### Module Handbook

#### Module name
Function of Complex Variables II

#### Module level, if applicable
Bachelor

#### Code, if applicable
MMM-3106

#### Subtitle, if applicable

#### Courses, if applicable
Function of Complex Variables II

#### Semester(s) in which the module is taught
5th (fifth)

#### Person responsible for the module
Chair of the Lab. of Analysis

Prof. Dr. Supama, M.Si.

Drs. Yusuf, M.A.

#### Language
Bahasa Indonesia

#### Relation to curriculum
Compulsory course in the third year (5th 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 Function of Complex Variables II course (MMM-3106) and have an examination card where the course is stated on.

#### Recommended prerequisites
Students have taken Function of Complex Variables I (MMM-2112) and have participated in the final examination of the course.

#### Module objectives/intended learning outcomes
After completing this course, the students have ability to:

CO 1. generalize the concept of integral in complex system.

CO 2. generalize the concept of series in complex system.

CO 3. Apply the theorem of residue.

#### Content
- Complex integral: definition of antiderivative, formula of Cauchy integral, maximum modulus principle, Liouville’s theorem.
- Series: convergence of sequences and series, Taylor and Mac Laurin series, Laurent series, absolute and uniform convergence, integration and differentiation of power series, singularity of representation of series, multiplication and division of power series.
- Residues and poles: residue, theorem of residue, main part of function, residue at pole, zeros and poles level, improper integral, definite integrals involving sines and cosines function, integration along a branch cut, inverse Laplace Transforms, logarithmic residue, Rouche’s theorem.

#### Study and examination requirements and forms of examination
<table>
<thead>
<tr>
<th>Assessment methods (components, activities)</th>
<th>Weight (percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Examination</td>
<td>45%</td>
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<tr>
<td>Mid-Term Examination</td>
<td>30%</td>
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<tr>
<td>Class Activities: Quiz, Homework, etc.</td>
<td>25%</td>
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</tbody>
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**UNIVERSITAS GADJAH MADA**
Faculty of Mathematics and Natural Sciences
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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.

<table>
<thead>
<tr>
<th>Media employed</th>
<th>White-board, Laptop, LCD Projector</th>
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| PLO and CO Mapping |
|--------------------|------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                   | PLO 1 | PLO 2 | PLO 3 | PLO 4 | PLO 5 | PLO 6 | PLO 7 | PLO 8 | PLO 9 |
| CO 1               |       |       |       |       | v     | v     |       |       |       |
| CO 2               |       |       |       |       |       |       | v     | v     | v     |
| CO 3               |       |       |       |       |       |       |       | v     | v     | v     |