Module designation	*Differential Geometry*
Semester(s) in which the module is taught	*6*
Person responsible for the module	*Prof. Dr. Hartono*
Language	*Bahasa Indonesia*
Relation to curriculum	*Elective course*
Teaching methods	*150 minutes lectures and 180 minutes structured activities per week.*
Workload (incl. contact hours, self-study hours)	*Total workload is 136 hours per semester which consists of 150 minutes lectures, 180 minutes structured activities, and 180 minutes self-study per week for 16 weeks.*
Credit points	*3*
Required and recommended prerequisites for joining the module	*MAT6312- Multivariable Calculus*
Module objectives/intended learning outcomes	*Upon successful completion of this course, students will be able to:* ***CO1**: Explain the fundamental concepts of differential geometry related to curves and surfaces using differential and integral calculus.* ***CO2**: Analyze the properties of curves in the plane and in three-dimensional space, including arc length, parameterization, and curvature.* ***CO3**: Compute and interpret geometric parameters of curves in various representations.* ***CO4**: Explain and apply the concept of **regular surfaces** in three-dimensional space.* ***CO5**: Use **Gaussian mapping** to investigate geometric properties of surfaces.* ***CO6**: Analyze the intrinsic geometry of surfaces, focusing on properties independent of embedding in space.* ***CO7**: Apply the theory of differential geometry of curves and surfaces to solve problems in mathematics and its applications.*

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<tr><td>Content</td><td>This course covers the properties of geometric configurations in the form of curves and surfaces. These properties are investigated using differential and integral calculus. Topics on the properties of curves will be studied through curve length, parameterization, and curvature. The study of curves will be conducted for curves in the plane and curves in 3-dimensional space. The material on surfaces covers topics such as regular surfaces, geometry in Gaussian mapping, and the intrinsic geometry of surfaces.</td></tr>
<tr><td>Examination forms</td><td>CO1: Attitude assessment is carried out at each meeting by observation and / or self-assessment techniques using the assumption that basically every student has a good attitude.</td></tr>
<tr><td>Study and examination requirements</td><td>The student is given a value of very good or not good attitude if they show it significantly compared to other students in general. The result of attitude assessment is not a component of the final grades, but as one of the requirements to pass the course. Students will pass from this course if at least have a good attitude.

The final mark will be weight as follow:
<table>
<tr><th>No</th><th>CO</th><th>Assessment Object</th><th>Assessment Technique</th><th>Weight</th></tr>
<tr><td>1</td><td>CO 1</td><td>a. Presentation
b. Discussion</td><td>Observation</td><td>5%
10%</td></tr>
<tr><td>2</td><td>CO 2, CO 3, CO 4</td><td>a. Individual assignment
b. Group assignment
c. Quiz
d. Midterm
e. Final test</td><td>Written</td><td>10%
10%
20%
20%
25%</td></tr>
<tr><td colspan="4">Total</td><td>100%</td></tr>
</table></td></tr>
<tr><td>Reading list</td><td>***do Carmo, M. P. (1976).*** *Differential Geometry of Curves and Surfaces. Prentice-Hall.*

Pressley, A. (2010). *Elementary Differential Geometry (2nd ed.). Springer.*

O'Neill, B. (2006). *Elementary Differential Geometry (2nd ed.). Academic Press.*</td></tr>
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