



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Mathematics Department

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Graduate Program in Mathematics

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MODULE HANDBOOK

Doctoral in Mathematics

Module name	Generalized Invers Matrices												
Module level, if applicable	Doctoral Program												
Code, if applicable													
Semester(s) in which the module is taught													
Person responsible for the module	Chair of Algebra Research Group												
Lecturer(s)	Dr. Al. Sutjijana, M.Sc. Dr. DiahJuniaEksiPalupi M.S.												
Language	Bahasa Indonesia												
Relation to curriculum	Doctoral Degree in Mathematics, Compulsory/Elective Course												
Credit points	3 Semester Credit Unit												
Type of teaching, contact hours	3 x 50 minutes lectures, 3x60 hours structured activities.												
Workload	<ul style="list-style-type: none"> ● 3 x 50 minutes lectures. ● 3 x 50 minutes structured activities. ● 3 x 50 minutes individual study. ● In 16 weeks per semester (including mid-term and final examinations), . 												
Recommended prerequisites	Students should be proficient in linear algebra, ring and group theories.												
Module objectives/intended learning outcomes	<p>After completing this course the students should have:</p> <p>CO1. Ability to prove the fundamental properties of generalized inverse matrices</p> <p>CO2. Ability to find Pseudoinverses of multiplication matrices, partition matrices, and addition matrices and use it on Iterated and Direct Method</p> <p>CO3. Ability to find a best approximation solution of a matrix equations.</p> <p>.</p>												
Content	<p>a. Definition, Characterization, and fundamental properties. Operator theory. Pseudoinverse for addition and multiplication matrices. Pseudoinverse for partition matrices.</p> <p>b. Solving matrices equation system; Intersection manifold; general solution of linear equation system, Solution of matrices equations.</p> <p>d. Counting Techniques: Iterated method and direct method</p>												
Study and examination requirements and forms of examination	<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>20%</td> </tr> <tr> <td>2</td> <td>Mid-Term Examination</td> <td>20%</td> </tr> <tr> <td>3</td> <td>Class Activities: Quiz, Homework, etc.</td> <td>60%</td> </tr> </tbody> </table> <p>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</p>	No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	20%	2	Mid-Term Examination	20%	3	Class Activities: Quiz, Homework, etc.	60%
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1	Final Examination	20%											
2	Mid-Term Examination	20%											
3	Class Activities: Quiz, Homework, etc.	60%											
Media employed	White/Black Board, LCD Projector, Laptop/Computer												
Reading List	<ol style="list-style-type: none"> 1. Ben-Israel, Adi; Thomas N.E., 2003, Generalized Inverses: Theory and Application Vanstone, Springer-Verlag New York, Inc 2. Boullion, T.L. dan Odell, P.L, 1971, Generalized Inverse Matrices, John Wiley & Sons, Ins; Canada. 												

PLO and CO Mapping

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