Course Title	ADVANCED COMPUTER PROGRAMMING	Instructor	LIN IN-HO
Course Class	TQIAB1A 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 developing and applying information system in various fields.

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 developing information system

E. Capability of integrating information system

Course Introduction	This course presents an advanced view of computer programming, mainly using C++. The use of current operating systems and Qt develop platform will also be presented. Object Oriented Programming is quite different than functional or procedural programming, and it is difficult to learn on your own. Hands-on programming will be a key part of the course. Outcomes: Students who successfully complete this course will be able to: *Apply and develop object oriented code. *Develop software for a variety of architectures *Demonstrate basic knowledge of software engineering concepts

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	A
2	Familiar with the processes of the computer program design and applications for solving the computer problems	P4	A
3	using Computer language and Software Engineering to solve Computer Problems	A6	A

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	Written test, Practicum, Participation, Lab.
2	Familiar with the processes of the computer program design and applications for solving the computer problems	Lecture, Discussion, Practicum, Problem solving	Written test, Practicum, Participation, onlinetest
3	using Computer language and Software Engineering to solve Computer Problems	Lecture, 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	104/02/24 ~ 104/03/01	Course overview, about the advanced computer programming Introduction to Qt project development Platform	
2	104/03/02 ~ 104/03/08	Overview of Computer Programming (1) : 1、 Introduction to Graphic User Interface tools: Qt 2、 Control flow	Lab.1
3	104/03/09 ~ 104/03/15	Overview of Computer Programming (2): 1、 Repetition using for, while and do while loop 2、 Qt Tutorial (1)	Lab.2
4	104/03/16 ~ 104/03/22	The function basic (Pass-by-value) 1、 Qt Tutorial (2)	Lab.3
5	104/03/23 ~ 104/03/29	The function basic (Pass-by-reference)	Quiz_1, HW.1
6	104/03/30 ~ 104/04/05	教學行政觀摩週	
7	104/04/06 ~ 104/04/12	Arrays (1-Dimension) 1、 Qt Tutorial (3)	Lab.4
8	104/04/13 ~ 104/04/19	Arrays (2-Dimension)	Lab.5
9	104/04/20 ~ 104/04/26	Structure design	Lab.6
10	104/04/27 ~ 104/05/03	Midterm Exam Week	

11	104/05/04 ~ 104/05/10	Class design (1)	Lab.7
12	104/05/11 ~ 104/05/17	Class design with GUI (2)	Lab.8
13	104/05/18 ~ 104/05/24	Class design with GUI (3)	HW.2
14	104/05/25 ~ 104/05/31	OOP project design with GUI (1)	Quiz_2
15	104/06/01 ~ 104/06/07	OOP project design with GUI (2)	
16	104/06/08 ~ 104/06/14	OOP project design with GUI (3)	
17	104/06/15 ~ 104/06/21	OOP project report	
18	104/06/22 ~ 104/06/28	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)	**10**　　(Filled in by assignment instructor only)
Grading Policy	◆ Attendance： 10.0 ％ ◆ Mark of Usual：20.0 ％ ◆ Midterm Exam： 20.0 ％ ◆ Final Exam： 20.0 ％ ◆ 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 . **※ Unauthorized photocopying is illegal. Using original textbooks is advised. It is a crime to improperly photocopy others' publications.**