

Study Programme : MSc in Biology

Degree level: Master degree

Course Title: Ecological Developmental Biology**Professor:** Milica Matavulj**Required/Elective Course:** Elective Course**Number of ECTS:** 6**Prerequisites:** Course Histology and Embryology**Course Objective:**

This course will provide the student with the basic insight in close connection of environmental factors and early phases of embryonic development

Course Outcome:

At the end of the course, students should understand the interaction between developmental process and environment, also, influence of different factors from environment on changes in phenotype as result of epigenetic changes in gene expression

Course Content:*Theoretical part*

Introduction to Ecological Developmental Biology. Signals from environment and normal development. Phenotypic plasticity as part of normal development (norms reaction, polyphenism, epigenesis). Polyphenisms dependent of: temperature, nutrition, gravity, predators and stress. Effects of factors from environment on development. Transduction of signals in genome via neuroendocrine system (neuroendocrine regulation of insects polyphenisms dependent of temperature, neuroendocrine regulation of sex differentiation). Transduction of signals in genome via direct induction (microbial induction of gene expression of digestive tract of insects, microbial induction of vertebrate immune response). Embryo and larval adaptations to environments. Teratogenesis. Chemical-induced teratogenes (ethanol, retinoic acid, etc). Endocrine disruptors (phytoestrogenes, pesticides, PCBs). Epigenetic origin of cancer and other diseases. Epigenetic origin of aging.

Practical part

Observation of phenotypic plasticity selected species in laboratory conditions and student research work in small groups and poster presentation of optioned results

Other

Seminar papers

Reading List:

1. Gilbert, SF David, D. Ecological Developmental Biology. Sinauer Associates, Inc., 2009.
2. Gilbert, SF. Developmental Biology (Chapter 22. Environmental regulation of animal development), 7th Ed, Sinauer Associates, Inc., 2003.

Total hours:

Lectures: 2	Practicals:	Other: 2	Student research work:
			5

Methods of instruction:

Lectures (PowerPoint presentation), laboratory practice, seminar papers

Assessment (maximum number of points 100)

Requirements	points	Final exam	points
Active participation in lectures	5	Test	70
Active participation in practicals		Oral exam	
Test(s) or			
Pre-exam testing			
Other	25		

Remark: