

## Course descriptions

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## COURSE DESCRIPTION

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                         |
| <b>Course ID:</b><br>FaF/457-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course title:</b><br>Active Participation in the Scientific Events 1 |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Number of credits:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the program of scientific events (in which he / she is an active participant) to the supervisor, which is also evidenced by confirmations of the organizers of scientific events about active performance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                         |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor has demonstrated the ability to work scientifically, ie to create scientific texts that meet the criteria of expertise, scientific and methodological relevance and then present these texts to the audience at a scientific event (conference, scientific seminar, congress).                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure participation in a scientific event (conference, scientific seminar, congress), at which he / she will actively present and present the results of his / her own scientific activity.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student presents it only once, while the translation of the content of the original scientific text is not considered as another original scientific text and it is inadmissible for the doctoral student to present it repeatedly. |                                                                         |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                         |
| <b>Languages necessary to complete the course:</b><br>the language in which the conference is organized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                         |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                         |

|                                                                                                                                                                         |       |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                         |
| <b>Course ID:</b><br>FaF/458-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course title:</b><br>Active Participation in the Scientific Events 2 |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Number of credits:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the program of scientific events (in which he / she is an active participant) to the supervisor, which is also evidenced by confirmations of the organizers of scientific events about active performance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                         |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor has demonstrated the ability to work scientifically, ie to create scientific texts that meet the criteria of expertise, scientific and methodological relevance and then present these texts to the audience at a scientific event (conference, scientific seminar, congress).                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure participation in a scientific event (conference, scientific seminar, congress), at which he / she will actively present and present the results of his / her own scientific activity.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student presents it only once, while the translation of the content of the original scientific text is not considered as another original scientific text and it is inadmissible for the doctoral student to present it repeatedly. |                                                                         |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                         |
| <b>Languages necessary to complete the course:</b><br>the language in which the conference is organized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                         |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                         |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                         |
| <b>Course ID:</b><br>FaF/468-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course title:</b><br>Active Participation in the Scientific Events 3 |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Number of credits:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the program of scientific events (in which he / she is an active participant) to the supervisor, which is also evidenced by confirmations of the organizers of scientific events about active performance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                         |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor has demonstrated the ability to work scientifically, ie to create scientific texts that meet the criteria of expertise, scientific and methodological relevance and then present these texts to the audience at a scientific event (conference, scientific seminar, congress).                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure participation in a scientific event (conference, scientific seminar, congress), at which he / she will actively present and present the results of his / her own scientific activity.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student presents it only once, while the translation of the content of the original scientific text is not considered as another original scientific text and it is inadmissible for the doctoral student to present it repeatedly. |                                                                         |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                         |
| <b>Languages necessary to complete the course:</b><br>the language in which the conference is organized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                         |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                         |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |



## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                         |
| <b>Course ID:</b><br>FaF/469-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course title:</b><br>Active Participation in the Scientific Events 4 |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                         |
| <b>Number of credits:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the program of scientific events (in which he / she is an active participant) to the supervisor, which is also evidenced by confirmations of the organizers of scientific events about active performance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                         |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor has demonstrated the ability to work scientifically, ie to create scientific texts that meet the criteria of expertise, scientific and methodological relevance and then present these texts to the audience at a scientific event (conference, scientific seminar, congress).                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure participation in a scientific event (conference, scientific seminar, congress), at which he / she will actively present and present the results of his / her own scientific activity.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student presents it only once, while the translation of the content of the original scientific text is not considered as another original scientific text and it is inadmissible for the doctoral student to present it repeatedly. |                                                                         |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                         |
| <b>Languages necessary to complete the course:</b><br>the language in which the conference is organized                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                         |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                         |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## STATE EXAM DESCRIPTION

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                          |
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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                          |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                          |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                          |
| <b>Course ID:</b><br>FaF/509-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Course title:</b><br>Analytical Monitoring of Drug Levels in Practice |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                          |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                          |
| <b>Course requirements:</b><br>Successful completion of the exam.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                          |
| <b>Learning outcomes:</b><br>Reliable identification and quantification of drugs in biological systems are essential steps to understand the mechanisms of their action in a living organism. Drug concentration levels are an important indicator of the therapeutic process at the molecular level, usable in optimizing the treatment management of individual patients.<br>Therapeutic drug monitoring (TDM) is recommended and performed for (i) drugs with a narrow therapeutic range, (ii) drugs with a well-defined relationship between drug concentration and effect (therapeutic or toxic), (iii) drugs with large inter- or intra-individual differences in drug distribution or clearance. Integral components of TDM are (I) collection and processing of biological material, (II) development, validation and application of analytical methods, and (III) processing and interpretation of analysis results. Interpretation of TDM results requires adequate knowledge of the pharmacokinetics and pharmacodynamics of the monitored drugs and their association with the patient's clinical data. Thus, for the successful implementation of TDM in clinical practice, it is necessary to combine theoretical knowledge and practical aspects of methods of clinical analysis and clinical pharmacology. In a broader context, monitoring of biologically active substance levels is also carried out in the areas of disease diagnosis, toxicology, doping control, forensic analysis and other practical areas. The graduate of the course will gain knowledge related to the development and application of analytical methods and procedures usable in solving the tasks of the above areas of pharmaceutical practice.<br>The doctoral students will expand and deepen their knowledge of the latest findings in the field of analytical monitoring of drug levels in practice in connection with the relevant analytical methodology and clinical aspects of the analyzed substances. They will be able to apply the acquired knowledge in practice at various levels of activity in connection with optimization of therapeutic procedures, early diagnosis of diseases, assessment of patient compliance, assessment of intoxication or presence / levels of banned, narcotic and psychotropic substances in the biological system in cooperation with physicians, clinical, diagnostic, toxicological, anti-doping or forensic laboratories. |                                                                          |
| <b>Class syllabus:</b><br>The basic concepts/terms, principles, methodological and clinical aspects, validation and application areas of the master's curriculum are continuously supplemented with current knowledge/findings and solutions to the problems of analytical monitoring of drug levels in practice.<br>. Introduction to the issue<br># Clarification of the term “therapeutic drug monitoring”<br># Importance of TDM in clinical practice (current state of the issue)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                          |

- # Analytical aspects in TDM
- # Pharmacological aspects in TDM
- # Monitoring the levels of biologically active substances for toxicological, doping and forensic analysis
- . Groups of therapeutically monitored drugs
  - # Drugs with a narrow therapeutic range
  - # Drugs with a well-defined relationship between drug concentration and effect (therapeutic or toxic)
  - # Drugs with large inter- or intra-individual differences in drug distribution or clearance
  - # Distribution of drug groups (by effect)
  - # Antibiotics with nephrotoxic and ototoxic effects (aminoglycosides amikacin, gentamicin, netilmicin, tobramycin, polypeptide antibiotic vancomycin)
  - # Cardiovascular drugs (cardioglycosides: digoxin, antidysrhythmics: quinidine)
  - # Antiepileptics (carbamazepine, ethosuximide, phenobarbital, phenytoin, primidone, valproic acid)
  - # Tricyclic antidepressants (amitriptyline, imipramine, clomipramine)
  - # Antiasthmatics (theophylline)
  - # Immunosuppressants (cyclosporin A, tacrolimus, azathioprine, 6-mercaptopurine, 6-thioguanine)
  - # Cytostatics (methotrexate)
- . Groups of other monitored substances
  - # Diagnostic biomarkers - endogenous substances
  - # Low molecular weight organic substances (amino acids, carboxylic acids, biogenic amines, lipids, etc.)
  - # Inorganic ions (metal cations, anions)
  - # Biomolecules (proteins, e.g., enzymes, antibodies)
  - # Toxic and prohibited substances (doping, drugs, poisoning) and drugs applied without the consent of a doctor (self-treatment) - exogenous substances
  - # Commercial drugs (clenbuterol, ivermectin, etc.)
  - # Experimental drugs (SARMS, etc.)
  - # Illegal synthetic preparations (heroin, etc.)
  - # Natural toxins (amanitin, botulinum toxin, etc.)
- . Collection and processing of biological material
  - # Sampling (method, time intervals), steady state, number of samples, residual and peak concentration vs. toxicity and therapeutic effect
  - # Sample processing (sample type, sample preparation before analysis, sample preparation techniques / methods - protein precipitation, extraction, derivatization, protein cleavage, etc.)
  - # Sample storage
- . Methods of biological material analysis
  - # Development (optimization), validation and application of analytical methods, advantages and limitations of analytical methods
  - # Spectral methods
  - # Electrochemical methods
  - # Separation methods (chromatographic, electromigration)
  - # Hyphenated separation and spectral or electrochemical methods
  - # Separation methods with on-line sample preparation
  - # Immunochemical methods: radioimmunoassay (RIA), immunoenzyme methods (EIA, EMIT, ELISA, FPIA, MEIA, CMIA)
- . Interpretation of analytical results

# TDM: Interpretation of serum drug concentrations in the context of all clinical data (related areas: pharmacokinetics and pharmacodynamics of drugs)

# Diagnosis of diseases: correlations of levels of individual biomarkers or biomarker profiles in comparison groups (monitoring of changes in datasets of health vs patients)

# Toxicological, anti-doping, forensic analysis: monitoring of levels of monitored substances, limit concentrations

. Statistical evaluation of the analytical results

# Validation parameters according to the used validation protocol

# Validation protocols: FDA, ICH

# Hypothesis testing (Student's t-test, ANOVA)

# Use of therapeutic drug level monitoring data:

# Objective: to ensure maximum efficacy of drugs, to reduce the risk of drug toxicity, to maintain the concentration of drugs in the so-called "Therapeutic range"

# Monitoring of treatment of chronically and critically ill patients with altered drug clearance with a narrow therapeutic range, patients with different drug pharmacokinetics (elderly, children)

# Adjust batch modes (regimes)

# Optimization of therapy using pharmacokinetic programs (population-kinetic data)

# Determining patients' compliance with treatment

# Identification of drug toxicity risks (reduction of toxic drug reactions)

# Reduction of treatment costs

# Reducing the need for emergency procedures and hospitalizations

# Shortening the length of hospitalization

# Application areas - solved examples:

# TDM of thiopurines in the optimization of therapy of patients with non-specific inflammatory bowel diseases

# Monitoring of carboxylate levels in connection with the diagnosis and therapy of cancer patients

# Monitoring of Prohibited Substance Levels (Clenbuterol, SARMS) in connection with doping control

#### **State exam syllabus:**

#### **Recommended literature:**

- Mikuš, P., Maráková, K.: HYPHENATED ELECTROPHORETIC TECHNIQUES IN ADVANCED ANALYSIS, Bratislava, KARTPRINT, 2012. 217 s.
- Mikuš, P., Hanko, M., Piešťanský, J., Maráková, K., Dokupilová, S., Mikulová, M.: Analytical chemistry: Instrumental analysis. Bratislava : VEDA, is being prepared.
- Scientific publications registered in the Web of Science database: keywords: Mikus (author), Comenius (Address), amino acids, biogenic amines, thiopurines (Topic)

#### **Languages necessary to complete the course:**

English

#### **Notes:**

Teacher: prof. RNDr. Peter Mikuš, PhD., PharmDr. Juraj Piešťanský, PhD.

**Last change:** 05.04.2022

**Approved by:**

## COURSE DESCRIPTION

|                                                                                                                                                                                                                         |                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                         |                                                               |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                       |                                                               |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                     |                                                               |
| <b>Course ID:</b><br>FaF/480-PhD-A/22                                                                                                                                                                                   | <b>Course title:</b><br>Authorship of Teaching Aids and Texts |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                       |                                                               |
| <b>Number of credits:</b> 20                                                                                                                                                                                            |                                                               |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                            |                                                               |
| <b>Educational level:</b> III.                                                                                                                                                                                          |                                                               |
| <b>Prerequisites:</b>                                                                                                                                                                                                   |                                                               |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the teaching aid or text (source cover, circulation letters with ISBN or ISSN) to the supervisor. |                                                               |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor demonstrated the ability to work in the preparation and writing of teaching aids and texts.                                      |                                                               |
| <b>Class syllabus:</b><br>The doctoral student, after consultation with the supervisor, works on the preparation and writing of teaching aids with the co-authors and the editorial staff.                              |                                                               |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                              |                                                               |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                  |                                                               |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                    |                                                               |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                 |                                                               |
| ABS                                                                                                                                                                                                                     | NEABS                                                         |
| 0,0                                                                                                                                                                                                                     | 0,0                                                           |
| <b>Lecturers:</b>                                                                                                                                                                                                       |                                                               |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                          |                                                               |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                 |                                                               |

## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                 |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                 |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                 |
| <b>Course ID:</b><br>FaF/814-PhD-A/23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Course title:</b><br>Bioanalytical Chemistry |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                 |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                 |
| <b>Course requirements:</b><br>Successful passing of the exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                 |
| <b>Learning outcomes:</b><br>Bioanalytical chemistry is a subdiscipline of analytical chemistry that involves the separation, detection, identification and quantification of biological samples in different settings. It often involves the study of molecules such as proteins, peptides, DNA and classic drugs. By its nature and focus, bioanalytical chemistry is an integral part of biomedical and clinical laboratories, as well as the pharmaceutical industry. Therefore, it is an important and stable part of natural science and medical environment.<br>Knowledge of the behavior of drugs in a living organism (pharmacodynamic and pharmacokinetic aspects) is essential for rational pharmacotherapy of a patient. One of the key aspect of bioanalytical chemistry in the pharmaceutical environment is its implementation into the field of development of new drugs – small molecules but also biopolymers (peptides, proteins, ADC conjugates), and in the determination of their pharmacokinetic profile. Development of new efficient and safety drugs demands monitoring of specific target molecules (e.g. endogenous low-molecular metabolites or biopolymers), whose occurrence or the specific level in the biological compartment is closely related to the emergence and progression of diseases. Bioanalytical chemistry helps in targeted designing of drugs with a specific site (i.e. receptors) of intervention, or by affecting a specific molecule. Ultimately, the importance of bioanalytical chemistry can be seen in identification of specific biomarkers, which are important in early diagnosis, and the resulting rational pharmacotherapeutic intervention in the treatment process. In a broader context, bioanalytical chemistry is implemented into the field of disease diagnostics, toxicology, doping control, forensic analysis and other practical areas. The graduate of the course will gain knowledge and technical skills for a career in bioanalysis, biomedicine, biotechnology, clinical science, or pharmaceutical science. |                                                 |
| <b>Class syllabus:</b> <ol style="list-style-type: none"> <li>1. Introduction to the issue.</li> <li>2. Basic characterization and specifics of bioanalysis. Bioanalysis in pharmaceutical industry. Bioanalysis in hospital environment. Bioanalysis in toxicology and antidoping laboratories.</li> <li>3. Physicochemical properties of drugs – small molecules, biopolymers.</li> <li>4. Biological samples – composition and properties. Blood, urine, other biological material.</li> <li>5. Sample preparation strategies for bioanalysis – protein precipitation, liquid-liquid extraction (LLE), solid phase extraction (SPE), dilute and shoot approach, alternative strategies.</li> <li>6. Analytical approaches in bioanalysis:               <ol style="list-style-type: none"> <li>a) Chromatography – gas chromatography, high-performance liquid chromatography, ultra high-performance chromatography</li> </ol> </li> </ol>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                 |

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| b) Electrophoresis – gel electrophoresis, capillary zone electrophoresis, isotachopheresis, capillary isoelectric focusing<br>c) Mass spectrometry and its combination with separation techniques – GC-MS, LC-MS, CE-MS<br>d) Nuclear magnetic resonance (NMR)<br>e) Immunochemical methods<br>7. Qualitative and quantitative evaluation in bioanalysis. Validation. Validation guidelines for bioanalytical methods – FDA, EMA, ICH.<br>8. Pharmacokinetics aspects of drugs analysis in biological fluids.<br>9. Analysis of small-molecule drugs in biological fluids.<br>10. Analysis of peptides and proteins in biological fluids.<br>11. Characterization of biologics and their analysis in biological fluids.<br>12. Perspectives and future trends in bioanalytical chemistry. |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Recommended literature:</b> <ul style="list-style-type: none"> <li>• Hansen, S.H., Pedersen-Bjergaard, S.: Bioanalysis of Pharmaceuticals: Sample preparation, separation techniques and mass spectrometry, Wiley, Chichester, 2015. 318s.</li> <li>• Xu, A.Q., Madden, T.L.: LC-MS in drug bioanalysis, Springer, New York, 2012. 476s.</li> <li>• Lill, J.R., Sandoval, W.: Analytical characterization of biotherapeutics, Wiley, Chichester, 2017. 368s.</li> </ul>                                                                                                                                                                                                                                                                                                                |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Notes:</b><br>Lecturers: doc. PharmDr. Juraj Piešťanský, PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Last change:</b> 26.04.2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Approved by:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |



## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                    |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                    |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                    |
| <b>Course ID:</b><br>FaF/815-PhD-A/23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course title:</b><br>Biophysics |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                    |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |
| <b>Course requirements:</b><br>Successful passing of the exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                    |
| <b>Learning outcomes:</b><br>PhD students will acquire knowledge about physical processes and mechanisms at the level of tissues, cells and molecules at physiological and pathological conditions. Biophysical aspects of molecular interactions with cell's receptors, and drug delivery through the cell membrane is emphasized.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                    |
| <b>Class syllabus:</b><br>The subject builds upon the knowledge from physics, mathematics and physical chemistry and is linked with additional chemical, biological and pharmaceutical areas.<br>The scope of the subject:<br>Cell, its structure and methods of study. Biological macromolecules – nucleic acids, proteins, lipids and polysaccharides. Biophysical aspects of cell membrane. Lipid membranes, cholesterol and rafts, their role in the cell. Polymorphic behaviour of lipids. Transport of drugs in the body. Models of pharmacokinetics. Membrane channels. Biophysics and pharmacology of voltage dependent membrane channels. Methods of study of membrane channels. Diseases caused by mutation of membrane channels. Lipid bilayer as a model system for interactions with antimicrobial and antiviral agents. Antimicrobial peptides and antibiotics. Antivirals and mechanism of their activity. Computer design of drugs. Pulmonary surfactant, interactions with pathogens and drugs. Gene therapy and methods for nucleic acid delivery. Biopolymers and dendrimers in drug delivery. Anaesthesia and solitons. |                                    |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                    |
| <b>Recommended literature:</b><br>Serdyuk I.N., Zaccai N.R., Zaccai J.: Methods in Molecular Biophysics. Structure, Dynamics, Function. Cambridge University Press, 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                    |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                    |
| <b>Notes:</b><br>Lecturers: prof. RNDr. Daniela Uhríková, CSc.; prof. Ing. V. Frečer, DrSc.; Mgr. Mária Klacsová, PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                    |
| <b>Last change:</b> 27.04.2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |
| <b>Approved by:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                    |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                      |                                        |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                    |                                        |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                  |                                        |
| <b>Course ID:</b><br>FaF/478-PhD-A/22                                                                                                                                                                                                                                                                                                                                                | <b>Course title:</b><br>Citation Other |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                    |                                        |
| <b>Number of credits:</b> 3                                                                                                                                                                                                                                                                                                                                                          |                                        |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                         |                                        |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                       |                                        |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                |                                        |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the sections (source cover, circulation letters with ISBN or ISSN, source content, paper), in which there is another citation of the doctoral student's scientific work such as SCI and SSCI.                                                                  |                                        |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of a supervisor has demonstrated the ability of quality scientific work and self-presentation.                                                                                                                                                                                                                  |                                        |
| <b>Class syllabus:</b><br>As part of his / her scientific work, the doctoral student establishes cooperation with scientific authorities of domestic and foreign origin and supports the promotion of the results of his / her own scientific publishing activity in the scientific area, while monitoring the citation of his / her outputs in other databases except SCI and SSCI. |                                        |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                           |                                        |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                               |                                        |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                 |                                        |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                              |                                        |
| ABS                                                                                                                                                                                                                                                                                                                                                                                  | NEABS                                  |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                  | 0,0                                    |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                    |                                        |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                       |                                        |

**Approved by:** prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.

## COURSE DESCRIPTION

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                  |                                            |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                |                                            |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                              |                                            |
| <b>Course ID:</b><br>FaF/477-PhD-A/22                                                                                                                                                                                                                                                                                                                                            | <b>Course title:</b><br>Citation SCI, SSCI |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                |                                            |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                                                                      |                                            |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                     |                                            |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                   |                                            |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                            |                                            |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with credit value after submitting the sections (source cover, circulation letters with ISBN or ISSN, source content, paper), which contains a citation of the doctoral student's scientific work defined as SCI and SSCI.                                                                      |                                            |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of a supervisor has demonstrated the ability of quality scientific work and self-presentation.                                                                                                                                                                                                              |                                            |
| <b>Class syllabus:</b><br>As part of his / her scientific work, the doctoral student establishes cooperation with scientific authorities of domestic and foreign origin and supports the promotion of the outputs of his / her own scientific publishing activity in the scientific area, while monitoring the citation response of his / her outputs in the relevant databases. |                                            |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                       |                                            |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                           |                                            |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                             |                                            |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                          |                                            |
| ABS                                                                                                                                                                                                                                                                                                                                                                              | NEABS                                      |
| 0,0                                                                                                                                                                                                                                                                                                                                                                              | 0,0                                        |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                |                                            |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                   |                                            |

**Approved by:** prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.

## COURSE DESCRIPTION

|                                                                                                                                                                                                                         |                                                                  |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                         |                                                                  |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                       |                                                                  |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                     |                                                                  |
| <b>Course ID:</b><br>FaF/481-PhD-A/22                                                                                                                                                                                   | <b>Course title:</b><br>Co-authorship of Teaching Aids and Texts |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                       |                                                                  |
| <b>Number of credits:</b> 10                                                                                                                                                                                            |                                                                  |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                            |                                                                  |
| <b>Educational level:</b> III.                                                                                                                                                                                          |                                                                  |
| <b>Prerequisites:</b>                                                                                                                                                                                                   |                                                                  |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the teaching aid or text (source cover, circulation letters with ISBN or ISSN) to the supervisor. |                                                                  |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor demonstrated the ability to cooperate and co-participate in the preparation and writing of teaching aids and texts.              |                                                                  |
| <b>Class syllabus:</b><br>The doctoral student, after consultation with the supervisor, participates in the preparation and writing of teaching aids with the author and other co-authors.                              |                                                                  |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                              |                                                                  |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                  |                                                                  |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                    |                                                                  |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                 |                                                                  |
| ABS                                                                                                                                                                                                                     | NEABS                                                            |
| 0,0                                                                                                                                                                                                                     | 0,0                                                              |
| <b>Lecturers:</b>                                                                                                                                                                                                       |                                                                  |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                          |                                                                  |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                 |                                                                  |

## COURSE DESCRIPTION

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                |                                                                                             |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                              |                                                                                             |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                            |                                                                                             |
| <b>Course ID:</b><br>FaF/488-PhD-A/22                                                                                                                                                                                                          | <b>Course title:</b><br>Completing Other Subject of the Offer of Other University Faculties |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                              |                                                                                             |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                    |                                                                                             |
| <b>Recommended semester:</b> 1., 2., 3., 4..                                                                                                                                                                                                   |                                                                                             |
| <b>Educational level:</b> III.                                                                                                                                                                                                                 |                                                                                             |
| <b>Prerequisites:</b>                                                                                                                                                                                                                          |                                                                                             |
| <b>Course requirements:</b><br>Upon presentation of confirmation of completion of the course at another faculty of the university, the doctoral student is evaluated according to the specific credit evaluation of the course at the faculty. |                                                                                             |
| <b>Learning outcomes:</b><br>The doctoral student will gain knowledge of the subject at another faculty of the university.                                                                                                                     |                                                                                             |
| <b>Class syllabus:</b><br>The doctoral student will complete a designated subject at another faculty of the university at which he / she did not complete his / her second degree.                                                             |                                                                                             |
| <b>Recommended literature:</b><br>Current sources on the presented issues                                                                                                                                                                      |                                                                                             |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                         |                                                                                             |
| <b>Notes:</b>                                                                                                                                                                                                                                  |                                                                                             |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                        |                                                                                             |
| ABS                                                                                                                                                                                                                                            | NEABS                                                                                       |
| 0,0                                                                                                                                                                                                                                            | 0,0                                                                                         |
| <b>Lecturers:</b>                                                                                                                                                                                                                              |                                                                                             |
| <b>Last change:</b> 13.04.2022                                                                                                                                                                                                                 |                                                                                             |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                        |                                                                                             |

## COURSE DESCRIPTION

|                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                     |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                     |
| <b>Course ID:</b><br>FaF/489-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                | <b>Course title:</b><br>Completion of a Defined Stage of the PhD Scientific Program |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                    |                                                                                     |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                     |
| <b>Recommended semester:</b> 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                     |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value upon submission of all required outcomes achieved during the doctoral study.                                                                                                                                                                                                                                                    |                                                                                     |
| <b>Learning outcomes:</b><br>After evaluating the results achieved, the doctoral student demonstrates the supervisor's ability to perform scientific work, ie to create scientific texts that meet the criteria of expertise, scientific and methodological relevance and then present these texts to the audience at a scientific event and demonstrates the ability to cooperate with domestic and foreign scientific authorities. |                                                                                     |
| <b>Class syllabus:</b><br>After consulting with the supervisor, the doctoral student will present the achieved results of his / her study, which meet the criteria of professionalism, scientific knowledge and methodological relevance in the given field of study.                                                                                                                                                                |                                                                                     |
| <b>Recommended literature:</b>                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                              |                                                                                     |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                  | NEABS                                                                               |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                  | 0,0                                                                                 |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                     |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                                                                                                                                                                                                              |                                                                                     |



## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                             |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                             |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                             |
| <b>Course ID:</b><br>FaF/302-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Course title:</b><br>Dissertation Thesis and its Defence |
| <b>Number of credits:</b> 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                             |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                             |
| <b>Recommended prerequisites:</b><br>Defined in the individual study plan of the doctoral student and in the Study Regulations of FPHARM CU.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                             |
| <b>Course requirements:</b><br>The doctoral student will obtain the rating completed with credit value after successfully defending the dissertation thesis. Fulfillment of required conditions according to regulations and submission of dissertation thesis.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                             |
| <b>Learning outcomes:</b><br>after a successful defense he / she will obtain a title PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                             |
| <b>Class syllabus:</b><br>1) The doctoral student will prepare a dissertation thesis. Through the dissertation, the student demonstrates the ability and readiness for independent scientific and creative activity in the field of research or development or for independent theoretical and creative activity. It should be characterized by a high degree of analysis and synthesis of knowledge, as well as a sufficient overview of the existing literature. The work must be original, created by the author in compliance with the rules of working with information sources. The school work must not have the character of plagiarism, nor must it infringe the copyrights of other authors. The author is obliged to thoroughly cite the information sources used, to name the specific and specific research results of other authors or authors, by citing the relevant source, to accurately describe the methods and working procedures of other authors or collectors, to document laboratory results and field research of other authors or collectives. The citation technique is guided by the practice in the given scientific field, respecting the relevant standards and norms. 2) The doctoral student will briefly state the essential content of his / her dissertation, its concept, results and contribution in the defense of the dissertation. 3) The doctoral student will take a position on the opinions of the opponents, in particular he will comment on all objections and comments and answer their questions. 4) During the discussion, the doctoral student will answer all questions and take a stand on all suggestions and objections of its participants. |                                                             |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                             |
| <b>Recommended literature:</b><br>Current sources on the studied issues                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                             |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                             |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                             |
| <b>Approved by:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                             |

## COURSE DESCRIPTION

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                           |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                           |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                           |
| <b>Course ID:</b><br>FaF/456-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Course title:</b><br>Elaboration of a Manuscript of a Scientific Publication in a Foreign Language as the First Author |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                           |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                           |
| <b>Recommended semester:</b> 5., 6..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                           |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                           |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                           |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the manuscript of the scientific work in a foreign language to the supervisor, which documents the ability to create a scientific text for publication in a journal with IF. The student is the first author in the manuscript.                                                                                                                                                                                                  |                                                                                                                           |
| <b>Learning outcomes:</b><br>a doctoral student under the guidance of a supervisor demonstrates the ability to work scientifically, i. e. a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                       |                                                                                                                           |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts in a foreign language (English language is recommended) that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The scientific text of the manuscripts consists of the basic parts:<br>- abstract<br>- introduction<br>- material and methods<br>- results and discussion<br>- literature.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original. |                                                                                                                           |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                           |
| <b>Languages necessary to complete the course:</b><br>foreign language, English is recommended                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                           |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                           |

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                        |       |
| Total number of evaluated students: 0                                                                                                                                 |       |
| ABS                                                                                                                                                                   | NEABS |
| 0,0                                                                                                                                                                   | 0,0   |
| <b>Lecturers:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                        |       |
| <b>Approved by:</b>                                                                                                                                                   |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                    |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                    |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                    |
| <b>Course ID:</b><br>FaF/432-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Course title:</b><br>English Language and Foreign Language Exam |
| <b>Educational activities:</b><br><b>Type of activities:</b> seminar<br><b>Number of hours:</b><br><b>per week: 2 per level/semester: 28</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                            |                                                                    |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                    |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                    |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                    |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                    |
| <b>Course requirements:</b><br>The doctoral student will receive a credit value evaluation after successfully passing the foreign language exam (min. 60%).                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| <b>Learning outcomes:</b><br>The doctoral student will gain knowledge of academic language preparation in English at a terminological and grammatical level.                                                                                                                                                                                                                                                                                                                                                                              |                                                                    |
| <b>Class syllabus:</b><br>Demonstration of academic language competences at level B2 (according to the Common European Framework of Reference for Languages) in English in written and oral form.<br>Academic texts and tasks are focused on pharmacy practice, the role of pharmacist in contact with patient, description of basic laboratory equipment, knowledge of terminology of vitamins and minerals, first aid, hereditary factors, addictions, theoretical aspects of pharmacology and drug therapy and complementary medicine. |                                                                    |
| <b>Recommended literature:</b><br>English for Pharmacists I. – IV.                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                    |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                    |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                    |
| <b>Past grade distribution</b><br>Total number of evaluated students: 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                    |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NEABS                                                              |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0,0                                                                |
| <b>Lecturers:</b> PhDr. Darina Kližanová, PaedDr. Viera Žufková, PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                    |
| <b>Last change:</b> 07.06.2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                    |

**Approved by:** prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                       |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                       |
| <b>Course ID:</b><br>FaF/470-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Course title:</b><br>Individual Study of the Scientific Literature |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                         |                                                                       |
| <b>Number of credits:</b> 2                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                       |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                       |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                       |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting a written version thematically corresponding to the topic of the dissertation, research, theoretical introduction or project to the supervisor, the doctoral student obtains the evaluation completed with a credit value. The supervisor provides the evaluation to the doctoral student by making an entry into the AIS and in the study records. |                                                                       |
| <b>Learning outcomes:</b><br>The doctoral student under the guidance of the supervisor will demonstrate the ability to develop a search, theoretical introduction or project that thematically corresponds to the topic of the dissertation.                                                                                                                                                                                                                              |                                                                       |
| <b>Class syllabus:</b><br>1. The doctoral student prepares a research, theoretical introduction or project corresponding to the main topic of the dissertation under the guidance of the supervisor 2. The doctoral student presents a case study corresponding to the main topic of the dissertation in the presence of the supervisor                                                                                                                                   |                                                                       |
| <b>Recommended literature:</b><br>Current sources on the studied issues.                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                       |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                       |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                       |
| <b>Past grade distribution</b><br>Total number of evaluated students: 2                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                       |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NEABS                                                                 |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 0,0                                                                   |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                       |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                             |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                             |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                             |
| <b>Course ID:</b><br>FaF/455-PhD/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>Course title:</b><br>Introduction to Scientific Research |
| <b>Educational activities:</b><br><b>Type of activities:</b> seminar<br><b>Number of hours:</b><br><b>per week: 1 per level/semester: 14</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                             |
| <b>Number of credits:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                             |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                             |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                             |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                             |
| <b>Course requirements:</b><br>- active participation in seminars – seminar work (40%) - final test (60%). The student must achieve at least 60% of the total assessment to complete the course.<br>Scale of assessment (preliminary/final): 40/60                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                             |
| <b>Learning outcomes:</b><br>After completing the seminars, the students can formulate their ideas, search for arguments, and conduct scientific interviews. They will learn to deal with evidence, be creative, inform, analyse, and understand the meaning of scientific research.                                                                                                                                                                                                                                                                                                                                                                                                               |                                                             |
| <b>Class syllabus:</b><br>The focus covers the following areas of scientific research and education: <ul style="list-style-type: none"> <li>- University education</li> <li>- Doctoral studies and PhD degree.</li> <li>- Science, research and observation</li> <li>- Selection of a scientific problem</li> <li>- Scientific research and experience</li> <li>- Experiment and experimenter</li> <li>- The meaning of scientific research</li> <li>- Scientific problem and its solution</li> <li>- Objectives and methods of scientific research</li> <li>- From observation to experiment</li> <li>- Ethics in scientific work</li> <li>- Science, pharmacy and clinical monitoring</li> </ul> |                                                             |
| <b>Recommended literature:</b><br>Hulín I., Ostatníková D. et al. O vedeckom bádání v medicíne, Bratislava, AEPress 2014, p. 240.<br>Bielik L. Methodology of Science an Introduction, Bratislava, Comenius University in Bratislava, 2019, p. 232.                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                             |
| <b>Languages necessary to complete the course:</b><br>Slovak language, English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                             |



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| <b>Notes:</b>                                                                                                                                                                                                                              |       |
| <b>Past grade distribution</b>                                                                                                                                                                                                             |       |
| Total number of evaluated students: 15                                                                                                                                                                                                     |       |
| ABS                                                                                                                                                                                                                                        | NEABS |
| 100,0                                                                                                                                                                                                                                      | 0,0   |
| <b>Lecturers:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, doc. PharmDr. Miloš Lukáč, PhD., prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD., prof. RNDr. Daniela Uhríková, CSc. |       |
| <b>Last change:</b> 07.06.2022                                                                                                                                                                                                             |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                    |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                            |                                                                                |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                |
| <b>Course ID:</b><br>FaF/454-PhD/21                                                                                                                                                                                                                                                                                                                                                                                          | <b>Course title:</b><br>Introduction to Scientific Writing in English Language |
| <b>Educational activities:</b><br><b>Type of activities:</b> seminar<br><b>Number of hours:</b><br><b>per week: 1 per level/semester: 14</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                               |                                                                                |
| <b>Number of credits:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                |
| <b>Recommended semester:</b> 2.                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                |
| <b>Course requirements:</b><br>- active participation in seminars - midterm test (15%) - final test (85%). The student must achieve at least 60% of the total assessment to complete the course.<br>Scale of assessment (preliminary/final): 15/85                                                                                                                                                                           |                                                                                |
| <b>Learning outcomes:</b><br>After completing the seminars, the students can formulate their ideas, search for arguments, and conduct scientific interviews through academic writing. They will learn to deal with evidence, be creative, inform, analyse, use professional terminology if necessary.                                                                                                                        |                                                                                |
| <b>Class syllabus:</b><br>The seminars follow the deepening of communicative skills and the acquisition of specific terminology. In addition to selected texts from textbooks, texts from promotional materials, manuals and magazines are used. The following topics are covered: writing professional articles, reports, interviews, lectures, emails, creating abstracts and summaries, presentations on assigned topics. |                                                                                |
| <b>Recommended literature:</b><br>Rejharová, V.: Letter – Writer. Praha: Academia, 1972,<br>Bates, M., Dudley, T.: Nucleus: General Science. London: Longman, 1992, Havlíčková, I., Dostálová, Š., Katerová, Z.: English for Pharmacy and Medical Bioanalytics. Karolinum Press, 2014, James, V. D.: Medicine. London: Prentice Hall, 1989                                                                                   |                                                                                |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                       |                                                                                |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                |
| <b>Past grade distribution</b><br>Total number of evaluated students: 19                                                                                                                                                                                                                                                                                                                                                     |                                                                                |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                          | NEABS                                                                          |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                                                        | 0,0                                                                            |
| <b>Lecturers:</b> PaedDr. Viera Žufková, PhD.                                                                                                                                                                                                                                                                                                                                                                                |                                                                                |

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| <b>Last change:</b> 07.06.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                     |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                     |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                     |
| <b>Course ID:</b><br>FaF/483-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>Course title:</b><br>Management of Student Scientific Activities |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                     |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                     |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                     |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                     |
| <b>Course requirements:</b><br>The course is successfully completed upon presentation of a certificate of management of student scientific activities. The confirmation will be issued by the supervisor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                     |
| <b>Learning outcomes:</b><br>the doctoral student will gain experience and acquire the skills necessary for the presentation of scientific work on selected professional issues in the academic space at the 1st and 2nd level of university study in the field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                     |
| <b>Class syllabus:</b><br>1. The doctoral student prepares the assignment, during the whole supervision of the work the doctoral student is responsible for the administration of all requisites related to this type of activity.<br>2. The doctoral student methodically and professionally guides the student from the choice of topic to the successful presentation of results.<br>3. The doctoral student will prepare a certificate of conducting the student's scientific work, which can be confirmed by the head of the department. The abstract of the presentation must be attached to the confirmation and the confirmation signed by the head of the department serves as proof of successful completion of the conditions for the supervisor, who on the basis of it will award an rating (completed). |                                                                     |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                     |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                     |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                     |

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| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                    |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                    |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                    |
| <b>Course ID:</b><br>FaF/473-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Course title:</b><br>Obtaining the "Grant FaF UK for Young Scientists" (Principal Investigator) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                    |
| <b>Number of credits:</b> 15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                    |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                    |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                    |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                    |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the acquisition of the grant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                    |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor demonstrated the ability to create, implement and administer a scientific project for young people.                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                    |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, will develop and submit a research project registered by the Faculty of Pharmacy Comenius University Bratislava. In the submitted author's project, the doctoral student appears as a principal investigator.<br>2. The doctoral student is obliged to inform the head of the department about the submitted project.<br>3. The doctoral student respects and complies with the currently valid Directive on the approval, registration and archiving of grant projects at Faculty of Pharmacy Comenius University Bratislava. |                                                                                                    |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                    |
| <b>Languages necessary to complete the course:</b><br>Slovak language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                    |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                    |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                    |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | NEABS                                                                                              |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 0,0                                                                                                |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                    |

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| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                      |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                      |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                      |
| <b>Course ID:</b><br>FaF/474-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>Course title:</b><br>Obtaining the "Grant FaF UK for Young Scientists" (Co-investigator of Grant) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                      |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                      |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                      |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                      |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                      |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the acquisition of the grant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                      |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor demonstrated the ability to participate in the creation, implementation and administration of a scientific project for young people.                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                      |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, co-authored in the elaboration and submission of a scientific project registered at Faculty of Pharmacy Comenius University Bratislava. The doctoral student appears as a co-investigator in the submitted author's project.<br>2. The doctoral student is obliged to inform the head of the department about the submitted project.<br>3. The doctoral student respects and complies with the currently valid Directive on the approval, registration and archiving of grant projects at Faculty of Pharmacy Comenius University Bratislava. |                                                                                                      |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                      |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                      |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                      |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                      |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | NEABS                                                                                                |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 0,0                                                                                                  |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                      |



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| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                           |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                           |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                           |
| <b>Course ID:</b><br>FaF/472-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Course title:</b><br>Obtaining the "University Grant for Young Researchers" (Co-investigator of Grant) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                           |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                           |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                           |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                           |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                           |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the acquisition of the grant.                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                           |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor demonstrated the ability to participate in the creation, implementation and administration of a scientific project for young people.                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                           |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, co-authored in the elaboration and submission of a scientific project registered at Comenius University Bratislava. The doctoral student appears as a co-investigator in the submitted author's project.<br>2. The doctoral student is obliged to inform the head of the department about the submitted project.<br>3. The doctoral student respects and complies with the currently valid Directive on the approval, registration and archiving of grant projects at Comenius University Bratislava. |                                                                                                           |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                           |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                           |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                           |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                           |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NEABS                                                                                                     |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,0                                                                                                       |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                           |

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| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                         |
| <b>Course ID:</b><br>FaF/471-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Course title:</b><br>Obtaining the "University Grant for Young Researchers" (Principal Investigator) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                         |
| <b>Number of credits:</b> 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the acquisition of the grant.                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                         |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor demonstrated the ability to create, implement and administer a scientific project for young people.                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, will develop and submit a research project registered by the Comenius University Bratislava. In the submitted author's project, the doctoral student appears as a principal investigator.<br>2. The doctoral student is obliged to inform the head of the department about the submitted project.<br>3. The doctoral student respects and complies with the currently valid Directive on the approval, registration and archiving of grant projects at Comenius University Bratislava. |                                                                                                         |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                         |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                         |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                         |
| <b>Past grade distribution</b><br>Total number of evaluated students: 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                         |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | NEABS                                                                                                   |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,0                                                                                                     |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                         |

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| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                       |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                       |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                       |
| <b>Course ID:</b><br>FaF/476-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Course title:</b><br>Other Activities (eg. a Member of the Organizing Committee of the Conference) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                       |
| <b>Number of credits:</b> 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                       |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                       |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                       |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                       |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with credit value after submitting an invitation to the conference (in which he is a member of the scientific conference organizing committee) and a separate published article on the successful implementation of the conference or a copy of the published summary of papers at the scientific event in the form of proceedings. source cover, circulation letters with ISBN or ISSN, source content, contribution), or the doctoral student obtains the rating completed with a credit value after submitting a confirmation from the head of the pharmacy about the completion of practice in a pharmacy. Completion of pharmacy practice is possible with the holder of a permit to provide pharmacy care, which is a legal entity, and which is also a university providing higher education in the field of pharmacy. The student can complete the subject even if he participates in an internship at a workplace that operates in the field of pharmacy or medicine. A student can be awarded a grade for having passed while representing the faculty at various events organized by the faculty or the university. |                                                                                                       |
| <b>Learning outcomes:</b><br>The doctoral student under the guidance of the supervisor will demonstrate the ability to prepare, organize and conduct a scientific conference, or the doctoral student under the guidance of a pharmacist or doctor demonstrates the ability to work professionally and scientifically in a pharmacy or in a workplace that operates in the field of pharmacy or medicine or the doctoral student demonstrates the ability to professionally and scientifically present studies and scientific activities carried out at the Faculty of Pharmacy of the Comenius University Bratislava.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                       |
| <b>Class syllabus:</b><br>The doctoral student shall actively participate in the preparation, organization and implementation of the conference in the position of chairman or member of the organizing committee of the scientific conference. 2. After the successful implementation of the conference, the doctoral student will prepare an article with photo documentation, which presents and promotes a scientific event in a journalistic, scientific periodical or proceedings. If a doctoral student completes an internship in a pharmacy, he actively participates in its operation and actively solves scientific questions related to the prescription and dispensing of medicines. If a doctoral student participates in an internship                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                       |

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| at a workplace that operates in the field of pharmacy or medicine, he actively solves professional and scientific topics that the workplace deals with. A doctoral student representing the faculty at events organized by the faculty or the university informs about the studies and scientific research activities carried out at the faculty. The student acquires skills in presenting professional topics. |       |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                       |       |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                           |       |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                             |       |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                          |       |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                              | NEABS |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                              | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                |       |
| <b>Last change:</b> 19.03.2024                                                                                                                                                                                                                                                                                                                                                                                   |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                                                                                                                                                                                          |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                         |
| <b>Course ID:</b><br>FaF/475-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Course title:</b><br>Participation in the Implementation of Another Research Project |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                         |
| <b>Number of credits:</b> 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the participation in the grant.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                         |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor has demonstrated the ability to create, implement and administer a scientific project.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, collaborates as an author on the elaboration and submission of a scientific project registered by the Ministry of Education, Science, Research and Sport of the Slovak Republic. The doctoral student appears as a co-investigator in the submitted author's project. 2. The doctoral student has the obligation to inform the head of the department about the solution of partial tasks on the project. 3. The doctoral student respects and complies with the currently valid Directive on the approval, registration and archiving of grant projects at Comenius University Bratislava. |                                                                                         |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                         |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                         |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                         |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                         |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | NEABS                                                                                   |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0,0                                                                                     |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                         |



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| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                          |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                          |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                          |
| <b>Course ID:</b><br>FaF/482-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Course title:</b><br>Participation in the Management of the Thesis in Master's Degree |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                          |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                          |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                          |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                          |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                          |
| <b>Course requirements:</b><br>The course is successfully completed if the trained student in AIS-2 is enrolled in the evaluation of the course: Preparation of Diploma Thesis 1 or Preparation of Diploma Thesis 2 or Preparation of Diploma Thesis 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                          |
| <b>Learning outcomes:</b><br>The doctoral student will gain experience and acquire the skills necessary for leading the final work of a selected professional issue in the academic space at the 2nd level of university study within the field of study.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                          |
| <b>Class syllabus:</b><br>1. The doctoral student methodically and professionally guides the undergraduate student from the choice of topic to the successful defense of the final (diploma) thesis under the supervision of the thesis supervisor. 2. During the entire supervision of the final (diploma) thesis, the doctoral student is responsible for the administration of all requisites related to the final (diploma) thesis in AIS under the supervision of the thesis supervisor. 3. The doctoral student will prepare a certificate of completion of the final (diploma) thesis, which can be confirmed by the head of the department. The evaluation must be accompanied by evaluation assessments of the works. The confirmation signed by the head of the department serves as proof of successful fulfillment of the conditions for completing the course for the supervisor, who consequently will award the evaluation (graduated) to the doctoral student in AIS and in the study report. |                                                                                          |
| <b>Recommended literature:</b><br>Current sources on the studied issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                          |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                          |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                          |

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| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                             |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                             |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                             |
| <b>Course ID:</b><br>FaF/451-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Course title:</b><br>Passing Prescribed Doctoral Lectures and Seminars 1 |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture / seminar<br><b>Number of hours:</b><br><b>per week:</b> 1 / 2 <b>per level/semester:</b> 14 / 28<br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                             |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                             |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                             |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                             |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                             |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting a written version of the list of completed prescribed doctoral lectures and seminars, which thematically correspond to the topic of the dissertation and the subjects of the dissertation examination to the supervisor. The supervisor will give the evaluation to the doctoral student in the AIS and in the study report.                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                             |
| <b>Learning outcomes:</b><br>Expansion and deepening of basic knowledge of doctoral students in scientific disciplines, which will be used in formulating hypotheses as a basis for the analytical part of the dissertation and in formulating conclusions for practice resulting from the results achieved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                             |
| <b>Class syllabus:</b><br>The doctoral student completes the designated lectures and seminar teaching in the range of subjects approved by the guarantor of the study program, from the offer of subjects for doctoral study. The choice of subjects depends on the flexibility of learning trajectories and the achievement of learning outcomes. There are topics to choose from: <ul style="list-style-type: none"> <li>- Analytical chemistry</li> <li>- Analytical monitoring of drug levels in practice</li> <li>- Inorganic chemistry</li> <li>- Applied biochemistry</li> <li>- Biochemistry</li> <li>- Pharmaceutical botany</li> <li>- Pharmaceutical chemistry</li> <li>- Pharmacognosy</li> <li>- Pharmacology</li> <li>- Pharmaceutical technology</li> <li>- Physical chemistry</li> <li>- Physiology</li> <li>- Immunology</li> <li>- Clinical pharmacy</li> </ul> |                                                                             |

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| <ul style="list-style-type: none"> <li>- Clinical pharmacology and pharmacotherapy</li> <li>- Retail pharmacy and social pharmacy</li> <li>- Molecular biology</li> <li>- Molecular biology of plants</li> <li>- Current trends in preparations of natural origin</li> <li>- Organic chemistry</li> <li>- Pathological physiology</li> <li>- Biological drug technology</li> <li>- Toxicology</li> <li>- Public health and pharmaceutical care</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |       |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |       |
| <b>Languages necessary to complete the course:</b><br>Slovak language, English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
| <b>Past grade distribution</b><br>Total number of evaluated students: 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | NEABS |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0,0   |
| <b>Lecturers:</b> doc. PharmDr. Szilvia Czigle, PhD., prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., prof. Ing. Vladimír Frečer, DrSc., prof. Ing. Miroslav Habán, PhD., PharmDr. Katarína Maráková, PhD., prof. Ing. Milan Nagy, CSc., doc. PharmDr. Juraj Piešťanský, PhD., doc. Mgr. Fils Andriamainty, PhD., PharmDr. Vladimír Garaj, PhD., Ing. Ladislav Habala, PhD., doc. PharmDr. Ivan Malík, PhD., doc. Ing. Martin Pisárčik, CSc., doc. PharmDr. Miroslava Sýkorová, PhD., doc. PharmDr. Marek Mát'uš, PhD., PharmDr. Veronika Mikušová, PhD., doc. PharmDr. Daniela Mináriková, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., prof. PharmDr. Tomáš Tesař, PhD., MBA, RNDr. František Bilka, PhD., doc. Mgr. Andrea Bilková, PhD., PharmDr. Gabriel Dóka, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD., doc. PharmDr. Peter Křenek, PhD., doc. PharmDr. Marek Obložinský, PhD., doc. PharmDr. Miloš Lukáč, PhD., RNDr. Alexander Búcsi, PhD., doc. RNDr. Jana Gallová, CSc., Mgr. Mária Klacsová, PhD., prof. RNDr. Daniela Uhríková, CSc., Dr.h.c. prof. RNDr. Jozef Čižmárik, PhD., prof. RNDr. Emil Havránek, PhD., Ing. Ľudmila Pašková, PhD., doc. RNDr. Miroslava Šupolíková, PhD., doc. Mgr. Peter Vavrínek, PhD., doc. PharmDr. Stanislava Kosírová, PhD., Mgr. Ondrej Sprušanský, PhD., doc. Mgr. Diana Vavrincová, PhD., PharmDr. Eva Kráľová, PhD., doc. PharmDr. Tomáš Rajtík, PhD. |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |
| <b>Approved by:</b> prof. PharmDr. Ján Klimas, PhD., MPH, prof. PharmDr. Adriana Duriš Adameová, PhD., prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                             |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                             |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                             |
| <b>Course ID:</b><br>FaF/452-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Course title:</b><br>Passing Prescribed Doctoral Lectures and Seminars 2 |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture / seminar<br><b>Number of hours:</b><br><b>per week:</b> 1 / 2 <b>per level/semester:</b> 14 / 28<br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                             |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                             |
| <b>Recommended semester:</b> 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                             |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                             |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                             |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting a written version of the list of completed prescribed doctoral lectures and seminars, which thematically correspond to the topic of the dissertation and the subjects of the dissertation examination to the supervisor. The supervisor will give the evaluation to the doctoral student in the AIS and in the study report.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                             |
| <b>Learning outcomes:</b><br>Expansion and deepening of basic knowledge of doctoral students in scientific disciplines, which will be used in formulating hypotheses as a basis for the analytical part of the dissertation and in formulating conclusions for practice resulting from the results achieved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                             |
| <b>Class syllabus:</b><br>The doctoral student completes the designated lectures and seminar teaching in the range of subjects approved by the guarantor of the study program, from the offer of subjects for doctoral study. The choice of subjects depends on the flexibility of learning trajectories and the achievement of learning outcomes. There are topics to choose from: - Analytical chemistry - Analytical monitoring of drug levels in practice - Inorganic chemistry - Applied biochemistry - Biochemistry - Pharmaceutical botany - Pharmaceutical chemistry - Pharmacognosy - Pharmacology - Pharmaceutical technology - Physical chemistry - Physiology - Immunology - Clinical pharmacy - Clinical pharmacology and pharmacotherapy - Retail pharmacy and social pharmacy - Molecular biology - Molecular biology of plants - Current trends in preparations of natural origin - Organic chemistry - Pathological physiology - Biological drug technology - Toxicology - Public health and pharmaceutical care |                                                                             |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                             |
| <b>Languages necessary to complete the course:</b><br>Slovak language, English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                             |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                             |

| <b>Past grade distribution</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |
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| Total number of evaluated students: 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | NEABS |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0,0   |
| <b>Lecturers:</b> RNDr. František Bilka, PhD., doc. Mgr. Andrea Bilková, PhD., doc. PharmDr. Marek Obložinský, PhD., Ing. Ludmila Pašková, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD., prof. RNDr. Peter Mikuš, PhD., doc. PharmDr. Juraj Piešťanský, PhD., prof. RNDr. Emil Havránek, PhD., PharmDr. Katarína Maráková, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., doc. PharmDr. Szilvia Czigele, PhD., RNDr. Peter Gál, PhD., MBA, prof. Ing. Miroslav Habán, PhD., prof. PharmDr. Pavel Mučaji, PhD., prof. Ing. Milan Nagy, CSc., doc. Mgr. Fils Andriamainty, PhD., doc. PharmDr. Miroslava Sýkorová, PhD., Dr.h.c. prof. RNDr. Jozef Čižmárik, PhD., Ing. Jaroslav Galba, PhD., PharmDr. Vladimír Garaj, PhD., doc. PharmDr. Ivan Malík, PhD., prof. RNDr. Daniela Uhríková, CSc., RNDr. Alexander Búcsi, PhD., doc. RNDr. Jana Gallová, CSc., Mgr. Mária Klacsová, PhD., Mgr. Norbert Kučerka, DrSc., Mgr. Ondrej Sprušanský, PhD., doc. PharmDr. Marek Máťuš, PhD., doc. Mgr. Diana Vavrincová, PhD., doc. Mgr. Peter Vavrínek, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, doc. PharmDr. Tomáš Rajtík, PhD., doc. PharmDr. Stanislava Kosírová, PhD., PharmDr. Eva Kráľová, PhD., doc. PharmDr. Peter Křenek, PhD., prof. Ing. Ferdinand Devínsky, DrSc., prof. RNDr. Magdaléna Kuželová, CSc., doc. RNDr. Miroslava Šupolíková, PhD., PharmDr. Veronika Mikušová, PhD., Ing. Ladislav Habala, PhD., doc. Ing. Martin Pisárčik, CSc., doc. PharmDr. Jindra Valentová, PhD., doc. PharmDr. Miloš Lukáč, PhD., doc. PharmDr. Daniela Mináriková, PhD., prof. PharmDr. Tomáš Tesař, PhD., MBA, prof. Ing. Vladimír Frečer, DrSc. |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                         |
| <b>Course ID:</b><br>FaF/453-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Course title:</b><br>Passing Selected Doctoral Lectures and Seminars |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture / seminar<br><b>Number of hours:</b><br><b>per week:</b> 1 / 2 <b>per level/semester:</b> 14 / 28<br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                         |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                         |
| <b>Recommended semester:</b> 3.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting a written version of the list of completed prescribed doctoral lectures and seminars, which thematically correspond to the topic of the dissertation and the subjects of the dissertation examination to the supervisor. The supervisor will give the evaluation to the doctoral student in the AIS and in the study report.                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                         |
| <b>Learning outcomes:</b><br>Expansion and deepening of knowledge of doctoral students in scientific disciplines, which will be used in formulating hypotheses as a basis for the analytical part of the dissertation and in formulating conclusions for practice resulting from the results achieved.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                         |
| <b>Class syllabus:</b><br>The doctoral student completes the designated lectures and seminar teaching in the range of subjects approved by the guarantor of the study program, from the offer of subjects for doctoral study. The choice of subjects depends on the flexibility of learning trajectories and the achievement of learning outcomes. There are topics to choose from: <ul style="list-style-type: none"> <li>- Analytical chemistry</li> <li>- Analytical monitoring of drug levels in practice</li> <li>- Inorganic chemistry</li> <li>- Applied biochemistry</li> <li>- Biochemistry</li> <li>- Pharmaceutical botany</li> <li>- Pharmaceutical chemistry</li> <li>- Pharmacognosy</li> <li>- Pharmacology</li> <li>- Pharmaceutical technology</li> <li>- Physical chemistry</li> <li>- Physiology</li> <li>- Immunology</li> <li>- Clinical pharmacy</li> </ul> |                                                                         |



|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <ul style="list-style-type: none"> <li>- Clinical pharmacology and pharmacotherapy</li> <li>- Retail pharmacy and social pharmacy</li> <li>- Molecular biology</li> <li>- Molecular biology of plants</li> <li>- Current trends in preparations of natural origin</li> <li>- Organic chemistry</li> <li>- Pathological physiology</li> <li>- Biological drug technology</li> <li>- Toxicology</li> <li>- Public health and pharmaceutical care</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |       |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |       |
| <b>Languages necessary to complete the course:</b><br>Slovak language, English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |       |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NEABS |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0,0   |
| <b>Lecturers:</b> RNDr. František Bilka, PhD., doc. Mgr. Andrea Bilková, PhD., doc. PharmDr. Marek Obložinský, PhD., Ing. Ľudmila Pašková, PhD., doc. Mgr. Martina Hrčka Dubničková, PhD., prof. RNDr. Peter Mikuš, PhD., doc. PharmDr. Juraj Piešťanský, PhD., prof. RNDr. Emil Havránek, PhD., PharmDr. Katarína Maráková, PhD., doc. PharmDr. Silvia Bittner Fialová, PhD., doc. PharmDr. Szilvia Czigle, PhD., RNDr. Peter Gál, PhD., MBA, prof. Ing. Miroslav Habán, PhD., prof. PharmDr. Pavel Mučaji, PhD., prof. Ing. Milan Nagy, CSc., doc. Mgr. Fils Andriamainty, PhD., doc. PharmDr. Miroslava Sýkorová, PhD., Dr.h.c. prof. RNDr. Jozef Čižmárik, PhD., Ing. Jaroslav Galba, PhD., PharmDr. Vladimír Garaj, PhD., doc. PharmDr. Ivan Malík, PhD., prof. RNDr. Daniela Uhríková, CSc., RNDr. Alexander Búcsi, PhD., doc. RNDr. Jana Gallová, CSc., Mgr. Mária Klacsová, PhD., Mgr. Norbert Kučerka, DrSc., Mgr. Ondrej Sprušanský, PhD., doc. PharmDr. Marek Mátuš, PhD., doc. Mgr. Diana Vavrincová, PhD., doc. Mgr. Peter Vavrínek, PhD., PharmDr. Gabriel Dóka, PhD., doc. PharmDr. Anna Paul Hrabovská, PhD., prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, doc. PharmDr. Tomáš Rajtík, PhD., doc. PharmDr. Stanislava Kosírová, PhD., PharmDr. Eva Kráľová, PhD., doc. PharmDr. Peter Křenek, PhD., doc. RNDr. Miroslava Šupolíková, PhD., PharmDr. Veronika Mikušová, PhD., prof. Ing. Ferdinand Devínsky, DrSc., prof. RNDr. Magdaléna Kuželová, CSc., Ing. Ladislav Habala, PhD., doc. Ing. Martin Pisárčik, CSc., doc. PharmDr. Jindra Valentová, PhD., doc. PharmDr. Miloš Lukáč, PhD., doc. PharmDr. Daniela Mináriková, PhD., prof. PharmDr. Tomáš Tesař, PhD., MBA |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |       |

## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                       |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                       |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |
| <b>Course ID:</b><br>FaF/431-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Course title:</b><br>Passing the Dissertation Exam |
| <b>Number of credits:</b> 20                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                       |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                       |
| <b>Recommended prerequisites:</b><br>Defined in the individual study plan of the doctoral student and in the Study Regulations of FPHARM CU.                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                       |
| <b>Course requirements:</b><br>The doctoral student will obtain the rating completed with credit value after successfully passing the dissertation exam with the result passed                                                                                                                                                                                                                                                                                                                                                                                                     |                                                       |
| <b>Learning outcomes:</b><br>At the dissertation exam, the student must demonstrate not only knowledge of the specified subjects of the exam, but also the ability under the supervision of the supervisor to submit a dissertation project proposal, method of solving experimental procedures, ability to form conclusions based on results and defend their project proposal before a committee of the doctoral study.                                                                                                                                                          |                                                       |
| <b>Class syllabus:</b><br>1) The dissertation examination consists of a part consisting of a discussion of the written work for the dissertation examination - project proposal.<br>2) The dissertation examination consists of a part in which the doctoral student has to demonstrate theoretical knowledge in the specified subjects of the dissertation examination.<br>3) The subjects of the dissertation examination consist of the main subject and secondary subjects according to the characteristics of the study program of the doctoral degree in the field of study. |                                                       |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                       |
| <b>Recommended literature:</b><br>Current sources on the studied issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                       |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                       |
| <b>Last change:</b> 18.04.2022                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                       |
| <b>Approved by:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                           |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                           |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                           |
| <b>Course ID:</b><br>FaF/485-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Course title:</b><br>Pedagogical Activities - Seminars |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                           |
| <b>Number of credits:</b> 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                           |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                           |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                           |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                           |
| <b>Course requirements:</b><br>After submitting a certificate of completion of pedagogical activities, the doctoral student obtains the rating completed according to the specific credit evaluation of the subject.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                           |
| <b>Learning outcomes:</b><br>the doctoral student will gain experience and acquire the skills necessary for the presentation of selected professional issues in the academic space at the 1st or 2nd level of university studies within the field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                           |
| <b>Class syllabus:</b><br>1. The doctoral student prepares seminars, provides teaching and assessment at the end of the semester.<br>2. The doctoral student is responsible for the administration of pedagogical outputs in the AIS system.<br>3. In his / her pedagogical activities, the doctoral student respects and adheres to the valid guidelines applicable to all teachers of FPHARM CU Bratislava in the current academic year.<br>4. The full-time doctoral student implements pedagogical activities in full-time study to the extent specified by the implementing regulations of FPHARM CU Bratislava for doctoral studies, but if the course is also implemented in external form, the full-time doctoral student will ensure its implementation free of charge.<br>5. A doctoral student of an external form of study may carry out pedagogical activities without the right to a fee, while the form and scope of this activity shall be agreed with the management of FPHARM CU Bratislava.<br>6. The doctoral student will prepare a confirmation of the implementation of pedagogical activities. The confirmation signed by the head of the department where the pedagogical activity took place serves as proof of successful fulfillment of the conditions for completing the course for the supervisor, who on the basis of it will award (graduate) the doctoral student to AIS and to the study report. |                                                           |
| <b>Recommended literature:</b><br>Current resources on the topic of pedagogical activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                           |

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| <b>Languages necessary to complete the course:</b><br>English language                                                                                                  |       |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                    |       |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                 |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                            |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
| <b>Course ID:</b><br>FaF/484-PhD- A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Course title:</b><br>Pedagogical Activities - Exercises |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                            |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                            |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                            |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                            |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                            |
| <b>Course requirements:</b><br>After submitting a certificate of completion of pedagogical activities, the doctoral student obtains the rating completed according to the specific credit evaluation of the subject.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                            |
| <b>Learning outcomes:</b><br>the doctoral student will gain experience and acquire the skills necessary for the presentation of selected professional issues in the academic space at the 1st or 2nd level of university studies within the field.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |
| <b>Class syllabus:</b><br>1. The doctoral student prepares exercises, provides teaching and evaluation at the end of the semester.<br>2. The doctoral student is responsible for the administration of pedagogical outputs in the AIS system.<br>3. In his / her pedagogical activities, the doctoral student respects and adheres to the valid guidelines applicable to all teachers of FPHARM CU Bratislava in the current academic year.<br>4. The full-time doctoral student implements pedagogical activities in full-time study to the extent specified by the implementing regulations of FPHARM CU Bratislava for doctoral studies, but if the course is also implemented in external form, the full-time doctoral student will ensure its implementation free of charge.<br>5. A doctoral student of an external form of study may carry out pedagogical activities without the right to a fee, while the form and scope of this activity shall be agreed with the management of FPHARM CU Bratislava.<br>6. The doctoral student will prepare a confirmation of the implementation of pedagogical activities. The confirmation signed by the head of the department where the pedagogical activity took place serves as proof of successful fulfillment of the conditions for completing the course for the supervisor, who on the basis of it will award (graduate) the doctoral student to AIS and to the study report. |                                                            |
| <b>Recommended literature:</b><br>Current resources on the topic of pedagogical activities.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                            |

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| <b>Languages necessary to complete the course:</b><br>English language                                                                                                  |       |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                    |       |
| <b>Past grade distribution</b><br>Total number of evaluated students: 1                                                                                                 |       |
| ABS                                                                                                                                                                     | NEABS |
| 100,0                                                                                                                                                                   | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                   |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                   |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                   |
| <b>Course ID:</b><br>FaF/812-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Course title:</b><br>Pharmaceutical Technology |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                   |
| <b>Course requirements:</b><br>Successful passing of the exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                   |
| <b>Learning outcomes:</b><br>By passing the course, the PhD. student will have a complex theoretical knowledge of drugs as dispersion and application systems in terms of theoretical and practical preparation of innovative dosage forms.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| <b>Class syllabus:</b><br>Pharmaceutical preparations are of a dosage (application) form which depends on the means of administration and coexistence of relevant drugs and excipients. Pharmaceutical technology (galenics) deals with composition, formulation, production, evaluation, and quality assurance of individually prepared and manufactured pharmaceutical preparations. It studies conditions for formulation of drugs and excipients into pharm. preparations, rules governing these processes, relations of the preparation with the effect of contained drugs. The subject of the study are these areas: - Pharm. preparations as systems composed of drugs and excipients (constitutive, stabilizing, corrective, etc.), conditions for coexistence of components in pharm. preparation. - Procedures and devices for preparation and manufacturing of pharm. preparations - Evaluation and quality assurance of pharm. preparations in terms of composition, technology, structure - Relations between the pharm. preparation and bioavailability of administered drugs - Stability of pharm. preparations and its possible ensuring - Containers 'materials, technique for pharm. preparations 'containers, study of interactions between containers and drugs / excipients Current research is oriented to drug carriers (polymeric, lipid - liposomes) in the role of drug delivery systems as nanoparticles. It begins with the synthesis of the carrier, incorporation of the drug, continues with formulation of dosage form, stability studies of formulated particles and in vitro drug release study. At the end of this difficult process the biologic activity and in vivo bioavailability are evaluated in cooperation with other departments/institutions. Also, nanodispersion systems as e.g., micro- and nanoemulsions are studied, especially related to low soluble drugs (e.g., terbinafine, minoxidil, indomethacin, tretinoin) intended for topical application with local or systemic effect e.g., also using the mechanisms of transdermal passage. In the preparation of these systems, various types of polymers (e.g., chitosan, thermosensitive polymers) and specific excipients are used to create a specific structure of given formulation with improved properties (e.g., better bioadhesion, stability, capacity to release the low soluble drugs, improved permeation, and penetration to target tissues in required concentration). |                                                   |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                   |
| <b>Recommended literature:</b><br>European Pharmacopoeia 10 th Ed. Strasbourg: EDQM, 2022 Aulton, M. E.: Aulton's Pharmaceutics: the design and manufacture of medicines - Edinburgh: Churchill Livingstone,                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                   |

2018 Mikušová, V.; Mikuš, P.: Advances in Chitosan-Based Nanoparticles for Drug Delivery. Int. J. Mol. Sci. 2021, 22, 9652. <https://doi.org/10.3390/ijms22179652>

**Languages necessary to complete the course:**

English language

**Notes:**

Lecturers: PharmDr. Veronika Mikušová, PhD., PharmDr. Juraj Piešťanský, PhD., doc. RNDr. Miroslava Šuplíková, PhD.

**Last change:** 10.04.2022

**Approved by:**



## STATE EXAM DESCRIPTION

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                      |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                      |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                      |
| <b>Course ID:</b><br>FaF/800-PhD-A/15                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Course title:</b><br>Pharmacology |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                      |
| <b>Course requirements:</b><br>Successful passing of the exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                      |
| <b>Learning outcomes:</b><br>Expansion and intensification of knowledge from pharmacology the can be used by the student to formulate scientific hypotheses to create a basis for the analytical part of the dissertation and to formulate conclusions following the obtained results.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                      |
| <b>Class syllabus:</b><br>The focus is on one or more of the following areas of pharmacology: <ul style="list-style-type: none"> <li>- pharmacodynamics with respect to the mechanism of action of drugs</li> <li>- pharmacokinetics</li> <li>- pharmacogenomics</li> <li>- adverse effects of drugs</li> <li>- drug overdose</li> <li>- therapeutic use of drugs</li> </ul> Special pharmacology <ul style="list-style-type: none"> <li>- pharmacology of drugs with effect on the central nervous system</li> <li>- pharmacology of drugs with effect on the autonomous nervous system</li> <li>- pharmacology of drugs with effect on the smooth muscles</li> <li>- pharmacology of drugs with effect on the cardiovascular system and kidneys</li> <li>- pharmacology of blood, inflammation</li> <li>- pharmacology of drugs with effect on the respiratory system</li> <li>- pharmacology of drugs with effect on the gastrointestinal system</li> <li>- pharmacology of drugs with effect on the endocrine system</li> <li>- pharmacology of anti-infective drugs</li> <li>- pharmacology of anticancer drugs</li> <li>- new directions of therapy of diseases using biological drugs</li> </ul> |                                      |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                      |
| <b>Recommended literature:</b><br>Brunton LL, Hilal-Dandan R, Knollmann BC et al. Goodman & Gilman's: The Pharmacological Basis of Therapeutics, 13e, McGraw-Hill Education 2018<br>Golan D. E., Tashjian Jr A. H., Armstrong E. J., Armstrong A. Wet al. .: Principles of Pharmacology: The Pathophysiologic Basis of Drug Therapy, 3rd 4th Edition. Lippincott Williams&Wilkins, 20172<br>Katzung BG, Vanderah TW et al. : Basic & Clinical Pharmacology, 15e, McGraw Hill 2021<br>Rang, H.P., Dale, M.M. a kol.: Rang and Dale's Pharmacology, 7th ed. London, Churchill Livingstone, Elsevier, 2012                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                      |

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| Ritter JM. et al.: Rang and Dale's Pharmacology E-Book, Elsevier, 9th ed., 2018                                                                                                                                                                                          |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                   |
| <b>Notes:</b><br>Lecturers: prof. PharmDr. Adriana Ďuriš Adameová, PhD.; prof. PharmDr. Ján Klimas, PhD., MPH.; doc. Peter Křenek, PhD.; doc. PharmDr. Anna Paul Hrabovská, PhD.; doc. PharmDr. Marek Mátuš, PhD.; Mgr. Peter Vavrinec, PhD.; Mgr. Diana Vavrincová, PhD |
| <b>Last change:</b> 11.04.2022                                                                                                                                                                                                                                           |
| <b>Approved by:</b>                                                                                                                                                                                                                                                      |

## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                             |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                             |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                             |
| <b>Course ID:</b><br>FaF/816-PhD-A/23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Course title:</b><br>Physical Chemistry of Drug Formulae |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                             |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                             |
| <b>Course requirements:</b><br>Successful passing of the exam                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                             |
| <b>Learning outcomes:</b><br>PhD students will acquire theoretical background for understanding of physicochemical principles necessary for the preparation of various drug formulae in the field of pharmaceutical technology, the drug binding and its release from the formulae, mechanism of drug action at molecular level, drug absorption, transport across biological membranes. Physical background of experimental methods used for development of new drugs and mechanisms of their action is emphasized.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                             |
| <b>Class syllabus:</b><br>The subject builds upon the knowledge from physics and mathematics and is linked with additional chemical, biological and pharmaceutical areas. The scope of the subject:<br>Structure of matter. The stability of elements, radionuclides in pharmacy. Chemical bonds and interactions.<br>Thermodynamics, phase transitions, partition equilibria, condensed systems.<br>Electrochemistry, solutions of electrolytes, acid-base equilibria.<br>Chemical kinetics, reaction rates and orders, mechanism of chemical reactions. Catalysis, enzymatic catalysis. Kinetics of drug release from drug formulae. A substance transport in the biological system.<br>Colloidal systems and dispersions, surface phenomena, membrane phenomena. Biological membranes as a model system for interaction with antimicrobial and antiviral agents. Lipids in drug delivery. Lyotropic and thermotropic polymorphism of lipids and methods for its study. Lipid-based nanoparticles (liposomes, hexosomes, cubosomes) in targeted drug delivery. Biopolymers and dendrimers in drug delivery.<br>Experimental methods: UV-VIS, fluorescence, IR, Raman, NMR spectroscopy, diffraction and scattering, DSC calorimetry, mass spectrometry. |                                                             |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                             |
| <b>Recommended literature:</b><br>Cevc G.: Phospholipids handbook. Marcel Dekker, Inc. New York (1993)<br>Serdyuk I.N., Zaccai N.R., Zaccai J.: Methods in Molecular Biophysics. Structure, Dynamics, Function. Cambridge University Press, 2007                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                             |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                             |
| <b>Notes:</b><br>Lecturers: prof. RNDr. Daniela Uhríková, CSc.; prof. Ing. V. Frečer, DrSc.; Mgr. Mária Klacsová, PhD.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                             |

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| <b>Last change:</b> 27.04.2023 |
| <b>Approved by:</b>            |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                            |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                            |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                            |
| <b>Course ID:</b><br>FaF/479-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Course title:</b><br>Presentation at the Conference of Young Scientists |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                            |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                            |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                            |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                            |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                            |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting the program of scientific events (in which he appears as an active participant) to the supervisor, which is also evidenced by confirmations of the organizers of scientific events about active performance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                            |
| <b>Learning outcomes:</b><br>the doctoral student under the guidance of the supervisor has demonstrated the ability to work scientifically, ie to create scientific texts that meet the criteria of expertise, scientific and methodological relevance and then present these texts to the audience at a scientific event (presentation at the event is limited by age).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                            |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>expertise, scientific and methodological relevance.<br>2. The doctoral student will individually ensure participation in a scientific event for young researchers (conference, scientific seminar, congress), at which he / she will actively present the results of his / her own scientific activity.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student presents it only once, while the translation of the content of the original scientific text is not considered as another original scientific text and it is inadmissible for the doctoral student to present it repeatedly. |                                                                            |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                            |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                            |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                            |

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| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                       |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                       |
| <b>Course ID:</b><br>FaF/465-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course title:</b><br>Professional Publication in International or Domestic Journal |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                       |
| <b>Number of credits:</b> 4                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                       |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                       |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                       |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                       |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting separate (source cover, circulation letters with ISBN or ISSN, source content, paper) published texts to the supervisor.                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                       |
| <b>Learning outcomes:</b><br>the doctoral student, under the guidance of the supervisor, demonstrates the ability to work scientifically, i. e. to create a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                                                                                            |                                                                                       |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the publication of the given texts in a international or domestic professional peer-reviewed periodical.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student publishes it only once, while the translation of the content of the original text is not considered as another original scientific text. |                                                                                       |
| <b>Recommended literature:</b><br>Current sources on published issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                       |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                       |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                       |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                       |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | NEABS                                                                                 |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0,0                                                                                   |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lecturers:</b>                                                                                                                                                       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |



## COURSE DESCRIPTION

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                               |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                               |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                               |
| <b>Course ID:</b><br>FaF/466-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <b>Course title:</b><br>Published Abstract in English from a Scientific Event |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                               |
| <b>Number of credits:</b> 3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                               |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                               |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                               |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                               |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting an abstract in English from a scientific event                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                               |
| <b>Learning outcomes:</b><br>the doctoral student under the supervision of a supervisor has demonstrated the ability to work scientifically, ie to create scientific texts in English that meet the criteria of expertise, scientific and methodological relevance and then publish these texts as an abstract in a book of abstracts from a scientific event (conference, scientific seminar, congress).                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                               |
| <b>Class syllabus:</b><br>1. The doctoral student, in consultation with the supervisor, shall prepare scientific texts in English that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the sending of the scientific text to the organizers of the scientific event (conference, scientific seminar, congress), at which he / she will actively present the results of his / her own scientific activity.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student presents it only once, while the translation of the content of the original scientific text is not considered another original scientific text and it is inadmissible for the doctoral student to present it repeatedly to be. |                                                                               |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                               |
| <b>Languages necessary to complete the course:</b><br>English                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                               |
| <b>Notes:</b><br>Teacher: provided by the supervisor<br>Recommended Study Semester: full length of study                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                               |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                    |                                                     |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                  |                                                     |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                |                                                     |
| <b>Course ID:</b><br>FaF/487-PhD-A/21                                                                                                                                                                                                                                                                                              | <b>Course title:</b><br>Reviewing a Bachelor Thesis |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                  |                                                     |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                        |                                                     |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                       |                                                     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                     |                                                     |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                              |                                                     |
| <b>Course requirements:</b><br>The course is successfully completed if the doctoral student submits relevant evidence of the peer review of the bachelor thesis, and the confirmation of entering the review into the AIS-2.                                                                                                       |                                                     |
| <b>Learning outcomes:</b><br>The doctoral student, under the guidance of a supervisor, has demonstrated the ability to review a professional text.                                                                                                                                                                                 |                                                     |
| <b>Class syllabus:</b><br>1. The doctoral student will critically evaluate the professionalism of the text of the bachelor thesis.<br>2. The doctoral student, after consultation with the supervisor, will prepare a report for the bachelor's thesis.<br>3. The doctoral student enters the bachelor's thesis report into AIS-2. |                                                     |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                                         |                                                     |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                             |                                                     |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                                              |                                                     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                            |                                                     |
| ABS                                                                                                                                                                                                                                                                                                                                | NEABS                                               |
| 0,0                                                                                                                                                                                                                                                                                                                                | 0,0                                                 |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                                                  |                                                     |
| <b>Last change:</b> 13.04.2022                                                                                                                                                                                                                                                                                                     |                                                     |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.                                                                                                                                                            |                                                     |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                               |                                                                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                             |                                                                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                           |                                                                                                                         |
| <b>Course ID:</b><br>FaF/467-PhD-A/21                                                                                                                                                                                                                                                                         | <b>Course title:</b><br>Reviewing the Manuscript of an Article Submitted to an Indexed Scientific Journal (Scopus, Wos) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                             |                                                                                                                         |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                   |                                                                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                  |                                                                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                |                                                                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                         |                                                                                                                         |
| <b>Course requirements:</b><br>The course is successfully completed if the doctoral student submits relevant evidence of elaboration of the review on the manuscript of the article (e-mail or other confirmation from the editors).                                                                          |                                                                                                                         |
| <b>Learning outcomes:</b><br>The doctoral student, under the guidance of a supervisor, has demonstrated the ability to review a professional text.                                                                                                                                                            |                                                                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student will critically evaluate the professionalism of the manuscript.<br>2. The doctoral student, after consultation with the supervisor, will prepare a review of manuscript.<br>3. The doctoral student will submit the review to the redaction of the journal. |                                                                                                                         |
| <b>Recommended literature:</b><br>Current sources on the presented issues.                                                                                                                                                                                                                                    |                                                                                                                         |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                        |                                                                                                                         |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                         |                                                                                                                         |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                       |                                                                                                                         |
| ABS                                                                                                                                                                                                                                                                                                           | NEABS                                                                                                                   |
| 0,0                                                                                                                                                                                                                                                                                                           | 0,0                                                                                                                     |
| <b>Lecturers:</b>                                                                                                                                                                                                                                                                                             |                                                                                                                         |
| <b>Last change:</b> 10.04.2022                                                                                                                                                                                                                                                                                |                                                                                                                         |

**Approved by:** prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                    |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                    |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                    |
| <b>Course ID:</b><br>FaF/486-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Course title:</b><br>Supervision of the Final Bachelor's Thesis |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                    |
| <b>Number of credits:</b> 5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                    |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                    |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                    |
| <b>Course requirements:</b><br>The course is successfully completed if a bachelor's program participant is in AIS-2 is provided with the subject: Preparation of bachelor thesis 1 or Preparation of bachelor thesis 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                    |
| <b>Learning outcomes:</b><br>The doctoral student will gain experience and acquire the skills necessary for leading the final work of a selected professional topic in the academic space at the 1st level of university study within the field of study.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                    |
| <b>Class syllabus:</b><br>1. The doctoral student will prepare in the AIS system, in the section Study records (VSES 057), the assignment of the final (bachelor's) thesis by entering the thesis title and annotation. During the entire supervision of the final (bachelor's) thesis, the doctoral student is responsible for the administration of all requisites related to the final (bachelor's) thesis in AIS.<br>2. The doctoral student methodically and professionally guides the bachelor's program student from the choice of topic to the successful defense of the final (bachelor's) thesis.<br>3. The doctoral student will prepare an evaluation of the final (bachelor's) thesis in the AIS, as well as in the form according to the instructions of the head of the corresponding department.<br>4. The doctoral student will prepare a certificate of completion of the final (bachelor's) thesis, which will be given to the head of the department. The evaluation must be accompanied by evaluation assessments of the works. The confirmation signed by the head of the department serves as proof of successful fulfillment of the conditions for completing the course for the supervisor who, based on the evaluation, provides the doctoral student with the grade "absolved" by entering it into AIS-2 and in the study record. |                                                                    |
| <b>Recommended literature:</b><br>Current sources on the studied issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                    |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                    |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                    |

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| Teacher: supervisor                                                                                                                                                     |       |
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 13.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                        |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                        |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                        |
| <b>Course ID:</b><br>FaF/813-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Course title:</b><br>Technology of Biological Drugs |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                        |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                        |
| <b>Course requirements:</b><br>Passing of the exam.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                        |
| <b>Learning outcomes:</b><br>Passing the course, the PhD. student will expand his/her knowledge about the possibilities of drug preparation using current biotechnological procedures, based on the manipulation of nucleic acids and using recombinant DNA. Emphasis is placed on the up-stream and down-stream phase of the production process. The student will get acquainted with different types of cloning and expression vectors and their application in the production of specific biopharmaceuticals (e.g. r-hormones, r-cytokines, r-vaccines, r-enzymes and r-monoclonal antibodies). The course will also provide information on the actual therapeutic trends, such as gene therapy, therapeutic cloning and the use of stem cells in the treatment of specific diseases.                                                                                                                                                                                                                                                                                                                                     |                                                        |
| <b>Class syllabus:</b><br>Biological drugs - definition, characterization, classification.<br>- Methods of recombinant DNA in biotechnology.<br>- Application of recombinant DNA in the biopharmaceuticals production. Cloning and expression vectors.<br>- Design and production of biological drugs I. Up-stream processes.<br>- Design and production of biological drugs II. Down-stream processes.<br>- Molecular-technological aspects in the field of biological drugs. Methods of quality control and analysis. Methods increasing the efficiency and stability of biologicals. Biosimilars.<br>- Plant biotechnology in pharmacy.<br>- Protein based biologicals I - recombinant enzymes, hormones, growth factors, cytokines and interferons.<br>- Protein based biologicals II - recombinant vaccines.<br>- Protein based biologicals III - monoclonal antibodies.<br>- Biomedical engineering. Principles and mechanisms of gene therapy. Nucleic acid-based biological drugs.<br>- Cloning - reproductive and therapeutic..<br>- Dispensing biopharmaceutical products. Economic consideration and legislative. |                                                        |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                        |
| <b>Recommended literature:</b><br>Clark D.P. a Pazdernik N.J.: Biotechnology. Oxford: Academic Cell 2016.<br>Daan J. A. Crommelin, Robert D. Sindelar, Bernd Meibohm: Pharmaceutical Biotechnology, Cahm: Springer 2019.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                        |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                        |



**Notes:**

Teacher: doc. Mgr. Andrea Bilková, PhD.; doc. PharmDr. Marek Obložinský, PhD.; RNDr. František Bilka, PhD.; Ing. Ludmila Pašková, PhD.

**Last change:** 08.04.2022**Approved by:**

## STATE EXAM DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                     |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                     |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                     |
| <b>Course ID:</b><br>FaF/817-PhD-A/23                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Course title:</b><br>Technology of nanoparticles |
| <b>Number of credits:</b> 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                     |
| <b>Learning outcomes:</b><br>After completing the course, PhD students will acquire systematic knowledge in the modern field of nanoparticles. They will get an overview of the methods of nanoparticles preparation, including green way of synthesis of nanoparticles, investigations of their physical properties, experimental techniques and methods associated with the characterisation of properties of nanoparticles. They will gain knowledge of the classification and properties of various types of nanoparticle stabilisers, as well as will be provided with a basic overview of nanoparticle applications in a wide variety of fields with an emphasis on applications in pharmacy and medicine.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                     |
| <b>Class syllabus:</b><br>A prerequisite for successful completion of the course is basic knowledge of inorganic chemistry, colloidal chemistry and physical chemistry, mathematics, organic chemistry and molecular biology. The subject of the study within the scope of the course is represented by the following areas: <ul style="list-style-type: none"> <li>- Definition of nanoparticles and nanosystems. Description of nanoparticle structure.</li> <li>- Synthesis of nanoparticles. Physical, chemical and biological methods of preparation of nanoparticles.</li> <li>- Green synthesis of nanoparticles. Description of biological sources for the synthesis of nanoparticles – bacteria, fungi, algae, plants. Correlation of physical properties of nanoparticles with biological sources for the preparation of nanoparticles.</li> <li>- Physical properties and parameters of nanoparticles. Surface plasmon resonance.</li> <li>- Analysis of physical parameters of nanoparticles: size, shape and charge. Description of experimental techniques – spectroscopic methods (UV-VIS and Raman spectroscopy), scattering methods (light scattering and small-angle neutron scattering), imaging methods (transmission and scanning electron microscopy, fluorescence microscopy).</li> <li>- Nanoparticle stabilisation, description of mechanism. Polymers and surfactants as nanoparticle stabilisers. Classification, properties.</li> <li>- Biological activities of nanoparticles. Antimicrobial and antineoplastic activity of nanoparticles. Description of the mechanism of action. Correlation between biological activity and size and shape of nanoparticles.</li> <li>- Areas of nanoparticle applications in general. Application areas of nanoparticles in medicine and pharmacy. Toxicity of nanoparticles.</li> </ul> |                                                     |
| <b>State exam syllabus:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                     |
| <b>Recommended literature:</b><br>C. Altavilla, E. Ciliberto: Inorganic Nanoparticles. Synthesis, Applications, and Perspectives, CRC Press (2010).<br>P. Prasher, M. Sharma: Silver Nanoparticles: Synthesis, Functionalization and Applications, Bentham (2022).<br>K. Abd-Elsalam (Ed.): Green Synthesis of Silver Nanomaterials, Elsevier (2021).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                     |

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| R. Chang: General Chemistry: The Essential Concepts, McGraw Hill; 7. vydanie (2013).<br>C. Housecroft, A. Sharpe: Inorganic Chemistry, Pearson, 5. vydanie (2018). |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                             |
| <b>Notes:</b><br>Lecturer: doc. Ing. M. Pisárčik, CSc.                                                                                                             |
| <b>Last change:</b> 27.04.2023                                                                                                                                     |
| <b>Approved by:</b>                                                                                                                                                |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                              |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                              |
| <b>Course ID:</b><br>FaF/460-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Course title:</b><br>The Original Publication in Current Contents Journal |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                              |
| <b>Number of credits:</b> 35                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                              |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                              |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                              |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting separate (source cover, circulation letters with ISBN or ISSN, source content, paper) published texts to the supervisor.                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                              |
| <b>Learning outcomes:</b><br>a doctoral student under the guidance of a supervisor demonstrates the ability to work scientifically, i. e. a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                              |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the publication of the given texts in a scientifically peer-reviewed periodical registered in the Current Contents database.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student publishes it only once, while the translation of the content of the original text is not considered as another original scientific text. |                                                                              |
| <b>Recommended literature:</b><br>Current sources on published issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                              |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                              |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                              |
| <b>Past grade distribution</b><br>Total number of evaluated students: 0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                              |
| ABS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | NEABS                                                                        |
| 0,0                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,0                                                                          |

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| <b>Lecturers:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD.   |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |

## COURSE DESCRIPTION

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|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                             |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                             |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                             |
| <b>Course ID:</b><br>FaF/459-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>Course title:</b><br>The Original Publication in Current Contents Journal – First Author |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                             |
| <b>Number of credits:</b> 40                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                             |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                             |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                             |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                             |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting separate (source cover, circulation letters with ISBN or ISSN, source content, paper) published texts to the supervisor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                             |
| <b>Learning outcomes:</b><br>a doctoral student under the guidance of a supervisor demonstrates the ability to work scientifically, i. e. a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                             |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the publication of the given texts in a scientifically peer-reviewed periodical registered in the Current Contents database.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student publishes it only once, while the translation of the content of the original text is not considered as another original scientific text.<br>4. The doctoral student is the first author of the publication. |                                                                                             |
| <b>Recommended literature:</b><br>Current sources on published issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                             |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                             |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                             |

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| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                |
| <b>Course ID:</b><br>FaF/463-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>Course title:</b><br>The Original Publication in non-Current Contents International or Domestic Journal Indexed in the SCOPUS Database (EPJ is Recommended) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting separate (source cover, circulation letters with ISBN or ISSN, source content, paper) published texts to the supervisor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                |
| <b>Learning outcomes:</b><br>a doctoral student under the guidance of a supervisor demonstrates the ability to work scientifically, i. e. a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the publication of the given texts in non current contents international or domestic journal indexed in the SCOPUS database (European Pharmaceutical Journal is recommended)<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student publishes it only once, while the translation of the content of the original text is not considered as another original scientific text. |                                                                                                                                                                |
| <b>Recommended literature:</b><br>Current sources on published issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                |



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| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                          |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                          |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                          |
| <b>Course ID:</b><br>FaF/462-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Course title:</b><br>The Original Publication in non-Current Contents Journal with IF (Impact Factor) |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                          |
| <b>Number of credits:</b> 25                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                          |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                          |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                          |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                          |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting separate (source cover, circulation letters with ISBN or ISSN, source content, paper) published texts to the supervisor.                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                          |
| <b>Learning outcomes:</b><br>a doctoral student under the guidance of a supervisor demonstrates the ability to work scientifically, i. e. a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                          |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the publication of the given texts in a scientifically peer-reviewed periodical with IF (impact factor).<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student publishes it only once, while the translation of the content of the original text is not considered as another original scientific text. |                                                                                                          |
| <b>Recommended literature:</b><br>Current sources on published issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                          |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                          |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                          |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                         |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                         |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                         |
| <b>Course ID:</b><br>FaF/461-PhD-A/21                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Course title:</b><br>The Original Publication in non-Current Contents Journal with IF (Impact Factor) - First Author |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                         |
| <b>Number of credits:</b> 30                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                         |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                         |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                         |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                         |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting separate (source cover, circulation letters with ISBN or ISSN, source content, paper) published texts to the supervisor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                         |
| <b>Learning outcomes:</b><br>a doctoral student under the guidance of a supervisor demonstrates the ability to work scientifically, i. e. a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                         |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the publication of the given texts in a scientifically peer-reviewed periodical with IF (impact factor).<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student publishes it only once, while the translation of the content of the original text is not considered as another original scientific text.<br>4. The doctoral student is the first author of the publication. |                                                                                                                         |
| <b>Recommended literature:</b><br>Current sources on published issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                         |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                         |
| <b>Notes:</b><br>Lecturer: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                         |

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|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|
| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |

## COURSE DESCRIPTION

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| <b>Academic year:</b> 2023/2024                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                |
| <b>University:</b> Comenius University Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                |
| <b>Faculty:</b> Faculty of Pharmacy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                |
| <b>Course ID:</b><br>FaF/464-PhD-A/22                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Course title:</b><br>The Original Scientific Publication in non-Current Contents and non-Indexed International or Domestic Journal or Conference Proceeding |
| <b>Educational activities:</b><br><b>Type of activities:</b><br><b>Number of hours:</b><br><b>per week: per level/semester:</b><br><b>Form of the course:</b> on-site learning, distance learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                |
| <b>Number of credits:</b> 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                |
| <b>Recommended semester:</b> 1., 2., 3., 4., 5., 6., 7., 8..                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                                                |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                |
| <b>Course requirements:</b><br>The doctoral student obtains the rating completed with a credit value after submitting separate (source cover, circulation letters with ISBN or ISSN, source content, paper) published texts to the supervisor.                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                |
| <b>Learning outcomes:</b><br>a doctoral student under the guidance of a supervisor demonstrates the ability to work scientifically, i. e. a scientific text that meets the criteria of professionalism, scientific and methodological relevance.                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                |
| <b>Class syllabus:</b><br>1. The doctoral student, after consultation with the supervisor, shall develop scientific texts that meet the criteria of professionalism, scientific and methodological relevance.<br>2. The doctoral student will individually ensure the publication of the given texts in non current contents and non-indexed international or domestic journal or conference proceeding.<br>3. The doctoral student respects the ethics of publishing, each scientific text is original and the doctoral student publishes it only once, while the translation of the content of the original text is not considered as another original scientific text. |                                                                                                                                                                |
| <b>Recommended literature:</b><br>Current sources on published issues.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                |
| <b>Languages necessary to complete the course:</b><br>English language                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                                |
| <b>Notes:</b><br>Teacher: supervisor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                |

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| <b>Past grade distribution</b>                                                                                                                                          |       |
| Total number of evaluated students: 0                                                                                                                                   |       |
| ABS                                                                                                                                                                     | NEABS |
| 0,0                                                                                                                                                                     | 0,0   |
| <b>Lecturers:</b>                                                                                                                                                       |       |
| <b>Last change:</b> 18.04.2022                                                                                                                                          |       |
| <b>Approved by:</b> prof. PharmDr. Adriana Duriš Adameová, PhD., prof. PharmDr. Ján Klimas, PhD., MPH, prof. RNDr. Peter Mikuš, PhD., prof. PharmDr. Pavel Mučaji, PhD. |       |