UNIVERSITAS NEGERI YOGYAKARTA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
DEPARTMENT OF MATHEMATICS EDUCATION
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Bachelor of Education in Mathematics **MODULE HANDBOOK**

Module name:	Vector Analysis
Module level, if applicable:	Undergraduate
Code:	MAT6308
Sub-heading, if applicable:	-
Classes, if applicable:	-
Semester:	6th
Module coordinator:	Dr. Sugiman, M.Si.
Lecturer(s):	Dr. Sugiman, M.Si.
Language:	Bahasa Indonesia
Classification within the curriculum:	Objective course
Teaching format / class hours per week during the semester:	150 minutes lectures and 180 minutes structured activities per week.
Workload:	Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes self study per week for 16 weeks.
Credit points:	3
Prerequisites course(s):	Linear Algebra (MAT 6308)
Course outcomes:	After taking this course the students have ability to: CO 1. Demonstrate responsibility in attending lecturers and completing assignments. CO 2. Able to communicate mathematics in written form CO 3. Have a deep understanding on the topics of sequences, series, functions of two variables and its derivative, and double integrals.

	CO 4. Able to solve problems in the scope of mathematics and mathematical applications related to the topics of sequences, series, functions of two variables and its derivatives, and double integrals. CO 5. Understand the basics of sequences and series, derivatives of the two variables functions, and multiple integrals to strengthen students' mathematical understanding in designing accurate and meaningful mathematics learning.
Content:	This course contains an introduction to vectors, vectors functions, vectors functions derivative, integral, and coordinate systems. The topics in vectors introduction are definition, notation, component, and various kinds of vectors. The introduction of vectors also discusses the operations of vectors (sums, scalar products, and cross products) and the vectors properties. The vectors functions chapter divide into two sub chapter, those are Linear vector functions and nonlinear vector functions. The subject in derivative of vectors functions are the definition, the geometrical and physical meaning of vector function derivative, the properties of vector function derivative, the definition of some operator, and vector rotation. Meanwhile, the topics in integral are line integral, surface integral, volume integral, Green Theorem, Gauss Theorem, and Stokes Theorem. And, at the end of the course we discussed the topics in coordinate systems, such as; coordinate transformation, orthogonal linear curve, vector identity, divergence, orthogonal coordinate system, tube coordinate, and spherical coordinate.
Study / exam achievements:	1. Assessment is carried out to measure all learning outcomes, namely the outcomes of attitude learning (CO 1), general skills (CO 2), knowledge (CO 3), and special skills (CO 4 and 5). 2. 2. Attitude assessment is carried out at each meeting using observation and / or self-assessment techniques by the assumption that every student is good. The student will be given a value as very good or not good if he/she shows, significantly, excellent or poor attitude. The results of attitude assessment used as one of the graduation requirements.

	3. The final grades will be weight as follow:

No	CO	Objek Penilaian	Teknik Penilaian	Bobot
1	CO 2	Presentation	Observation	10%
2	CO 3 and 4	a. Individual Assignment	Written	10%
		b. Group Assignment		10%
		c. Chapter tests		20%
		d. Mid test		20%
		e. Final Test		25%
3	CO 5	Project	product	5%
			Total	100%

Forms of media:	Board, LCD Projector, Laptop/Computer
Literature:	1. Larson, Hestetler, and Edwards. 2008. *Essencial Calculus: Early Transendental Functions*. Boston: Houghtin Mifflin Company. 2. Davis H F, 1961, *Introduction to Vector Analysis*, Allyn and Bacon Inc, Boston 3. C. Max Stein, 1963, *Introduction to Vector Analysis*, Harper & Row Publisher, New York.

PLO and CO mapping

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO 11	PLO 12
CO1		✓										
CO2			✓									
CO3					✓							
CO4							✓					
CO5								✓				