HANDBOOK

BACHELOR OF INFORMATICS PROGRAM
DEPARTMENT OF INFORMATICS
FACULTY OF INTELLIGENT ELECTRICAL AND
INFORMATICS TECHNOLOGY
INSTITUT TEKNOLOGI SEPULUH NOPEMBER

Module name	**Modeling and Simulation**
Module level	Undergraduate
Code	IF184921
Courses (if applicable)	**Modeling and Simulation**
Semester	Event
Contact person	Prof. Dr. Ir. Joko Lianto Buliali, M.Sc
Lecturer	Prof. Dr. Ir. Joko Lianto Buliali, M.Sc Dr. Ahmad Saikhu, S,Si, MT.
Language	Bahasa Indonesia and English
Relation to curriculum	1. Undergraduate degree program; mandatory; 6th, or 8th semester. 2. International undergraduate program; mandatory; 6th, or 8th semester.
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students, 2. International undergraduate program: lectures, < 40 students
Workload	1. Lectures: 3 x 50 = 150 minutes (2 hours 30 minutes) per week. 2. Exercises and Assignments: 3 x 60 = 180 minutes (3 hours) per week. 3. 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 80% of the lectures to sit in the exams.
Mandatory prerequisites	Probability and Statistics
	After completing this module, a student is expected to:

Learning outcomes and their corresponding PLOs	**CO1** Students can apply concept & procedure in creating simulation model of a real system which performance efficiency is under study, run a simulation model, draw conclusion on efficiency based on the analysis of simulation output, develop alternative system and compare performance based on the output of simulation run and the output of the real system, able to work individually and in a group.	PLO3
Content	Knowledge: • Mastering concept and principles of Intelligent System such as representation and reasoning techniques, searching technique, intelligent agent, data mining, machine learning, and development of intelligent application in various fields, and also mastering concept and principles of computation science such as manage information, multimedia data processing, and numerical analysis • Mastering principles and methods to solve computation problems by using calculus, matrixs, statistics, approximation, linear optimization, modelling and simulation • Mastering principles of algorithm development and various programming language concepts; Specific Skill: • Able to desain and develop applications using principles of intelligent systems and computing science to produce intelligent applications in various fields	

	• Able to solve computation problems, and mathematical modelling through exact, stochastic, probabilistic, and numeric approaches effectively and efficiently • Capable of desaining and analizing of algorithms to solve problems effectively and efficiently based on programming principles, and able to apply programming model in various programming language; and able to choose programming languages in producing appropiate applications
Study and examination requirements and forms of examination	Mid-terms examination and Final examination.
Media employed	LCD, whiteboard, websites, books (as references), etc.
Assessments and Evaluation	CO1: Problem 1 in mid-term exam (5%) and exercise 1 (5%) - 10% CO2: Problem 2 in mid-term exam (5%) and exercise 2 (5%) -
	10% CO3: Problem 3 in mid-term exam (5%); problem 4 in mid-term exam (5%); assignment 1: make an algorithm and computer program (5%); and exercise 3 (5%) - 20% CO4: Problem 5 in mid-term exam (5%); problem 1 in final exam (5%) and exercise 4 (5%) - 15% CO5: Problem 2 in final exam (5%); assignment 2: make a function and recursive (5%); and exercise 5 (5%) - 15% CO6: Problem 3 in final exam (5%) and exercise 6 (5%) - 10% CO7: Problem 4 in final exam (5%) and exercise 7 (5%) - 10% CO8: Problem 5 in final exam (5%) and assignment 3: make a program based on a real-life problem (5%) - 10%
Reading List	• Banks, J., John S. Carson II, "Discrete-Event System Simulation", Prentice Hall, 2009. • Law, A., "Simulation Modeling and Analysis", McGraw-Hill, 2006.