



# UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

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## Master in Mathematics

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## MODULE HANDBOOK

Module name	Theory of Complex Functions												
Module level, if applicable	Master												
Code, if applicable	MMM 5104												
Subtitle, if applicable													
Courses, if applicable	Theory of Complex Functions												
Semester(s) in which the module is taught	2 <sup>nd</sup> (Second)												
Person responsible for the module	Chair of Analysis Research Group												
Lecture(s)	Drs. Yusuf, M.A.												
Language	Bahasa Indonesia												
Relation to curriculum	Master Degree, Elective course, 2 <sup>nd</sup> (Second) semester												
Type of teaching, contact hours	3 hours lectures, 3 hours structured activities.												
Workload	3 hours lectures, 3 hours structured activities, 3 hours individual study, 16 weeks per semester (including mid-term and final examinations), 144 hours per semester.												
Credit points	3												
Requirements according to the examination regulations	Students have taken the course of Analysis I and have participated in the final exam of the course.												
Recommended prerequisites	--												
Module objectives/intended learning outcomes	After completing this course the students are expected to be able: CO 1. to understand and prove or solve theories related to complex integral. CO 2. to understand and prove or solve theories related to Laurent series, power series, and their properties. CO 3. to understand and prove or solve theories related to poles, residues, and their applications. CO 4. to understand and prove or solve theories related to conformal mapping and their properties.												
Content	Open Mapping Theorem, complex integral, antiderivative of holomorphic function, Cauchy's Theorem, Cauchy's Integral Formula, Derivative of Analytic function, Maximum Modulus Principle, Laurent series, Power series, isolated singular point, residues and poles, essential singular point, improper Integral, inverse of Laplace transform, Roche's Theorem, Conformal mapping.												
Study and examination requirements and forms of examination	The final mark will be weighted as follows: <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>No</th> <th>Assessment methods (components, activities)</th> <th>Weight (percentage)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Final Examination</td> <td>45%</td> </tr> <tr> <td>2</td> <td>Mid-Term Examination</td> <td>30%</td> </tr> <tr> <td>3</td> <td>Class Activities: Quiz, Homework, etc.</td> <td>25%</td> </tr> </tbody> </table> Final grade will be determined as follows:	No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	45%	2	Mid-Term Examination	30%	3	Class Activities: Quiz, Homework, etc.	25%
No	Assessment methods (components, activities)	Weight (percentage)											
1	Final Examination	45%											
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	<p>Grade Criteria</p> <p>A <math>95 \leq \text{final mark} \leq 100</math></p> <p>A- <math>90 \leq \text{final mark} &lt; 95</math></p> <p>A/B <math>85 \leq \text{final mark} &lt; 90</math></p> <p>B+ <math>80 \leq \text{final mark} &lt; 85</math></p> <p>B <math>75 \leq \text{final mark} &lt; 80</math></p> <p>B- <math>70 \leq \text{final mark} &lt; 75</math></p> <p>B/C <math>65 \leq \text{final mark} &lt; 70</math></p> <p>C+ <math>60 \leq \text{final mark} &lt; 65</math></p> <p>C <math>55 \leq \text{final mark} &lt; 60</math></p> <p>D <math>40 \leq \text{final mark} &lt; 55</math></p> <p>E <math>0 \leq \text{final mark} &lt; 40</math></p>
Media employed	Board, LCD Projector, Laptop/Computer
Reading List	<ol style="list-style-type: none"> <li>1. Serge Lang, 1999, <i>Complex Analysis, Fourth Edition</i>, Springer-Verlag New York, Inc.</li> <li>2. Brown, J.W. and Churchill, R.V, 2014, <i>Complex Variables And Applications</i>, 9th Edition, McGraw-Hill.</li> <li>3. Howie, J.W, 2003, <i>Complex Analysis</i>, Springer.</li> </ol>

### PLO and CO Mapping

	PLO 1	PLO 2	PLO 3	PLO 4	PLO 5	PLO 6
CO 1		v	v	v	v	
CO 2		v	v	v	v	
CO 3		v	v	v	v	
CO 4		v	v	v	v	

Modified Date: 9 August 2022