



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:	Permainan Dinamis (<i>Dinamic Game</i>)												
Module level, if applicable:	Doctoral Program												
Code, if applicable:	MMM 6302												
Semester(s) in which the module is taught:	-												
Person responsible for the module:	Chair of Applied Mathematics Research Group												
Lecturer(s):	Salmah												
Language:	Bahasa Indonesia												
Relation to curriculum:	Doctoral Degree in Mathematics, Compulsory / Elective Course												
Credit points:	3 Semester Credit Unit												
Type of teaching, contact hours:	3x50 minutes lectures, 3x60 minutes structured activities.												
Workload:	<ul style="list-style-type: none"> • 3x50 minutes lectures, • 3x60 minutes structured activities, • 3x60 minutes individual study, • In 16 weeks per semester (including assignments and examinations) 												
Recommended prerequisites:	-												
Module objectives/intended learning outcomes:	<p>On successful completion of this course, students should be able to:</p> <p>CO 1: to solve two players and n players noncooperative and cooperative game (static game).</p> <p>CO 2: to solve noncooperative dynamic game</p> <p>CO 3: To solve cooperative dynamic game.</p> <p>CO 4: To solve feedback dynamic game</p> <p>CO 5: to relate between the theory and applications of simple dynamic game problems, and to interpret the solutions.</p> <p>CO 6: to consider control method that based on dynamic game</p>												
Content:	<p>Dynamic game with some scenario: noncooperative, cooperative and feedback.</p> <p>Syllabi:</p> <p>Topics include two players and n players noncooperative and cooperative game (static game), noncooperatie linear quadratic dynamic game finite horizon, noncooperative linear quadratic dynamic game infinite horizon, couple of differential Riccati equation, couple of algebraic Riccati equation, cooperative game, feedback game, example of application of noncooperative linear quadratic dynamic game, control method based on dynamic game</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>40%</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>30%</td> </tr> </tbody> </table> <p>Final grade will be determined as follows:</p>	No	Assessment methods (components, activities)	Weight (percentage)	1	Final Examination	40%	2	Mid-Term Examination	30%	3	Class Activities: Quiz, Homework, etc	30%
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1	Final Examination	40%											
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3	Class Activities: Quiz, Homework, etc	30%											

	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.
Media employed:	Board, LCD Projector, Laptop/Computer
Reading List:	<ol style="list-style-type: none"> Engwerda, Jacob, 2005, <i>LQ Dynamic Optimization and Differential Games</i>, John Wiley & Sons, Tilburg University, Netherlands. Thomas, L.C., 1984, <i>Games, Theory and Applications</i>, Ellis Horwood Limited.

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	√	√				
CO 2	√	√				
CO 3	√	√				
CO 4	√	√				
CO 5	√	√			√	√
CO 6	√	√	√	√		√

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.