

UNIVERSITAS NEGERI PADANG

FACULTY OF MATHEMATICS AND NATURAL SCIENCES MATHEMATICS DEPARTMENT, MATHEMATICS STUDY PROGRAM

Main Campus Universitas Negeri Padang.

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Bachelor of Science in Mathematics

MODULE HANDBOOK

Module name:	Theory of Differential Equations					
Module level,if applicable:	Bachelor					
Code:	MAT2.62.5001					
Subheading, if applicable:	-					
Classes,if applicable:	Theory of Differential Equations					
Semester:	5 th (fifth)					
Module coordinator:	Head of Analysis Expertise Group					
Lecturer(s):	Dra. Media Rosha, M.Si and Riry Sriningsih, M.Sc.					
Language:	Indonesian Language and English					
Classification within the curriculum:	Elective course in the third year (5 th semester) Bachelor Degree					
Teaching format / class hours per week during the semester:	 a. Lectures: Guided discovery learning with methods such as expository, drill, and discussion. (3 x 50 minutes = 150 minutes) b. Structured assignment: Weekly individual written assignment. (3 x 60 minutes = 180 minutes). c. Individual study. (3 x 60 minutes = 180 minutes). 					
Workload:	Total workload is 136 hours per semester, which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes individual study for 16 weeks per semester, including mid exam and final exam.					
Creditpoints:	3 sks = 4.53 ECTS					
Prerequisites course(s):	Ordinary Differential Equation					

Course outcomes:	After taking this course, the students have the ability to: CO1. Solve the solution with the initial value problem using					
	Picard Theorem.					
	CO2. Investigate the existence and uniqueness of the solution					
	of the initial value problem and provide the approximation					
	solution.					
	CO3. investigates the existence and uniqueness of a solution to					
	a linear system of differential equations with an initial condition.					
	CO4. Characterize and prove the stability of the					
	critical/equilibrium point of a linear system of differential equations.					
	CO5. Analyze using the Sturm-Liouville Theorem.					
Content:	Differential equations of order one					
	2. System of differential equations of order one					
	3. Sturm liouville theorems and applications					
Study / exam achievements:	The final grade will be weighted as follows:					
	The assessment consists of a final exam (35 %), a midterm exam (30%), assignment (20 %), and class activities: quiz and presence (15%).					
	The final and midterm exams are essay tests with a closed book (120 minutes).					
Forms of media:	White Board, laptop, Projector, e-learning via					
	elearning2.unp.ac.id, and zoom meeting.					
Literature:	[1] George F. Simmons, 2017. Differential Equation with					
	Application and Historical Notes, 3 rd ed					
	[2] Paul Blanchard, Robert L. Devaney, and Glen R. Hall,					
	2012. Differential Equations 3 rd ed.					
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PLO and CO mapping

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CO 4									V	
CO 5									1	·