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| <b>Study Programme:</b> Doctoral Academic Studies in Biochemistry   |                     |                           |
| <b>Course Unit Title:</b> Selected experimental methods for determination of bioactivity  |                     |                           |
| <b>Course Unit Code:</b> DSB612   |                     |                           |
| <b>Name of Lecturer(s):</b> Associate Professor Ivana Beara, Associate Professor Marija Lesjak  |                     |                           |
| <b>Type and Level of Studies:</b> PhD degree  |                     |                           |
| <b>Course Status (compulsory/elective):</b> elective  |                     |                           |
| <b>Semester (winter/summer):</b> summer   |                     |                           |
| <b>Language of instruction:</b> English   |                     |                           |
| <b>Mode of course unit delivery (face-to-face/distance learning):</b> Face-to-face  |                     |                           |
| <b>Number of ECTS Allocated:</b> 15   |                     |                           |
| <b>Prerequisites:</b> none  |                     |                           |
| <b>Course Aims:</b><br>The goal of this course is to provide students with advanced theoretical knowledge for estimating biological activities of pharmacologically active substances and natural products.   |                     |                           |
| <b>Learning Outcomes:</b><br>Students will be able to independently select, adapt, develop and implement methods for testing different biological activities and determine the potential of tested compounds.   |                     |                           |
| <b>Syllabus:</b><br><i>Theory</i><br>Estimation of biological activities of pharmacologically active substances and natural products. In vitro, in vivo and ex vivo assays. Analysis of the principle of selection of appropriate methods, substrate, target molecules, activators / inhibitors, biological response, ways to detect biological activity and present results. Detailed analysis of the determination of anti-inflammatory, antioxidant, cytotoxic and antimicrobial activities. Selected examples of in vitro, in vivo and ex vivo methods for investigation of various biological activities.<br><i>Practice</i><br>Project                          |                     |                           |
| <b>Required Reading:</b><br>1. Shiqi, P., Ming, Z. (2009): <i>Pharmaceutical Bioassays: Methods and Applications</i> , John Willey & Sons, Hoboken, NJ, USA<br>2. Choudhary, M. I., Atta-ur-rahman, Thomsen, W. J. (2001) <i>Bioassay Techniques For Drug Development</i> , Informa Healthcare<br>3. Bohlin, L., Bruhn, J. G. (1999): <i>Bioassay Methods In Natural Product Research And Drug Development</i> , Kluwer Academic Publishers, Dordrecht, Netherland.<br>4. Journals: Journal of Pharmaceutical and Biomedical Analysis, Journal of Biochemical and Biophysical Methods, Methods in Enzymology, Journal of Microbiological Methods, Laboratory Animals. |                     |                           |
| <b>Weekly Contact Hours:</b>  | <b>Lectures:</b> 75 | <b>Practical work:</b> 75 |
| <b>Teaching Methods:</b> Lectures, seminar(s)   |                     |                           |
| <b>Knowledge Assessment (maximum of 100 points):</b> 100  |                     |                           |

| <b>Pre-exam obligations</b> | points | <b>Final exam</b> | points |
|-----------------------------|--------|-------------------|--------|
| Active class participation  |        | written exam      |        |
| Practical work              |        | oral exam         | 40     |
| Preliminary exam(s)         |        | project           | 60     |
| Seminar(s)                  |        |                   |        |

The methods of knowledge assessment may differ; the table presents only some of the options: written exam, oral exam, project presentation, seminars, etc.