



UNIVERSITY "ISMAIL QEMALI" VLOR
FACULTY OF TECHNICAL AND NATURAL SCIENCES
DEPARTMENT OF BIOLOGY

APPROVED
Head of the Biology Department
Dr. Aurora Bakaj

BIO 481 COURSE PROGRAM

Subject:	Mechanisms of evolution and heredity
Head/Teacher of the course:	MSc. Mariola Ismailaj
Charge:	Lectures 2 hours/ Seminar 2 hours
Subject typology:	Disciplines of characteristic formation
Academic year/semester when it takes place:	2022-2023/ Spring 2023
Subject type:	Disciplines of characteristic formation
Study program:	AM Professional Master in Teaching with a minor in Chemistry
Subject code:	BIO 481
E-mail address of the holder/pedagogue:	mariola.ismailaj@univlora.edu.al

summary AND LEARNING OUTCOMES:

Course objectives: In the first part of the course, the basic principles of the inheritance of traits from parents to offspring based on Mendel's laws, exceptions to Mendel's laws, the inheritance of traits linked to sex chromosomes and the analysis of genealogical trees will be discussed. In the second part of the course, the basic mechanisms of the evolution of living things will be treated based on the pre-Darwinian, Darwinian evolutionary views and the further development of the theory of Evolution, the evolution of populations, the factors of evolution, issues related to the birth of life, the evolution of the first cells and the origin of man.

BASIC CONCEPTS:

- 1 Mendelian genetics and exceptions to Mendel's laws.
- 2 Analysis of genealogical trees and the inheritance of sex-chromosome-linked traits.
- 3 Darwinian Evolution: Descent with Modifications and Evolution of Populations.
- 4 Origin of species.
- 5 The history of life on earth.
- 6 Phylogeny and the tree of life.
- 7 The origin of man.

COURSE TOPICS THAT WILL BE DEALED IN LECTURES:

Topic 1

Mendel's laws, test crosses, exceptions and applications of Mendelian genetics, different levels of dominance.

Topic 2

Relationship between dominance and phenotype, multiple allelism, Pleiotropy, epistasis. Polygenic inheritance, lethal alleles.

Topic 3

Influence of environment on phenotype, pedigree analysis. Recessive and dominant inherited diseases.

- Topic 4** Chromosomal basis of inheritance. Inheritance of genes linked to sex chromosomes.
- Topic 5** Linkage of genes. Genetic map.
- Topic 6** Genetic structure of the population.
- Topic 7** Pre-Darwinian evolutionary views and the Darwinian revolution.
- Topic 8** Classification of factors of evolution. Mutational process. Migrations. Recombination and its disorders. Gene drift, population fitness.
- Topic 9** Action of selection against recessive and lethal recessive homozygotes. Action of selection against dominant alleles and heterozygotes. Selection in interaction with other factors of evolution. General data for the selection.
- Topic 10**
Sexual selection. Natural selection and behavior. Examples of adaptation of organisms. Genetic co-adaptation.
- Topic 11** Stages of the cognitive process for the type. Concepts for type. Classification of insulating mechanisms. Types formation methods.
- Topic 12** The origin of life and its essence. Definition of living. Evolution of the first cells.
- Topic 13**
Evidence of evolution. Data of Paleontology and Biogeography. Data of Morphology and Embryology.
- Topic 14** Phylogeny and the tree of life. The origin of man. Human diversity.

Topics to be covered in the seminars:

- Topic 1**
Mendel's laws, test crosses, exceptions and applications of Mendelian genetics, different levels of dominance.
- Topic 2** Relationship between dominance and phenotype, multiple allelism, Pleiotropy, epistasis. Polygenic inheritance, lethal alleles.
- Topic 3** Influence of environment on phenotype, pedigree analysis. Recessive and dominant inherited diseases.
- Topic 4** Chromosomal basis of inheritance. Inheritance of genes linked to sex chromosomes.
- Topic 5** Linkage of genes. Genetic map.
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- Topic 14** Phylogeny and the tree of life. The origin of man. Human diversity.

FORM OF KNOWLEDGE CONTROL

control	Percentage rating
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Annual assessment seminars, laboratories, and teaching practice	20%
Final check	80%

Grading is based on the conversion of the total grade to %, grade 5-10 progressively 41-100%.

Grading	4	5	6	7	8	9	10
ASSESSMENT	0 -40	41-50	51-60	61-70		71-80	81-90

EVALUATION AND ATTENDANCE:

The grading is based on the conversion of the total grade into %, grade 5-10 progressively 40-100%. The student, who results in less than 75% attendance during the course of the semester, will not be included in the final exam, as he will be evaluated with M (Absent).

If the student has attended the course, but does not appear in the next exam, he is assessed NP (Did Not Appear).

COURSE FORMAT:

The course will be evaluated on the basis of the annual evaluation and the final exam. Points earned will be cumulative. Exams will not be repeated for any reason. If you miss the final exam without a valid reason, then you will lose points for the exam you missed. without any major reason, then you will lose marks for that exam in which you did not appear.

COMMUNICATION:

Homework exercises, course assignments and any other announcements will be given in class or at the official address of the "Ismail Qemali" University of Vlora on the Internet: www.univlora.edu.al or to the e-mail address of the lecturer: mariola.ismailaj@univlora.edu.al.

Email: It is the duty of every student to check e-mail regularly. There will be tasks and notifications will be given only via e-mail.

HONESTY CODE:

Group work is not allowed for homework, as it is individual. At the same time, copying in exams is not allowed, which is punishable.

LITERATURE

a)Mandatory basic literature:

Series of lectures Genetics: Dr. Blerta Laze; Lecture cycle Mechanisms of evolution: Dr. Blerta Laze;

b) Recommended literature:

Theory of evolution: Zyri Bajrami, Mynyr Koni; Campbell Biology / Lisa Urry, Michael Cain, Steven wasserman, Peter Minorsky, Jane Reece, 2016.

FINAL REMARKS FROM THE SUBJECT TEACHER

Homework exercises, coursework and any other notices will be given in class.

Students are also encouraged to work in groups for the homework exercises. Copying from one another in exams, coursework, homework, etc. is not allowed. Violation of this rule will be accompanied by punitive measures up to expulsion from the university.

The use of mobile phones and smoking in the auditorium is not allowed.

Lecturer
MSc. Mariola Ismailaj