



Instructor Information	Class Times
Instructors: Assoc. Prof. Dr. Natasha Dejdumrong E-mails: natasha.dej@mail.kmutt.ac.th Website: https://www.leb2.kmutt.ac.th/ Telephone: 02-470-9380 Office Hours: Tue: 13.30-16.30, or with an appointment. TAs.: To be announced	Monday 8 Aug 2022 – 1 December 2022 Lecture: 10:30 – 12:20 Friday 19 Aug 2022 – 1 December 2022 Labs: 13.30 – 17.30

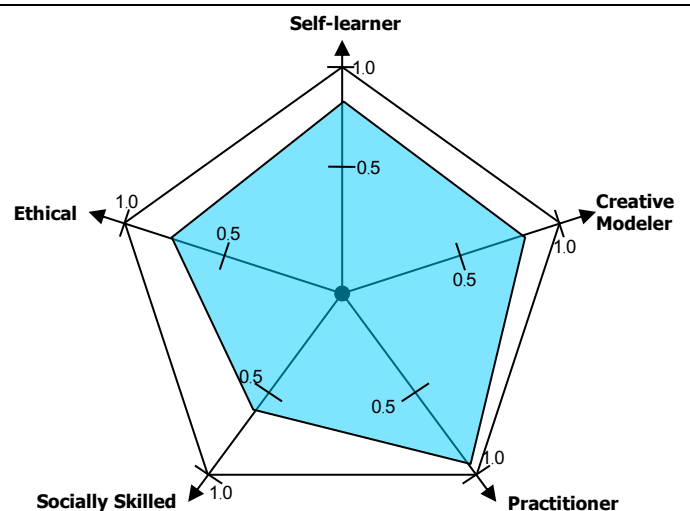
Course Objectives

The key objective of this course is to provide students hands-on experiences in the foundation of computer programming, including analysis, design, and implementation. A project-based approach will be exploited.

The Computer Engineering Department has a new mission to use innovative hands-on, active learning techniques to develop 5 distinct student characteristics:

- 1) Self-Learner
 - prepare readings before class for group discussion/quiz
 - self-study for doing projects
- 2) Creative Designer/Modeler
 - create models for projects and assignments of real-life problems
- 3) Practitioner
 - projects and assignments with real-life type problems.
- 4) Socially Apt
 - working in teams of 5 on projects
 - participating in group discussion
- 5) Ethical
 - focus on the importance of ethics and individual integrity

The shaded area in the graph is the goal of this course to develop you in each dimension. Ethics is a key characteristic we would like all our students to possess.



Five Desired Characteristics of CPE Students

Ethics means that any work you submit for credit is to be your work. For homework assignments and projects, general discussion with your classmates regarding the requirements or the approach to be taken is permitted.

Homework assignments and/or reports are due prior to the class time. Your submitted assignments/reports must be yours. **Class attendance** is very important. Showing up late causes 10% deducted in in-class exercises. Cell-phones must be **turned off** before you come to class and not allowed to use during class time. They are disruptive and annoying. If we hear a cell-phone ringing during a quiz, I will assume you are cheating. **Laptop** usage is for assigned classwork. **Facebook, Messenger, Line** and **game playing** are prohibited. If we see you playing game or using Facebook, Messenger, Line you will be asked to leave the room.

Course Description

Fundamental concepts of programming including data types, conditional execution, iteration, functions, and I/O with programming exercises. Software development as a problem- solving activity. Techniques for producing correct and robust programs including top-down decomposition, hand simulation and hypothesis-based debugging. Weekly laboratory sessions focus on program design and implementation to solve interesting case problems.

Course Learning Outcomes

1. Design, write and debug a computer program in C that solves a problem as described in a detailed problem specification.
2. Create a multi-module software system to solve a problem.

Ultimate Learning Outcomes

M1: Students are able to analyze, design, and implement *basic* C programs as described in the problem specification.

M2: Students are able to analyze, design, and implement *intermediate* C programs as described in the problem specification.

M3: Students are able to construct *advance* C programs by applying the knowledge.

Rubrics

Criteria	Performance descriptors				
	Level 1	Level 2	Level 3	Level 4	Level 5
Students are able to analyze real-world computational problem.	The student cannot explain or analyze the real-world problem.	The student can explain and analyze the real-world problem but wrong.	The student can explain and analyze the real-world problem in proper English or comments.	The student can almost explain and analyze the real-world problem in proper English or comments.	The student can properly explain and analyze the real-world problem in proper English or comments.
Students are able to design real-world computational problem.	Flowchart or PseudoCode is wrong or no correct result has been shown.	Flowchart or PseudoCode is incorrectly represented the real-world problem.	Flowchart or PseudoCode is partially represented the real-world problem.	Flowchart or PseudoCode is almost represented the real-world problem.	Flowchart or PseudoCode is completely represented the real-world problem.
Students are able to implement real-world problem in C Program.	Program cannot be compiled or executed.	Program can be compiled and executed but wrong answers are shown.	Program can be compiled and executed with a few error or a few test cases are failed.	Program can be compiled and executed with very few errors and very few test cases are failed.	Program can be fully compiled and executed without any errors and all test cases are passed.

Grading Criteria

Final grades are based on performance indicated by student in-class exercises, lab reports, homework assignments, quizzes, projects, mid-term, and final exam grades. The final grade will be calculated according to the following weights:

Criteria	Weight	Rubric Score	Grade	Weighted Score
C1	0.25	Level 5	4	1.0
C2	0.25	Level 4	3	0.75
C3	0.50	Level 3	2	0.5
		Level 2	0	0.0
M1-SUM	0.3			2.25
M2-SUM	0.5			x
M3-SUM	0.2			y
SUM	2.25 + 0.5x + 0.2y			

0.675
0.5x
0.2y

Score range	Grade
3.75 - 4.00	A
3.25 - 3.74	B+
2.75 - 3.24	B
2.25 - 2.74	C+
2.00 - 2.24	C
< 2.00	I

Required Text

- Paul Deitel and Harvey M. Deitel, **C How to Program**, 7th Edition Paul Deitel, Deitel & Associates, Inc. Harvey M. Deitel, Deitel & Associates, Inc. ©2013.

Lecture Note

Computer Programming for Engineers, CPE-KMUTT, ©2022.

Grading Policy

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CPE 100 Schedule (Tentative)

Week#	Lectures	In-class topics	Lab Topics
1 (32/52) (Aug 8)	Introduction to C Programming (Ch.1)	Problem 1	(Aug 12): Queen's Birthday Lab 0: Lab overview
2 (33/52) (Aug 15)	C Language Constructs Variables and Data Types (Ch.2 - 3)	Problem 2	(Aug 19) Lab 1: TBA
3 (34/52) (Aug 22)	C Statements Operators and Expressions (Ch.4 - 5)	Problem 3	(Aug 26) Lab 2: TBA
4 (35/52) (Aug 29)	Control Flow – Decision Making and Looping (Ch.6 - 7)	Problem 4:	(Sep 2) Lab 3: TBA
5 (36/52) (Sep 5)	Control Flow – Nesting and Array (Ch.8 - 9)	Problem 5: Matrix Operations	(Sep 9) Lab 4: TBA
6 (37/52) (Sep 12)	M1 Assessment	Quiz #1	(Sep 16) Lab 5: TBA
7 (38/52) (Sep 19)	Structures and Unions (Ch.10)	Problem 6: Records	(Sep 23) Lab 6: TBA
8 (39/52) (Sep 26)	Pointers (Ch.11)	Problem 7: Linked List	(Sep 30) Lab 7: TBA
9 (40/52) (Oct 3)	Functions – Function Parameters (Ch. 12 - 13)	Problem 8:	(Oct 7) Lab 8: TBA
10 (Oct 10)	Pass by Value/Address (Ch.14)	Problem 9:	(Oct 10) Lab 9: TBA
11 (Oct 17)	Recursion (Ch. 15)	Problem 10: Fibonacci Project proposal Due	(Oct 17) Project proposal Presentation
12 (Oct 24)	Holiday Compensation for King Rama V Day	-	(Oct 28) M2 Assessment
13 (Oct 31)	File Processing in C (Ch.19)	Problem 11	(Nov 4) Lab 10: TBA
14 (Nov 7)	Introduction to Header Files (Ch.16)	Problem 12	(Nov 11) Lab 11: TBA
15 (Nov 14)	C Pre-Processor - Macro (Ch.17-18)	Problem 13	(Nov 18) Lab 12: TBA
16 (Nov 21)	Project Presentation		Project Presentation
17 (Nov 28)	Project Presentation		Project Presentation
Dec 5	Final period, Final		Hands-on Final Exam (TBA)