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Master in Mathematics

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MODULE HANDBOOK

Module Name	*Numerical Differential Equations*
Module level, if applicable	*Master Program*
Code, if applicable	*MMM-5608*
Subtitle, if applicable	
Courses, if applicable	*Numerical Differential Equations*
Semester(s) in which the module is taught	*1st semester*
Person responsible for the module	***Chair of Computational Mathematics Research Group***
Lecturer(s)	*Dr. Sumardi, M.Si*
Language	*Bahasa Indonesia*
Relation to curriculum	*Master Degree in Mathematics, Elective, 1st semester*
Teaching methods	*lecture, lab works, project, seminar*
Workload (incl. contact hours, self-study hours)	• *3x50 minutes lectures,* • *3x50 minutes structured activities,* • *3x50 minutes individual study,* • *In 16 weeks per semester (including mid-term and final examinations).* • *Total: 144x50 minutes per semester*
Credit points	*3*
Required and recommended prerequisites for joining the module	*existing competences in differential equation*

<table>
<tr><td>Module objectives/intended learning outcomes</td><td>After completing this course the students should have:
CO 1 describe the derivation of the numerical algorithms for the solution of initial and boundary value problems for systems of ordinary differential equations
CO 2 describe the derivation of the numerical algorithms for the solution of boundary and initial-boundary value problems for partial differential equations.
CO 3 implement and execute algorithms in Matlab
CO 4 Understand the error concept, analyze, and predict it.</td></tr>
<tr><td>Content</td><td>In this course we will be concerned with numerical methods for the solution of initial and boundary value problems for systems of ordinary differential equations, and with numerical methods for boundary and initial-boundary value problems for partial differential equations.</td></tr>
<tr><td>Examination forms</td><td>essay</td></tr>
<tr><td>Study and examination requirements</td><td>To pass this course, students must obtain a minimum grade of D. The final mark will be weighted as follows:
<table>
<tr><th>No</th><th>Assessment method</th><th>Weight</th><th>Cognitive</th><th>Project/Case base</th></tr>
<tr><td>1.</td><td>Final Examination</td><td>30</td><td>12</td><td>18</td></tr>
<tr><td>2.</td><td>Mid-Term Examination</td><td>30</td><td>18</td><td>12</td></tr>
<tr><td>3.</td><td>Laboratory</td><td>25</td><td></td><td>25</td></tr>
<tr><td>4.</td><td>Quiz, Homework</td><td>15</td><td>10</td><td>5</td></tr>
<tr><td></td><td>TOTAL</td><td>100</td><td>40</td><td>60</td></tr>
</table></td></tr>
<tr><td>Media employed</td><td>Board, LCD Projector, Laptop/Computer</td></tr>
<tr><td>Reading list</td><td>Granville Sewell, 2005, The numerical solution of ordinary and partial differential equations, John Wiley & Sons, Inc,
Mark H. Holmes, 2007, Introduction to Numerical Methods in Differential Equations, Springer Science+Business Media, LLC</td></tr>
</table>

CO-PLO Mapping

	CO 1	**CO 2**	**CO 3**	
PLO 1	V	V	V	V
PLO 2	V	V		V

PLO 3	V	V	V	V
PLO 4	V	V		V
PLO 5			V	V
PLO 6				

Compilation Date :

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