

UNDERGRADUATE PROGRAM IN COMPUTER SCIENCE
DEPARTMENT OF COMPUTER SCIENCE AND ELECTRONICS
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNIVERSITAS GADJAH MADA

Module name	Bioinformatics	
Module level	Undergraduate	
Code	MII-4401	
Courses (if applicable)	Bioinformatics	
Semester	Fall (Odd)	
Contact person	Afiahayati, S.Kom., M.Cs., Ph.D.	
Lecturer	Afiahayati, S.Kom., M.Cs., Ph.D.	
Language	Bahasa Indonesia and English	
Relation to curriculum	<ol style="list-style-type: none"> Undergraduate degree program, elective, 5th or 7th semester. International undergraduate program, elective, 5th or 7th semester. 	
Type of teaching, contact hours	<ol style="list-style-type: none"> Undergraduate degree program: lectures, < 60 students, Thursdays, 12.30-14.10 and Friday 7.30 - 8.20. International undergraduate program: lectures, < 30 student, Tuesdays, 15.30 - 17.10 and Friday 13.30 - 14.20. 	
Workload	<ol style="list-style-type: none"> Lectures: 3 x 50 = 150 minutes (2.5 hours) per week. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. Private study: 3 x 60 = 180 minutes (3 hours) per week. 	
Credit points	3 credit points (sks).	
Requirements according to the examination regulations	A student must have attended at least 75% of the lectures to sit in the exams.	
Recommended prerequisites	Algorithm Analysis and Complexity; Artificial Intelligence; Machine Learning	
Learning outcomes and their corresponding PLOs	<p>After completing this module, a student is expected to:</p> <p>LO1 Students master the concept of biomolecular</p> <p>LO2 Students master computational methods in bioinformatics</p> <p>LO3 Students master how to use bioinformatics tools</p> <p>LO4 Students master how analyse and design the computational methods to solve biology task</p> <p>LO5 Students master how to develop a tool to solve biology task</p>	<p>PLO1</p> <p>PLO2</p> <p>PLO3</p> <p>PLO4</p> <p>PLO7</p>

Content	The huge increment of biology data requires new generation of analysis. Manual analysis is impossible because it is not efficient. Computational methods are required to help the	
	analysis process in order to extract knowledge and information from biology data. Bioinformatics is the intersection between biology and informatics.	
Study and examination requirements and forms of examination	Mid term examination and Final examination	
Media employed	LCD, blackboard, websites, and ACL tools.	
Assessments and Evaluation	LO1 : 1 problem mid-term (5%) and 1 assignment (5%) LO2 : 2 problems mid-term (15%), 1 problem final exam (10%), 1 assignment (5%) LO3 : 1 problem mid-term (5%), 1 problem final exam (10%) and 1 assignment (5%) LO4 : 2 problem final exam (20%), 2 assignment (10%) LO5 : 1 problem final exam (5%), 1 assignment (5%)	
Reading List	<ol style="list-style-type: none"> 1. Durbin, R., Eddy, S.R., Krogh, A., Mitchison, G.,1998, Biological Sequence Analysis: Probabilistic Models of Proteins and Nucleic Acids, Cambridge University Press, New York 2. Jones, N.C., and Pevzner P.A., 2004, An Introduction to Bioinformatics Algorithms, MIT Press, Cambridge 3. Colton, S., 2007, Introduction to Bioinformatics, Genetics Background, Course 341 Lecture Slide. Department of Computing Imperial College, London	

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