Tamkang University Academic Year 113, 2nd Semester Course Syllabus

Course Title	METAHEURISTIC(SOFT COMPUTING/COMPUTATIONAL INTELLIGENCE)	Instructor	TRAN, HUU KHOA
Course Class	TLMXM1A MASTER'S PROGRAM, DEPARTMENT OF INFORMATION MANAGEMENT, 1A	Details	◆ General Course ◆ Selective ◆ One Semester ◆ 2 Credits
Relevance to SDGs	SDG4 Quality education		

Departmental Aim of Education

Devoting to the integration and research of information technology and business management knowledge, and cultivating, for the society, middle and higher level managers with both information capabilities and modern management skills.

Subject Departmental core competences

A. Use of modern management knowledge.(ratio:5.00)

B. Logical thinking.(ratio:20.00)

C. Critical analysis.(ratio:10.00)

D. Integration of information technology and business management.(ratio:10.00)

E. Research and innovation.(ratio:20.00)

F. Theory and applications of data analysis.(ratio:20.00)

G. Information and communication security management.(ratio:10.00)

H. Verbal and Writing Communication skills.(ratio:5.00)

Subject Schoolwide essential virtues

1. A global perspective. (ratio:20.00)

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:5.00)

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

7. A spirit of teamwork and dedication. (ratio:20.00)

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

Course Introduction	The course will discuss the theory and applications of the following methodologies and algorithms: 1. Fuzzy Logic 2. Neuron Network 3. Meta-heuristic algorithms, such as: Simulated annealing, Genetic algorithms, Particle swarm intelligence and Ant-colony system

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	Inspiring students interest in learning Soft Computing (SC) or Computational Intelligence (CI) and cultivating their basic core competence of SC so as to make it reality in daily lives.	Cognitive
2	Keeping abreast of the developments and applications of information communication and technology.	Affective
3	Guiding students SC and/or CI skills with diverse examples so that they can apply what they have learned in their live and work	Psychomotor

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDEFGH	12345678	Lecture, Discussion	Discussion(including classroom and online), Report(including oral and written)
2	ABCDEH	1234568	Lecture, Discussion	Discussion(including classroom and online), Report(including oral and written)

3	ABCDEFH	1235678	Lecture, Discussion	Discussion(including classroom and online), Report(including oral and written)

Course Schedule

Week	Date	Course Contents	Note
1	114/02/17 ~ 114/02/23	Introduction. Overview and motivation.	
2	114/02/24 ~ 114/03/02	Fuzzy Set and Fuzzy Logic	
3	114/03/03 ~ 114/03/09	Fuzzy type I and type II	
4	114/03/10 ~ 114/03/16	Fuzzy in applications	
5	114/03/17 ~ 114/03/23	Neuron networks	
6	114/03/24 ~ 114/03/30	Neuron networks II	
7	114/03/31 ~ 114/04/06	Neuron Networks in applications	
8	114/04/07 ~ 114/04/13	ANFIS system	
9	114/04/14 ~ 114/04/20	Midterm Exam week	
10	114/04/21 ~ 114/04/27	Programming language	
11	114/04/28 ~ 114/05/04	Simulated Annealing	
12	114/05/05 ~ 114/05/11	Genetic Algorithms	
13	114/05/12 ~ 114/05/18	Particle Swarm Intelligence	
14	114/05/19 ~ 114/05/25	Ant Colony System	
15	114/05/26 ~ 114/06/01	New Meta-heuristic Algorithms	
16	114/06/02 ~ 114/06/08	Project Presentations	
17	114/06/09 ~ 114/06/15	Final Exam week	
18	114/06/16 ~ 114/06/22	Project Presentations	

Key capabilities	self-directed learning Information Technology Problem solving Interdisciplinary
Interdisciplinary	STEAM course (S:Science, T:Technology, E:Engineering, M:Math, A field:Integration of Art and Humanist) Competency-based education 'competency exploration' sustained competency or global issues STEEP (Society, Technology, Economy, Environment, and Politics)

Distinctive teaching	Industry-university collaboration courses Project implementation course Special/Problem-Based(PBL) Courses
Course Content	Computer programming or Computer language (students have hands-on experience in related projects) Logical Thinking AI application
Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Handouts Using teaching materials from other writers:Handouts
References	Journal papers
Grading Policy	◆ Attendance： 10.0 % ◆ Mark of Usual： % ◆ Midterm Exam： 5.0 % ◆ Final Exam： 5.0 % ◆ Other〈Project presentation〉：80.0 %
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.**