

<b>Study program: REPRODUCTIVE BIOLOGY</b>			
<b>Course title:</b> Physiology and endocrinology of male reproductive system			
<b>Teachers:</b> Tatjana Kostić, Silvana Andrić			
<b>Course status:</b> obligatory			
<b>ECTS:</b> 5			
<b>Requirements:</b> Basic medical/animal physiology			
<b>Course objectives</b> The objective of the course is to study the fundamental mechanisms of physiology and endocrinology of the male reproductive system and regulatory mechanisms that control the function of the male reproductive tract.			
<b>Learning outcomes</b> After successfully completing the course, students should acquire basic knowledge about the mechanisms of sex differentiation and reproductive signal molecules, as well as ability to describe the function of the reproductive system at different ages.			
<b>Syllabus</b> <i>Lectures</i> Signaling processes and signaling molecules in male reproductive physiology and endocrinology. Sex differentiation and determination (sex, gender, sexuality). Functional anatomy of the male reproductive system. Physiological and endocrine basis of puberty and maturation of hypothalamic pituitary-gonadal axis. Physiology of testicles and accessory organs. Physiological effects of steroid hormones. Regulation of male reproductive function. Physiological basis of coitus and fertilization. Physiological and endocrine changes during male aging. <i>Practical classes (Laboratory exercise)</i> Experimental animals and experimental models (hypogonadal-hypogonadism, androgenization, aging, psycho-physical stress, blockade of receptors (androgens, estrogens, adrenergic, glucocorticoid). Experimental surgical (castration, pinealectomy) and drug administration ( <i>sc, iv, ip, per-or</i> ) procedures. Reproductive organs of rats male. Determination of levels (RIA, ELISA) of testosterone, luteinizing hormone, and some secondary messengers (NO, cAMP, cGMP) in the medium and cellular content of spermatozoa and Leydig cells. Analysis of the transcription profile of particular characteristic signaling molecules in spermatozoa and Leydig cells.			
<b>Literature</b> 1. Bhasin S, Huang G, Travison TG, Basaria S (2016): <i>Age-related changes in the male reproductive axis</i> . NCBI Bookshelf. 2. Handelsman DJ (2016): <i>Androgen physiology, pharmacology and abuse</i> . NCBI Bookshelf. 3. Handelsman DJ (2015): <i>Male Contraception</i> . NCBI Bookshelf. 4. Jones RE, Lopez K (2014): <i>Human reproductive biology</i> . Academic Press. 5. Jonson MH (2013): <i>Essential reproduction</i> . Wiley-Blackwell. 6. McEwan IJ, Brinkmann AO (2016): <i>Androgen physiology: receptor and metabolic disorders</i> . NCBI Bookshelf. 7. Plant T, Zeleznik A (2014): <i>Knobil and Neill's Physiology of reproduction 4th</i> . Elsevier. 8. O'Donnell L, Stanton P, de Kretser DM (2017): <i>Endocrinology of the male reproductive system and spermatogenesis</i> . NCBI Bookshelf. 9. Rochira V, Madeo B, Diazzi C, Zirilli L, Daniele S, Carani C (2016): <i>Estrogens and male reproduction</i> . NCBI Bookshelf. 10. Winters SJ (2017): <i>Laboratory assessment of testicular functions</i> . NCBI Bookshelf. 11. White B, Harrison JR, Mehlmann L (2018): <i>Endocrine and reproductive physiology</i> . Mosby physiology series by Elsevier. 12. Review papers in the field of reproductive physiology and endocrinology of males.			
<b>Weekly teaching load</b>	<b>Lectures: 2</b>	<b>Practical lectures: 0+2+0</b>	
<b>Teaching methods</b> Lectures, "flip-flop" presentations, consultations, AFT (additional form of teaching including the laboratory exercises, participation in planning and performing experiments, as well as in the analysis of results).			
<b>Evaluation of knowledge (maximum score 100)</b>			
<b>Pre-exam obligation</b>	Points	<b>Final exam</b>	Points
		Test	10
AFT (practical laboratory exercises)	30	Oral exam	60