



**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:	Vector Calculus
Module level,if applicable:	Bachelor
Code:	MAT1.62.3004
Sub-heading,if applicable:	-
Classes,if applicable:	Vector Calculus
Semester:	3 <sup>rd</sup> (third)
Module coordinator:	Head of Analysis Expertise Group
Lecturer(s):	Prof. Dr. Yerizon, M.Si. and Rara Sandhy Winanda, S.Pd., M.Sc.
Language:	Indonesian Language and English
Classification within the curriculum:	Compulsory Courses in the first year (3 <sup>rd</sup> semester) Bachelor Degree
Teaching format / class	<ol style="list-style-type: none"><li>Lectures : Cooperative learning with methods such as expository and discussion. (4 x 50 minutes = 200 minutes)</li><li>Structured assignment : Weekly individual written assignment. (4 x 60 minutes = 240 minutes)</li><li>Individual study. (4 x 60 minutes = 240 minutes)</li></ol>
Workload:	Total workload is 181,33 hours per semester, which consists of 200 minutes lectures, 240 minutes structured activities, and 240 minutes individual study for 16 weeks per semester, including mid exam and final exam.
Credit Points:	4 SKS = 6.04 ECTS
Prerequisites course(s):	Advanced Calculus

Course outcomes:	Students are able to: CO1. Demonstrate honesty, accountability, and appreciation for others' efforts. CO2. Analyze the line and surface integrals. CO3. Evaluate parametric and symmetric equation, tangent line, Green's theorem, Stokes theorem, and divergence theorem. CO4. Sketch graph, vector field, and surface area of cylinder CO5. Apply the concept of vector calculus in solving mathematical problems
Content:	<ol style="list-style-type: none"> <li>1. Vector in <math>R^2</math> and <math>R^3</math></li> <li>2. Vector-valued functions</li> <li>3. Derivatives and vector-valued functions of integral.</li> </ol>
Study/exam achievements:	<p>The final mark will be weighted as follows: The assessment consists of final exam (30%), mid term exam (30%), assignment (20%), and discussion (20%). Final and mid term exams are in the form of a closed book essay written test (120 minutes). Weekly assignments (solving selected problems) are given in two forms; group or individual assignments. In order to comprehend the specific issue, a classroom discussion is held.</p>
Form of media:	White Board, laptop, Projector, e-learning via <a href="http://elearning2.unp.ac.id">elearning2.unp.ac.id</a> , and zoom meeting.
Literature:	<ol style="list-style-type: none"> <li>1. James Stewart, 2012. Calculus 7 ed.</li> <li>2. August and Taylor, 1995. Advanced Calculus, 3<sup>rd</sup> ed</li> </ol>

### PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10
CO1		✓								
CO2				✓						
CO3			✓							
CO4									✓	
CO5			✓							