



UNIVERSITAS GADJAH MADA

Faculty of Mathematics and Natural Sciences

Department of Mathematics

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Master in Mathematics

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MODULE HANDBOOK

Module Name	<i>Differential Geometry</i>
Module level, if applicable	<i>Master Program</i>
Code, if applicable	<i>MMM-6109</i>
Subtitle, if applicable	
Courses, if applicable	<i>Differential Geometry</i>
Semester(s) in which the module is taught	<i>II (second year)</i>
Person responsible for the module	<i>Chair of the Lab. of Applied Mathematics</i>
Lecturer(s)	<i>Dr. Fajar Adi Kusumo</i>
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory / Elective / Specialisation</i> <i>Names of other study programmes with which the module is shared: -</i>
Teaching methods	<i>lecture, lesson, project.</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload:</i> <i>- 136 hours per semester</i> <i>Contact hours (please specify whether lecture, exercise, laboratory session, etc.):</i> <i>- 150 minutes (2.5 hours) lectures per week for 14 weeks, 180 minutes (3 hours) structured activities per week, in total is 16 weeks per semester, including mid exam and final exam.</i> <i>Private study including examination preparation, specified in hours:</i> <i>- 180 minutes (3 hours) individual study per week</i>
Credit points	<i>3</i>

Required and recommended prerequisites for joining the module	<i>Before taking this course, the students must have a good understanding about the concept of the Differential Equations and Multivariable Calculus.</i>										
Module objectives/intended learning outcomes	<p><i>After completing this course, the students should have:</i></p> <p><i>CO 1. Ability to analyse the cases of tangent space and differential form.</i></p> <p><i>CO 2. Ability to calculate the case of Frenet Formula and frame field.</i></p> <p><i>CO 3. Ability to analyze Isometry on \mathbb{R}^3.</i></p> <p><i>CO 4. Ability to analyze the case of surface in \mathbb{R}^3 and manifolds.</i></p>										
Content	<p><i>a. Tangent Space and Differential Forms</i></p> <p><i>b. Frenet Formula and Frame Fields</i></p> <p><i>c. Isometry on \mathbb{R}^3.</i></p> <p><i>d. Surface in \mathbb{R}^3 and Manifolds.</i></p>										
Examination forms	<i>Oral presentation, Essay</i>										
Study and examination requirements	<p><i>The final mark will be computed from a proportional weight of assignments, mid examination and final examination. The final mark will be weighted as follows:</i></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><i>No Assessment methods</i></th> <th style="text-align: right;"><i>Weight (percentage)</i></th> </tr> </thead> <tbody> <tr> <td><i>1. Final Examination</i></td> <td style="text-align: right;"><i>30 (15% case based)</i></td> </tr> <tr> <td><i>2. Mid-Term Examination</i></td> <td style="text-align: right;"><i>30 (10% case based)</i></td> </tr> <tr> <td><i>3. Project and Presentation</i></td> <td style="text-align: right;"><i>25</i></td> </tr> <tr> <td><i>4. Other Activities: Quiz, Homework, etc.</i></td> <td style="text-align: right;"><i>15</i></td> </tr> </tbody> </table> <p><i>The initial cut-off points for grades A, B, C, and D should not be less than 80%, 70%, 50%, and 40%, respectively.</i></p>	<i>No Assessment methods</i>	<i>Weight (percentage)</i>	<i>1. Final Examination</i>	<i>30 (15% case based)</i>	<i>2. Mid-Term Examination</i>	<i>30 (10% case based)</i>	<i>3. Project and Presentation</i>	<i>25</i>	<i>4. Other Activities: Quiz, Homework, etc.</i>	<i>15</i>
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Media employed	<i>Boards, projectors, Laptop/Computer</i>										
Reading list	<p><i>1. O'Neill, B., Elementary Differential Geometry, Elsevier, 2006</i></p> <p><i>2. Thorpe, J.A., Elementary Topics in Differential Geometry, Springer-Verlag New York, Inc, 1979</i></p>										

CO-PLO Mapping

	CO 1	CO 2	CO 3	CO4
PLO 1	√			

PLO 2	√	√		√
PLO 3	√	√	√	√
PLO 4				
PLO 5				
PLO 6				

Compilation Date :

Modified Date :