

Study program: Doctoral academic studies in biomedical sciences		
Course title: EXPERIMENTAL NUCLEAR MEDICINE AND RADIOPHARMACY		
Teacher: Jasna M. Mihailović, Branislava P. Ilinčić, Radmila R. Žeravica, Velibor C. Čabarkapa, Đorđe S. Popović, Nataša B Milić, Olga J. Horvat, Saša N. Vukmirović		
Course status: elective		
ECTS Credits: 20		
Condition: -		
Course aim Acquiring knowledge about the basics of translational nuclear medical research with the use of radiopharmaceuticals in <i>in vivo</i> and <i>in vitro</i> experimental animal and human models of disease		
Expected outcome of the course: Knowledge: The doctoral student should acquire knowledge that will enable him to understand the steps in the development, design, production and experimental use of radiopharmaceuticals in relation to a research question of importance in understanding current human disorders at the molecular level. Skills: The student should know the basic concepts of translational nuclear medical research and the possibilities of using radiopharmaceuticals in preclinical and clinical studies.		
Course description <i>Theoretical education</i> <ol style="list-style-type: none"> 1. Basic principles of translational nuclear medical research 2. Theoretical concept of radiopharmaceutical design 3. Theoretical concept of radiopharmaceutical synthesis 4. Theoretical concept of production of new generator and cyclotron radiopharmaceuticals 5. Biodistribution studies using radiopharmaceuticals in experimental animal and human disease models 6. Visualization methods - localization of radiopharmaceuticals in experimental models - hydride systems 7. Methods of quantification of biodistribution of radiopharmaceuticals in preclinical and clinical research 8. Radiomics in nuclear medical research of human diseases 9. Use of artificial intelligence in experimental models 10. Specifics of ethical regulations in studies with radiopharmaceuticals <i>Practical education</i> Consultations with the mentor, case studies and detailed consideration of the research phases required for the development and application of radiopharmaceuticals in preclinical and clinical trials.		
Literature <i>Compulsory</i> <ol style="list-style-type: none"> 1. Kowalsky RJ, Falen SW. Radiopharmaceuticals in Nuclear Pharmacy and Nuclear Medicine, Third Edition, Washington, United States American Pharmacists Association, 2011. 2. Volterrani D, Erba PA, Carrio I, Strauss WH, Mariani G. Nuclear Medicine Textbook Methodology and Clinical Applications; First edition, Springer International Publishing; 2019. 3. Theobald T; Sampson BC. Sampson's textbook of radiopharmacy, London ;Pharmaceutical Press, 2011. 4. Gopal B. Saha. Fundamentals of Nuclear Pharmacy, Seventh Edition, Springer International Publishing AG, 2018. <i>Additional</i> <ol style="list-style-type: none"> 1. Prekeges J. Nuclear Medicine Instrumentation; Second Edition, Sudbury, United States, Jones and Bartlett Publishers, 2012. 2. Mihailovic J, Goldsmith SJ, Killeen R. FDG PET/CT in Clinical Oncology. Case Based Approach with Teaching Points. Berlin Heidelberg: Springer Verlag, 2012. 3. Waterstram KM, Gilmore D. Nuclear Medicine and PET/CT : Technology and Techniques; 8th Revised edition St Louis, United States Elsevier - Health Sciences Division; 2016. 		
Number of active classes	Theory: 60	Practice: 45
Teaching methods: Interactive lectures and practices; Consultations; Essays		
Student activity assessment (maximally 100 points) lectures: 10 practices: 20		

colloquim:5
essay: 10
oral exam: 55