TQF 3 Course Specifications

Section 1 General Information

1. Course code and course title
   - Thai EGCI 113 การเขียนโปรแกรมคอมพิวเตอร์ขั้นมูลฐาน
   - English EGCI 113 Fundamental Computer Programming
2. Number of credits 3 (2-2-5)
3. Program and type of subject
   - 3.1 Program Bachelor of Engineering (Computer Engineering)
   - 3.2 Type of Subject Major Course (Required Major)
4. Course Coordinator and Course Lecturer
   - 4.1 Course Coordinator Asst. Prof. Dr. Tanasanee Phienthrakul
   - 4.2 Course Lecturer Asst. Prof. Dr. Tanasanee Phienthrakul
5. Trimester/ Year of Study
   - 5.1 Trimester Second trimester / for 1st year Computer Engineering
   - 5.2 Course Capacity 20-25 students
6. Pre-requisite None
7. Co-requisites None
8. Venue of Study Mahidol University, Salaya campus

Section 2 Goals and Objectives

1. Course Goals

After successful completion of this course, students will be able to:

- Explain basic principle of computer.
- Design and write a simple high-level programming language.
- Apply computer programming to solve elementary level of engineering problems.

2. Objectives of Course Development/Revision

2.1 Course Objective

1. Students can explain basic elements. of computer program
2. Students can design and write computer programming using high-level language
3. Student can use computer programming language to solve engineering problems

2.2 Course-level Learning Outcomes: CLOs

By the end of the course, students will be able to (CLOs)

CLO1: Write program to solve basic programming problems

CLO2: Understand and solve problems occurred in computer programs

CLO3: Apply computer programming knowledge to develop elementary level of engineering problems under specific scope and objective

Section 3 Course Management

1. Course Description

(Thai) แนะนำแนวคิดคอมพิวเตอร์ ส่วนประกอบต่างๆ ของคอมพิวเตอร์ ฮาร์ดแวร์และซอฟต์แวร์ การโต้ตอบระหว่างฮาร์ดแวร์และซอฟต์แวร์ แนวคิดการประมวลผลข้อมูลอิเล็กทรอนิกส์ (อีดีพี) แนะนำการออกแบบและการสร้างโปรแกรมโดยใช้ภาษาระดับสูง: ชนิดข้อมูลและนิพจน์ ข้อความสั่งเชิงวนซ้ำและเชิงควบคุมแบบมีเงื่อนไข ฟังก์ชัน ตรรกะแบบบูล โครงสร้างแถวลำดับ

(English) Introduction to computer concepts, computer components, hardware and software, hardware and software interaction, and Electronic Data Processing (EDP) concepts. Introduction to program design and implementation using a high-level language: types and expressions, iterative and conditional control statements, functions, Boolean logic, array

2. Credit hours / trimester

Lecture (hours)	**Additional Class (hours)**	**Laboratory/field trip/internship (hours)**	**Self-study (hours)**
24 hours (2 hours x 12 weeks)	-	24 hours (2 hours x 12 weeks)	60 hours (5 hours x 12 weeks)

3. Numbers of hours that the lecturer provides individual counseling and guidance

1 hour/week

Section 4 Development of Students' Learning Outcome

1. Short summary on the knowledge or skills that the course intends to develop in students (CLOs)

By the end of the course, students will be able to

CLO1: Write program to solve basic programming problems

CLO2: Understand and solve problems occurred in computer programs

CLO3: Apply computer programming knowledge to develop elementary level of engineering problems under specific scope and objective

2. Teaching methods for developing the knowledge or skills specified in item 1 and evaluation methods of the course learning outcomes

Course Code	Teaching methods	Evaluation Methods
CLO1	Interactive Lecture, Practical Exercise, Individual Assignment	Project Evaluation, Written Examination, Individual Evaluation
CLO2	Interactive Lecture, Practical Exercise, Project Assignment	Written Examination, Project Evaluation, Individual Evaluation
CLO3	Interactive Lecture, Example, Project, Practical Exercise	Project Evaluation, Individual Assignment

Section 5 Teaching and Evaluation Plans

1. Teaching plan

Week	Topic	Number of Hours		Teaching Activities/ Media	Evaluation
		Lecture Hours	Lab Hours		
1	Basic computer element Basic computer programming Electronic data processing	3	1	Interactive lecture and Practical Exercises	Individual Assignment
2	Basic programming I	1	3		Individual Programming Assessment
3	Basic programming II	2	2		
4	Basic logic and condition	2	2		
5-6	Loops and repetition	2	4		
6	Midterm Exam	2	-	Examination	Written Exam
7	Function I	2	2	Interactive lecture and Practical Exercises	Individual Programming Assessment, Project Assignment
8	Function II and Recursion	2	2		
9	Array	2	2		
10	String	2	2		
11	Structure	2	2		
12	File Management	2	2		
13	Final Examination	-	-	Presentation and Examination	Presentation and Written Exam
	Total	24	24		

2. Plan for Assessing Course Learning Outcomes

2.1 Assessing and Evaluating Learning Achievement

a. Formative Assessment

The assessment tools such as lab exercises and quizzes are used to evaluate student's understanding by their ability to familiar and to write and develop computer programming.

Lab Assignment	20 %
Quizzes	20 %
Project	20 %
Examination	40 %

b. Summative Assessment

(1) Tools and Percentage Weight in Assessment and Evaluation

Learning Outcomes	Assessment Methods	Assessment Ratio (Percentage)	
CLO1: Write program to solve basic programming problems	Individual Assignment	5	40
	Quizzes	10	
	Examination	20	
	Project Assignment	5	
CLO2: Understand and solve problems occurred in computer programs	Individual Assignment	5	40
	Quizzes	10	
	Examination	20	
	Project Assignment	5	
CLO3: Apply computer programming knowledge to develop elementary level of engineering problems under specific scope and objective	Individual Assignment	10	20
	Project Assignment	10	
Total			100

(2) Grading System

Grade	Achievement	Final Score (% range)	GPA
A	Excellent	90-100	4.0
B+	Very Good	85-89	3.5
B	Good	80-84	3.0
C+	Fairly Good	75-79	2.5
C	Fair	70-74	2.0
D+	Poor	65-69	1.5
D	Very Poor	60-64	1.0
F	Fail	Less than 60	0.0

(3) Re-examination (If course lecturer allows to have re-examination)

N/A - (Not applicable with MUIC)

3. Student Appeals

The student wishing to appeal according to grading result must submit a written and signed appeal form personally to the academic affair unit. It is prohibited to assign another person to appeal on one's behalf. The written appeal form is then sent to the program director and chair of department. The final decision is transferred for approval by the faculty committee. The result of appeal then is informed to the student.

Section 6 Teaching Materials and Resources

1. Textbooks and/or other documents/materials

1. Oualline, Steve. Practical C Programming. O'Reilly, 1993.

2. Kernighan, Brian W., Ritchie Dennis M., The C Programming Language. (2nd edition) Prentice Hall, 1988.

3. Deitel HM, Deitel PJ. C: how to program. 5th ed. Upper Saddle River (NJ): Prentice Hall, 2006.

4. Hanly JR, Koffman EB. Problem solving and program design in C. 6th ed. Boston(MA): Addison-Wesley, 2009.

2. Recommended textbooks and/or other documents/materials

http://www.cprogramming.com/

http://www.onlinegdb.com

https://www.geeksforgeeks.org/c-programming-language/

Section 7 Evaluation and Improvement of Course Management

1. Strategies for evaluating course effectiveness by students
    1.1 Evaluation of peers by students
    1.2 Student evaluation
        1.2.1 Course content
        1.2.2 Course management
        1.2.3 Suggestions
        1.2.4 Overall opinions

2. Strategies for evaluating teaching methods
    2.1 Student evaluation
    2.2 Presentation

3. Improvement of teaching methods
    Use evaluation from 1 and 2 for course improvement.

4. Verification process for evaluating students' standard achievement outcomes in the course
    Analysis of students' learning outcomes using scores from each CLOs for evaluation.

5. Review and plan for improving the effectiveness of the course
    Review the course before trimester starts, before each teaching period and review course contents every 3 years.

Appendix

Alignment between Courses and Program

Table 1 The relationship between course and Program Learning Outcomes (PLOs)

	Program Learning Outcomes (PLOs)					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
EGCI 113 Fundamental Computer Programming		I		I		I, P

Note: Indicate the level of CLOs by letter I, R, P or M. Using the information as shown in the Curriculum Mapping of TQF2

Table 2 The relationship between CLOs and PLOs

EGCI 113 Fundamental Computer Programming	Program Learning Outcomes (PLOs)					
	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6
CLO1: Write program to solve basic programming problems		2.1				
CLO2: Understand and solve problems occurred in computer programs				4.5		
CLO3: Apply computer programming knowledge to develop elementary level of engineering problems under specific scope and objective						6.2

Table 3 The description of PLOs and Sub Los of the course

PLOs	SubPLOs
PLO2. Integrate computer engineering knowledge with other related sciences and pursue new knowledge in computer engineering.	2.1 Use computer engineering knowledge to solve problems in other fields
PLO 4 Generate potential solutions for problem solving with computer engineering knowledge and skills.	4.5 Design engineering system for problem solving
PLO6. Create a related computer engineering development based on information technologies in mathematics or applied statistics.	6.2 Create a related computer engineering development based on selected tools