UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Mathematics Department
Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 552243 Fax: +62 274 555131 Email: math@ugm.ac.id Website: math.fmipa.ugm.ac.id

Undergraduate Programme in Mathematics
Telp : +62 274 552243
Email : maths1@ugm.ac.id; kaprodi-s1-matematika.mipa@ugm.ac.id
sekprodi-s1-matematika.mipa@ugm.ac.id
Website : http://s1math.fmipa.ugm.ac.id/

MODULE HANDBOOK

Module name	Calculus of Multivariable II
Module level, if applicable	Bachelor
Code, if applicable	MMM-2110
Subtitle, if applicable	
Courses, if applicable	Multivariable Calculus II
Semester(s) in which the module is taught	IV
Person responsible for the module	Chair of the Lab. of Analysis
Lecturer(s)	Prof. Dr. Christiana Rini Indrati, M.Si and Prof. Dr. Supama, M.Si
Language	Indonesia
Relation to curriculum	Bachelor Degree, Compulsary, Semester IV
Type of teaching, contact hours	100 minutes lectures and 120 minutes structured activities per week.
Workload	Total workload is 90.67 hours per semester, which consists of 100 minutes lectures per week for 14 weeks, 120 minutes structured activities per week, 120 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.
Credit points	2
Requirements according to the examination regulations	Students have taken Calculus of Multivariable II course (MMM-2110) and have an examination card where the course is stated on.
Recommended prerequisites	Students have taken Multivariable Calculus I course (MMM-2109) and have participated in the final examination of the course.
Module objectives/intended learning outcomes	After completing this course, the students: CO 1. able to determine and prove position of a point as an interior point, a limit point, a boundary point, or an isolated point. CO 2. able to determine and prove basic properties of the limit of function, continuity, derivative, and integral of vector-valued functions. CO 3. able to determine the line integral and able to apply Green's Theorem. CO 4. able to apply line integral in fluid mechanic CO 5. able to determine the surface integral and to apply the Divergence Theorem, and Stokes' Theorem.
Content	• Topology on $\mathbb{R}^n$: distance, neighbourhood, interior point, limit point, boundary point, and isolated point. • Function from $\mathbb{R}$ into $\mathbb{R}^n$: limits, continuity, derivative, integral. • Function from $\mathbb{R}^n$ into $\mathbb{R}^m$: limits, continuity, partial derivative, differential, integral. • Line and surface integral: definition and properties, Green's Theorem, Divergence Theorem, and Stokes' Theorem.

Study and examination requirements and forms of examination	The final mark will be weighted as follows:		
	No	Assessment methods (components, activities)	Weight (percentage)
	1	Final Examination	45%
	2	Mid-Term Examination	30%

	3 Class Activities: Quiz, Homework, etc 25% The initial cut off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.
Media employed	White-board, Laptop, LCD Projeector
Reading List	1. Angus E. Taylor, 1989, *Advanced Calculus*, Blaisdell. 2. Charles Dixon, 1981, *Advanced Calculus*, John Wiley.

PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6	PLO 7	PLO 8	PLO 9
CO 1		v				v	v		
CO 2		v				v	v		v
CO 3		v	v				v		v
CO 4			v		v				v
CO 5			v			v	v		