



# UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

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## Doctoral Program in Mathematics

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### MODULE HANDBOOK Doctoral in Mathematics

<b>Module name:</b>	Some topics in Advanced Statistical Computing																
<b>Module level, if applicable:</b>	Doctoral																
<b>Code, if applicable:</b>	MMM 6529																
<b>Semester(s) in which the module is taught:</b>	1st (first) year																
<b>Person responsible for the module:</b>	Chair of Statistical Computing Research Group																
<b>Lecturer(s):</b>	Prof. Dr.rer.nat. Dedi Rosadi, S.Si., M.Sc.																
<b>Language:</b>	Bahasa Indonesia																
<b>Relation to curriculum:</b>	Doctoral Degree in Mathematics, Elective Course																
<b>Credit points:</b>	3 Semester Credit Unit																
<b>Type of teaching, contact hours:</b>	3x50 minutes lectures, 3x60 minutes structured activities.																
<b>Workload:</b>	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.																
<b>Recommended prerequisites:</b>	Students have learned introductory statistical course Students also have some knowledge on statistical software, such as R																
<b>Module objectives/intended learning outcomes:</b>	After completing this course the students have ability to : CO 1. Understand some basic statistical computing methods used in general CO2.. Use statistical software to do the statistical computing CO3. Use advanced statistical computing method on specific fields of research																
<b>Content:</b>	We design this course to give some necessary background on statistical computing for the PhD research on the specific field of research. We start on the basic statistical computing concept, and then go the discussion on the specific topic, appropriate for the student research.																
<b>Study and examination requirements and forms of examination:</b>	<p>The final mark will be weighted as follows:</p> <table border="1"> <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>35%</td> </tr> <tr> <td>2</td> <td>Mid-Term Examination</td> <td>30%</td> </tr> <tr> <td>3</td> <td>Projects/Presentation</td> <td>25%</td> </tr> <tr> <td>4</td> <td>Peer Assessment/Quiz</td> <td>10%</td> </tr> </tbody> </table> <p>Final grade will be determined as follows:</p> <p>Grade Criteria The initial cut-off points for grades A, B, C, and D should not be less than 80%, 65%, 50%, and 40%, respectively.</p>		No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	35%	2	Mid-Term Examination	30%	3	Projects/Presentation	25%	4	Peer Assessment/Quiz	10%
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1	Final Examination	35%															
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3	Projects/Presentation	25%															
4	Peer Assessment/Quiz	10%															
<b>Media employed:</b>	Board, LCD Projector, Laptop/Computer																
<b>Reading List:</b>	<ol style="list-style-type: none"> <li>Härdle, W.K., Lu, H. H and Shen, X. , 2018, Handbook of Big Data Analytics, Springer</li> <li>Recent publication on statistical computing of the specific topic of research</li> </ol>																

**Mapping of The COs and PLOs**

	<b>PLO – 1</b> <b>S3 Mat</b>	<b>PLO – 2</b> <b>S3 Mat</b>	<b>PLO – 3</b> <b>S3 Mat</b>	<b>PLO – 4</b> <b>S3 Mat</b>	<b>PLO – 5</b> <b>S3 Mat</b>	<b>PLO –6</b> <b>S3 Mat</b>
<b>CO 1</b>	v	v	v		v	
<b>CO 2</b>	v	v	v		v	
<b>CO 3</b>	v	v	v		v	v

Programme Learning Outcomes (PLO) Doctoral Programme in Mathematics

<b>PLO-1</b>	:	<b>Attitude:</b>  Devote to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working in the area of expertise independently.
<b>PLO-2</b>	:	<b>Knowledge:</b>  Mastering philosophy of mathematics and one of the fields in mathematics (algebra, analysis, applied mathematics, statistics, computational mathematics, computational statistics).
<b>PLO-3</b>	:	<b>Knowledge:</b>  Able to think logically, analytically, inductively, deductively, and structured; having the ability to manage, lead, and develop research programs independently, and able to communicate the thoughts as well as his work to the scientific community and the general public.
<b>PLO-4</b>	:	<b>Skill:</b>  Creating new concepts and / or new methods (original) in the field of mathematics that are recognized nationally and internationally.
<b>PLO-5</b>	:	<b>Skill:</b>  Able to apply mathematics according to their field of expertise to solve problems including those that require a multidisciplinary, cross-disciplinary, or trans-disciplinary approach.
<b>PLO-6</b>	:	<b>Life Long Learning:</b>  Having lifelong learning skills and adaptive to the development of science and technology, especially in fields related to Mathematics and its applications.