CHULALONGKORN UNIVERSITY

CHULA ENGINEERING
Foundation toward Innovation

COURSE SYLLABUS

1. **Course Number** 2110200
2. **English Abbreviation of Course Title** DISCRETE STRUC
3. **Course Title**
   Thai : โครงสร้างดิสครีต
   English : DISCRETE STRUCTURES
4. **Credit** 3 (3 – 0 – 6)
5. **Responsible Section**
   5.1. Faculty/Equivalent FACULTY OF ENGINEERING
   5.2. Department DEPARTMENT OF COMPUTER ENGINEERING
   5.3. Section
6. **Method of Measurement** Letter Grade (A B+ B C+ C D+ D F)
7. **Type of Course** Semester Course
8. **Semester** 1st semester
9. **Academic Year** 2015
10. **Teaching Management**

Class Section	Instructor	Evaluation Period
1	10002126 ATHASIT SURARERKS	23-11-2015 to 31-12-2015
2	10003176 ATIWONG SUCHATO	23-11-2015 to 31-12-2015
3	00034157 ATTAWITH SUDSANG	23-11-2015 to 31-12-2015

11. **Condition**
12. **Program that uses this course** Computer Engineering (121100), Bachelor of Education Program (5-year program) (2700), Bachelor of Education Program (5-year program) (2700), Bachelor of Education Program (5-year program) (2700), Bachelor of Education Program (5-year program) (2700), Bachelor of Education Program (5-year program) (2700), Bachelor Degree of Computer Education (2766)
13. **Degree** Bachelor Year 2
14. **Venue of Class** ห้องเรียนกลุ่มที่ 1 ใช้ห้อง 209 อาคาร 3 เพื่อทำการบันทุกการสอน

15. Course Description

เซต ความสัมพันธ์ ฟังก์ชัน ทฤษฎีและการพิสูจน์ คณิตศาสตร์เชิงการจัด การนับ หลักการเพิ่มเข้าตัดออก ความสัมพันธ์เวียนเกิด ฟังก์ชันก่อกำเนิด กราฟและต้นไม้ ทฤษฎีจำนวนเบื้องต้น

Sets, relations, functions, theorem and proof; combinatorics; counting, principle of inclusion exclusion, recurrent relations, generating functions; graphs and trees; introduction to number theory.

16. Course Outline

16.1. Behavioral Objectives

#	Behavioral Objectives
1	Students gain knowledge of discrete mathematics which are required for more advanced courses in Computer Engineering **Learning outcomes :** ▸ 01.1. ▸ 01.4. ▸ 02.1. ▸ 02.4. **Teaching/Development Method :** ▸ 01. Lecture **Evaluation Method :** ▸ 01. Written examination

16.1. Content

Week	Description	Student Assignment
1	Propositional Logic, Predicate Logic, Rules of Inference Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	
2	Sets and Operations, Functions and Relations Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	
3	Methods of Proof, Direct and Indirect Proofs, Vacuous Proof, Trival Proof, Proof by Contradiction Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	
4	Methods of Proof, Existence Proofs, Uniqueness Proofs, Counterexamples, Proof by Cases Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	

Week	Description	Student Assignment
5	Mathematical Induction Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	
6-8	GCD & LCM, Fundamental Theorem of Arithmetic, Euclid's Division Algorithm, Diophantine Equations, Congruence Equations, Residue Number system, Primarity, RSA Cryptography, ISBN Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	
9-11	Basic Counting Techniques, Bionomial Coefficients, Combinational Proof, Generalized Permutations and Combinations, Principle of Inclusion and Exclusion, Recurrence Relation Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	
12-14	Graphs, Graph Models, Graph Terminology, Special Graphs, Representing Graphs, Graph Isomorphism, Connectivity, Euler and Hamilton Paths, Planar Graphs, Graph Coloring, Introduction to Trees, Application of Trees, Tree Traversal, Tree Spanning Behavioral Objectives : ▸ 1 Instructor : ▸ ATTAWITH ▸ ATHASIT ▸ ATIWONG	

17. Teaching Media

✔ เขียนกระดาน

✔ แผ่นใสและแผ่นทึบ

✔ สื่อนำเสนอในรูปแบบ Powerpoint media

17.1. Communication with students through social networks

17.1.1. Form and Usage: ✔ อีเมล์/**Email** ✔ **Facebook** ✔ **courseville**

17.1.2. Learning Management System ✔ **CourseVille**

17.2. Students Consultation 3.0 Hour/Week

17.3. Assessment

Activities Assessed	%
In-class participation and quiz 1 (Foundation)	15.00
In-class participation and quiz 2 (Counting)	15.00
In-class participation and quiz 3 (Graphs & Trees)	15.00
In-class participation and quiz 4 (Number Theory)	15.00
FINAL EXAM	40.00

Assessment Criteria

18. Reading List

18.1. Required Texts

DISCRETE MATHEMATICS AND ITS APPLICATIONS 7E, McGrawHill, Kenneth H. Rosen

18.2. Supplementary Texts

18.3. Research/Academic Articles (if any)

18.4. Related Electronic Media or Websites

19. Teaching Evaluation

19.1. Evaluation through the **CUCAS – SCE** system

19.2. Changes made in accordance with previous teaching evaluation

20. Remark