Module Description/Course Syllabi

Study Programme: Bachelor of Mathematics
Faculty of Mathematics and Natural Sciences
Universitas Andalas

1. *Course number and name*

MAT61221 Transformation Geometry

2. *Credits and contact hours/Number of ECTS credits allocated*

2 sks / 4,53 ECTS

3. *Instructors and course coordinator*

1. Efendi, M.Si,

4. *Text book, title, author, and year*

1. Eccles FM, Introduction to Transformational Geometry , Addison Wesley, 1971.
2. G.E. Martin. (1982). Transformation Geometry. New York: Springer-verlag

5. *Recommended reading and other learning resources/tools*

3. H. Anton. (1987). Elementary Linear Algebra. New York: John Wiley- Sons.

6. *Specific course information*

A. Brief description of the content of the course (catalog description)

. This course discusses transformation geometry. Lectures start with an introduction to transformation , translation, rotation and their applications in the field. Towards the mid-semester evaluation, transformation topics were discussed. After the mid-semester evaluation, half-turn transformations and dilation were

introduced. Towards the end of the semester evaluation, an introduction to dilation in the field was given. To complement students' skills and abilities in communicating mathematically and using Geogebra software , towards the end of the semester, group collaboration assignments related to topics in transformation geometry were given.
B. Prerequisites or co-requisites
Calculus 1
C. Indicate whether a required or elective course in the program
Elective
D. Level of course unit (according to EQF: first cycle Bachelor, second cycle Master)
First Cycle Bachelor
E. Year of study when the course unit is delivered (if applicable)
1Year
F. Semester when the course unit is delivered
Odd Semester
G. Mode of delivery (face-to-face, distance learning)
Face to face

7. *Intended Learning Outcomes*

ILO-2: Possesses profound knowledge of the basic concept of mathematics. PI-1: Able to explain the basic concepts of mathematics; PI-2: Able to provide examples that are relevant to the basic concepts of mathematics; PI-3: Able to determine simple problem solutions using basic mathematical concepts.
ILO-3: An ability to identify, explain and generalize simple mathematics. PI-1: Able to identify simple math problems; PI-2: Be able to explain simple math problems.
ILO-4: An ability to use concepts and fundamental techniques of mathematics in solving simple mathematical problems. PI-1: Able to choose the right basic mathematical concepts and techniques in solving simple math problems; PI-2: Able to illustrate simple mathematical problems based on appropriate basic mathematical concepts and techniques.
ILO 5: An ability to formally and correctly prove simple mathematical statements using facts and methods that have been studied. PI-1: Be able to identify formal structures and forms of analogy in mathematics; PI-2: Able to use facts and apply methods in proving simple mathematical statements; PI-3: Able to present a rigorous proof of simple mathematical statements (with a trace and thorough).
8. *Course Learning Outcomes*
Students are able to master theoretical concepts, especially related to the definition and basic properties of conic sections, translation and rotation and determine the equations of conic sections in Cartesian coordinates and draw sketches. (CP-2: PI-1)
Students are able to master the concept of curve parameterization and curvature of curves in a plane, equations in polar coordinates and calculus in polar coordinates. CP-2: PI-1)
Students are able to generalize plane geometry problems into three-dimensional space geometry. CP-3: PI-1, KK-2)
Students are able to identify and explain problems related to plane equations, distance, area, volume. (CP 4: KK-2, KK-3)
Students are able to solve geometric problems on planes and space using mathematical software (CP-6: PI-1- PI-4)
Students are able to communicate the results of their thoughts and work both orally and in writing. (CP-7: KU-2)

9. *Brief list of topics to be covered*
1. Transformation 2. Isometri 3. Translation 4. Reflection 5, Transformation composition 6. Half-turn transformation and shear reflection 7. Dilation
10. Learning and teaching methods
Directed Learning, Teacher Center Learning
11. Language of instruction
Bahasa and English

12. Assessment methods and criteria
Summative Assessment : 1. Mid-term exam: 30% 2. Final exam: 40% 3. Quiz: 15% 4. Assignment: 15% **Formative Assessment**: