

Course Code	TKIT162101													
Course Name	Discrete Mathematics													
Course Instructors	Sri Suning Kusumawardani; Anugrah Galang Persada; Warsun Najib; I Wayan Mustika													
Course Type	Required													
Course Classification	Basic Science & Math													
Credit / Contact Hour per Week	3 / 150 minutes per Week													
Course Description	This course will discuss the fundamental of logic and discrete mathematics that applicable to solve the complex problem in engineering.													
Prerequisites Courses	-													
Covered Student Outcome	Fundamental Engineering Knowledge (a) Development of Engineering Solution (b)													
Learning Outcome														
		Study Program Student Outcome												
No	Learning Outcome	SO (a) – SO (k)												
1.	Students are able to <u>explain</u> the fundamental of logic in computer programming including compound propositions, logical operators, conditional and biconditional proposition, and etc.	Fundamental Engineering Knowledge (a)												
2.	Students able to <u>solve</u> various problem related to set theory, Boolean algebra, minimum weights and shortest paths, and able to <u>proof</u> the truth of an argument by using inference methods and mathematical induction.	Development of Engineering Solution (b)												
3.	Students are able to <u>evaluate</u> group application on encoding, and the state diagrams of Finite-State Machines to solve complex engineering problem	Development of Engineering Solution (b)												
Topic	<ol style="list-style-type: none"> 1. Overview of Discrete Mathematics and Logic 2. Basic Logic and Predicate Logic 3. Basic of mathematical proof 4. Set theory and Boolean Algebra 5. Relation and Function 6. Graf Theory 7. Group and Semigroup 8. Finite-State Machines and Language 													
Direct Assessment	<table border="1"> <thead> <tr> <th>Direct Assessment Plan</th> <th>Measured Learning Outcome</th> </tr> </thead> <tbody> <tr> <td>Engineering Design Assignment – Fundamental</td> <td>LO1</td> </tr> <tr> <td>Engineering Design Assignment – Project Presentation</td> <td>LO3</td> </tr> <tr> <td>Mid Exam</td> <td>LO1</td> </tr> <tr> <td>Final Exam</td> <td>LO2, LO3</td> </tr> <tr> <td></td> <td></td> </tr> </tbody> </table>		Direct Assessment Plan	Measured Learning Outcome	Engineering Design Assignment – Fundamental	LO1	Engineering Design Assignment – Project Presentation	LO3	Mid Exam	LO1	Final Exam	LO2, LO3		
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Engineering Design Assignment – Fundamental	LO1													
Engineering Design Assignment – Project Presentation	LO3													
Mid Exam	LO1													
Final Exam	LO2, LO3													
Indirect Assesment	Questionnaire (EDOM)													
References	<ol style="list-style-type: none"> [1] Finan, Marcel B., 2002, <i>Lecture Notes in Discrete Mathematics</i>, Arkansas Tech University. [2] Kusumawardani, Sri Suning, <i>e-Learning JTETI: Matematika Diskret dan Logika</i>, 2004-2010. [3] Kolman, Bernard, 1987, <i>Discrete Mathematical Structures for Computer Science</i>, Prentice Hall International, United States of America. [4] Rosen, Kenneth H., 2007, <i>Discrete Mathematics and Its Applications</i>, McGraw-Hill, Singapore. [5] Siang, Jong Jek, 2006, <i>Matematika Diskret dan Aplikasinya pada Ilmu Komputer</i>, Andi Offset, Yogyakarta. 													