一、課程說明(Course Description)

This course gives an introduction to the essentials of discrete mathematics. This course will teach students how to think logically and mathematically. Five important themes are interwoven in this course:

1. Mathematical Reasoning: Logic and Mathematical Induction
2. Combinatorial Analysis: Counting
3. Discrete Structures: Sets, Permutations, and Graphs
4. Algorithmic Thinking: Problems→Algorithms→Computer Programs
5. Applications: Cryptography

二、指定用書(Text Books)

K. H. Rosen, *Discrete Mathematics and its Applications, 7th ed.* McGraw-Hill, 2013.

三、參考書籍(References)

E. Gossett, *Discrete Mathematics with Proof,* Prentice Hall, 2003.

四、教學方式(Teaching Method)

3-hour lecture per week

五、教學進度(Syllabus)

1. Chapter 1: The Foundations: Logic (4 hours)
2. Chapter 2: Basic Structures: Sets, Functions, Sequences, and Sums (4 hours)
3. Chapter 3: Algorithms (6 hours)
4. Chapter 4: Number Theory and Cryptography (5 hours)
4. Chapter 5: Induction and Recursion (5 hours)
5. Chapter 6: Counting (4 hours)
6. Chapter 8: Advanced Counting Techniques (7 hours)
7. Chapter 10: Introduction to Graphs (6 hours)

六、成績考核(Evaluation)

Homework (20%)   Midterm I (25%)   Midterm II (25%)   Final Exam (30%)

七、可連結之網頁位址