Tamkang University Academic Year 111, 2nd Semester Course Syllabus

Course Title	ALGORITHMS	Instructor	YU, KUO-CHUNG
Course Class	TKFXB2A DEPARTMENT OF ARTIFICIAL INTELLIGENCE, 2A	Details	◆ General Course ◆ Required ◆ One Semester
Relevance to SDGs	SDG4 Quality education		

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:30.00)

B. Practical application.(ratio:30.00)

C. Professional attitude.(ratio:30.00)

D. Global Mobility.(ratio:10.00)

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	Algorithm is one of the core basic subjects of information technology. This course will introduce the design strategies of algorithms and the techniques of algorithm performance analysis. The content covers various important design strategies such as Divide and Conquer, Dynamic Programming, Greedy Algorithm, Backtracking, Branch-and-Bound, and Genetic Algorithm, etc. We will allow students to enter this interesting and important core field of information science and engineering through example-oriented teaching.

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	Students can understand the concepts of Algorithm design strategy.	Cognitive
2	Students can apply the Algorithm design strategies in various problems	Psychomotor
3	Students can implement important Algorithms	Affective

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	A	1567	Lecture	Testing
2	BCD	2358	Discussion	Study Assignments
3	AC	123457	Practicum	Practicum

Course Schedule

Week	Date	Course Contents	Note
1	112/02/13 ~ 112/02/19	Algorithms: Efficiency, Analysis, and Order	
2	112/02/20 ~ 112/02/26	Divide and Conquer	

3	112/02/27 ~ 112/03/05	Divide and Conquer	
4	112/03/06 ~ 112/03/12	Dynamic Programming	
5	112/03/13 ~ 112/03/19	Dynamic Programming	
6	112/03/20 ~ 112/03/26	Dynamic Programming	
7	112/03/27 ~ 112/04/02	Greedy Apporach	
8	112/04/03 ~ 112/04/09	Greedy Approach	
9	112/04/10 ~ 112/04/16	Backtracking	
10	112/04/17 ~ 112/04/23	Midterm Exam Week	
11	112/04/24 ~ 112/04/30	Backtracking	
12	112/05/01 ~ 112/05/07	Branch-and-Bound	
13	112/05/08 ~ 112/05/14	Branch-and-Bound	
14	112/05/15 ~ 112/05/21	Sorting Problem	
15	112/05/22 ~ 112/05/28	Searching Problem	
16	112/05/29 ~ 112/06/04	Genetic Algorithm	
17	112/06/05 ~ 112/06/11	Introduction to the Theory of NP	
18	112/06/12 ~ 112/06/18	Final Exam Week	

Requirement	
Teaching Facility	Computer, Projector
Textbooks and Teaching Materials	Fundations of Algorithms (Richard E. Neapolitan/開發圖書)
References	Intorduction to the Design and Analysis of Algorithmns 3rd Ed. (Anany Levitin/高立圖書)
Number of Assignment(s)	(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 5.0 % ◆ Mark of Usual：25.0 % ◆ Midterm Exam： 25.0 % ◆ Final Exam： 25.0 % ◆ Other〈Experiment Course〉：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.**