Module designation	**Analytical Geometry** **Course code:** 8420202004
Semester(s) in which the module is taught	Semester 3 (Second year)
Person responsible for the module	**Coordinator:** Dr. Susanah, M.Pd **Teaching staff:** Dr. Susanah, M.Pd.; Dr. Lestariningsih, S.Pd., M.Pd.; Dr. Sri Suryanti, S.Pd., M.Si.; Dr. Ali Shodikin, S.Pd., M.Pd.; Evangelista Lus Windyana Palupi, S.Pd., M.Sc.; Novita Vindri Harini, M.Pd.; Dr. Mukhtamilatus Sa'diyah, M.Pd.
Language	Indonesian
Relation to curriculum	Compulsory
Teaching methods	Lectures, tutorial assignments, and individual study **Media and tools:** Slides and LCD projectors, whiteboard
Workload (incl. contact hours, self-study hours)	**(Estimated) total workload:** 3 CU × 170 minutes × 16 weeks = 8,160 minutes = 136.00 hours (≈ 4.77 ECTS) **Contact hours:** lectures, 3 × 50 minutes per week × 16 weeks = 40.00 hours (class hours per week: 510 minutes = 8.50 hours, including structured activities) **Private study including examination preparation:** structured assignments, 3 × 60 minutes per week × 16 weeks = 48.00 hours; independent study, 3 × 60 minutes per week × 16 weeks = 48.00 hours (total 96.00 hours)
Credit points	3 CU (4.77 ECTS) *1 CU = 170 minutes per week × 16 weeks = 45.3 hours; 1 ECTS = 28.48 hours (144 CU = 229 ECTS), so 1 CU = 1.59 ECTS (UNESA Rector's Decree No. 736/HK/KM/2023).*
Required and recommended prerequisites for joining the module	None
Module objectives/intended learning outcomes	**Programme learning outcomes (PLO) addressed:** • PLO-5: Apply the basic principles of mathematics to solve simple mathematical problems. • PLO-6: Demonstrate mathematical knowledge and insight.
Content	Studying points in the plane and space; distance and midpoint formulas slope, equations of lines, angle between lines, distance from point to line, standard equations and properties of circles, ellipses, parabolas, hyperbolas, vector operations, dot and cross product, applications in geometry, equations of planes and lines in space; angle and distance between geometric objects, equation of a sphere; intersections and tangents in 3D, real-world modeling using analytic geometry, integration with technology tools, the real number system, real functions, limits and continuity, derivatives of a real function and their uses, transcendent functions and their derivatives, limits of improper forms, Taylor and Maclaurin series, applying these concepts to the problem of determining the asymptotes of function graphs, optimization problems and determining the approximation of a function at a point
Examination forms	Final score is calculated from the weekly assessment scheme below

(CLO/PLO addressed and weight of each assessment):

Week	CLO	PLO	Weight (%)
1	CLO-1	PLO-5	5
2	CLO-2	PLO-5	5
3	CLO-2	PLO-5	5
4	CLO-2	PLO-5	10
5	CLO-5	PLO-6	5
6	CLO-3	PLO-5	5
7	CLO-3	PLO-5	5
8	CLO-5	PLO-6	10
9	CLO-3	PLO-5	5
10	CLO-3	PLO-5	10
11	CLO-4	PLO-5	5
12	CLO-4	PLO-5	5
13	CLO-4	PLO-5	5
14	CLO-4	PLO-5	5
15	CLO-4	PLO-5	5
16	CLO-4	PLO-5	10

Study and examination requirements

Students are considered competent and pass if the final score calculated from the score of midterm exam, assignments, participation, and final exam is at least 55 or C.

Final index (grade conversion):

Index	Converted score	Score range (A = final score)
A	4.00	85 ≤ A ≤ 100
A-	3.75	80 ≤ A < 85
B+	3.50	75 ≤ A < 80
B	3.00	70 ≤ A < 75
B-	2.75	65 ≤ A < 70
C+	2.50	60 ≤ A < 65
C	2.00	55 ≤ A < 60
D	1.00	40 ≤ A < 55
E	0.00	0 ≤ A < 40

Reading list

1. Susanah.2024.GeometriAnalitika.Surabaya: Unesa University Press.
2. LeePengYee,FanLiangHuo. 2002. Mathematics2.Singapore: Shing Lee Publisher PTE.LTD.
3. http://www.mathportal.org/analytic-geometry/analytic-geometry-2d