INTERNATIONAL UNIVERSITY (IU) – VIETNAM NATIONAL UNIVERSITY HCMC
School of Electrical Engineering (SEE)

PROGRAMMING FOR ENGINEERS
(LEVEL 1: INTRODUCTORY)

1. **Course number and name**

   EE057IU – Programming for Engineers

2. **Credit(s) and contact hours**

   3 credits. Three periods (50 minutes per period), once per week.

3. **Instructor or course coordinator name**

   Dr. Nguyen Trung Hieu

4. **Textbook, title, author, and year**

   - Paul Deitel and Harvey Deitel, *C How to Program,* 9th edition, Pearson, 2022.

   - Class hands-out/Lecture notes

   Other supplemental materials

   - Brian Kernighan and Dennis Ritchie, *The C Programming Language,* 2nd edition, Prentice Hall, 1988.

   - Stephen G. Kochan, *Programming in C,* 4th edition, Sams Publishing, 2014.

   Specific course information

   a. Brief description of the content of the course (catalog description)

   This course is aimed at students with little to no prior programming experience. Generally, it endeavors to provide students with an understanding about the role of programming that can play in solving real-life problems. The course content thus equips the basic terminologies of principles of programming, algorithms and data structures via C programming language.

   The fundamentals include the history of programming and C language, introduction to algorithm analysis, stepwise refinement and flow-charting; basic data types, type conversion, making decision and looping, branching, break and continue; I/O operations; functions and recursion; arrays and multiple-subscripted arrays, searching and different sorting algorithms; pointers, function pointers; characters and strings processing; structures, unions, enumerates; operations on bits, dynamic memory allocation, file processing; introduction to abstract data types: linked lists, queues, stacks, binary trees; hash table.

   b. Prerequisites or corequisites

   Prerequisite: Introduction to Computers for Engineers

   Corequisite: Programming for Engineers Laboratory (EE058IU)

   c. Indicate whether a required, elective, or selected elective course in the program

   This is a required course.

5. **Specific course outcomes**

a. Upon the successful completion of this course students will be able to

1. Understand and implement basic C instructions, data types and basic principles of programming
2. Apply C language to analyze and design solutions to programming problems
3. Understand the impact of electrical engineering solutions in a global, economic, environmental, and social context

b. The relationship between Course Outcomes (1-3) and Student Outcomes (1-7) is shown in the following table:

	SO1	SO2	SO3	SO4	SO5	SO6	SO7
CLO1	x					x	
CLO2	x						x
CLO3						x	x
Total (%)							
ABET Evidence	Exams Content - Basic principles of programming - analyze and design solutions to programming problems Evaluation - Midterm Test and Final Exam (Pass 50%)					Project Content - Basic principles of programming - Group projects indicate the environmental, economic and social impacts Evaluation - Presentation and report (Pass 70%)	Project Content - analyse and design solutions to programming problems - Group projects indicate the environmental, economic and social impacts Evaluation - Presentation and report (Pass 70%)

** Pass Percentage means the required score over the maximum grading for the assessment rubric, i.e. Pass 70% over 100 grading item means that students need to achieve at least 70 marks to be considered passing this assessment rubric.*

How course outcomes are assessed

- HW/assignments + Projects (30%)
- Midterm Test (30%)
- Final Exam (40%)

6. Brief list of topics to be covered

- Programming Fundamentals and Introduction to Computers and C Programming
- Algorithm and Flowcharts
- Variables, Data Types and Arithmetic Expressions
- Making Decisions, Branching and Looping

- Input and Output Operations in C
- Working with C Functions/Recursion
- Working with C Arrays
- Working with C Pointers/Pointers to Functions
- Working with Structures, Unions, and Enumerates
- Character and String Processing
- Operations on Bits
- Linked Lists, queues, stacks, binary Trees, and AVL trees
- Dynamic Memory Allocation/File Processing

7. Other information

Lecture hours: depends on semester calendar.

Office hours: As scheduled in the semester calendar, or by appointment (Office: O2.206)

Contact information: nthieu@hcmiu.edu.vn

Software

Dev C/C++, Visual Studio Code, BlockCode, NetBeans, Programiz C Online Compiler

Independent Learning Experiences

Homework problems are assigned weekly or bi-weekly, collected, and graded.

Course Policies

- Assignments: All assignments need to be submitted on the due date. Otherwise, a penalty of 20% per day will be applied for each late assignment.
- Policy on dishonesty: Students are expected to do their own work at all times. Any evidence of plagiarism or cheating will be treated as grounds for failure in the class.

Link to download materials: **http://blackboard.hcmiu.edu.vn/**

Prepared by: Dr. Nguyen Ngoc Truong Minh

Ho Chi Minh City, 6 September 2025	Ho Chi Minh City, 6 September 2025
Head of Department	**Dean of School of Electrical Engineering**