

Study program: Integrated academic studies of Pharmacy			
Type and level of the study program: integrated academic studies			
Course title: HUMAN HEALTH RISK ANALYSIS (PhV-HRISK)			
Teacher: Ljilja D. Torović			
Course status: elective			
ECTS Credits: 3			
Condition: Basic toxicology			
Course aim Introduction of students to the implementation of the risk analysis, training for the interpretation of the results of risk assessment, risk management and communication.			
Expected outcome of the course: Knowledge: Guidelines, recommendations, and tools used in the process of risk analysis. Knowledge in the field of risk assessment and risk management measures. Database on the composition and food consumption - the sources and use of data. Introduction to the scientific framework for objective comparison of risk and benefit. Getting to know the results of relevant research projects. Skills: Possibility of professional work in the field of risk assessment for human health due to the presence of various chemical substances in food, formulating recommendations for risk reduction, involvement in setting up the relevant legal basis.			
Course description <i>Theoretical education</i> Risk analysis - the importance and structure of the process. Getting to know the relevant legal, scientific and professional organizations. Food safety law. Risk management. Communication in the risk analysis. Communication with consumers. Risk Assessment. The formulation of the problem. Previous knowledge. Hazard identification. Hazard characterization. Dose - response relationship. The critical effect. Reference points. The scientific substantiation of the evidence. Biomarkers of exposure and biomarkers of effect. Exposure assessment. Databases on the food composition. The effects of analytical methods on the quality of the results. Bioavailability. Methods of data collection and databases on food consumption. Risk characterization. Margin of safety. Variability and uncertainty. Model of establishing the upper level of nutrients and related substances intake. Cost benefit analysis: the structure of the process. Establishing a common scale of measurement to compare the risks and benefits for food and food constituents. Cost benefit analysis: natural foods. Cost benefit analysis: dietary interventions - food fortification and supplementation, replacement of macronutrients. Cost benefit analysis: the impact of technological processes of food processing. Preventive systems in ensuring food safety. Portals for the international exchange of information on risks related to food. <i>Practical education: exercises, other forms of education, research related activities</i> Case Study - chemical contaminants in food ; natural toxicants in foods; substances formed during technological food processing; food fortification and supplementation. Vitamins - the upper level of safe intake. Minerals - the upper level of safe intake. Safety assessment of plant materials intended for food use. HACCP plan. Informing consumers about the risks and benefits associated with foods and food constituents.			
Literature <i>Compulsory</i> 1. Selected publications of WHO, FAO, JECFA, IARC, EFSA (freely available on websites given under additional literature) <i>Additional</i> 1. www.efsa.europa.eu ; www.who.int ; www.fao.org ; www.iarc.fr ; www.codexalimentarius.net ; ec.europa.eu/food/safety/index_en.htm			
Number of active classes			Other:
Lectures: 30	Practice: 15	Other types of teaching: Research related activities:	
Teaching methods Theoretical and practical; essay.			
Student activity assessment (maximally 100 points)			
Pre-exam activities	points	Final exam	points
Lectures	5	Written	-
Practices	5	Oral	50
Colloquium	-	
Essay	40		