**Multivariable Calculus II**

**Module level**, if applicable: Bachelor

**Code**, if applicable: MMM-2110

**Subtitle**, if applicable: Multivariable Calculus II

**Semester(s) in which the module is taught**: 4th (fourth)

**Person responsible for the module**: Chair of the Lab. of Analysis

**Lecturer(s)**: Prof. Dr. Ch. Rini Indrati, M.Si. and Prof. Dr. Supama, M.Si.

**Language**: Indonesia

**Relation to curriculum**: Compulsatory course in the second year (4th semester) Bachelor Degree

**Type of teaching, contact hours**: 100 minutes lectures and 120 minutes structured activities per week.

**Workload**: Total workload is 90.67 hours per semester, which consists of 100 minutes lectures per week for 14 weeks, 120 minutes structured activities per week, 120 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.

**Credit points**: 2

**Requirements according to the examination regulations**: Students have taken Calculus of Multivariable II course (MMM-2110) and have an examination card where the course is stated on.

**Recommended prerequisites**: Students have taken Multivariable Calculus I course (MMM-2109) and have participated in the final examination of the course.

**Module objectives/intended learning outcomes**: After completing this course, the students:

CO 1. able to determine and prove position of a point as an interior point, a limit point, a boundary point, or an isolated point.

CO 2. able to determine and prove basic properties of the limit of function, continuity, derivative, and integral of vector-valued functions.

CO 3. able to determine the line integral and able to apply Green’s Theorem.

CO 4. able to apply line integral in fluid mechanic

CO 5. able to determine the surface integral and to apply the Divergence Theorem, and Stokes’ Theorem.

**Content**:  
- Topology on $\mathbb{R}^n$: distance, neighbourhood, interior point, limit point, boundary point, and isolated point.
- Function from $\mathbb{R}$ into $\mathbb{R}^n$: limits, continuity, derivative, integral.
- Function from $\mathbb{R}^n$ into $\mathbb{R}^m$: limits, continuity, partial derivative, differential, integral.
- Line and surface integral: definition and properties, Green’s Theorem, Divergence Theorem, and Stokes’ Theorem.

**Study and examination requirements and forms of examination**: The final mark will be weighted as follows:

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<tr>
<th>No.</th>
<th>Assessment methods (components, activities)</th>
<th>Weight (percentage)</th>
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<tbody>
<tr>
<td>1</td>
<td>Final Examination</td>
<td>45%</td>
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<td>2</td>
<td>Mid-Term Examination</td>
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<td>3</td>
<td>Class Activities: Quiz, Homework, etc.</td>
<td>25%</td>
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The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.
### Media employed
White-board, Laptop, LCD Projector

### Reading List

### PLO and CO Mapping

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