



Syllabus

Term: 2026/27/1 **Subject name:** Molecular Biology - lab. **Subject code:** ENBIOB3402

Unit (Unit code) (BIOLOGIA)

Lecturer responsible for the course: LANSZKI Zsófia

Requirement: Term mark

Classes per week : 0/0/3

Classes per term: 0/0/39

Purpose of education:

This laboratory course will be an introduction to the basic techniques of DNA isolation and manipulation. Students completing the course will have knowledge on the total DNA and plasmid DNA isolation and analysis by restriction endonucleases and agarose gel electrophoresis, as well as on the design and practice of polymerase chain reaction (PCR).

Contents:

Week 1-2: Total DNA isolation from *Escherichia coli* and characterization of the isolated DNA by spectrophotometry.

Week 3-4: Restriction digestion and agarose gel electrophoresis of DNA

Week 5-6: Plasmid DNA isolation and physical mapping by restriction endonucleases. (evaluation of insert orientation)

Week 6: written examination

Week 7-8: Demonstration of the activity of T4 DNA ligase. Polymerase chain reaction: design of experiments

Week 9-10: Fast DNA purification from human samples and analysis of a microsatellite locus

Week 11-12: Rapid plant DNA isolation and analysis: applications of PCR for random amplification of polymorphic DNA (RAPD) and for the analysis of microsatellite regions

Week 13-14: Cloning: ligation of a PCR fragment into a plasmid vector, transformation and detection of the insert DNA by X-gal and colony PCR

Week 14: written examination from the second part of the laboratory works

System of examing and valuation:

Laboratory work and lab reports (50%) and the marks of the written examinations will be evaluated.



Syllabus

Term: 2026/27/1

**Subject
name:**

Molecular Biology - lab.

Subject code: ENBIOB3402

System of examining and valuation:

Bibliography:

Laboratory lecture-notes are available at the web page of the department.

Sandy B. Primrose, Richard Twyman Principles of Gene Manipulation and Genomics, 7th Edition January 2006, Wiley-Blackwell

Bibliography: