12. Programming for Engineers Laboratory (EE058IU)

Course designation	*This laboratory is associated with the Programming for Engineers course. It covers everything that students will need tounderstand the basic concepts covered in the theory course, as well as the implementation of simple-to-complex C programs especially in the field of engineering. Topics include data types, control structures, functions, arrays, files, and the mechanics of running, testing, and debugging.*
Semester(s) in whichthe course is taught	1, 2, summer semester
Person responsiblefor the course	M. Eng, Trang Kiến
Language	English
Relation to curriculum	Compulsory
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	(Estimated) Total workload: 55 Contact hours (please specify whether lecture, exercise, laboratory session, etc.): lecture: 25 Private study including examination preparation, specified in hours: 30
Credit points/ECTS	1 credit/2 ECTS
Required and recommended prerequisites for joining the course	Parallel course: Programming for Engineers (EE058IU)
Course objectives	This course conducts sequence of laboratory experiments to present and illustrate implement and debug programs using the C techniques which can investigate some case studies in order to comprehend professional and ethical responsibilities

Course learning outcomes	Upon the successful completion of this course students will be able to:
	CLO1: Able to design problem solutions, implement and debug programs using the C techniques.
	CLO2: Able to examine some case studies to understand the professional and ethical responsibility.
	CLO3: Understand the impact of electrical engineering solutions in a global, economic, environmental and social context.

Competency level	Course learning outcome (CLO)
Knowledge	CLO1, CLO2, CLO3
Skill	CLO1, CLO2, CLO3
Attitude	CLO2, CLO3

Content	*The description of the contents should clearly indicate the weighting of the content and the level.*
	Weight: lecture session (4 hours)
	Teaching levels: I (Introduction); T (Teaching); U (Utilization)

Topic	Weight	Level
Variables, Data Types, Making Decisions, Branching and Looping	1	I, T, U
I/O operations	1	I, T, U
Functions/Recursion	1	I, T, U
Arrays	1	I, T, U
Pointers/Function Pointers	1	I, T, U
Structures/Unions/Enumerates	1	I, T, U
Characters and Strings, Operations on Bits	1	I, T, U

Examination forms	short-answer questions

Study and examination requirements	Attendance: A minimum attendance of 80 percent is compulsory for the class sessions. Students will be assessed on the basis of their class participation. Questions and comments are strongly encouraged.
	Assignments/Examination: Students must have more than 50/100 points overall to pass this course.
Reading list	[1] Laboratory Manual supplied by the instructor