

Class Syllabus – Fall Semester, 115 Academic Year
International Bachelor Degree Program in Mechanical Engineering,
National Chung Cheng University

Course Name: : Programming Languages				Dept.		IBPME
				Course Code		4231001
Instructors	Hsu-Chih Huang	Credits	3	Compulsory	Grade	First-Year
EMI	☒ Yes ☐ No					
Course type	☐ Humanistic Care Course ☐ Problem-oriented Course ☐ Integrate the curriculum ☐ Internship ☐ Competition Special Course ☒ Topic-based courses ☐ Practical courses ☐ Other					
Prerequisites: None						
Class Description : The course covers the basics of programming and demonstrates fundamental programming techniques, customs and terms including the most common library functions and the usage of the preprocessor. This course helps the students in gaining the knowledge to write C language applications, mathematical and engineering problems. This course helps to undertake future courses that assume this programming language as a background in computer programming. principles.						
Class Objective : 1. To teach how to write modular, efficient and readable C programs. 2. To impart knowledge in creating and using arrays of the C data types. 4. To describe the techniques for creating program modules in C using functions and recursive functions. 5. To demonstrate creation of derived data types and perform operations on files. 6. To familiarize pointers and dynamic memory allocation functions to efficiently solve problems.						
Textbooks	Paul Deitel, Harvey Deitel, <i>C HOW TO PROGRAM: WITH CASE STUDIES IN APPLICATIONS AND SYSTEMS PROGRAMMING 9/E</i> , Pearson, 2022. Please respect intellectual property rights and do not illegally photocopy textbooks specified by the instructor.					
An overview of the main points of teaching						
Teaching Materials	☒ PPT ☐ Self-edited textbooks ☐ Self-made instructional videos ☐ Course handouts ☐ Teaching Procedures ☐ Other					
Teaching Methods	☒ Lectures ☐ Oral presentation ☐ Case studies ☐ Group discussion ☐ Problem-oriented learning ☐ Other					

Evaluation Tools	☒ Mid-term Exam ☒ In-class Quiz ☒ Homework ☐ Final Report ☐ Other					☒ Final Exam ☐ In-class homework ☐ Mid-term Report ☐ Special Report ☐ Scales
Teaching Resources	☐ Course website ☒ Electronic files of textbooks are available for download ☐ Internship website					
Instructor's Information						
Course Outlines		Teaching Hours				Core Competence
Unit Title	Contents	Lectures	Demo	Practice	Other	
Introduction to the C Language	C programs, identifiers, data types, variables, constants, input/output and operators	6				B1, B2, B4
Statements	Selection and repetition statements	9				B2, B4, B6, B7
Functions	User defined functions, inter function communication and standard functions	9				B1, B2, B4
Arrays	Dimensional arrays and multidimensional arrays	6				B2, B4, B6, B7
Strings	String input/output functions, string manipulation functions and string /data conversion	9				B2, B4, B6, B7
Structures and pointers	Pointers to pointers, compatibility and pointer applications	9				B2, B4, B6, B7
Achievable Core Competence		Achievable Objective				
B1	Possess the ability of basic engineering mathematics, solid mechanics, heat flow mechanics, automatic control, materials science and opto-mechanical integration engineering practical analysis	Possess the ability of basic engineering mathematics, solid mechanics, heat flow mechanics, automatic control, materials science and opto-mechanical integration engineering practical analysis				
B2	Ability to absorb and integrate cross-domain knowledge	Ability to absorb and integrate cross-domain knowledge				
B4	Ability to write programming languages and computer-aided design	Ability to write programming languages and computer-aided design				
B6	Ability to identify, analyse and solve professional problems	Ability to identify, analyse and solve professional problems				
B7	Ability to implement and innovate	Ability to implement and innovate				

Core competencies of the University Division

B1 Possess the ability of basic engineering mathematics, solid mechanics, heat flow mechanics, automatic control, materials science and opto-mechanical integration engineering practical analysis

B2 Ability to absorb and integrate cross-domain knowledge

B3 Ability to perform solid force experiments, heat flow experiments, mechanical project implementation, optoelectronic engineering experiments and analyze data

B4 Ability to write programming languages and computer-aided design

B5 Mechanical and opto-electromechanical systems, component design and process planning capabilities

B6 Ability to identify, analyse and solve professional problems

B7 Ability to implement and innovate

B8 Ability to engage in scientific writing and presentations

B9 Ability to work as a team, communicate effectively and manage the program

B10 Learn general knowledge and demonstrate the ability of engineering ethics, social responsibility and sustainable development

Weekly teaching plan				
Course Time	Course Location	Grading	Office hour	Teaching quality evaluation method
Tue 7-9 13:10~16:00	Innovation Building Rm202	Midterm Exam: 30% Final Exam: 30% Assignments: 30% Others (Attendance, In-class Performance): 10%	Mon 13:00-15:00 Rm. 526 hchuang@ccu.edu.tw	Questionnaire
Weeks	Teaching & Homework Progress			Note
1	Introduction to the C language			
2	Structured program development			
3	Program control			
4	Data types, input/output			
5	Selection statements: if and switch			
6	Repetition statements: while, for and do-while			
7	Arrays: basic concepts and one-dimensional arrays			
8	Arrays: two-dimensional and multidimensional arrays			
9	Midterm exam.			
10	Functions: basics and user defined functions			

11	Functions: arrays to functions and recursive functions	
12	Structure	
13	Structure	
14	Pointers: basics and array of pointers	
15	Pointers: pointers to functions and applications	
16	File processing	
17	File processing	
18	Final exam.	