

## Course descriptions

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## COURSE DESCRIPTION

|                                                                                                                                                                                                                       |     |                                                                           |     |     |     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                  |     |                                                                           |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                                       |     |                                                                           |     |     |     |
| <b>Course ID:</b><br>FMFI.KAFZM/3-FFP-203/15                                                                                                                                                                          |     | <b>Course title:</b><br>Bio-medical Applications of Plasmas and Radiation |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 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>                                                                                                                                                                                           |     |                                                                           |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                             |     |                                                                           |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                                |     |                                                                           |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                        |     |                                                                           |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                    |     |                                                                           |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                         |     |                                                                           |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 6                                                                                                                                               |     |                                                                           |     |     |     |
| A                                                                                                                                                                                                                     | B   | C                                                                         | D   | E   | FX  |
| 100,0                                                                                                                                                                                                                 | 0,0 | 0,0                                                                       | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> doc. RNDr. Zdenko Machala, PhD.                                                                                                                                                                     |     |                                                                           |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                        |     |                                                                           |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                   |     |                                                                           |     |     |     |

## COURSE DESCRIPTION

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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                     |     |                                                               |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                                          |     |                                                               |     |     |     |
| <b>Course ID:</b><br>FMFL.KJP/3-MXX-101/15                                                                                                                                                                               |     | <b>Course title:</b><br>Course of English for PhD Studies (1) |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> practicals<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning, distance learning |     |                                                               |     |     |     |
| <b>Number of credits:</b> 5                                                                                                                                                                                              |     |                                                               |     |     |     |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                          |     |                                                               |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                           |     |                                                               |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                                    |     |                                                               |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                              |     |                                                               |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                                |     |                                                               |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                                   |     |                                                               |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                           |     |                                                               |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                       |     |                                                               |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                            |     |                                                               |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 27                                                                                                                                                 |     |                                                               |     |     |     |
| A                                                                                                                                                                                                                        | B   | C                                                             | D   | E   | FX  |
| 100,0                                                                                                                                                                                                                    | 0,0 | 0,0                                                           | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> PhDr. Alena Zemanová                                                                                                                                                                                   |     |                                                               |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                           |     |                                                               |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                      |     |                                                               |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                     |     |                                                               |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                                          |     |                                                               |     |     |     |
| <b>Course ID:</b><br>FMFL.KJP/3-MXX-102/15                                                                                                                                                                               |     | <b>Course title:</b><br>Course of English for PhD Studies (1) |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> practicals<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning, distance learning |     |                                                               |     |     |     |
| <b>Number of credits:</b> 5                                                                                                                                                                                              |     |                                                               |     |     |     |
| <b>Recommended semester:</b> 2.                                                                                                                                                                                          |     |                                                               |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                           |     |                                                               |     |     |     |
| <b>Prerequisites:</b> FMFL.KJP/3-MXX-101/15 - Course of English for PhD Studies (1)                                                                                                                                      |     |                                                               |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                              |     |                                                               |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                                |     |                                                               |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                                   |     |                                                               |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                           |     |                                                               |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                       |     |                                                               |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                            |     |                                                               |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 38                                                                                                                                                 |     |                                                               |     |     |     |
| A                                                                                                                                                                                                                        | B   | C                                                             | D   | E   | FX  |
| 100,0                                                                                                                                                                                                                    | 0,0 | 0,0                                                           | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> PhDr. Alena Zemanová                                                                                                                                                                                   |     |                                                               |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                           |     |                                                               |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                      |     |                                                               |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                        |     |                                                             |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                             |     |                                                             |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-806/10                                                                                                                                                                 |     | <b>Course title:</b><br>Creation of Teaching Texts and Aids |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 5 <b>per level/semester:</b> 70<br><b>Form of the course:</b> on-site learning |     |                                                             |     |     |     |
| <b>Number of credits:</b> 6                                                                                                                                                                                 |     |                                                             |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                |     |                                                             |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                              |     |                                                             |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                       |     |                                                             |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                 |     |                                                             |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                   |     |                                                             |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                      |     |                                                             |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                              |     |                                                             |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                          |     |                                                             |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                               |     |                                                             |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 6                                                                                                                                     |     |                                                             |     |     |     |
| A                                                                                                                                                                                                           | B   | C                                                           | D   | E   | FX  |
| 100,0                                                                                                                                                                                                       | 0,0 | 0,0                                                         | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                           |     |                                                             |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                              |     |                                                             |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                         |     |                                                             |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                               |     |                                                                   |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                    |     |                                                                   |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-404/15                                                                                                                                                        |     | <b>Course title:</b><br>Department Seminar in the Summer Semester |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> seminar<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning |     |                                                                   |     |     |     |
| <b>Number of credits:</b> 5                                                                                                                                                                        |     |                                                                   |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                       |     |                                                                   |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                     |     |                                                                   |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                              |     |                                                                   |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                        |     |                                                                   |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                          |     |                                                                   |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                             |     |                                                                   |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                     |     |                                                                   |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                 |     |                                                                   |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                      |     |                                                                   |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 31                                                                                                                           |     |                                                                   |     |     |     |
| A                                                                                                                                                                                                  | B   | C                                                                 | D   | E   | FX  |
| 100,0                                                                                                                                                                                              | 0,0 | 0,0                                                               | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                  |     |                                                                   |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                     |     |                                                                   |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                |     |                                                                   |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                               |     |                                                                   |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                    |     |                                                                   |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-203/15                                                                                                                                                        |     | <b>Course title:</b><br>Department Seminar in the Winter Semester |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> seminar<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning |     |                                                                   |     |     |     |
| <b>Number of credits:</b> 5                                                                                                                                                                        |     |                                                                   |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                       |     |                                                                   |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                     |     |                                                                   |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                              |     |                                                                   |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                        |     |                                                                   |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                          |     |                                                                   |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                             |     |                                                                   |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                     |     |                                                                   |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                 |     |                                                                   |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                      |     |                                                                   |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 45                                                                                                                           |     |                                                                   |     |     |     |
| A                                                                                                                                                                                                  | B   | C                                                                 | D   | E   | FX  |
| 100,0                                                                                                                                                                                              | 0,0 | 0,0                                                               | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                  |     |                                                                   |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                     |     |                                                                   |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                |     |                                                                   |     |     |     |

## COURSE DESCRIPTION

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                                                       |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                                                       |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-709/10                                                                                                                                                                   |     | <b>Course title:</b><br>Development of Novel Software Product Linked with PhD Project |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 10 <b>per level/semester:</b> 140<br><b>Form of the course:</b> on-site learning |     |                                                                                       |     |     |     |
| <b>Number of credits:</b> 20                                                                                                                                                                                  |     |                                                                                       |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                                                       |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                                                       |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                                                       |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                                                       |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                                                       |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                                                       |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                                                       |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                                                       |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                                                       |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 2                                                                                                                                       |     |                                                                                       |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                                                     | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                                                   | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                                                       |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                                                       |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                                                       |     |     |     |

## STATE EXAM DESCRIPTION

|                                                      |                                                     |
|------------------------------------------------------|-----------------------------------------------------|
| <b>University:</b> Comenius University in Bratislava |                                                     |
| <b>Faculty:</b>                                      |                                                     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-990/15          | <b>Course title:</b><br>Dissertation Thesis Defense |
| <b>Number of credits:</b> 30                         |                                                     |
| <b>Recommended semester:</b> 7., 8..                 |                                                     |
| <b>Educational level:</b> III.                       |                                                     |
| <b>State exam syllabus:</b>                          |                                                     |
| <b>Last change:</b> 02.06.2015                       |                                                     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.  |                                                     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |                                                             |     |     |      |
| <b>Faculty:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                                             |     |     |      |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-004/00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     | <b>Course title:</b><br>Effect of Light on Living Organisms |     |     |      |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                                             |     |     |      |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |     |                                                             |     |     |      |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                                             |     |     |      |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                                             |     |     |      |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |     |                                                             |     |     |      |
| <b>Course requirements:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                                             |     |     |      |
| <b>Learning outcomes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |     |                                                             |     |     |      |
| <b>Class syllabus:</b><br>Solar radiation and artificial light sources. Reflection, scattering and absorption of light radiation by components of living organisms. Intrinsic chromophores and fluorophores. Phototherapy, Photodiagnostics, Photosterilization, Extrinsic chromophores and fluorophores in therapy and diagnostics.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |     |                                                             |     |     |      |
| <b>Recommended literature:</b><br>B. Birks (Ed.): Organic Molecular Photophysics, Arrowsmith, Bristol, 1973<br>J. R. Lakowicz: Principles of Fluorescence Spectroscopy, Plenum Press, New York and London, 1983 // ruský preklad: Osnovy fluorescentnoj spektroskopii, Mir, Moskva, 1986<br>G. Britton: The Biochemistry of Natural Pigments, Cambridge University Press, Cambridge, 1983<br>Ľ. Lapčík, P. Pelikán, M. Čepan: Fotochemické procesy, Alfa, Bratislava, 1989<br>H. Berlien, G. Muller (Eds.): Angewandte Lasermedizin, Ecomed, Landsberg, 1989 // ruský preklad: Příkladnaja Lasernaja medicina, Intereksper, Moskva, 1997<br>R. J. H. Clark, R. E. Hester: Biomedical Applications of Spectroscopy, Wiley, New York, 1996<br>J.M. Hollas: Modern Spectroscopy, Wiley, New York, 2004<br>R. Kraayenhof, A.J.W.G. visser, H.C. Gerritsen (eds.): Fluorescence Spectroscopy, Imaging and Probes, Springer, Berlin, 2002<br>UV-VIS Spectroscopy and its Applications, Springer, Berlin, 1992 |     |                                                             |     |     |      |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |     |                                                             |     |     |      |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                                             |     |     |      |
| <b>Past grade distribution</b><br>Total number of evaluated students: 17                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |     |                                                             |     |     |      |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | B   | C                                                           | D   | E   | FX   |
| 94,12                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0,0 | 0,0                                                         | 0,0 | 0,0 | 5,88 |

|                                                     |
|-----------------------------------------------------|
| <b>Lecturers:</b> prof. RNDr. Libuša Šikurová, CSc. |
| <b>Last change:</b> 02.06.2015                      |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc. |

## COURSE DESCRIPTION

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                            |
| <b>Faculty:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                            |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-003/00                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Course title:</b><br>Experimental Methods of Biophysics |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                            |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                            |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                            |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                            |
| <b>Course requirements:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                            |
| <b>Learning outcomes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |
| <b>Class syllabus:</b><br>Scattering and diffraction of X-ray, electrons and neutrons (Symmetry of crystals, cylindrical and helical objects, symmetry of viruses. Determination of the structure of crystals, problem of phase. Determination of the structure of amorphous substances and partially oriented systems. Preparation of samples for measurement. Experimental set up, available sources of synchrotron and neutron radiation)<br>Magnetic resonance methods (Magnetic resonance in a condensed matter. Nuclear magnetic resonance, electron paramagnetic resonance. Continual and pulse methods. Multiple resonance methods. Spectral methods, imaging methods and their combination. Preparation of samples and living objects for measurement. Experimental techniques, availability of experimental instruments).<br>Electron microscopy (Transmission and raster microscopy, electron optics. Preparation of samples for measurements. Reconstruction of the structure from micrographs. Experimental technique)<br>Ion microscopy. Light microscopy. (Transmission and reflection microscopy, in monochromatic, UV and IR light. Fluorescence, polarized and interference microscopy. Spatial reconstruction, stereology and analysis of images. Cytophotometry, autoradiography and autoradiography).<br>Optical spectroscopy (Light sources, spectral analysis, detectors of optical radiation. Absorption spectroscopy and Raman spectroscopy. Chiroptical methods. Emission spectroscopy)<br>Light scattering (Statics and dynamics light scattering and its application for determination of the shape of biological objects)<br>Preparative and analytical methods (Extraction, aggregation, sedimentation, membrane methods, chromatographic methods, electrophoresis, crystallization, lipophilization, solubilization. Determination of molecular weight. |                                                            |
| <b>Recommended literature:</b><br>V. Prosser et al.: Experimental methods of biophysics. Academia, Praha, 1989<br>Original and review articles from scientific journal of biophysical orientation according to selection of lecturer and according to actual interest of the students.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                            |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                            |

|                                                      |     |     |     |     |     |
|------------------------------------------------------|-----|-----|-----|-----|-----|
| <b>Notes:</b>                                        |     |     |     |     |     |
| <b>Past grade distribution</b>                       |     |     |     |     |     |
| Total number of evaluated students: 14               |     |     |     |     |     |
| A                                                    | B   | C   | D   | E   | FX  |
| 100,0                                                | 0,0 | 0,0 | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> prof. RNDr. Daniela Uhríková, CSc. |     |     |     |     |     |
| <b>Last change:</b> 02.06.2015                       |     |     |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.  |     |     |     |     |     |

## COURSE DESCRIPTION

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|----------------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                    |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                    |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-703/10                                                                                                                                                                   |     | <b>Course title:</b><br>Home Project Co-researcher |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 10 <b>per level/semester:</b> 140<br><b>Form of the course:</b> on-site learning |     |                                                    |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                  |     |                                                    |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                    |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                    |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                    |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                    |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                    |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                    |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                    |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                    |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                    |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 31                                                                                                                                      |     |                                                    |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                  | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                    |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                    |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                    |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                                                |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                                                |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-101/10                                                                                                                                                                   |     | <b>Course title:</b><br>Individual Study of Science and Research Resources (2) |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 10 <b>per level/semester:</b> 140<br><b>Form of the course:</b> on-site learning |     |                                                                                |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                  |     |                                                                                |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                                                |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                                                |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                                                |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                                                |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                                                |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                                                |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                                                |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                                                |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                                                |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 35                                                                                                                                      |     |                                                                                |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                                              | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                                            | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                                                |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                                                |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                                                |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                                                |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                                                |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-104/10                                                                                                                                                                   |     | <b>Course title:</b><br>Individual Study of Science and Research Resources (2) |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 10 <b>per level/semester:</b> 140<br><b>Form of the course:</b> on-site learning |     |                                                                                |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                  |     |                                                                                |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                                                |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                                                |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                                                |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                                                |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                                                |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                                                |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                                                |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                                                |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                                                |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 37                                                                                                                                      |     |                                                                                |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                                              | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                                            | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                                                |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                                                |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                                                |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                             |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                             |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-702/10                                                                                                                                                                   |     | <b>Course title:</b><br>International Project Co-researcher |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 10 <b>per level/semester:</b> 140<br><b>Form of the course:</b> on-site learning |     |                                                             |     |     |     |
| <b>Number of credits:</b> 15                                                                                                                                                                                  |     |                                                             |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                             |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                             |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                             |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                             |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                             |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                             |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                             |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                             |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                             |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 15                                                                                                                                      |     |                                                             |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                           | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                         | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                             |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                             |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                             |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                                                           |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                                                           |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-708/10                                                                                                                                                                   |     | <b>Course title:</b><br>Introduction of Novel Experimental Method Linked with PhD Project |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 10 <b>per level/semester:</b> 140<br><b>Form of the course:</b> on-site learning |     |                                                                                           |     |     |     |
| <b>Number of credits:</b> 20                                                                                                                                                                                  |     |                                                                                           |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                                                           |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                                                           |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                                                           |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                                                           |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                                                           |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                                                           |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                                                           |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                                                           |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                                                           |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 2                                                                                                                                       |     |                                                                                           |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                                                         | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                                                       | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                                                           |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                                                           |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                                                           |     |     |     |

## COURSE DESCRIPTION

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-----------------------------------------------------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                               |     |                                                                                         |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                    |     |                                                                                         |     |     |     |
| <b>Course ID:</b><br>FMFI.KJFB/3-FBF-012/15                                                                                                                                                        |     | <b>Course title:</b><br>Methods for Preparation and Implementation of Research Projects |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning |     |                                                                                         |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                       |     |                                                                                         |     |     |     |
| <b>Recommended semester:</b> 4.                                                                                                                                                                    |     |                                                                                         |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                     |     |                                                                                         |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                              |     |                                                                                         |     |     |     |
| <b>Antirequisites:</b> FMFI.KJFB/3-FBF-012/11                                                                                                                                                      |     |                                                                                         |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                        |     |                                                                                         |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                          |     |                                                                                         |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                             |     |                                                                                         |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                     |     |                                                                                         |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                 |     |                                                                                         |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                      |     |                                                                                         |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 9                                                                                                                            |     |                                                                                         |     |     |     |
| A                                                                                                                                                                                                  | B   | C                                                                                       | D   | E   | FX  |
| 100,0                                                                                                                                                                                              | 0,0 | 0,0                                                                                     | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> doc. RNDr. Iveta Waczulíková, PhD.                                                                                                                                               |     |                                                                                         |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                     |     |                                                                                         |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                |     |                                                                                         |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                                                                                                                                                                                           |     |                                              |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                                                                                                                                                                                                                |     |                                              |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-001/00                                                                                                                                                                                                                                                                                                                                                    |     | <b>Course title:</b><br>Molecular Biophysics |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning                                                                                                                                                                                             |     |                                              |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                   |     |                                              |     |     |     |
| <b>Recommended semester:</b> 2.                                                                                                                                                                                                                                                                                                                                                                |     |                                              |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                 |     |                                              |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                          |     |                                              |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                                                                                                                                                                                                    |     |                                              |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                                                                                                                                                                                                      |     |                                              |     |     |     |
| <b>Class syllabus:</b><br>Biophysics of proteins and nucleic acids. Membrane structure and physical properties.<br>Biophysics and thermodynamics of membranes, theory of phase transitions, mechanical properties of membranes. Mechanisms of ion transport. Signal transduction across membranes.                                                                                             |     |                                              |     |     |     |
| <b>Recommended literature:</b><br>C.R. Cantor, P.R. Schimmel, Biophysical Chemistry, W.H. Freeman and Co., 1980<br>T. Hianik, V.I. Passechnik, Bilayer Lipid Membranes“ Structure and Mechanical Properties. Kluwer Acad. Publ. 1995<br>B. Alberts et al. Essential Cell Biology, Garland Publishing, 1998<br>M. Shinitzky (Ed.) Biomembranes, VCH, Vol.1 (1993), Vol. 2 (1994), Vol. 3 (1995) |     |                                              |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                                                                                                                                                                                             |     |                                              |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                  |     |                                              |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 21                                                                                                                                                                                                                                                                                                                       |     |                                              |     |     |     |
| A                                                                                                                                                                                                                                                                                                                                                                                              | B   | C                                            | D   | E   | FX  |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                          | 0,0 | 0,0                                          | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                                                                                                                                                                                              |     |                                              |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                                                                                                                                                                                                 |     |                                              |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                                                                                                                                                                                            |     |                                              |     |     |     |

## COURSE DESCRIPTION

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                               |     |                                          |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                    |     |                                          |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-013/11                                                                                                                                                        |     | <b>Course title:</b><br>Molecular Design |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning |     |                                          |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                       |     |                                          |     |     |     |
| <b>Recommended semester:</b> 4.                                                                                                                                                                    |     |                                          |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                     |     |                                          |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                              |     |                                          |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                        |     |                                          |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                          |     |                                          |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                             |     |                                          |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                     |     |                                          |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                 |     |                                          |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                      |     |                                          |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 6                                                                                                                            |     |                                          |     |     |     |
| A                                                                                                                                                                                                  | B   | C                                        | D   | E   | FX  |
| 100,0                                                                                                                                                                                              | 0,0 | 0,0                                      | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> doc. Ing. Vladimír Frečer, DrSc.                                                                                                                                                 |     |                                          |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                     |     |                                          |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                |     |                                          |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                                                                    |     |                                                                  |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                                                                                         |     |                                                                  |     |     |     |
| <b>Course ID:</b><br>FMFI.KJFB/3-FBF-007/00                                                                                                                                                                                                                             |     | <b>Course title:</b><br>Molecular Dynamics of Biological Systems |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<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                                                                             |     |                                                                  |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                            |     |                                                                  |     |     |     |
| <b>Recommended semester:</b> 2.                                                                                                                                                                                                                                         |     |                                                                  |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                          |     |                                                                  |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                   |     |                                                                  |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                                                                             |     |                                                                  |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                                                                               |     |                                                                  |     |     |     |
| <b>Class syllabus:</b><br>Molecular dynamics (MD), algorithms and methods in MD, interactions in molecular systems, their calculations, forcefield, analysis of results. Modeling of lipid bilayer, peptides, study of the mechanisms of interactions in lipid bilayer. |     |                                                                  |     |     |     |
| <b>Recommended literature:</b><br>O. Becker et al. Computational Biochemistry and Biophysics, Dekker, 2000                                                                                                                                                              |     |                                                                  |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                                                                      |     |                                                                  |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                                                                           |     |                                                                  |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 7                                                                                                                                                                                                 |     |                                                                  |     |     |     |
| A                                                                                                                                                                                                                                                                       | B   | C                                                                | D   | E   | FX  |
| 100,0                                                                                                                                                                                                                                                                   | 0,0 | 0,0                                                              | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> prof. RNDr. Ján Urban, DrSc.                                                                                                                                                                                                                          |     |                                                                  |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                                                                          |     |                                                                  |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                                                                     |     |                                                                  |     |     |     |

## COURSE DESCRIPTION

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|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                      |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                      |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-701/10                                                                                                                                                                   |     | <b>Course title:</b><br>Obtaining a University Grant |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 20 <b>per level/semester:</b> 280<br><b>Form of the course:</b> on-site learning |     |                                                      |     |     |     |
| <b>Number of credits:</b> 20                                                                                                                                                                                  |     |                                                      |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                      |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                      |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                      |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                      |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                      |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                      |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                      |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                      |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                      |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 20                                                                                                                                      |     |                                                      |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                    | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                  | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                      |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                      |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                      |     |     |     |

## STATE EXAM DESCRIPTION

|                                                      |                                                          |
|------------------------------------------------------|----------------------------------------------------------|
| <b>University:</b> Comenius University in Bratislava |                                                          |
| <b>Faculty:</b>                                      |                                                          |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-950/15          | <b>Course title:</b><br>Passing Dissertation Examination |
| <b>Number of credits:</b> 20                         |                                                          |
| <b>Recommended semester:</b> 3., 4..                 |                                                          |
| <b>Educational level:</b> III.                       |                                                          |
| <b>State exam syllabus:</b>                          |                                                          |
| <b>Last change:</b> 02.06.2015                       |                                                          |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.  |                                                          |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                        |     |                                                           |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                             |     |                                                           |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-403/10                                                                                                                                                                 |     | <b>Course title:</b><br>Presentation at a Home Conference |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 5 <b>per level/semester:</b> 70<br><b>Form of the course:</b> on-site learning |     |                                                           |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                |     |                                                           |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                |     |                                                           |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                              |     |                                                           |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                       |     |                                                           |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                 |     |                                                           |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                   |     |                                                           |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                      |     |                                                           |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                              |     |                                                           |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                          |     |                                                           |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                               |     |                                                           |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 10                                                                                                                                    |     |                                                           |     |     |     |
| A                                                                                                                                                                                                           | B   | C                                                         | D   | E   | FX  |
| 100,0                                                                                                                                                                                                       | 0,0 | 0,0                                                       | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                           |     |                                                           |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                              |     |                                                           |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                         |     |                                                           |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                                     |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                                     |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-401/15                                                                                                                                                                   |     | <b>Course title:</b><br>Presentation at an International Conference |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 10 <b>per level/semester:</b> 140<br><b>Form of the course:</b> on-site learning |     |                                                                     |     |     |     |
| <b>Number of credits:</b> 20                                                                                                                                                                                  |     |                                                                     |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                                     |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                                     |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                                     |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                                     |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                                     |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                                     |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                                     |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                                     |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                                     |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 35                                                                                                                                      |     |                                                                     |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                                   | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                                 | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                                     |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                                     |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                                     |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                                                  |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                                                  |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-302/15                                                                                                                                                                   |     | <b>Course title:</b><br>Publication in a Reviewed Periodical or Reviewed Almanac |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 15 <b>per level/semester:</b> 210<br><b>Form of the course:</b> on-site learning |     |                                                                                  |     |     |     |
| <b>Number of credits:</b> 30                                                                                                                                                                                  |     |                                                                                  |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                                                  |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                                                  |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                                                  |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                                                  |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                                                  |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                                                  |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                                                  |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                                                  |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                                                  |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 2                                                                                                                                       |     |                                                                                  |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                                                | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                                              | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                                                  |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                                                  |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                                                  |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                          |     |                                                                 |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                               |     |                                                                 |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-301/15                                                                                                                                                                   |     | <b>Course title:</b><br>Publication in an A-category Periodical |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 20 <b>per level/semester:</b> 280<br><b>Form of the course:</b> on-site learning |     |                                                                 |     |     |     |
| <b>Number of credits:</b> 35                                                                                                                                                                                  |     |                                                                 |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                  |     |                                                                 |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                |     |                                                                 |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                         |     |                                                                 |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                   |     |                                                                 |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                     |     |                                                                 |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                        |     |                                                                 |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                                |     |                                                                 |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                            |     |                                                                 |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                 |     |                                                                 |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 15                                                                                                                                      |     |                                                                 |     |     |     |
| A                                                                                                                                                                                                             | B   | C                                                               | D   | E   | FX  |
| 100,0                                                                                                                                                                                                         | 0,0 | 0,0                                                             | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                             |     |                                                                 |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                |     |                                                                 |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                           |     |                                                                 |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                             |     |                                                   |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                  |     |                                                   |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-706/15                                                                                                                                                      |     | <b>Course title:</b><br>Response to a Publication |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> other<br><b>Number of hours:</b><br><b>per week:</b> 3 <b>per level/semester:</b> 42<br><b>Form of the course:</b> on-site learning |     |                                                   |     |     |     |
| <b>Number of credits:</b> 3                                                                                                                                                                      |     |                                                   |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                     |     |                                                   |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                   |     |                                                   |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                            |     |                                                   |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                      |     |                                                   |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                        |     |                                                   |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                           |     |                                                   |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                   |     |                                                   |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                               |     |                                                   |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                    |     |                                                   |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 1                                                                                                                          |     |                                                   |     |     |     |
| A                                                                                                                                                                                                | B   | C                                                 | D   | E   | FX  |
| 100,0                                                                                                                                                                                            | 0,0 | 0,0                                               | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                |     |                                                   |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                   |     |                                                   |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                              |     |                                                   |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                             |     |                                                                                   |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                  |     |                                                                                   |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-704/15                                                                                                                                                      |     | <b>Course title:</b><br>Response to a SCI-, WoK- or SCOPUS-registered Publication |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> other<br><b>Number of hours:</b><br><b>per week:</b> 6 <b>per level/semester:</b> 84<br><b>Form of the course:</b> on-site learning |     |                                                                                   |     |     |     |
| <b>Number of credits:</b> 4                                                                                                                                                                      |     |                                                                                   |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                     |     |                                                                                   |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                   |     |                                                                                   |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                            |     |                                                                                   |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                      |     |                                                                                   |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                        |     |                                                                                   |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                           |     |                                                                                   |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                   |     |                                                                                   |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                               |     |                                                                                   |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                    |     |                                                                                   |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 6                                                                                                                          |     |                                                                                   |     |     |     |
| A                                                                                                                                                                                                | B   | C                                                                                 | D   | E   | FX  |
| 100,0                                                                                                                                                                                            | 0,0 | 0,0                                                                               | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                |     |                                                                                   |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                   |     |                                                                                   |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                              |     |                                                                                   |     |     |     |

## COURSE DESCRIPTION

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|-------------------------------------------------------------------|-----|-----|-----|
| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                                                                                                            |     |                                                                   |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                                                                                                                                 |     |                                                                   |     |     |     |
| <b>Course ID:</b><br>FMFI.KJFB/3-FBF-005/00                                                                                                                                                                                                                                                                     |     | <b>Course title:</b><br>Selected Chapters from Human Biomechanics |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning                                                                                                              |     |                                                                   |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                    |     |                                                                   |     |     |     |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                                                                                                                 |     |                                                                   |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                  |     |                                                                   |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                           |     |                                                                   |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                                                                                                                     |     |                                                                   |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                                                                                                                       |     |                                                                   |     |     |     |
| <b>Class syllabus:</b><br>Cell biomechanics, biomechanics of bones and muscles, elastic properties of body fluids and vascular system, breathing mechanics, mechanics of digestion tract, lungs, and cerebral tissue. Biomechanics of hearing and functions of ear. Applications of biomechanics in a medicine. |     |                                                                   |     |     |     |
| <b>Recommended literature:</b><br>Vogel J. Biomechanics, Princeton, University Press, 2003.<br>Valenta J. Biomechanics, Academia and Kluwer Academic Publishers, 2002.<br><a href="http://en.wikipedia.org/wiki/Biomechanics">http://en.wikipedia.org/wiki/Biomechanics</a>                                     |     |                                                                   |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                                                                                                              |     |                                                                   |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                   |     |                                                                   |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 6                                                                                                                                                                                                                                         |     |                                                                   |     |     |     |
| A                                                                                                                                                                                                                                                                                                               | B   | C                                                                 | D   | E   | FX  |
| 100,0                                                                                                                                                                                                                                                                                                           | 0,0 | 0,0                                                               | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> prof. RNDr. Melánia Babincová, DrSc.                                                                                                                                                                                                                                                          |     |                                                                   |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                                                                                                                  |     |                                                                   |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                                                                                                             |     |                                                                   |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                              |     |                                                                  |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                   |     |                                                                  |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-802/15                                                                                                                                                       |     | <b>Course title:</b><br>Teaching Practice in the Summer Semester |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> other<br><b>Number of hours:</b><br><b>per week:</b> 8 <b>per level/semester:</b> 112<br><b>Form of the course:</b> on-site learning |     |                                                                  |     |     |     |
| <b>Number of credits:</b> 5                                                                                                                                                                       |     |                                                                  |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                      |     |                                                                  |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                    |     |                                                                  |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                             |     |                                                                  |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                       |     |                                                                  |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                         |     |                                                                  |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                            |     |                                                                  |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                    |     |                                                                  |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                |     |                                                                  |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                     |     |                                                                  |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 18                                                                                                                          |     |                                                                  |     |     |     |
| A                                                                                                                                                                                                 | B   | C                                                                | D   | E   | FX  |
| 100,0                                                                                                                                                                                             | 0,0 | 0,0                                                              | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                 |     |                                                                  |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                    |     |                                                                  |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                               |     |                                                                  |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                              |     |                                                                  |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                   |     |                                                                  |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-801/15                                                                                                                                                       |     | <b>Course title:</b><br>Teaching Practice in the Winter Semester |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> other<br><b>Number of hours:</b><br><b>per week:</b> 8 <b>per level/semester:</b> 112<br><b>Form of the course:</b> on-site learning |     |                                                                  |     |     |     |
| <b>Number of credits:</b> 5                                                                                                                                                                       |     |                                                                  |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                      |     |                                                                  |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                    |     |                                                                  |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                             |     |                                                                  |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                       |     |                                                                  |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                         |     |                                                                  |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                            |     |                                                                  |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                    |     |                                                                  |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                |     |                                                                  |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                     |     |                                                                  |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 22                                                                                                                          |     |                                                                  |     |     |     |
| A                                                                                                                                                                                                 | B   | C                                                                | D   | E   | FX  |
| 100,0                                                                                                                                                                                             | 0,0 | 0,0                                                              | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                 |     |                                                                  |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                    |     |                                                                  |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                               |     |                                                                  |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                                                                                                                                                                                                                                                  |     |                                                                                |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                                                                |     |     |     |
| <b>Course ID:</b><br>FMFI.KJFB/3-FBF-002/00                                                                                                                                                                                                                                                                                                                                                                                           |     | <b>Course title:</b><br>Theoretical Methods of the Study the Molecular Systems |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> lecture<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning                                                                                                                                                                                                                                    |     |                                                                                |     |     |     |
| <b>Number of credits:</b> 10                                                                                                                                                                                                                                                                                                                                                                                                          |     |                                                                                |     |     |     |
| <b>Recommended semester:</b> 1.                                                                                                                                                                                                                                                                                                                                                                                                       |     |                                                                                |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                                                                |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                                                                                                                                                                                                                                                 |     |                                                                                |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                                                                                                                                                                                                                                           |     |                                                                                |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                                                                                                                                                                                                                                             |     |                                                                                |     |     |     |
| <b>Class syllabus:</b><br>The study of statical properties:<br>Quantum mechanic description of energetic and reactivity of molecules (HF, post HF and DFT methods, semi empirical methods, methods of molecular mechanics, combined methods).<br>Study of dynamical properties:<br>Methods of molecular dynamics, Monte Carlo methods, analysis of the results of simulations, methods of classical and quasi classical trajectories. |     |                                                                                |     |     |     |
| <b>Recommended literature:</b><br>O.Becker et al. Computational Biochemistry and Biophysics, Dekker, 2000<br>A. Szabo N. S. Ostlund: Modern Quantum Chemistry: Introduction to Advanced Electronic Structure Theory<br>P.W. Atkins: Molecular Quantum Mechanics, Oxford Univ. Press, 1970                                                                                                                                             |     |                                                                                |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                                                                                                                                                                                                                                                    |     |                                                                                |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                                                                                                                                                                                                                                                         |     |                                                                                |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 18                                                                                                                                                                                                                                                                                                                                                              |     |                                                                                |     |     |     |
| A                                                                                                                                                                                                                                                                                                                                                                                                                                     | B   | C                                                                              | D   | E   | FX  |
| 100,0                                                                                                                                                                                                                                                                                                                                                                                                                                 | 0,0 | 0,0                                                                            | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b> prof. Ing. Pavel Mach, CSc., prof. RNDr. Ján Urban, DrSc.                                                                                                                                                                                                                                                                                                                                                           |     |                                                                                |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                                                                                                                                                                                                                                                        |     |                                                                                |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                                                                                                                                                                                                                                                   |     |                                                                                |     |     |     |

## COURSE DESCRIPTION

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| <b>University:</b> Comenius University in Bratislava                                                                                                                                                        |     |                                                                  |     |     |     |
| <b>Faculty:</b>                                                                                                                                                                                             |     |                                                                  |     |     |     |
| <b>Course ID:</b><br>FMFL.KJFB/3-FBF-808/15                                                                                                                                                                 |     | <b>Course title:</b><br>Writing Final Thesis Assessment Protocol |     |     |     |
| <b>Educational activities:</b><br><b>Type of activities:</b> independent work<br><b>Number of hours:</b><br><b>per week:</b> 2 <b>per level/semester:</b> 28<br><b>Form of the course:</b> on-site learning |     |                                                                  |     |     |     |
| <b>Number of credits:</b> 4                                                                                                                                                                                 |     |                                                                  |     |     |     |
| <b>Recommended semester:</b>                                                                                                                                                                                |     |                                                                  |     |     |     |
| <b>Educational level:</b> III.                                                                                                                                                                              |     |                                                                  |     |     |     |
| <b>Prerequisites:</b>                                                                                                                                                                                       |     |                                                                  |     |     |     |
| <b>Course requirements:</b>                                                                                                                                                                                 |     |                                                                  |     |     |     |
| <b>Learning outcomes:</b>                                                                                                                                                                                   |     |                                                                  |     |     |     |
| <b>Class syllabus:</b>                                                                                                                                                                                      |     |                                                                  |     |     |     |
| <b>Recommended literature:</b>                                                                                                                                                                              |     |                                                                  |     |     |     |
| <b>Languages necessary to complete the course:</b>                                                                                                                                                          |     |                                                                  |     |     |     |
| <b>Notes:</b>                                                                                                                                                                                               |     |                                                                  |     |     |     |
| <b>Past grade distribution</b><br>Total number of evaluated students: 1                                                                                                                                     |     |                                                                  |     |     |     |
| A                                                                                                                                                                                                           | B   | C                                                                | D   | E   | FX  |
| 100,0                                                                                                                                                                                                       | 0,0 | 0,0                                                              | 0,0 | 0,0 | 0,0 |
| <b>Lecturers:</b>                                                                                                                                                                                           |     |                                                                  |     |     |     |
| <b>Last change:</b> 02.06.2015                                                                                                                                                                              |     |                                                                  |     |     |     |
| <b>Approved by:</b> prof. RNDr. Tibor Hianik, DrSc.                                                                                                                                                         |     |                                                                  |     |     |     |