International Program
CPE111 Syllabus and Course Information, 2022
King Mongkut's University of Technology Thonburi
Department of Computer Engineering

CPE 111 **Discrete Mathematics for Computer Engineers**

Instructors: **Associate Professor Dr. Naruemon Wattanapongsakorn**
Office Hours: Monday & Thursday 13.30-15:00, or by appointment
E-mail: naruemon.wat@mail.kmutt.ac.th

Course Description

The course aims at providing a foundation for discrete mathematics for computer engineering. In particular, the course covers proof techniques, relations, numbering systems, counting and logic. Also, it covers recursion and an introduction to complexity analysis of algorithms. Finally, it covers graphs, trees, Boolean algebra and discrete probability.

Expect Learning Outcomes
Understand the fundamental discrete mathematics on the provided topics. Able to apply the knowledge to solve related problems and present them in both oral and written forms.

Tentative Class Schedule:

Weeks	**Topics**	**Text References**
1, 2	Basic of Logic, Sets and Functions	Ch. 1-2
	Numbering System	Ch. 4
3	Boolean Algebra	-
4	Introduction to Complexity Analysis of Algorithms	Ch. 3
5-6	Mathematical Reasoning - Mathematical Induction - Recursive Definition & Algorithms	Ch. 5
6-7	Counting - Basics of Counting - Pigeonhole Principle - Permutations & Combinations	Ch. 6
8-9	**Midterm Examination**	
10	Advanced Counting - Recurrence Relations - Divide & Conquer - Inclusion & Exclusion	Ch. 8
11	Discrete Probability	Ch. 7
12	Relations - Relations and Their Properties - Closures of Relations - Equivalence Relations	Ch. 9
13-14	Graphs and Trees - Graph Terminology & Connectivity - Introduction to Trees	Ch. 10-11
15	Finite State Machine, context-free grammar, and Turing machine	-
16	**Final Examination**	

Textbook: Kenneth H. Rosen, Discrete Mathematics and Its Applications, 2019, Eight Edition, McGraw-Hill, ISBN 978-125-967-6512

Course Grade:	Midterm Exam	30%
	Final Exam	30%
	Quizzes	20%
	Homework and Assignment	20%

Homework Assignment Policies:

1. A homework will be assigned almost every week
2. Each homework solution will be available on the class web page on the day that the homework is due
3. Once the solution is posted, late homework is **not** acceptable. Students will receive zero credits for late or not turn-in homework.