



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:	Ordinary Differential Equations
Module level, if applicable:	Bachelor
Code:	MAT1.62.4001
Subheading, if applicable:	-
Classes, if applicable:	Ordinary Differential Equations
Semester:	4 th (fourth)
Module coordinator:	Head of Applied Mathematics Expertise Group
Lecturer(s):	Dra. Media Rosha, M.Si., and Dr. Arnellis, M.Si
Language:	Indonesian Language and English
Classification within the curriculum:	Compulsory course in the second year (4 th semester) Bachelor Degree
Teaching format / class hours per week during the semester:	<ol style="list-style-type: none">Lectures : Problem Based Learning with methods such as expository, discussion, and drill. (4 x 50 minutes = 200 minutes)Structured assignment : Weekly individual/group written assignment. (4 x 60 minutes = 240 minutes).Individual study (4 x 60 minutes = 240 minutes).
Workload:	The total workload is 181.33 hours per semester, which consists of 200 minutes lectures, 240 minutes structured assignment, and 240 minutes of individual study. In total, there are 16 weeks per semester, including midterm and final exams.
Credit points:	4 sks = 6.04 ECTS
Prerequisites course(s):	<ol style="list-style-type: none">CalculusElementary Linear Algebra

Course Outcomes:	<p>After completing this course, students will be able to:</p> <p>CO1. Recognize the various types of differential equations.</p> <p>CO2. Select and apply relevant approaches for solving distinct differential equations.</p> <p>CO3. Analyze the properties and behavior of the systems of ordinary differential equations.</p> <p>CO4. Prove mathematical statements using the concept of Laplace transformation.</p>
Content:	<ol style="list-style-type: none"> 1. First order Differential Equations 2. High order Differential Equations 3. Solving Differential Equations with power series 4. Laplace transform 5. Differential Equations System 6. Solving the numerical of Differential Equations
Study/exam achievements:	<p>The final grade will be weighted as follows:</p> <p>The assessment consists of a final exam (35%), a midterm exam (30%), assignment (15 %), and class activities /discussion (20%).</p> <p>The final and midterm exams are essay tests with a closed book (120 minutes).</p> <p>In class, students build the concept (discussion) based on the problem that is related to this course.</p> <p>Each student gets a weekly assignment as an individual or group.</p>
Forms of media:	<p>White Board, laptop, Projector, e-learning via elearning2.unp.ac.id, and zoom meeting.</p>
Literature:	<p>Main:</p> <ol style="list-style-type: none"> 1. Prima, Boyce D, (2017). Elementary Differential Equations 11th ed. John Wiley and Sons. 2. Ross, Shepley L. (1989). Introduction to Ordinary Differential Equations, Fourth Edition. New York: John Wiley & Sons. <p>Recommended:</p> <ol style="list-style-type: none"> 1. Edwards, JR. CH dkk. (1989). Elementary Differential Equations With Boundary Value Problem. New York: Prentice-Hall, Inc 2. Kartono. (1994), Penuntun Belajar Persamaan Diferensial, Yogyakarta: Penerbit Andi Offset

	3. Rio Gilang, R.H. (1990), Persamaan Diferensial, Bandung: Bina Eksakta. 4. Ahmad, S (2015), A Textbook on ordinary differential equations 2 nd ed. Springer. 5. Deng. (2018). Lecture problem and solution for ODE.
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PLO and CO Mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1									✓	
CO2			✓							
CO3						✓				
CO4				✓						