

Study program: Bachelor academic studies: ECOLOGICAL ECONOMICS (BASEEC)			
Type and level of studies: Bachelor academic studies, I level			
Subject name: Systems and Information Theory		Subject code	6E1TSI
Professor: dr Aleksandar V. Gordić, associate professor			
Subject status: Elective			
Number of ECTS: 5			
Condition: none			
Subject goal Familiarizing students with key concepts and philosophical foundations of the system of various levels of complexity, as a precondition for their analytical and synthetic study and application of systemic thinking in ecology.			
Subject outcome Acquiring the necessary professional knowledge of techniques and approaches of contemporary theories of systems and information as a conceptual basis for multidisciplinary research in various fields of ecology.			
Subject content <i>Theoretical classes</i> Philosophical foundations of systemic thinking. The concept and definition of the system. Classification and hierarchy system. Quantitative and qualitative characteristics of the system. Relations and operations within the system - logic-algebraic apparatus. Static and dynamic systems. Simple and complex systems, and their condition. The real systems and models. Systems in nature and society. Reachability, controllability and observability of discrete-time systems. Basic concepts of information theory - information, synergy and entropy. Elements of communication theory. <i>Practical classes:</i> Getting to know certain types of real systems and testing their features. Elaboration of mathematical modeling to describe the behavior of the system. Applying the concepts of regulation, manageability, determinism and other concepts in ecological systems. Research on interconnectivity and complex processes in dynamic ecological systems (ecosystems). Using the theory of information and communication in the environmental sciences.			
Literature 1. Kostić, Momčilo (1987). <i>Elementi teorije sistema i informacija</i> , Beograd: Naučna knjiga, više izdanja. 2. Simić, Dušan (1981). <i>Osnovi kibernetike</i> , Beograd: Naučna knjiga. 3. Petrović, Bratislav J. (1998). <i>Teorija sistema</i> , Beograd: Fakultet organizacionih nauka (više izdanja). 4. Šereš, Šandor (1984). <i>Teorije sistema</i> , Subotica: Ekonomski fakultet 5. Kron, Aleksandar (2004), <i>Savremena filozofija logike i matematike</i> , Beograd: Institut za filozofije Filozofskog fakulteta u Beogradu. 6. Djordjević, Toma (1979), <i>Teorija informacija – teorija savremenih komunikacija</i> , Beograd: Partizanska knjiga, više izdanja.			
Number of active teaching classes			Other classes
Lectures:2(30)	Practices: 2(30)	Other class forms:	Study research paper:
Teaching methods Lectures, audiovisual practices, colloquium, defense of written papers, consultations, oral exam.			
Knowledge evaluation (maximum number of points is 100)			
Pre-exam obligations	points	Final exam	points
Activity during classes	10	Written exam	
Practical classes and papers colloquium	20	Oral exam	50
	20		