



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

Module name:	Robust Statistics															
Module level, if applicable:	Doctoral															
Code, if applicable:	MMM 7502															
Semester(s) in which the module is taught:	2 nd (second) year															
Person responsible for the module:	Chair of Statistical Computing Research Group															
Lecturer(s):	Prof. Dr.rer.nat. Dedi Rosadi, S.Si., M.Sc.															
Language:	Bahasa Indonesia															
Relation to curriculum:	Doctoral Degree in Mathematics, Elective Course															
Credit points:	3 Semester Credit Unit															
Type of teaching, contact hours:	3x50 minutes lectures, 3x60 minutes 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.															
Recommended prerequisites:	Students have learned mathematical statistics course Students also have some knowledge on statistical software, such as R															
Module objectives/intended learning outcomes:	After completing this course the students have ability to : CO 1. understand basic concept and several methods of robust statistics CO2.. use statistical softwares to do the robust statistical analysis and interpret the output from the softwares CO3. Understand the application of robust statistics on several fields of research															
Content:	Overview some basic concept of robustness: definition, some measures of robustness, Robustness on Linear Regression Analysis, Robustness on Multivariate Analysis, others application related to the research															
Study and examination requirements and forms of examination:	The final mark will be weighted as follows: <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> Final grade will be determined as follows: 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.	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%
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%														
Media employed:	Board, LCD Projector, Laptop/Computer															
Reading List:	<ol style="list-style-type: none"> 1. Maronna, R.A., Martin, R.D., Yohai, V.J., Barrera, M.S., 2019, Robust Statistics: Theory and Methods (with R), 2nd Edition, Wiley and Sons, New York 2. Jurečková, J., Picek, J., Schindler, M., 2019, Robust Statistical Methods with R, Second Edition 2nd Edition, Chapman and Hall/CRC Press, New York 3. Recent publication on robust statistics 															

Mapping of The COs and PLOs

	PLO – 1 S3 Mat	PLO – 2 S3 Mat	PLO – 3 S3 Mat	PLO – 4 S3 Mat	PLO – 5 S3 Mat	PLO –6 S3 Mat
CO 1	v	v	v		v	
CO 2	v	v	v		v	
CO 3	v	v	v		v	v

Programme Learning Outcomes (PLO) Doctoral Programme in Mathematics

PLO-1	:	Attitude: Devote to God Almighty, uphold the humanity values, internalize academic values and ethics, responsible in working in the area of expertise independently.
PLO-2	:	Knowledge: Mastering philosophy of mathematics and one of the fields in mathematics (algebra, analysis, applied mathematics, statistics, computational mathematics, computational statistics).
PLO-3	:	Knowledge: 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.
PLO-4	:	Skill: Creating new concepts and / or new methods (original) in the field of mathematics that are recognized nationally and internationally.
PLO-5	:	Skill: 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.
PLO-6	:	Life Long Learning: Having lifelong learning skills and adaptive to the development of science and technology, especially in fields related to Mathematics and its applications.