Tamkang University Academic Year 111, 1st Semester Course Syllabus

Course Title	DISCRETE MATHEMATICS	Instructor	JEN-HO YANG
Course Class	TKFXB1A DEPARTMENT OF ARTIFICIAL INTELLIGENCE, 1A	Details	◆ General Course ◆ Required ◆ One Semester
Relevance to SDGs	SDG9 Industry, Innovation, and Infrastructure		

Departmental Aim of Education

Ⅰ. Students may analyze problems in applied science based on the fundamental knowledge of programming, mathematics, and artificial intelligence.

Ⅱ. Students may plan and implement an AI system following the procedures of problem analysis, experiment testing, data visualizing, derivation and deduction.

Ⅲ. Educate the students to be AI engineers who may accomplish their missions indepedently and may collaborate with their colleagues in the workplace.

Ⅳ. Students may have basic skills and global competence for career diversification, and may keep lifelong learning.

Subject Departmental core competences

A. Professional analysis.(ratio:65.00)

B. Practical application.(ratio:20.00)

C. Professional attitude.(ratio:10.00)

D. Global Mobility.(ratio:5.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:5.00)

2. Information literacy. (ratio:30.00)

3. A vision for the future. (ratio:10.00)

4. Moral integrity. (ratio:5.00)

5. Independent thinking. (ratio:30.00)

6. A cheerful attitude and healthy lifestyle. (ratio:5.00)

7. A spirit of teamwork and dedication. (ratio:10.00)

8. A sense of aesthetic appreciation. (ratio:5.00)

	Course Introduction	Discrete Mathematics is the basis of all of "digital" information processing. After completing this course, students will realize the following: (1) Make students smarter; (2) Solve interesting problem; (3) Promote the logic and thinking capabilities of the students.

The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.

Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.

 I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of
　　　　　　the course's veracity, conception, procedures, outcomes, etc.
II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal,
　　　　　　morals, attitude, conviction, values, etc.
III.Psychomotor: Emphasis upon the study of the course's physical activity and technical
　　　　　　manipulation.

No.	Teaching Objectives	objective methods
1	After completing this course, students will realize the following topics: Fundamental Principles of Counting, Fundamentals of Logic, Set Theory, Mathematical Induction, Relations and Functions, Languages: Finite State Machines, The Principle of Inclusion and Exclusion, Generating Functions, Recurrence Relations, An Introduction to Graph Theory, Trees, and Optimization and Matching.	Cognitive

The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCD	12345678	Lecture, Discussion	Testing, Discussion(including classroom and online), Report(including oral and written)

Course Schedule			
Week	Date	Course Contents	Note
1	111/09/05 ~ 111/09/11	Logic and Proof	

2	111/09/12 ~ 111/09/18	Set and Function	
3	111/09/19 ~ 111/09/25	Array	
4	111/09/26 ~ 111/10/02	Basic Algorithm	
5	111/10/03 ~ 111/10/09	Advanced Algorithm	
6	111/10/10 ~ 111/10/16	Advanced Function	
7	111/10/17 ~ 111/10/23	Modular Operation	
8	111/10/24 ~ 111/10/30	Integer	
9	111/10/31 ~ 111/11/06	Prime Number	
10	111/11/07 ~ 111/11/13	Midterm Exam Week	
11	111/11/14 ~ 111/11/20	Recursive	
12	111/11/21 ~ 111/11/27	Cryptography (1)	
13	111/11/28 ~ 111/12/04	Cryptography (2)	
14	111/12/05 ~ 111/12/11	Relations	
15	111/12/12 ~ 111/12/18	Tree	
16	111/12/19 ~ 111/12/25	Graph	
17	111/12/26 ~ 112/01/01	Probability	
18	112/01/02 ~ 112/01/08	Final Exam Week	
Requirement			
Teaching Facility		Computer	
Textbooks and Teaching Materials		Discrete mathematics and its applications, 7e, Kenneth H. Rosen	
References			

Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 30.0 % ◆ Mark of Usual： % ◆ Midterm Exam： 30.0 % ◆ Final Exam： 40.0 % ◆ Other 〈 〉： %
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.**