大學部課程綱要表

課程名稱：（中文）計算機概論				開課學系	電機工程學系
（英文）Introduction to Computers				課程代碼	4151004_01
授課教師：陳自強					
學分數	3	必/選修	必修	開課年級	大一
先修科目或先備能力：無					
課程概述：This course discusses what computers are; how they work and how they are programmed and gives a brief history of the development of programming languages from machine languages, to assembly languages, then to high-level languages. The course shows how to solve problems by software development method. Students will learn how to analyze the program, design, and implement the algorithm by programming in C language.					
學習目標：1. Understanding the history of computer development 2. Obtaining the ability to analyze problems, and design algorithms 3. Enhancing the programming and problem-solving ability					
教科書 [1]	J. R. Hanly, and E. B. Koffman, *Problem Solving and Program Design in C*, Pearson Education, Inc.: Boston, 2013.				

課程綱要		對應之學生核心能力	備註
單元主題	內容綱要		
Overview of Computers and Programming	■ Electronic Computers Then and Now ■ Computer Hardware ■ Computer Software ■ Software Development Method	■1.1 ■1.2 □1.3 ■2.1 □2.2 □3.1 □3.2 □4.1 □4.2 □4.3 □4.4	
Data Representation	■ Data and Computers ■ Representing Numeric Data ■ Representing Text ■ Representing Audio Information ■ Representing Images and Graphics ■ Representing Video	■1.1 ■1.2 □1.3 ■2.1 □2.2 □3.1 □3.2 □4.1 □4.2 □4.3 □4.4	
Computing Components	■ Individual Computer Components ■ Stored-Program Concept ■ Non-von Neumann Architecture	■1.1 ■1.2 □1.3 ■2.1 □2.2 □3.1 □3.2 □4.1 □4.2 □4.3 □4.4	
Overview of C	■ C Language Elements ■ Variable Declarations and Data Type ■ General Form of a C Program	■1.1 ■1.2 □1.3 ■2.1 ■2.2 □3.1 □3.2 □4.1 □4.2 □4.3 □4.4	
Top-Down Design with Functions	■ Building Programs from Existing Information ■ Library Functions ■ Top-down Design and Structure Charts ■ Functions with/without Arguments	■1.1 □1.2 □1.3 ■2.1 ■2.2 □3.1 □3.2 □4.1 □4.2 □4.3 □4.4	
Selection Structure: If and switch statement	■ Control Structures ■ If Statement ■ Decision Steps in Algorithms ■ Switch Statement	■1.1 ■1.2 □1.3 ■2.1 ■2.2 □3.1 □3.2 □4.1 □4.2 □4.3 □4.4	
Repetition and Loop statements	■ Repetition in Programs ■ Counting Loops and while Statement ■ For Statement ■ Conditional Loops ■ Do-while Statement and Flag-Controlled Loops	■1.1 ■1.2 □1.3 ■2.1 ■2.2 □3.1 □3.2 □4.1 □4.2 □4.3 □4.4	

教學要點概述[2]：

教材編選：■自編教材　■教科書作者提供

教學方法：■投影片講述　□板書講述　□實例示範　■操作練習

評量方法：□上課點名（%）　□小考（%）　□作業（%）　■程式實作（40%）　□實習報告（%）　□專案（%）　■期中考（30%）　■期末考（30%）　□期末報告（%）　□其它（%）

教學資源：□課程網站　□教材電子檔供下載　□其他 _____

教學相關配合事項：

核心能力

●1.1 ●1.2 ○1.3 ●2.1 ●2.2 ○3.1 ○3.2○4.1 ○4.2 ○4.3 ○4.4

1.1 瞭解電機工程基礎知識。

為何有關：

This course discusses what computers are; how they work and how they are programmed and gives a brief history of the development of programming languages from machine languages, to assembly languages, then to high-level languages.

達成指標：

The students understand the history of computer development.

評量方法：

examination

1.2 培養電機工程實作能力。

為何有關：

This course shows also the software development method to solve problems. Students will learn how to analyze the program, design the algorithm, and implement the algorithm by programming in C language.

達成指標：

The students get the ability to implement the algorithm by programming in C language.

評量方法：

Programming examination

2.1 培養分析問題的能力。

為何有關：

One of the target of this course is to help students improve their problem-solving ability. To solve the problem, students need to analyze the problem after specifying the problem requirements.

達成指標：

The students learn how to solve problem by analyzing the problem, and designing the algorithm.

評量方法：

programming examination

2.2 培養善用資源以解決問題的能力。

為何有關：

The course introduces the notion of algorithms (procedures) for solving problem. This course guides students to understand how to construct programs modular from small pieces called functions. By top-down design, students are able to build a system by integrating many functions where the big problem can be solved.

達成指標：

The students learn how to solve problem by analyzing the problem, and designing the algorithm.

評量方法：

programming examination