

<b>Study programme:</b> PhD in Biology				
<b>Level:</b> Doctoral degree				
<b>Course title:</b> Reproductive Toxicology				
<b>Lecturer:</b> Nebojsa Andric PhD, Kristina Pogrmic-Majkic PhD				
<b>Status:</b> Elective				
<b>ECTS:</b>				
<b>Requirements:</b>				
<b>Learning objectives</b>				
The course provides knowledge about the impact of chemicals from the environment (with emphasis on the chemicals with endocrine disruptors potential) on the reproductive function.				
<b>Learning outcomes</b>				
After completion of the course, it is expected that students (i) gain knowledge about mechanism and the effect of the environmental chemicals on the reproductive systems and fertility (ii) understand research in the field of reproductive toxicology.				
<b>Syllabus</b>				
<i>Theoretical instruction</i>				
Environmental chemicals as endocrine disruptors. Molecular mechanism of endocrine disruptor. Fetal and neonatal exposure to endocrine disruptors and implications on adult reproductive function: ovarian and testicular dysgenesis syndrome. Adult exposure and impacts on reproductive health and fertility.				
Environmental chemicals and related systems that have implication for reproduction: neuroendocrine and immune systems. Toxicological testing: <i>in vitro</i> and <i>in vivo</i> tests and chemical risk assessments				
<i>Practical instruction</i>				
Experimental models: primary culture of immature and preovulatory granulosa cells; analysis of signaling pathways and functions of granulosa cells after chemicals exposure in different experimental conditions; analysis of the results and preparation of manuscripts				
<b>Literature</b>				
Schug, T. T., Janesick, A., Blumberg, B. and Heindel, J. J. (2011) 'Endocrine disrupting chemicals and disease susceptibility', <i>The Journal of steroid biochemistry and molecular biology</i> 127(3-5): 204-15. Mark-Kappeler, C. J., Hoyer, P. B. and Devine, P. J. (2011) 'Xenobiotic Effects on Ovarian Preantral Follicles', <i>Biology of reproduction</i> . Blumberg, B., Iguchi, T. and Odermatt, A. (2011) 'Endocrine disrupting chemicals', <i>The Journal of steroid biochemistry and molecular biology</i> 127(1-2): 1-3. Craig, Z. R., Wang, W. and Flaws, J. A. (2011) 'Endocrine-disrupting chemicals in ovarian function: effects on steroidogenesis, metabolism and nuclear receptor signaling', <i>Reproduction</i> 142(5): 633-46. Woodruff, T.J., Janssen, S.J., Guillette Jr, L.J., Giudice, L.C. (2010) 'Environmental Impacts on Reproductive Health and Fertility, Cambridge University Press.				
<b>Weekly teaching load</b>				Other:
Lectures:	Exercises:	Other forms of teaching:	Student research:	
<b>Teaching methodology</b>				
Lectures, experimental work, analysis and presentation of experimental results, presentation of the articles from the field of the reproductive toxicology (journal club)				
<b>Grading method (maximal number of points 100)</b>				
Experimental work – 40 points				
Presentation of the results – 10 points				
Exam- 50 points				