UNIVERSITAS MATARAM

(University of Mataram)

FAKULTAS TEKNIK

(Faculty of Engineering)

PROGRAM STUDI TEKNIK INFORMATIKA

(Department of Informatics Engineering)

MODULE HANDBOOK DESCRIPTION

Bioinformatics (P22A02)

Module designation	Bioinformatics
Semester(s) in which the module is taught	*6 / third year*
Person responsible for the module	*Gibran Satya Nugraha, S.Kom., M.Eng*
Language	*Indonesian*
Relation to curriculum	*Preference*
Teaching methods	*Lectures, Discussions, Project*
Workload (incl. contact hours, self-study hours)	Contact Hours every week, each week of the 16 weeks/semester including Evaluation ● 2 x 50 minutes lecturer/week ● 2 x 60 minutes class exercise/week ● Self Study hours = 120 minutes/week Total workload 340 minutes/week
Credit points	*2 (~ 3,2 ECTS)*
Required and recommended prerequisites for joining the module	Artificial Intelligence

Module objectives/intended learning outcomes	The main objective of Bioinformatics courses is to provide an understanding of the basic principles, application techniques, and implementation of machine learning for DNA sequencing case. Based on these main objectives, the Bioinformatics courses have subject learning outcomes, namely: 1. Able to understand the basic concepts of several DNA sequencing methods 2. Able to apply several DNA sequencing methods for solving simple cases manually and with computer assistance (independently) *3.* Able to create proposed research about implementing several machine learning method in DNA sequencing case
Content	Bioinformatics is a course that studies alignment, extraction, and feature selection using Principal Component Analysis and Pearson Correlation on DNA sequences. In addition, this course also learns about Hepatoma disease by analyzing DNA sequences in the disease. Bioinformatics also learns about Unsupervised Learning in Bioinformatics using clustering and Hierarchical Agglomerative
Examination forms	*Assignments, Quiz, Assessment, Project (Oral Presentation)*
Study and examination requirements	*Assignments 20%,* *Quiz 25%,* *Project 55%*
Reading list	1. A Textbook of Bioinformatics Information-theoretic Perspectives of Bioengineering and Biological ComplexesBy (author): Perambur S Neelakanta (Florida Atlantic University, USA) 2. Bioinformatics with Python Cookbook: Use modern Python libraries and applications to solve real-world computational biology problems, 3rd Edition by Tiago Antao 3. Bioinformatics For Dummies 2nd Edition by Jean-Michel Claverie