Tamkang University Academic Year 113, 2nd Semester Course Syllabus

Course Title	ADVANCED COMPUTER PROGRAMMING	Instructor	FENG-CHENG CHANG
Course Class	TEIDB1A DEPARTMENT OF COMPUTER SCIENCE AND INFORMATION ENGINEERING (ENGLISH-TAUGHT PROGRAM), 1A	Details	◆ General Course ◆ Selective ◆ One Semester ◆ 3 Credits
Relevance to SDGs	SDG4 Quality education		

Departmental Aim of Education

Ⅰ. Comprehend professional knowledge.

Ⅱ. Acquire mastery of Practical Skills.

Ⅲ. Establish creative achievement.

Subject Departmental core competences

A. Programming and application ability.(ratio:40.00)

B. Mathematical reasoning ability.(ratio:15.00)

C. Implementing computer systems ability.(ratio:15.00)

D. Computer networking application skills.(ratio:15.00)

E. Professional skills for information technology (IT) industry.(ratio:15.00)

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:10.00)

5. Independent thinking. (ratio:30.00)

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

7. A spirit of teamwork and dedication. (ratio:5.00)

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

Course Introduction	This course presents an advanced view of computer programming, mainly using C and C++. The first part is both a review and application of C language. The second part is fundamental C++ syntax and the C++-specific OOP concepts. Outcomes: Students who successfully complete this course will be able to: * Apply and develop procedural and object-oriented code. * Develop software with a few building tools. * Demonstrate basic knowledge of software engineering concepts.

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	To learn the basic concept of software development tools for problem solving using computer languages	Cognitive
2	Familiar with the processes of the computer program design and applications for solving the computer problems	Affective
3	Using computer language and software engineering to solve computer problems	Psychomotor

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

No.	Core Competences	Essential Virtues	Teaching Methods	Assessment
1	ABC	12348	Lecture	Testing, Study Assignments, Practicum
2	CDE	1234567	Lecture, Practicum, Experience	Testing, Study Assignments, Discussion(including classroom and online), Practicum
3	ABCDE	125	Lecture, Discussion, Practicum, Experience	Testing, Study Assignments, Discussion(including classroom and online), Practicum

Course Schedule			
Week	Date	Course Contents	Note
1	114/02/17 ~ 114/02/23	Course overview and quick review of C fundamentals	
2	114/02/24 ~ 114/03/02	Practices with C toy programs	
3	114/03/03 ~ 114/03/09	Introduction of ncurses and the make utility	
4	114/03/10 ~ 114/03/16	Introduction of raylib	
5	114/03/17 ~ 114/03/23	Design a raylib application with C language	Quiz 1
6	114/03/24 ~ 114/03/30	Transition from C to C++ (quick but informal)	
7	114/03/31 ~ 114/04/06	Object-oriented approach and C++	
8	114/04/07 ~ 114/04/13	Basic C++ standard classes	
9	114/04/14 ~ 114/04/20	Designing C++ applications	
10	114/04/21 ~ 114/04/27	Basic C++ class design	Quiz 2
11	114/04/28 ~ 114/05/04	More run-time properties of C++ objects	
12	114/05/05 ~ 114/05/11	C++ application with ncurses	
13	114/05/12 ~ 114/05/18	C++ application with raylib (1)	
14	114/05/19 ~ 114/05/25	C++ application with raylib (2)	Quiz 3
15	114/05/26 ~ 114/06/01	C++ application with raylib (group project)	
16	114/06/02 ~ 114/06/08	C++ application with raylib (group project)	
17	114/06/09 ~ 114/06/15	Final Assessment Week	Group project due
18	114/06/16 ~ 114/06/22	Flexible Teaching Week: Generally, no in-person classes; teachers may arrange teaching activities or final assessments, among other options.	Online supplementary videos

Key capabilities	
Interdisciplinary	

Distinctive teaching	
Course Content	Computer programming or Computer language (students have hands-on experience in related projects)
Requirement	
Textbooks and Teaching Materials	Self-made teaching materials:Presentations, Videos Using teaching materials from other writers:Textbooks, Handouts, Videos
References	
Grading Policy	◆ Attendance： % ◆ Mark of Usual：70.0 % ◆ Midterm Exam： 10.0 % ◆ Final Exam： 10.0 % ◆ Other〈Quiz2〉：10.0 %
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.**