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Undergraduate Programme in Mathematics

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MODULE HANDBOOK

Module name	Calculus I
Module level, if applicable	Bachelor
Code, if applicable	MMM-1101
Subtitle, if applicable	-
Courses, if applicable	Calculus I
Semester(s) in which the module is taught	1st (first)
Person responsible for the module	Chair of the Lab. Analysis
Lecturers	Prof. Dr. Supama, M.Si. Prof. Dr. Ch. Rini Indrati, M.Si. Drs. Yusuf, MA. Atok Zulijanto, S.Si., M.Si., Ph.D. Nur Khusnussaadah, S.Si., M.Sc. Prof. Dr.Widodo, MS. Dr. Salmah, M.Si. Dr. Budi Surodjo, M.Si. Dwi Ertiningsih, M.Si.
Language	Bahasa Indonesia
Relation to curriculum	Compulsory course in the first year (1st semester) Bachelor Degree
Type of teaching, contact hours	150 minutes lectures and 180 minutes structured activities per week.
Workload	Total workload is 136 hours per semester, which consists of 150 minutes lectures per week for 14 weeks, 180 minutes structured activities per week, 180 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.
Credit points	3
Requirements according to the examination regulations	Students have taken Calculus I course (MMM-1101) and have an examination card where the course is stated on.
Recommended prerequisites	Students should be proficient in elementary algebra
Module objectives/intended learning outcomes	After completing this course the students should have : CO 1. ability to understand the fundamental concepts of one variable calculus such as functions, limit, derivative, differential, and its geometry interpretation. CO 2. ability to solve the standard problems on calculus such as properties on real numbers, functions, limit, and derivative. CO 3. ability to apply the concepts of calculus to solve problems in mathematics and sciences especially related to optimization problems. CO 4. ability to use limit and derivative to obtain the information about a function such as increasing or decreasing, concavity, extreme points, inflection points, including sketching its graph. CO 5. ability to determine the Taylor series and Mac-Laurin series of a function.
Content	The course will cover about the system of real numbers, functions and their graph, the limit of a function, continuity, the derivative, the geometric interpretation of the derivative, higher-order derivatives, the Mean Value Theorem, L'Hospital's rule theorem of extreme value, applications of extreme problem, increasing and decreasing

	functions, concavity, inflection points, sketching the graph of functions, Taylor and MacLaurin series.
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 40% 2 Mid-Term Examination 30% 3 Class Activities: Quiz, Homework, etc. 30% The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.
	Board, LCD Projector, Laptop/Computer
Reading List	**1.** Abe Mizrahi and Michael Sullivan, 1990, *Calculus and Analytic Geometry,* Wadsworth **2.** James Stewart, 1999, *Calculus,* 4th edition, Brooks/Cole Pub. Comp. **3.** Robert A. Adam and Christopher Essex, 2010, *Calculus, A Complete Course*, Pearson. 4. Tim Pengajar Kalkulus, 2003, *Diktat Kuliah Kalkulus I,* FMIPA UGM.

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		
CO 2		v					v		
CO 3		v			v				
CO 4		v					v		
CO 5		v							