Module Descriptions

A **module** is a self-contained **learning unit** within a higher education program that includes thematically related courses and is assigned a **fixed number of credits**. It follows specific **learning objectives**, includes an **assessment component**, and contributes to achieving the qualifications of a degree program. In some countries, “modules” are also named “courses”.

Please provide a module description for each module. In addition to the compulsory and elective modules, this also includes credited internships and the final thesis.

Please summarize all module descriptions in one document (Module Handbook) and create a table of contents so that the modules can be found easily.

Module designation	Biomolecules and Genetic Engineering
Semester(s) in which the module is taught	1st Semester
Person responsible for the module	Dr. Dra. Retno Arianingrum, M.Si.
Language	*Indonesian*
Relation to curriculum	*Compulsory ~~/ elective / specialisation~~*
Teaching methods	Lecture, Discussion, Demonstration, Quiz, Independent Study, Project Work
Workload (incl. contact hours, self-study hours)	Contact hours, self-study hours
Credit points	2 credits (SKS)
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	Upon completion of this course, students are expected to be able to: 1. Explain DNA structure and replication processes. 2. Describe the central dogma of molecular biology including transcription and translation. 3. Discuss signal transduction and fermentation. 4. Explain PCR and blotting techniques (Western, Northern, Southern). 5. Describe genetic engineering techniques.
Content	- Nucleic acids, DNA replication, transcription and translation, signal transduction, fermentation, PCR, Western/Northern/Southern blotting, genetic engineering, and biotechnology applications. - Identification and classification of abstract Chemistry concepts

Examination forms	Quizzes, Assignments, Presentations, Projects
Study and examination requirements	Minimum attendance: 75% of lectures and full participation in fieldwork Evaluation Components: Assessment Type — Weight (%) Quiz — 10 Attendance — 10 Assignments — 30 Midterm Exam — 0 Final Exam — 0 Case Studies — 25 Team-based Projects — 50 Total — 100
Reading list	Akhmaloka. 1994. Structure and Function of Nucleic Acids. Bandung. Publisher: ITB Brown, T.A. 1991. Introduction to Gen. Cloning Yogyakarta: Essensia Medica Foundation Watson, J.D., et al. 1983, Recombinant DNA. Cold Spring Harbor Laboratory Press, USA Wang, C.D. et al. 1978. Fermentation and Enzyme Technology. Karolinaca Institute

Dr. Retno Arianingrum		Program Study Coordinator