UNIVERSITAS NEGERI PADANG
FACULTY OF MATHEMATICS AND NATURAL SCIENCES MATHEMATICS DEPARTMENT, MATHEMATICS STUDY PROGRAM Main Campus Universitas Negeri Padang.
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Module name:	Partial Differential Equations
Module level,if applicable:	Bachelor
Code:	MAT2.62.5007
Subheading,if applicable:	-
Classes,if applicable:	Partial Differential Equations
Semester	5^{th} (fifth)
Module coordinator:	Head of Applied Mathematics Expertise Group
Lecturer(s):	Riry Sriningsih, M.Sc. and Dra. Media Rosha, M.Si.
Language:	Indonesian Language and English
Classification within the curriculum:	Elective course in third year (5^{th} semester) Bachelor Degree
Teaching format / class hours per week during the semester:	a. Lectures : Problem Based Learning with methods such as expository, discussion, and drill. (3 x 50 minutes = 150 minutes). b. Structured assignment : Weekly individual/group written assignment. (3 x 60 minutes = 180 minutes). c. Individual study (3 x 60 minutes = 180 minutes).
Workload:	The total workload is 136 hours per semester, which consists of 150 minutes lectures, 180 minutes structured assignment, and 180 minutes of individual study. In total, there are 16 weeks per semester, including midterm and final exams.
Credit Points:	3 SKS = 4,53 ECTS
Prerequisites course(s):	Ordinary Differential Equations, Theory of Differential Equation

Course Outcomes:	After completing this course, students will be able to: CO1: Demonstrate the system's existence and uniqueness. CO2: Solve first-order linear and quasi-linear initial value problems by using characteristic methods. CO3: Using separation of variables, provide a general solution to the linear second-order partial differential equation. CO4: Solve initial value problems on infinite or semi-infinite intervals using the Fourier Integral or Fourier Transform. CO5: Determine the d'Alembert solution. CO6: Solve the boundary value issue using the Fourier-Bessel series. CO7: Use the finite difference approach to solve problems with beginning values.
Content:	1. Differential equation as mathematical models 2. Method of characteristics 3. Canonical form of hyperbolic, parabolic, and elliptic equations. 4. Cauchy problem and d'Alembert formula 5. Method of separation variables 6. Sturm –Liouville problem 7. The Fourier integral and solution 8. The Fourier transform and solution 9. Fourier –Bessel series and its applications 10. Solution by finite difference method
Study/exam achieve–ments:	The final grade will be weighted as follows: The assessment consists of a final exam (40%), a midterm exam (35%), assignment (10 %), and class activities /discussion (15%). The final and midterm exams are essay tests with a closed book (120 minutes). Students do the drill in pairs or individually in class. Each student gets a weekly assignment as an individual or group.
Forms of media:	White Board, laptop, Projector, e-learning via elearning2.unp.ac.id, and zoom meeting.

Literature	1. Pinchover, Y., and Rubinstein, J., 2005, Introduction to Partial Differential Equations. Cambridge University Press, New York. 2. DuChateau, P., and Zachmann, D.W., 2011, Partial Differential Equations, 3rd Ed. McGraw-Hill, New York. 3. Zaudere, E., 2011, Partial Differential Equations Applied Mathematics,3rd Ed, John Wiley& Sons, New York.

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1		√								
CO2									√	
CO3			√							
CO4				√						
CO5									√	
CO6							√			
CO7			√							