UNIVERSITAS GADJAH MADA
Faculty of Mathematics and Natural Sciences
Department of Mathematics
Sekip Utara Bulaksumur Yogyakarta 55281 Telp: +62 274 552243 Fax: +62 274 555131 Email: math@ugm.ac.id Website: http://math.fmipa.ugm.ac.id

Doctor in Mathematics

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MODULE HANDBOOK

Module Name	*Topics in Boundary Element Method*
Code, if applicable	*MMM 7601*
Subtitle, if applicable	-
Semester(s) in which the module is taught	*1st or 2nd semester*
Person responsible for the module	*Chair of the Lab. of Computation of Mathematics*
Language	*Bahasa Indonesia*
Relation to curriculum	*elective*
Teaching methods	*lecture, project, seminar*
Workload (incl. contact hours, self-study hours)	*Total workload is 232 hours per semester, which consists of 50 minutes lectures per week, 120 minutes structured activities per week, 120 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.*
Credit points	*3*
Required and recommended prerequisites for joining the module	*Before taking this course, students are expected to have learned differential equations and coding.*
Module objectives/intended learning outcomes	*After completing this course, the students should have able to:* • *CO 1 derive boundary element method for modified Helmholtz equation.* • *CO 2 derive boundary element method for diffusion-convection equation.* • *CO 3 develop boundary element method for equations related to student's research.*

<table>
<tr><td>Content</td><td>In this course, students have to do activities under Lecture's supervision. Academic activities including literature study to master one or more concepts including: Boundary element method for modified Helmholtz equation, Boundary element method for diffusion-convection equation.</td></tr>
<tr><td>Examination forms</td><td>oral presentation, 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><td>No</td><td>Assessment method</td><td>Weight</td><td>Cognitive</td><td>Project/Case base</td></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>Ang, W. T., 2007, A Beginner's Course in Boundary Element Methods, Universal Publishers, Boca Raton, Florida.
Pertridge, P.W., Brebbia, C.A., Wrobel, L.C., 1991, Dual Reciprocity Boundary Element Method, Springer.
Katsikadelis, J. T., 2002, Boundary Elements: Theory and Applications, Elsevier, London.
Selected papers.</td></tr>
</table>

CO-PLO Mapping

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

Compilation Date :

Modified Date :

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MODULE HANDBOOK

Module designation	*Topics in Boundary Element Method*
Code, if applicable	*MMM 7601*
Subtitle, if applicable	*Standard Boundary Element Method*
Semester(s) in which the module is taught	*1st or 2nd semester*
Person responsible for the module	*Chair of the Lab. of Computation of Mathematics*
Language	*Bahasa Indonesia*
Relation to curriculum	~~*Compulsory*~~ */ elective /* ~~*specialisation*~~
Teaching methods	*case based learning*
Workload (incl. contact hours, self-study hours)	*Total workload is 232 hours per semester, which consists of 50 minutes lectures per week, 120 minutes structured activities per week, 120 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.*
Credit points in Credit Units	*3*
Required and recommended prerequisites for joining the module	*existing competences in advanced calculus*
Module objectives/intended learning outcomes	*After completing this course, the students should have able to:* • *CO 1 derive standard boundary element method for Laplace equation.* • *CO 2 write computer codes to implement the standard boundary element method.*

<table>
<tr><td>Content</td><td>In this course, students have to do activities under Lecture's supervision. Academic activities including literature study to master concepts including: Standard boundary element method for Laplace equation, and implement the method using computer codes.</td></tr>
<tr><td>Examination forms</td><td>Oral presentation, essay.</td></tr>
<tr><td>Study and examination requirements</td><td>To pass this course, students must obtain a minimum grade of B. The final mark will be weighted as follows:
<table>
<tr><td>No</td><td>Assessment method</td><td>Weight</td></tr>
<tr><td>1.</td><td>Oral Presentation</td><td>70</td></tr>
<tr><td>2.</td><td>Essay</td><td>30</td></tr>
<tr><td></td><td>Total</td><td>100</td></tr>
</table></td></tr>
<tr><td>Reading list</td><td>
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CO-PLO Mapping

	PLO 1	**PLO 2**	**PLO 3**	**PLO 4**	**PLO 5**	**PLO 6**
CO 1		V	V			V
CO 2		V	V			V

Last Modified Date : 4 November 2023

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MODULE HANDBOOK

Module designation	*Topics in Boundary Element Method*
Code, if applicable	*MMM 7601*
Subtitle, if applicable	*Dual Reciprocity Boundary Element Method*
Semester(s) in which the module is taught	*1st or 2nd semester*
Person responsible for the module	*Chair of the Lab. of Computation of Mathematics*
Language	*Bahasa Indonesia*
Relation to curriculum	~~*Compulsory*~~ */ elective /* ~~*specialisation*~~
Teaching methods	*case based learning*
Workload (incl. contact hours, self-study hours)	*Total workload is 232 hours per semester, which consists of 50 minutes lectures per week, 120 minutes structured activities per week, 120 minutes individual study per week, in total is 16 weeks per semester, including mid exam and final exam.*
Credit points in Credit Units	*3*
Required and recommended prerequisites for joining the module	*existing competences in advanced calculus*
Module objectives/intended learning outcomes	*After completing this course, the students should have able to:* • *CO 1 derive boundary element method for modified Helmholtz equation.* • *CO 2 derive boundary element method for diffusion-convection equation.* • *CO 3 develop boundary element method for equations related to student's research.*

<table>
<tr><td>Content</td><td>In this course, students have to do activities under Lecture's supervision. Academic activities including literature study to master one or more concepts including: Boundary element method for modified Helmholtz equation, Boundary element method for diffusion-convection equation.</td></tr>
<tr><td>Examination forms</td><td>Oral presentation, essay.</td></tr>
<tr><td>Study and examination requirements</td><td>To pass this course, students must obtain a minimum grade of B. The final mark will be weighted as follows:
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CO-PLO Mapping

	PLO 1	**PLO 2**	**PLO 3**	**PLO 4**	**PLO 5**	**PLO 6**
CO 1		V	V			V
CO 2		V	V			V
CO 3		V	V		V	V

Last Modified Date : 4 Nopember 2023