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	Bioinformatics
Semester(s) in which the module is taught	Even
Person responsible for the module	Dr. Ixora Sartika Mercuriani
Language	Indonesian language
Relation to curriculum	Elective subject
Teaching methods	lecture, project, case study, seminar, examination
Workload (incl. contact hours, self-study hours)	Total workload is 45 hours per semester which consists of 50 minutes lectures, 60 minutes structured activities, and 60 minutes individual study per week for 8 weeks.
Credit points	1 SKS (1,6 ECTS)
Required and recommended prerequisites for joining the module	Biology Cell and Molecular, Biotechnology
Module objectives/intended learning outcomes	PLO-5, PLO-7, PLO-8, PLO-9
Content	This course is designed to enhance students’ competencies in bioinformatics by providing comprehensive knowledge and practical skills. The course covers the definition, scope, and advancement of bioinformatics; applications of bioinformatics in research across diverse species; utilization of online databases for bioinformatics analysis; primer design from existing databases using online tools for both DNA and methylated DNA; explanation and comparison of sequencing data analysis methods; as well as the analysis of polymorphisms and construction of phylogenetic trees.
Examination forms	Test, rubrics, and presentation

<table>
<tr><td>Study and examination requirements</td><td>Requirements for successfully passing the module
The final mark will be weight as follow:

<table>
<tr><th>NO</th><th>Assessment Techniques</th><th>Percentage Weight Assessment (%)</th><th>Information</th></tr>
<tr><td>1</td><td>Cognitive</td><td>50</td><td>Maximum assessment weight accumulation 50%</td></tr>
<tr><td rowspan="5"></td><td>Presence</td><td>5</td><td></td></tr>
<tr><td>Task</td><td>5</td><td></td></tr>
<tr><td>Quiz</td><td>10</td><td></td></tr>
<tr><td>Mid-semester exams</td><td>15</td><td></td></tr>
<tr><td>Final Semester Exam</td><td>20</td><td></td></tr>
<tr><td>2</td><td>Participatory</td><td>50</td><td>Maximum assessment weight accumulation 50%</td></tr>
<tr><td rowspan="3"></td><td>Case study</td><td>25</td><td></td></tr>
<tr><td>Team Base Project</td><td>25</td><td></td></tr>
<tr><td>Total</td><td>100</td><td></td></tr>
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<tr><td>Reading list</td><td>

A. Diniz, W.J.S. and F. Canduri. 2017. Bioinformatics: an overview and its applications. Genet.Mol.Res. 16(1).
B. He, Y., Yan,H., Hua, W., Huang, Y. and Wang, W. (2016). Selection and validation of reference genes for quantitative Real-time PCR in Gentiana macrophylla. Frontiers in Plant Science, 7: 1-13.
C. Zvelebil, M. 2007. Understanding Bioinformatics. Garland Science.
D. Claverie, J., Notredame, C. 2006. Bioinformatics for Dummies. For Dummies.
E. Achyar, et al., 2021. Primer design, in silico PCR and optimum annealing temperature for Escherichia coli detection in refillable drinking water samples. Tropical Genetics Vol 1 No. 2.

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