MINISTRY OF HIGHER EDUCATION, SCIENCE, AND TECHNOLOGY
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCES
UNDERGRADUATE PROGRAM OF MATHEMATICS EDUCATION
Ketintang Campus, Jalan Ketintang, C8 C9 Building, Surabaya 60231
Phone: +62 895335466373, email: s1-pmat@unesa.ac.id
Website: https://pendidikan-matematika.fmipa.unesa.ac.id/

Module Name:	Transformational Geometry
Module Level:	Sarjana (S-1) / Undergraduate
Abbreviation, if applicable:	8420202004
Sub-heading, if applicable:	-
Course included in the module, if applicable:	-
Semester/term:	7 / Fourth year
Module Coordinator(s):	Dr. Susanah, M.Pd
Lecturer(s):	Dr. Susanah, M.Pd. Dr. Lestariningsih, S.Pd., M.Pd. Evangelista Lus Windyana Palupi, S.Pd., M.Sc.
Language:	Indonesia
Classification within the curriculum:	~~Compulsory course~~/elective studies
Teaching format/class hours per week during the semester	Teaching format: lectures, tutorial assignment, and individual Study/2 x 170 minutes = 340 minutes = 5.7 hours lectures
Workload:	16 weeks per semester consisting of: • 1 hour lectures (1 x 50 minutes) per week, • 1 hours assignments (1 x 60 minutes) per week, ➢ 1 hours individual study (1 x 60 minutes) per week, Total workload : 16 x 2 x 170 minutes = 5,440 minutes = 90.7 hours= 3.2 ECTS*
Credit Point:	2
Requirements:	N/A

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Learning Goals :	**PLO-5**: Possesses basic mathematical knowledge to solve mathematical problems and their applications in education. **PLO-6**: Masters the principles of mathematical knowledge to support mathematical thinking skills in solving mathematical problems.
Content:	Investigate a function as a transformation. Prove theorems related to transformations and isometries. Define translations and prove the related theorems. Define the concept of reflection. Prove theorems associated with reflections. Define half-turns and apply them to solve relevant problems. Define rotations and identify the characteristics of their images. Prove theorems related to rotations. Solve problems involving compositions of transformations. Identify applications of transformational geometry concepts in education and/or real-life contexts. Design and produce a product by implementing transformational geometry concepts.
Study/exam achievements	• 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 score is calculated as follows:

Week	Course Learning Outcomes (CLO)	Programme Learning Outcomes (PLO)	Evaluation (%)
1	CLO-1	PLO-5	5
2	CLO-2	PLO-6	5
3	CLO-3	PLO-5	5
4	CLO-4	PLO-5	5
5	CLO-5	PLO-6	5
6	CLO-6	PLO-5	5
7	CLO-7	PLO-5	5
8	CLO-8	PLO-6	5
9	CLO-9	PLO-5	10
10	CLO-10	PLO-5	5
11	CLO-10	PLO-5	5
12	CLO-11	PLO-6	5
13	CLO-11	PLO-6	10

	14 | CLO-11 | PLO-6 | 10 15 | CLO-11 | PLO-6 | 5 16 | CLO-11 | PLO-6 | 10 • Final index is defined as follow: Index | Converted Score | Score Range A | 4.00 | $85 \leq A \leq 100$ A- | 3.75 | $80 \leq A- < 85$ B+ | 3.50 | $75 \leq B+ < 80$ B | 3.00 | $70 \leq B < 75$ B- | 2.75 | $65 \leq B- < 70$ C+ | 2.50 | $60 \leq C+ < 65$ C | 2.00 | $55 \leq C < 60$ D | 1.00 | $40 \leq D < 55$ E | 0.00 | $0 \leq E < 40$
Forms of Media	Slides and LCD projectors, whiteboard
Literature	1. Budiarto, M.T. 2015. Geometri Transformasi. Surabaya: Unesa University Press Anggota IKAPI. 2. Eccles, Frank R. 1971. An Introduction to Transformational Geometry. California: Addison Wesley Publishing Company. 3. Martin,George F. 1980. Transformational Geometry an Introduction to Symmetry. New York: Springer- Verlag.
Note	based on the regulation of the minister of education and culture of Indonesia number 3 of 2020 concerning national higher education standards, it is state 1 CU equals to 170 minutes per week. Therefore, in one semester (16 weeks, including midterm a final exam) 1 CU = 170 X 16 = 2.720 minutes or 45.3 hours. Therefore, workhours in 144 CU x 45.3 hours = 6.523,2 hours. Unesa decided that 1 ECTS with 144 CU, 6.523,2/229 ECTS = 28.48 hours, so that 1 CU = 1.59 ECTS