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MODULE HANDBOOK

Module name	Analytic Geometry
Module level, if applicable	Bachelor
Code, if applicable	MMM-1106
Subtitle, if applicable	-
Courses, if applicable	Analytical Geometry
Semester(s) in which the module is taught	2nd (second)
Person responsible for the module	Chair of the Lab. of Analysis
Lecturer	Atok Zulijanto, S.Si., M.Si., Ph.D. Dr. Budi Surodjo, M.Si.
Language	Bahasa Indonesia
Relation to curriculum	Compulsory course in the first year (2nd 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 Analytical Geometry course (MMM-1106) and have an examination card where the course is stated on.
Recommended prerequisites	Students have taken Calculus I course (MMM-1101) and have participated in the final examination of the course.
Module objectives/intended learning outcomes	The course is intended to provide a good basic knowledge and training on analytic geometry to students via vectors approach. Moreover, the course aims to provide a tool for students to study more advanced courses such as multivariable calculus. After completing this course, the students should have: 1. CO 1. ability to understand the concepts of geometry in two and three dimensions using a coordinate system and algebraic representation such as straight lines, conic sections, planes, parametric equations, and surfaces. 2. CO 2. ability to solve problems on geometry in two and three dimension through its equations. 3. CO 3. ability to use translation and rotation to simplify and sketch the graph of the second-degree equations in two dimensions. 4. CO 4. ability to sketch second-degree equations in three dimensions, such as cylinders, ellipsoids and hyperboloids.
Content	Vectors in $\mathbb{R}^2$ and $\mathbb{R}^3$. Equations of straight lines in two dimensions: relation between two lines in $\mathbb{R}^2$, angle between two lines, distance between a point and a line. Second-degree equations in $\mathbb{R}^2$: circles, parabolas, ellipses, hyperbolas. Polar coordinate. Parametric equations: writing Cartesian equations in parametric form, parametric equations of circles, cycloids, hypocycloids, epicycloids and asteroids. Transformation coordinates: translation and rotation of axes. Straight lines and planes in three dimensions. Second-degree equations in three dimensions: cylinders, spheres, ellipsoids, paraboloids, hyperboloids, hyperbolic paraboloids, cones. Cylindrical and spherical coordinates.

Study and examination requirements and frms 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	Board, LCD Projector, Laptop/Computer
Reading List	1. James Stewart, 2015, *Calculus: Early Transcendentals Single Variable 8th Ed.*, Willey, USA 2. Charles. C. Carico and Irving Drooyan, 1980, *Analytic Geometry*, John Wiley & Sons. 3. Charles Wexler, 1962, *Analytic Geometry : A Vector Approach*, Addison Wesley Publishing Company, Inc.

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							
CO 3		v					v		
CO 4		v							