



**UNIVERSITAS NEGERI PADANG**  
FACULTY OF MATHEMATICS AND NATURAL SCIENCES  
MATHEMATICS DEPARTMENT, MATHEMATICS STUDY PROGRAM  
Main Campus Universitas Negeri Padang.  
Jalan Prof. Dr. Hamka Air Tawar Padang, Sumatera Barat  
Telepon: +62 751 7053902, Fax: +62 751 7055628  
Email: [humas@unp.ac.id](mailto:humas@unp.ac.id)

---

**Bachelor of Science in Mathematics**

**MODULE HANDBOOK**

Module name:	Advanced Calculus
Module level,if applicable:	Bachelor
Code:	MAT1.62.2002
Subheading,if applicable:	-
Classes,if applicable:	Advanced Calculus
Semester:	2 <sup>nd</sup> (second)
Module coordinator:	Head of Analysis Expertise Group
Lecturer(s):	Dr. Arnellis, M.Si. and Dra. Dewi Murni, M.Si.
Language:	Indonesian Language and English
Classification within the curriculum:	Compulsory course in the first year (2nd semester) Bachelor Degree
Teaching format / class hours per-week during the semester:	<ol style="list-style-type: none"><li>Lectures : Cooperative learning with methods such as expository, presentations, group and class 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):	Calculus

Course outcomes:	Students are able to: CO1. Prove mathematical statements using the fundamental concept of multivariable calculus such as limit, partial derivative, differentiable, the convergence interval of power series, double and triple integral. CO2. Analyze problems in multivariable calculus (limit, partial derivative, differentiable, double and triple integral). CO 3. Apply the concept of multivariable calculus in solving mathematical problems using related software.
Content:	Coordinate system, concept in multivariable calculus (limit, partial derivative, differentiable, double and triple integral), power series, convergence.
Study/exam achievements:	The final mark will be weighted as follows: The assessment consists of final exam (35 %), mid term exam (30%), assignment (10%), Presentation (25%).  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.  After collecting the group task, presentations are held in the classroom and focus on the performance of group members.
Forms of media:	White Board, laptop, Projector, e-learning via elearning2.unp.ac.id, and zoom meeting.
Literature:	[1] Purcell, 2007. Calculus 9 <sup>th</sup> ed. Pearson [2] James Stewart, 2015. Calculus 8 <sup>th</sup> ed. CENGAGE [2] August and Taylor, 1995. Advanced Calculus, 3rd ed.

### PLO and CO mapping

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