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### Module Handbook

Module Name :	<i>Graf Random</i> Random Graph
Module level :	Bachelor degree/Undergraduate Program
Course Code :	4420103046
Abbreviation, if applicable:	-
Courses included in the module, if applicable:	Not Applicable
Semester/Term	8 <sup>th</sup> / fourth year
Module coordinator(s)	Prof. I Ketut Budayasa, Ph.D
Lecturer(s):	Prof. I Ketut Budayasa, Ph.D
Language:	Bahasa Indonesia (Indonesian Language)
Classification within the curriculum:	<del>Compulsory</del> / 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 ~ 3.77 ECTS**
Credit Unit:	3 credit unit (4.77 ECTS)
Requirements:	Statistical Mathematics and Graph Theory



<p>Learning goals/competencies:</p>	<p><b>Knowledge (KNO-2):</b> Identifying and explaining the characteristics of mathematical problems.</p> <p>CLO-1: Able to identify monotonicity, asymptotic equivalence and graph random</p> <p>CLO-2: Able to explain an example of subgraph on random graph</p> <p>CLO-2: Able to explain random graph matching</p> <p><b>Skill (SKI-3):</b> Analyzing the formal structure of mathematical problems and relevant fields.</p> <p>CLO-4: Able to analyze probability exponential problems (subset random binomial and martingales inequalities)</p> <p>CLO-4: Able to analyze asymptomatic distribution of random graph (method of moments, Stein method, Projection and decomposition)</p> <p><b>Competence (COM-1):</b> Proving mathematical statements by various methods.</p> <p>CLO-4: Able to prove mathematical statements or properties related to chromatic number of random graph</p>
<p>Content</p>	<p>This course is primarily aimed at teaching the concepts of discrete mathematics which is a combine of graph theory, combinatorics and probability theory and their applications. Discussion on the probability space <math>(\Omega, F, P)</math> where <math>\Omega</math> represents the set of all graphs with the set of vertices <math>\{1, 2, 3, \dots, n\}</math>, <math>F</math> is the set of subsets of <math>\Omega</math>, and <math>P</math> is the probability set of each element. in through a deductive approach.</p>

<p>Attribute Soft skill:</p>	<p>Active communication; Discipline; Collaboration; Responsibility; and Argumentation in class.</p>
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Study/exam achievements:	The final grade ( <i>NA</i> ) is calculated based on the following ratio:		
	Assessment Components	Percentage of contribution	
	Participation	20%	
	Assignment	30%	
	Mid-semester test	20%	
	Final semester test	30%	
	Grade conversion of 0-100 scale into 0-4 scale is set as below:		
	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	$0 \leq E < 40$
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"><li>1. Ketut Budayasa. 2013. Teori Graf dan Aplikasinya. Surabaya: University Press Surabaya.</li><li>2. Remco van der Hofstad. 2013. Random Graphs and Complex Networks. Eindhoven Univ of Tech.</li><li>3. Svante Janson etc, Random Graph, Wiley Interscience,</li></ol>
Notes:	<p>*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.</p> <p>**1 credit unit or <i>sks</i> = 1.59 ECTS according to Rector Decree Of Universitas Negeri Surabaya No. 598/UN38/HK/AK/2019</p>