MODULE HANDBOOK
Multivariable Calculus

BACHELOR DEGREE PROGRAM
DEPARTMENT OF MATHEMATICS
FACULTY OF SCIENCE AND DATA ANALYTICS

INSTITUT TEKNOLOGI SEPULUH NOPEMBER

MODULE HANDBOOK
MULTIVARIABLE CALCULUS

Module name	**Multivariable Calculus**
Module level	Undergradute
Code	KM184301
Course (if applicable)	Multivariable Calculus
Semester	Fall (Gasal)
Person responsible for the module	Dr. Didik Khusnul Arif, S.Si, M.Si
Lecturer	Dr. Didik Khusnul Arif, S.Si, M.Si Drs. Lukman Hanafi, M.Sc Dra. Nur Asiyah, M.Si Drs. Suhud Wahyudi, M.Si
Language	Bahasa Indonesia and English
Relation to curriculum	Undergradute degree program, **mandatory**, 3th semester.
Type of teaching, contact hours	Lectures, <60 students Tuesdays, 11.00-12.50 (GMT+7)
Workload	1. Lectures : 3 x 50 = 150 minutes per week. 2. Exercises and Assignments : 2 x 60 = 120 minutes (2 hours) per week. 3. Private learning : 2 x 60 = 120 minutes (2 hours) per week.
Credit points	3 credit points (sks)
Requirements according to the examination regulations	A student must have attended at least 80% of the lectures to sit in the exams.

Mandatory prerequisites	Matematika II *Mathematics II*	
Learning outcomes and their corresponding ILOs	Course Learning Outcome (CLO) after completing this module, Mahasiswa mampu mengaplikasikan aljabar vektor khususnya berkaitan dengan persamaan garis dan bidang dalam ruang. *Students are able to apply vector algebra especially related to equation of line and field in space.* Mahasiswa mampu memahami konsep fungsi peubah banyak, khususnya yang berkaitan dengan diferensiasi dan integrasi. *Students are able to understand the concept of multi variable functions, especially related to differentiation and integration.* Mahasiswa mampu mengaplikasikan masalah maksimum dan minimum dalam fenomena riil. *Students are able to apply maximum and minimum problems in real life.* Mahasiswa mampu mengaplikasikan integral rangkap dalam menyelesaikan masalah-masalah riil. *Students are able to apply multiple integrals in solving real problems.*	
Content	Pada mata kuliah ini mahasiswa akan belajar tentang fungsi dua peubah bebas atau lebih, limit dan kekontinuan, turunan parsial, maksimum dan minimum, integral rangkap dua dan tiga, aplikasi integral rangkap, integral garis dan permukaan. Pada pembelajaran di kelas mahasiswa akan belajar dan dibekali untuk memahami serta untuk bisa menjelaskan materi yang diajarkan sesuai dengan bahan ajar. Disamping itu mahasiswa diberi tugas-tugas yang mengarah untuk belajar mandiri dan kerja kelompok. *In this course students will learn about the functions of two or more independent variables, limit and continuity, partial, maximum and minimum derivatives, double and triple integrals, applications of multiple integrals, line and surface integrals. In*	

	classroom, students will learn and be equipped to understand and to be able to explain the material being taught according to the teaching material. In addition, students are given assignments that lead to independent study and group work.
Study and examination requirements and forms of examination	• In-class exercises • Assignment 1, 2, 3 • Mid-term examination • Final examination
Media employed	LCD, whiteboard, websites (myITS Classroom), zoom.
Reading list	Main : Howard Anton, IRL Bivens, Stephen Davis, "Multivariables Calculus", 9th Edition, Jhon Wiley & Sons, Inc, Singapore, 2009 Supporting : Pulcell J.E., Rigdon S.E., Vargerg D. "Calculus", Prentice Hall, New Jersey, 2000

I. Rencana Pembelajaran Semester / *Semester Learning Plan*

<table>
<tr><td></td><td colspan="6">INSTITUT TEKNOLOGI SEPULUH NOPEMBER (ITS)
FACULTY OF SCIENCE AND DATA ANALYTICS
DEPARTMENT OF MATHEMATICS</td><td>Kode Dokumen
Document Code</td></tr>
<tr><td colspan="8">RENCANA PEMBELAJARAN SEMESTER / SEMESTER LEARNING PLAN</td></tr>
<tr><td colspan="2">MATA KULIAH (MK)
COURSE</td><td>KODE
CODE</td><td>Rumpun MK
Course Cluster</td><td colspan="2">MATA KULIAH (MK)
COURSE</td><td>KODE
CODE</td><td>Rumpun MK
Course Cluster</td></tr>
<tr><td colspan="2">Kalkulus Peubah Banyak / Multivariable Calculus</td><td>KM184301</td><td>Analisis dan Aljabar
Analysis and Algebra</td><td>4</td><td></td><td>3</td><td></td></tr>
<tr><td colspan="2" rowspan="2">OTORISASI / PENGESAHAN
AUTHORIZATION / ENDORSEMENT</td><td colspan="2">Dosen Pengembang RPS
Developer Lecturer of Semester Learning Plan</td><td colspan="2">Koordinator RMK
Course Cluster Coordinator</td><td colspan="2">Ka DEPARTEMEN
Head of Department</td></tr>
<tr><td colspan="2"></td><td colspan="2">(Jika ada)
Tanda tangan</td><td colspan="2">Subchan, S.Si., M.Sc., Ph.D</td></tr>
<tr><td rowspan="4">Capaian Pembelajaran

Learning Outcomes</td><td colspan="3">CPL-PRODI yang dibebankan pada MK
ILO Program Charged to The Course</td><td colspan="4"></td></tr>
<tr><td>CPL-1

PLO-1</td><td colspan="6">[C2] Mahasiswa mampu mengidentifikasi dan menjelaskan pondasi matematika yang meliputi murni, terapan dan dasar-dasar komputasi

[C2] Students are able to identify and explain foundations of mathematics that include pure, applied, and the basic of computing</td></tr>
<tr><td>CPL-2

PLO-2</td><td colspan="6">[C3] Mahasiswa mampu menyelesaikan permasalahan sederhana dan praktis dengan mengaplikasikan pernyataan matematika dasar, metode dan komputasi</td></tr>
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