



SH03009: GENETIC ENGINEERING LAB (THỰC HÀNH KỸ THUẬT DI TRUYỀN)

Credits: 1 credits (Lecture: 0 – Practice: 1)

EXPECTED LEARNING OUTCOMES

Course objectives	COURSE EXPECTED LEARNING OUTCOMES After successfully completing this course, students are able to	Expected learning outcomes of program
Knowledge		
CELO1	Understanding the operating principles and the use of some equipment in the laboratory of molecular biology, genetic engineering (vortex, centrifuge, PCR machine, electrophoresis system, electrophoresis imaging system, autoclave, laminar flow...) to evaluate the biotechnology products and assessment of genetic diversity in samples.	ELO3, ELO5
Skills		
CELO2	Proficient use of basic equipment and basic techniques in the molecular biology and genetic engineering lab, developing writing and presentation skills.	ELO7, ELO9, ELO11
CELO3	Successfully implementing DNA extraction from plants, animal blood, and microorganisms, DNA gel electrophoresis techniques, polymerase chain reaction (PCR) techniques, generating matrix and analyze the genetic diversity of the samples by using NTSYS software.	ELO7, ELO9, ELO11
CELO4	Application of molecular marker (RAPD, ISSR, SSR) in genetic diversity analysis.	ELO7, ELO9, ELO11
Personal autonomy and responsibility		
CELO5	Proactively propose, implement, and execute scientific research, applying advanced biotechnology techniques into practice.	ELO13



CONTENT

- Lesson 1: Project proposal preparation and defenses.
- Lesson 2: DNA extraction from animals, plants, microorganisms (depend on the project).
- Lesson 3: Implementation of PCR-based molecular markers (RAPD, ISSR, SSR, depend on the project).
- Lesson 4: DNA gel electrophoresis technique.
- Lesson 5: Learning NTSYS2.1 software; Generating binary matrix; Analyzing genetic diversity between examined samples.
- Lesson 6: Project profiling, final reports, and final presentation (summaries of important project documents, such as the project plan, the lab notebook (including raw and processed data).

LEARNING METHODS

- Read lecture notes, books and references before attending the class.
- Students are required to listen to lectures in class, carry out practical operations, record and analyze the obtained results and perform other learning activities such as solving practice problems after class.
- Prepare and actively participate in discussion and team-work.

STUDENT TASKS

- Attendance: Students are not allowed to absent from classes.
- Strictly obey the laboratory rules.
- Preparation for the classes: Students are required to read lecture notes, text books and references before attending the class.
- Must be proactive and directly participate in all group activities.
- Practice: All students must participate.
- Group discussion and presentation: Students are required to engage in group discussion.



ASSESSMENT METHODS

- Attendance: According to regulations of VNUA.
- Exercise and progress tests: Students must complete the exercises, group discussion and presentation with satisfied results.
- Grading: 10 marks
- Weighting:
 - ✓ Project proposal preparation and presentation: 20%.
 - ✓ Progress report, skills: 20%.
 - ✓ Internal self-assessment: 10%.
 - ✓ Project implementation profile: 25%.
 - ✓ Project results, final report, and final presentation: 25%.

LECTURERS

1. Dr. Đinh Trường Sơn, 0968.133.927, dtson@vnu.edu.vn
2. Dr. Đặng Thị Thanh Tâm, 0944.359.567, thanhtram17_01@yahoo.com
3. Dr. Ninh Thị Thảo, 0328837231, ninhthao85@gmail.com
4. Dr. Nông Thị Huệ, 0986.535.699, nthue86sh@gmail.com
5. Assc. Prof., Dr. Nguyễn Thanh Hải, 0914.598.399, haitver@yahoo.com