Tamkang University Academic Year 102, 2nd Semester Course Syllabus

Course Title	ADVANCED COMPUTER PROGRAMMING	Instructor	LIN IN-HO
Course Class	TPIAB1A DIVISION OF SOFTWARE ENGINEERING, DEPARTMENT OF INNOVATIVE INFORMATION AND TECHNOLOGY, 1A	Details	◆ Selective ◆ One Semester ◆ 3 Credits

Departmental Aim of Education

Cultivate professional talents in software engineering and communication technology.

Departmental core competences

A. Capability of computer program coding, process planning, and problem solving.

B. Capability of applying basic mathematics and information technology related mathematics.

C. Capability of applying knowledge of internet structure and protocol in communication system.

D. Capability of data collecting and analyzing, and organizing software and hardware.

E. Capability of understanding and integrating system structure for problem solving.

F. Capability of system analyzing, modeling, and designing.

G. Capability of management utilizing information technology system.

Course Introduction	The primary purpose of this course is to help students to learn and develop their understanding of the theory and practice of object-oriented program design, focusing on techniques of program development using the C++ programming language. Students will also broaden their understanding of object-oriented program design and programming language features that are applicable to many computer languages. Students will also continue to hone their problem solving skills as they become more proficient at programming the computer, and hopefully, will seek to learn more.

The Relevance among Teaching Objectives, Objective Levels and Departmental core competences

I.Objective Levels (select applicable ones) :
 (i) Cognitive Domain   : C1-Remembering,   C2-Understanding,   C3-Applying,
                          C4-Analyzing,   C5-Evaluating,   C6-Creating
 (ii) Psychomotor Domain : P1-Imitation,   P2-Mechanism,   P3-Independent Operation,
                          P4-Linked Operation, P5-Automation,   P6-Origination
 (iii) Affective Domain : A1-Receiving,   A2-Responding,   A3-Valuing,
                          A4-Organizing,   A5-Charaterizing,   A6-Implementing

II.The Relevance among Teaching Objectives, Objective Levels and Departmental core competences :
 (i) Determine the objective level(s) in any one of the three learning domains (cognitive,
     psychomotor, and affective) corresponding to the teaching objective. Each objective should
     correspond to the objective level(s) of ONLY ONE of the three domains.
 (ii) If more than one objective levels are applicable for each learning domain, select the
     highest one only. (For example, if the objective levels for Cognitive Domain include
     C3,C5,and C6, select C6 only and fill it in the boxes below. The same rule applies to
     Psychomotor Domain and Affective Domain.)
 (iii) Determine the Departmental core competences that correspond to each teaching objective.
     Each objective may correspond to one or more Departmental core competences at a time.
     (For example, if one objective corresponds to three Departmental core competences: A,AD,
     and BEF, list all of the three in the box.)

No.	Teaching Objectives	Relevance	
		Objective Levels	Departmental core competences
1	To learn the basic concept of software development platform for problem solving using computer languages	C2	ABCE
2	Familiar with the processes of the computer program design and applications for solving the computer problems	P4	ABDEF
3	using Computer language and Software Engineering to solve Computer Problems	A6	ABDEFG

Teaching Objectives, Teaching Methods and Assessment

No.	Teaching Objectives	Teaching Methods	Assessment
1	To learn the basic concept of software development platform for problem solving using computer languages	Lecture, Discussion, Practicum	Practicum, Participation, Lab.
2	Familiar with the processes of the computer program design and applications for solving the computer problems	Discussion, Practicum, Problem solving	Practicum, Participation, onlinetest
3	using Computer language and Software Engineering to solve Computer Problems	Discussion, Practicum, Problem solving	Practicum, Report, Participation, onlinetest

This course has been designed to cultivate the following essential qualities in TKU students	
Essential Qualities of TKU Students	Description
◇ A global perspective	Helping students develop a broader perspective from which to understand international affairs and global development.
◆ Information literacy	Becoming adept at using information technology and learning the proper way to process information.
◆ A vision for the future	Understanding self-growth, social change, and technological development so as to gain the skills necessary to bring about one's future vision.
◆ Moral integrity	Learning how to interact with others, practicing empathy and caring for others, and constructing moral principles with which to solve ethical problems.
◆ Independent thinking	Encouraging students to keenly observe and seek out the source of their problems, and to think logically and critically.
◆ A cheerful attitude and healthy lifestyle	Raising an awareness of the fine balance between one's body and soul and the environment; helping students live a meaningful life.
◆ A spirit of teamwork and dedication	Improving one's ability to communicate and cooperate so as to integrate resources, collaborate with others, and solve problems.
◇ A sense of aesthetic appreciation	Equipping students with the ability to sense and appreciate aesthetic beauty, to express themselves clearly, and to enjoy the creative process.

Course Schedule

Week	Date	Subject/Topics	Note
1	103/02/17 ~ 103/02/23	Course overview, about the advanced computer programming Introduction to Eclipse, and Microsoft Visual Studio 2010, the C/C++/Java project development Platform	
2	103/02/24 ~ 103/03/02	Overview of Computer Programming: 1、　　　　　Control flow (Two-way selection), Lab.1 problem solving techniques	
3	103/03/03 ~ 103/03/09	Overview of Computer Programming: 1、　　　　　Control flow (Multi-way selection), Lab.2 problem solving techniques	
4	103/03/10 ~ 103/03/16	Overview of Computer Programming: 1、　　　　　Control flow (Multi-way using switch case), Lab.3 problem solving techniques	
5	103/03/17 ~ 103/03/23	Repetition using while and do while loop Lab.4 problem solving techniques	
6	103/03/24 ~ 103/03/30	Repetition using for loop Lab.5 problem solving techniques	
7	103/03/31 ~ 103/04/06	教學觀摩週	

8	103/04/07~103/04/13	The function basic (Pass-by-value) Lab.6 problem solving techniques	
9	103/04/14~103/04/20	The function basic (Pass-by-reference) Lab.7 problem solving techniques	
10	103/04/21~103/04/27	Midterm Exam Week	
11	103/04/28~103/05/04	Arrays (1-Dimension) Lab.8 problem solving techniques	
12	103/05/05~103/05/11	Arrays (2-Dimension) Lab.9 problem solving techniques	
13	103/05/12~103/05/18	structure design Lab.10 problem solving techniques	
14	103/05/19~103/05/25	class design (1) Lab.11 problem solving techniques	
15	103/05/26~103/06/01	class design (2) Lab.12 problem solving techniques	
16	103/06/02~103/06/08	Problem solving using OOP (1) Lab.13 problem solving techniques	
17	103/06/09~103/06/15	Problem solving using OOP (2) Lab.14 problem solving techniques	
18	103/06/16~103/06/22	Final Exam Week	

Requirement	Registration on moodle website: http://moodle.learning.tku.edu.tw
Teaching Facility	Computer, Projector, Other (Compters)
Textbook(s)	1.Problem Solving with C++ (Eighth Ed.) by Walter Savitch 2.Programming and Problem Solving with C++ (5th Ed.) by Nell Dale 3. Absolute C++ (5th Ed.) by Walter Savitch
Reference(s)	1、 Absolute C++ by Walter Savitch (Forth Edition) 開發圖書有限公司 2、Problem Solving With C++ by Walter Savitch (Seventh Edition) 開發圖書 3、 C++ How to Program (Deitel) 全華圖書 4、 http://www.cppreference.com/wiki/ 5、 http://www.cplusplus.com/reference/
Number of Assignment(s)	**14** (Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 10.0 % ◆ Mark of Usual：10.0 % ◆ Midterm Exam： 25.0 % ◆ Final Exam： 25.0 % ◆ Other〈Project & Homework〉：30.0 %

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 .
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