HANDBOOK

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

Module name	**Research Operation**
Module level	Undergraduate
Code	IF184923
Courses (if applicable)	**Research Operation**
Semester	Odd
Contact person	Dr. Bilqis Amaliah, S.Kom, M.Kom
Lecturer	Dr. Bilqis Amaliah, S.Kom, M.Kom Yudhi Purwananto, S.Kom, M.Kom.
Language	Bahasa Indonesia and English
Relation to curriculum	1. Undergraduate degree program; mandatory; 5th, or 7th semester. 2. International undergraduate program; mandatory; 5th, or 7th 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	Linear Algebra
	After completing this module, a student is expected to:

Learning outcomes and their corresponding PLOs	**CO1** Students are able to solve a linear program using the simplex method.	PLO3
	CO2 Students are able to perform a sensitivity analysis in linear programming	PLO3
	CO3 Students are able to solve the problem of duality.	PLO3
	CO4 Students are able to solve the problem of transportation.	PLO3
	CO5 Students are able to resolve network problems.	PLO4
	CO6 Students are able to solve the problem of integer programming.	PLO4
	CO7 Students are able to implement the above sub-topics into the program	PLO4
Content	Knowledge: Mastering principles and methods to solve computation problems by using calculus, matrix, statistics, approximation, linear optimization, modelling and simulation Mastering principles of algorithm development and various programming language concepts; Specific Skill: Able to solve computation problems, and mathematical modelling through exact, stochastic, probabilistic, and numeric approaches effectively and efficiently Capable of detaining and analysing 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 appropriate 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	Operation Research ; Hamdy A. Taha, University of Arkansas, Prentice Hall; eight edition, 2007