



Module Handbook

Module Name :	<i>Teori Graf</i> Graph Theory
Module level :	Bachelor degree/Undergraduate Program
Course Code :	4420103138
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	4 th / Second year
Module coordinator(s)	Dr. Budi Rahadjeng, M.Si
Lecturer(s):	Prof. I Ketut Budayasa, PhD Dr. Budi Rahadjeng, 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 (<i>sks</i> 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 ~ 4.76 ECTS**
Credit Unit:	3 credit unit (4.76 ECTS)
Requirements:	Discrete Mathematics



<p>Learning goals/competencies:</p>	<p>Knowledge (KNO-1): Demonstrating mathematical knowledge and mathematical insight. CLO-1: Explain concepts connectedness, tree, planarity, eulerian, hamiltonian, coloring, and some graph optimizations and their applications.</p> <p>Knowledge (KNO-2): Identifying and explaining the characteristics of mathematical problems CLO-2: Solve mathematical problems using concepts connectedness, tree, planarity, eulerian, hamiltonian, coloring, and some graph optimizations and their applications</p> <p>Skill (SKI-2): Applying the basic principles of mathematics to solve simple* mathematical problems. CLO-3: Use the concepts and properties of connectedness, tree, planarity, eulerian, hamiltonian, coloring, and some graph optimizations and their applications in solving more general mathematical problems.</p> <p>Competences (COM-1): Proving mathematical statements by various methods. CLO-4: Prove the properties of connectedness, tree, planarity, eulerian, hamiltonian, coloring, and some graph optimizations</p> <p>Attitude and Social (SOC-2) : Showing responsibility for work in the field of expertise independently, having a lifelong willingness to learn, and having the courage to make decisions. CLO-5: Able to responsible for completing test and task</p>
<p>Content</p>	<p>This course discusses about connectedness, Tree, Planarity, Eulerian, Hamiltonian, Coloring, and Some Graph Optimizations And Their Applications. Lecture activities are carried out in a student center with discussions, observations, project assignments, and presentations.</p>

<p>Attribute Soft skill:</p>	<p>Active communication; Discipline; Collaboration; Responsibility; and Argumentation in class and outdoor setting</p>					
<p>Study/exam achievements:</p>	<p>The final grade (NA) is calculated based on the following ratio:</p> <table border="1" data-bbox="539 1912 1347 2038"> <thead> <tr> <th data-bbox="539 1912 943 1977">Assessment Components</th> <th data-bbox="943 1912 1347 1977">Percentage of contribution</th> </tr> </thead> <tbody> <tr> <td data-bbox="539 1977 943 2038">Participation</td> <td data-bbox="943 1977 1347 2038">20%</td> </tr> </tbody> </table>		Assessment Components	Percentage of contribution	Participation	20%
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	<table border="1"> <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> </table> <p>Grade conversion of 0-100 scale into 0-4 scale is set as below:</p> <table border="1"> <thead> <tr> <th>Letter</th> <th>Number</th> <th>Grade Interval</th> </tr> </thead> <tbody> <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> </tbody> </table>	Assignment	30%	Mid-semester test	20%	Final semester test	30%	Letter	Number	Grade Interval	A	4,00	$85 \leq A \leq 100$	A-	3,75	$80 \leq A- < 85$	B+	3,50	$75 \leq B+ < 80$	B	3,00	$70 \leq B < 75$	B-	2,75	$65 \leq B- < 70$	C+	2,50	$60 \leq C+ < 65$	C	2,00	$55 \leq C < 60$	D	1,00	$40 \leq D < 55$	E	0,00	$0 \leq E < 40$
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Learning Methods :	Student-centered approach; project-based learning; lecturer and discussion; and presentations (structured activities)																																				
Form of Media:	Power point slides; video; worksheets, and textbooks																																				
Literature (primary references):	<ol style="list-style-type: none"> Budayasa, K., 2016, Teori Graph dan Aplikasinya, UNESA University Press. Chartrand, G. Dan Zhang, P. 2012. A First Course In Graph Theory. New York: Dover Publications, Inc. Mineola. Chartrand, G., Linda, L., dan Zhang, P. 2011. Graphs & Digraphs. Fifth Edition. New York: Taylor and Francis Group, LLC Chapman & Hall/CRC. Hammack, R., Imrich, W., dan Klavžar, S. 2011. HANDBOOK OF PRODUCT GRAPHS SECOND EDITION. New York: Taylor and Francis Group, LLC Chapman & Hall/CRC. Clark, J. & D. A. Holton, 1991, First Look at Graph Theory, New Jersey World Scientific Publishing Co. Johnsonbaugh, R., 1997, Discrete Mathematics, Prentice Hall. 																																				



Notes:	*1 credit unit or <i>sks</i> 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 <i>sks</i> = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2019