MINISTRY OF EDUCATION, CULTURE, RESEARCH, AND TECHNOLOGY
UNIVERSITAS NEGERI SURABAYA
FACULTY OF MATHEMATICS AND NATURAL SCIENCE
UNDERGRADUATE PROGRAM OF MATHEMATICS
Ketintang Campus, C8-C9 Buildings of FMIPA, Surabaya
Email: s1-mat@unesa.ac.id

Module Handbook

Module Name :	*Graf Topologi* Graph of Topology
Module level :	Bachelor degree/Undergraduate Program
Course Code :	4420103047
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	7th/ fourth year
Module coordinator(s)	Prof. Dr. Dwi Juniati,M.Si
Lecturer(s):	Prof. Dr. Dwi Juniati,M.Si
Language:	Bahasa Indonesia (Indonesian Language)
Classification within the curriculum:	~~Compulsory~~/ Elective
Teaching format/class hours per week during the semester:	3 contact hours of lectures (*sks* or credit unit*)
Workload :	3 x 50 minutes lectures, 3 x 60 minutes structured activity, and 3 x 60 minutes individual activity per week, 14 weeks per semester 119 total hours per semester ~ 4.77 ECTS**
Credit Unit:	3 credit unit (4.77 ECTS)
Requirements:	Graph Theory and Abstract Algebra I

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Learning goals/competencies:	**Knowledge (KNO-2):** Identifying and explaining the characteristics of mathematical problems. CLO-1: Able to identify the graph classification based on the given matrix CLO-2: Able to explain representation of cyclic group and cayley group on graph CLO-3: Able to identify an action of a group on a graph CLO-4: Able to explain the formation of ordinary voltage graphs and their properties CLO-5: Able to identify the conditions that a graph has a group that acts independently CLO-6: Able to explain the formation of permutation voltage graphs **Skill (SKI-4):** Implementing simple mathematical procedures in computer programs.) CLO-4: Able to implement mathematical procedures in computer programs (Maple/Matlab) to determine a mapping on graphs and product between two graphs
Content	This course discusses the concepts of graphs and how to construct graphs in various ways, forming ordinary voltage graphs and permuted voltage graphs using groups and permutations, determining the conditions for a graph to have a nontrivial basic graph and applying voltage graph theory in determining the components of a graph without having to know the graph.. Lecture activities are carried out in a student center with discussions, observations, project assignments, and presentations.

Attribute Soft skill:	Active communication; Discipline; Collaboration; Responsibility; and Argumentation in class.
Study/exam achievements:	The final grade (*NA*) is calculated based on the following ratio:

Assessment Components	Percentage of contribution
Participation	20%

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<tr><td>Assignment</td><td>30%</td></tr>
<tr><td>Mid-semester test</td><td>20%</td></tr>
<tr><td>Final semester test</td><td>30%</td></tr>
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Grade conversion of 0-100 scale into 0-4 scale is set as below:
<table>
<tr><th>Letter</th><th>Number</th><th>Grade Interval</th></tr>
<tr><td>A</td><td>4,00</td><td>$85 \leq A \leq 100$</td></tr>
<tr><td>A-</td><td>3,75</td><td>$80 \leq A- < 85$</td></tr>
<tr><td>B+</td><td>3,50</td><td>$75 \leq B+ < 80$</td></tr>
<tr><td>B</td><td>3,00</td><td>$70 \leq B < 75$</td></tr>
<tr><td>B-</td><td>2,75</td><td>$65 \leq B- < 70$</td></tr>
<tr><td>C+</td><td>2,50</td><td>$60 \leq C+ < 65$</td></tr>
<tr><td>C</td><td>2,00</td><td>$55 \leq C < 60$</td></tr>
<tr><td>D</td><td>1,00</td><td>$40 \leq D < 55$</td></tr>
<tr><td>E</td><td>0,00</td><td>$0 \leq E < 40$</td></tr>
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<tr><td>Learning Methods :</td><td>Student-centered approach; project-based learning; lecturer and discussion; and presentations (structured activities)</td></tr>
<tr><td>Form of Media:</td><td>Power point slides; video; worksheets, and textbooks</td></tr>
<tr><td>Literature (primary references):</td><td>
1. Juniati, Dwi. 2013. Topologi. Surabaya. University Press Surabaya.
2. Gross, Jonathan L. and Tucker, Thomas W. T. 1987. Topologycal Graph Theory. New York. Wiley Interscience.
3. Gallian, Joseph. 2010. Contemporary Abstract Algebra. Toronto. D.C. Heath and Co.
4. Budayasa, Ketut. 2013. Teori Graf dan Aplikasinya. Surabaya. University Press Surabaya.
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Notes:	*1 credit unit or *sks* in learning process = three periods consist of: (a) scheduled instruction in a classroom or laboratory (50 minutes); (b) structured activity (60 minutes); and (c) individual activity (60 minutes) according to the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 44 Year 2015 jo. the Regulation of Indonesia Ministry of Research, Technology, and Higher Education No. 50 Year 2018.
	**1 credit unit or *sks* = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2019