

Course Code	TKIE162101													
Course Name	Discrete Mathematics													
Course Instructors	Anugerah Galang Persada, Dyonisius Dony Ariananda, I Wayan Mustika, Sunu Wibirama													
Course Type	Required													
Course Classification	Engineering Topics													
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 and Engineering Knowledge (a) Development of Engineering Solution (b)													
Learning Outcome	<ol style="list-style-type: none"> 1. Students are able to explain the fundamental of logic in computer programming including compound propositions, logical operators, conditional and biconditional proposition, and etc. 2. Students able to solve various problem related to set theory, Boolean algebra, minimum weights and shortest paths, and able to proof the truth of an argument by using inference methods and mathematical induction. 3. Students are able to evaluate group application on encoding, and the state diagrams of Finite-State Machines to solve complex engineering problem. 													
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 Asessment	<table border="1"> <thead> <tr> <th>Direct Asessment 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 Asessment 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. 													