Module designation	*Multivariable calculus*
Semester(s) in which the module is taught	*3*
Person responsible for the module	*Dr. Atmini Dhoruri MS.*
Language	*Bahasa Indonesia*
Relation to curriculum	*Compulsory 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	*MAT6305 - Integral Calculus*
Module objectives/intended learning outcomes	*CO 1-Attitude. Demonstrates responsibility in attending lectures and completing assignments related to two-variable functions, two-variable limits, two-variable derivatives, and multiple integrals.* *CO2-General Skills. Able to communicate mathematically in written form in solving two-variable functions, two-variable limits, two-variable derivatives, and multiple integrals* *CO 3- Mastering in depth the material of two-variable functions and their derivatives, and double integrals.* *CO 4- Able to solve problems in the field of mathematics and mathematical applications related to two-variable functions and their derivatives, and double integrals.* *CO 5- Mastering the basics of two-variable function derivatives and double integrals to strengthen mathematical understanding*

<table>
<tr><td>Content</td><td>The Multivariable Calculus course covers the concepts of multivariable functions, multivariable function derivatives, and double integrals along with their applications. Topics covered include properties of two-variable functions, limits and continuity of two-variable functions, partial derivatives, differentiability and directional derivatives & maximum rates, the chain rule, tangent planes to surfaces, maxima and minima, Lagrange multipliers, double integrals over rectangles, double integrals on non-rectangular regions, applications of double integrals, triple integrals in Cartesian coordinates, triple integrals in cylindrical and spherical coordinates, and variable substitution in integrals.</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>1. Varberg, D, Purcell, Edwin J. dan Rigdon, Steve E. 2011. Kalkulus , Edisi Kesembilan, Jilid 2. Alih Bahasa: I Nyoman Susila, Ph.D,. Jakarta: Penerbit Erlangga

2. Larson, Hestetler, and Edwards. 2008. Essencial Calculus: Early Transendental Functions. Boston: Houghtin Mifflin Company.</td></tr>
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