

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

Module name	Numerical Methods		
Module level	Undergraduate		
Code	MII-2213		
Courses (if applicable)	Numerical Methods		
Semester	Spring (Even)		
Contact person	Dr. Nurrokhman		
Lecturer	Dr. Nurrokhman Faizal Makhrus, Ph.D.		
Language	Bahasa Indonesia and English		
Relation to curriculum	Undergraduate degree program, Elective, 4 th semester International undergraduate program, Elective, 4 th semester		
Type of teaching, contact hours	1. Undergraduate degree program: lectures, < 60 students 2. International undergraduate program: lectures, < 30 students		
Workload	1. Lectures: 2 x 50 = 100 minutes per week. 2. Exercises and Assignments: 2 x 60 = 120 minutes (2 hours) per week. 3. Private study: 2 x 60 = 120 minutes (2 hours) per week.		
Credit points	2 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	Calculus I		
Learning outcomes and their corresponding PLOs	LO	Description	supported PLO
	LO-1	Students understand the concept of differential equation and Taylor series	PLO3
	LO-2	Students understand how to calculate error of the numerical solutions	PLO3
	LO-3	Students understand how to approximate the solution of polynomial	PLO3
	LO-4	Students understand how to approximate the solution of linear functions	PLO3
	LO-5	Students understand how to approximate the solution of non-linear functions	PLO3
	LO-6	Students understand how to approximate the differential equations	PLO3
	LO-7	Students understand how to approximate patterns using linear and non-linear interpolations	PLO3

	LO-8	Students understand how to approximate integration	PLO3		
	LO-9	Students understand how to create program using Scilab/Mathlab	PLO4		
Content	There are several mathematic problems which can not be solved analytically. However, there are some approximate methods which can give solutions with some tolerable errors. These methods are called numerical methods. In this course, it will be discussed how to find numerical solution in polynomial, linear and non-linear function, calculate interpolation, and integration.				
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	LO	Method	Type	Percentage	Total
	LO1	question 1 in midterm exam	Formatif	10%	10%
	LO2	question 2 in midterm exam	Formatif	10%	10%
	LO3	question 3 in midterm exam	Formatif	10%	10%
	LO4	question 4 in midterm exam	Formatif	10%	10%
	LO5	question 1 in final exam	Formatif	10%	10%
	LO6	question 2 in final exam	Formatif	10%	10%
	LO7	question 3 in final exam	Formatif	10%	10%
	LO8	question 4 in final exam	Formatif	10%	10%
Reading List	Numerical Methods with Program in C, T. Verarajan, 2007 http://mathforcollege.com/nm/topics/textbook_index.html				