

(Table 5.2) Course unit description

Study program : Molecular biology			
Type and level of studies: Master academy study – II level of studies			
Course unit: Molecular methods in entomology			
Teacher in charge : Ana Mitrovski Bogdanović, PhD			
Language of instruction: English			
ECTS:6			
Prerequisites: /			
Semester: Summer Semester			
Course unit objective			
Introduction with fundamental methods of molecular systematics and their applying in entomology .			
Learning outcomes of Course unit			
Training of students to apply different methods of molecular analyses in entomological investigations.			
Course unit contents			
<i>Theoretical classes</i>			
Modern insect systematics. Importance of taxonomical informations. Molecular systematics in entomological investigations. Molecular versus traditional approaches to systematics. Applying of genetical markers in entomology. Insect molecular identification. Applying of molecular methods in the studies of taxonomy, phylogenetic relationships and genetic population of insects. Phylogenetic methods. Molecular identification of insect pest natural enemies and their applying in biological control programmes. Molecular methods – advantages and disadvantages.			
<i>Practical classes</i>			
DNA extraction from insects. PCR amplification of mitochondrial and nuclear gene fragments. Purification and sequencing of amplified genetic markers. Analysis and comparing of DNA sequences (BLAST, Clustal W). Construction of phylogenetic tree by MEGA 5 program. Determination of phylogenetic relationships among species. Intra- and intergenetic species variability. Traditional systematics versus molecular systematics.			
Literature			
Avisé J. C. Molecular Markers, Natural History and Evolution. Chapman & Hall, 1994.			
Avisé J. C. Phylogeography: the history and formation of species. Harvard University Press, 2000.			
Hoy M. Insect Molecular Genetics: An Introduction to Principles and Applications. Academic press, 2003.			
Number of active teaching hours			Other classes
Lectures:	Practice:	Other forms of classes: Mentoring (consultative) system	Independent work:
Teaching methods			
Power point presentations, seminars, consultations, laboratory work.			
Examination methods (maximum 100 points)			
Exam prerequisites	No. of points:	Final exam	No. of points:
Student's activity during lectures		oral examination	30
practical classes/tests		written examination	30
Seminars/homework	40	
Project			
Other			