

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

Module name	Management Science		
Module level	Undergraduate		
Code	MII-4207		
Courses (if applicable)	Management Science		
Semester	Fall(odd)		
Contact person	Faizal Makhrus, Ph.D.		
Lecturer	Faizal Makhrus, Ph.D.		
Language	Bahasa Indonesia and English		
Relation to curriculum	Undergraduate degree program, Elective, 3 rd ,5 th , 7 th semester International undergraduate program, Elective, 3 rd ,5 th , 7 th semester		
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students 2. International undergraduate program: lectures, < 30 students		
Workload	1. Lectures: 3 x 50 = 150 (2.5 hours) 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 75% of the lectures to sit in the exams.		
Recommended prerequisites	None		
Learning outcomes and their corresponding PLOs	Course Learning Outcome (CO)	Description	Supported Outcome (PLO)
	CO-1	Students grasp and solve real world problems using linear and non-linear programming.	PLO-3,4,5
	CO-2	Students grasp and solve problems related to transportation and assignment.	PLO-3,4,5
	CO-3	Students grasp and solve problem related to optimization of network model.	PLO-3,4,5
	CO-4	Students grasp and solve some problems by using dynamic programming.	PLO-3,4,5
	CO-5	Students grasp and solve problems related to integer programming.	PLO-3,4,5

	CO-6	Students grasp and solve problems using game theory.	PLO-3,4,5			
	CO-7	Students grasp and implement decision analysis for a few of problems.	PLO-3,4,5			
	CO-8	Students grasp and solve problems using Markov Chain.	PLO-3,4,5			
	CO-9	Students grasp and solve problems related to inventory.	PLO-3,4,5			
	CO-10	Students grasp and solve problems related to queue.	PLO-3,4,5			
	CO-11	Students grasp and solve a problem related to forecasting.	PLO-3,4,5			
	CO-12	Students can grasp and solve a random problem using one or more methods which have been studied.	PLO-4,5,7,8			
Content	Management science is a topic which discusses methods to find the optimal solutions of several problems. These methods were firstly used in the world war II. In this course, it will be discussed about how to find the best combination of products in order to maximize the profit by using limited resources, game theory, finding the shortest and optimum path, project scheduling, inventory management, queuing problem, forecasting, etc. Management science is also closely related to Operations Research.					
Study and examination requirements and forms of examination	Mid-terms examination and Final examination.					
Media employed	LCD, blackboard, websites, and e-learning.					
Assessments and Evaluation	CO	Methods	Supported PLO	Types	Percentage	Total
	CO-1	1st Assignment and 1 problem in final exam	PLO 3,4,5	Formative	15%	15%
	CO-2	2nd assignment	PLO 3,4,5	Formative	5%	5%
	CO-3	3rd assignment	PLO 3,4,5	Formative	5%	5%
	CO-4	1 problem in midterm exam	PLO 3,4,5	Summative	10%	10%
	CO-5	1 problem in midterm exam	PLO 3,4,5	Summative	10%	10%
	CO-6	1 problem in midterm exam	PLO 3,4,5	Summative	10%	10%
	CO-7	4th assignment	PLO 3,4,5	Formative	5%	5%

	CO-8	5th assignment	PLO 3,4,5	Formative	5%	5%
	CO-9	1 problem in final exam	PLO 3,4,5	Summative	10%	10%
	CO-10	1 problem in final exam	PLO 3,4,5	Summative	10%	10%
	CO-11	1 problem in final exam	PLO 3,4,5	Summative	10%	10%
	CO-12	6th assignment	PLO 4,5,7,8	Formative	5%	5%
Reading List	W1: Winston, W.L., 2003, Operations Research: Applications and Algorithms (with CD-ROM and InfoTrac) 4th Edition, Duxbury Press. W2: Taylor, B.W., 2013, Introduction to Management Science 11th edition, Pearson.					