Tamkang University Academic Year 102, 1st Semester Course Syllabus

Course Title	DISCRETE MATHEMATICS	Instructor	HUANG-WEN HUANG
Course Class	TPIBB2A DIVISION OF COMMUNICATION TECHNOLOGY, DEPARTMENT OF INNOVATIVE INFORMATION AND TECHNOLOGY, 2A	Details	◆ Required ◆ One Semester ◆ 3 Credits

Departmental teaching objectives

Cultivate professional talents in software engineering and communication technology.

Departmental core competences

A. Capability of computer program coding, process planning, and problem solving.

B. Capability of applying basic mathematics and information technology related mathematics.

C. Capability of applying knowledge of internet structure and protocol in communication system.

D. Capability of data collecting and analyzing, and organizing software and hardware.

E. Capability of understanding and integrating system structure for problem solving.

F. Capability of system analyzing, modeling, and designing.

G. Capability of management utilizing information technology system.

Course Introduction	This course will teach the students to be familiar with discrete mathematics which is an important fundamental knowledgement in computer science and software engineering. It will further teach the students to understand the major topics and functions in discrete mathematics.

The Relevance among Teaching Objectives, Objective Levels and Departmental core competences

I.Objective Levels (select applicable ones) :
 (i) Cognitive Domain　　: C1-Remembering,　　C2-Understanding,　　C3-Applying,
 　　　　　　　　　　　　　　 C4-Analyzing,　　　C5-Evaluating,　　　C6-Creating
 (ii) Psychomotor Domain : P1-Imitation,　　　P2-Mechanism,　　　　P3-Independent Operation,
 　　　　　　　　　　　　　　 P4-Linked Operation, P5-Automation,　　P6-Origination
 (iii) Affective Domain　: A1-Receiving,　　　　A2-Responding,　　　A3-Valuing,
 　　　　　　　　　　　　　　 A4-Organizing,　　　A5-Charaterizing,　A6-Implementing

II.The Relevance among Teaching Objectives, Objective Levels and Departmental core competences :
 (i) Determine the objective level(s) in any one of the three learning domains (cognitive,
 　　psychomotor, and affective) corresponding to the teaching objective. Each objective should
 　　correspond to the objective level(s) of ONLY ONE of the three domains.
 (ii) If more than one objective levels are applicable for each learning domain, select the
 　　highest one only. (For example, if the objective levels for Cognitive Domain include
 　　C3,C5,and C6, select C6 only and fill it in the boxes below. The same rule applies to
 　　Psychomotor Domain and Affective Domain.)
 (iii) Determine the Departmental core competences that correspond to each teaching objective.
 　　Each objective may correspond to one or more Departmental core competences at a time.
 　　(For example, if one objective corresponds to three Departmental core competences: A,AD,
 　　and BEF, list all of the three in the box.)

No.	Teaching Objectives	Relevance	
		Objective Levels	Departmental core competences
1	To introduce the concepts of logic, definitions of logic and its relationship with computer logic.	C2	BEG
2	To teach students technical terms used and concepts in discrete mathematics; as well as the differences between continuous and discrete mathematical models.	C3	B
3	To introduce concepts of set and quantity; furthermore, understand function, sequence, sum, numbers, growth of function and matrices.	C3	B
4	To introduce concepts of induction, recursion and relation as well as their definitions and applications.	C2	B
5	To illustrate concepts of graph, its definitions and applications.	C3	B

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	To introduce the concepts of logic, definitions of logic and its relationship with computer logic.	Lecture, Discussion	Written test
2	To teach students technical terms used and concepts in discrete mathematics; as well as the differences between continuous and discrete mathematical models.	Lecture	Written test

3	To introduce concepts of set and quantity; furthermore, understand function, sequence, sum, numbers, growth of function and matrices.	Lecture	Written test
4	To introduce concepts of induction, recursion and relation as well as their definitions and applications.	Lecture	Written test
5	To illustrate concepts of graph, its definitions and applications.	Lecture	Written test

This course has been designed to cultivate the following essential qualities in TKU students

Essential Qualities of TKU Students	Description
◇ A global perspective	Helping students develop a broader perspective from which to understand international affairs and global development.
◆ Information literacy	Becoming adept at using information technology and learning the proper way to process information.
◆ A vision for the future	Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision.
◇ Moral integrity	Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems.
◆ Independent thinking	Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically.
◇ A cheerful attitude and healthy lifestyle	Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life.
◇ A spirit of teamwork and dedication	Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems.
◇ A sense of aesthetic appreciation	Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process.

Course Schedule

Week	Date	Subject/Topics	Note
1	102/09/16 ~ 102/09/22	Introduction Logic	
2	102/09/23 ~ 102/09/29	Formal Logic	
3	102/09/30 ~ 102/10/06	Propositional Logic	
4	102/10/07 ~ 102/10/13	Predicate Logic	
5	102/10/14 ~ 102/10/20	Logic in Mathematics	
6	102/10/21 ~ 102/10/27	Sets	
7	102/10/28 ~ 102/11/03	Functions, Sequences and Sums	

8	102/11/04~ 102/11/10	Numbers, Growth of Functions	
9	102/11/11~ 102/11/17		
10	102/11/18~ 102/11/24	Midterm Exam Week	
11	102/11/25~ 102/12/01	Induction	
12	102/12/02~ 102/12/08	Recursion 1	
13	102/12/09~ 102/12/15	Recursion 2	
14	102/12/16~ 102/12/22	Relations 1	
15	102/12/23~ 102/12/29	Relations 2	
16	102/12/30~ 103/01/05	Graphs 1	
17	103/01/06~ 103/01/12	Graphs 2	
18	103/01/13~ 103/01/19	Final Exam Week	

Requirement	
Teaching Facility	Computer
Textbook(s)	
Reference(s)	
Number of Assignment(s)	**5** (Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 10.0 % ◆ Mark of Usual：20.0 % ◆ Midterm Exam： 30.0 % ◆ Final Exam： 20.0 % ◆ Other〈小考〉：20.0 %
Note	This syllabus may be uploaded at the website of Course Syllabus Management System at http://info.ais.tku.edu.tw/csp or through the link of Course Syllabus Upload posted on the home page of TKU Office of Academic Affairs at http://www.acad.tku.edu.tw/CS/main.php . ※ **Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**