

Tamkang University Academic Year 114, 1st Semester Course Syllabus

Course Title	COMPUTER VISION AND IMAGE PROCESSING	Instructor	CHII-JEN CHEN
Course Class	TEIEM1A MASTER'S PROGRAM IN INTELLIGENT COMPUTING AND APPLICATION, DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION	Details	◆ General Course ◆ Selective ◆ One Semester ◆ 3 Credits
Relevance to SDGs	ENGINEERING, 1A SDG4 Quality education		
D e p a r t m e n t a l A i m o f E d u c a t i o n			
I . Cultivate the ability to conduct independent research and problem solving. II . Strengthen creativity and research capacity. III . Build profound professional knowledge in networking and communication. IV . Engage in self-directed lifelong learning.			
Subject Departmental core competences			
A. Independent problem solving ability.(ratio:20.00) B. Independent innovative thinking ability.(ratio:20.00) C. Research paper writing and presentation ability.(ratio:20.00) D. Research &development (R&D) ability in networking and communication.(ratio:20.00) E. Project execution and control ability.(ratio:10.00) F. Lifelong self-directed learning ability.(ratio:10.00)			
Subject Schoolwide essential virtues			
1. A global perspective. (ratio:10.00) 2. Information literacy. (ratio:20.00) 3. A vision for the future. (ratio:10.00) 4. Moral integrity. (ratio:10.00) 5. Independent thinking. (ratio:20.00) 6. A cheerful attitude and healthy lifestyle. (ratio:10.00) 7. A spirit of teamwork and dedication. (ratio:10.00) 8. A sense of aesthetic appreciation. (ratio:10.00)			

Course Introduction	Recently, we pay more and more attentions and requirements to medical images on clinical researches. The aim of this unit is to introduce and describe the techniques of medical image processing. Besides, this unit will also teach student to use some computer software, such as MATLAB, ImageJ, MeVisLab, DICOMViewer or C++ program to assist and understand the related processing methods on medical imaging field.			
<p>The correspondences between the course's instructional objectives and the cognitive, affective, and psychomotor objectives.</p> <p>Differentiate the various objective methods among the cognitive, affective and psychomotor domains of the course's instructional objectives.</p> <p>I. Cognitive : Emphasis upon the study of various kinds of knowledge in the cognition of the course's veracity, conception, procedures, outcomes, etc.</p> <p>II.Affective : Emphasis upon the study of various kinds of knowledge in the course's appeal, morals, attitude, conviction, values, etc.</p> <p>III.Psychomotor: Emphasis upon the study of the course's physical activity and technical manipulation.</p>				
No.	Teaching Objectives			objective methods
1	The ability to know the types of medical images.			Cognitive
2	The ability to know how to implement the medical image processing.			Cognitive
The correspondences of teaching objectives : core competences, essential virtues, teaching methods, and assessment				
No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABCDEF	12345678	Lecture, Discussion, Practicum	Study Assignments, Discussion(including classroom and online), Practicum, Report(including oral and written)
2	ABCDEF	12345678	Lecture, Discussion, Practicum	Study Assignments, Discussion(including classroom and online), Practicum, Report(including oral and written)
Course Schedule				
Week	Date	Course Contents		Note

1	114/09/15 ~ 114/09/21	Introduction to medical image processing	
2	114/09/22 ~ 114/09/28	Methods of Image processing (1)	
3	114/09/29 ~ 114/10/05	Methods of Image processing (2)	
4	114/10/06 ~ 114/10/12	Methods of Image processing (3)	
5	114/10/13 ~ 114/10/19	Methods of Image processing (4)	
6	114/10/20 ~ 114/10/26	Software and programming of image processing (1)	
7	114/10/27 ~ 114/11/02	Software and programming of image processing (2)	
8	114/11/03 ~ 114/11/09	Midterm reports	
9	114/11/10 ~ 114/11/16	Software and programming of computer version (1)	
10	114/11/17 ~ 114/11/23	Software and programming of image processing (2)	
11	114/11/24 ~ 114/11/30	Practice and demonstration (1)	
12	114/12/01 ~ 114/12/07	Practice and demonstration (2)	
13	114/12/08 ~ 114/12/14	Discussion about related research papers (1)	
14	114/12/15 ~ 114/12/21	Discussion about related research papers (2)	
15	114/12/22 ~ 114/12/28	Final oral presentation	
16	114/12/29 ~ 115/01/04	Final oral presentation	
17	115/01/05 ~ 115/01/11	Final oral presentation	
18	115/01/12 ~ 115/01/18	Final oral presentation	
Key capabilities			
Interdisciplinary			
Distinctive teaching			

Course Content	Computer programming or Computer language (students have hands-on experience in related projects) AI application
Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations, Handouts
References	
Grading Policy	<p>◆ Attendance : % ◆ Mark of Usual : 40.0 % ◆ Midterm Exam : 30.0 %</p> <p>◆ Final Exam : 30.0 %</p> <p>◆ Other () : %</p>
Note	<p>This syllabus may be uploaded at the website of Course Syllabus Management System at https://web2.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.</p> <p>※"Adhere to the concept of intellectual property rights" and "Do not illegally photocopy, download, or distribute." Using original textbooks is advised. It is a crime to improperly photocopy others' publications.</p>