

Academic Org: Dept of Computer Sci & Engg – Subject: Computer Engineering

**Course:** CENG3430      **Course ID:** 001785      **Eff Date:** 2022-07-01      **Crse Status:** Active      **Apprv. Status:** Approved      **【Course Rev】**  
Rapid Prototyping of Digital Systems 數字系統之快速原型技術

This course introduces digital prototyping techniques such as the use of a hardware description language for hardware system development, and the methods for interfacing field programmable devices to microprocessors, memory systems, and peripheral devices.

本科介紹如何使用硬件描述語言來開發數字系統以及如何把現場可編程器件連接到微處理器、內存系統和外部裝置。

**Grade Descriptor:**      A

EXCELLENT – exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.

有關等級說明的資料，請參閱英文版本。

B

GOOD – good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.

有關等級說明的資料，請參閱英文版本。

C

FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

有關等級說明的資料，請參閱英文版本。

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

有關等級說明的資料，請參閱英文版本。

**Equivalent Offering:**

**Units:** 3 (Min) / 3 (Max) / 3 (Acad Progress)  
**Grading Basis:** Graded  
**Repeat for Credit:** N  
**Multiple Enroll:** N  
**Course Attributes:**

**Topics:**

**COURSE OUTCOMES**

**Learning Outcomes:**

Students will be able to

1. use a hardware description language to prototype a digital system;
2. interface a computer with the outside world using field programmed devices;
3. build reliable digital systems.

**Course Syllabus:**

This course introduces digital prototyping techniques such as the use of a hardware description language for hardware system development, and the methods for interfacing field programmable devices to microprocessors, memory systems, and peripheral devices.

**Assessment Type:**

Lab reports	: 40%
Project	: 50%
Participation	: 10%

**Feedback for Evaluation:**

1. Mid-term course and teaching evaluation;

2. Final course and teaching evaluation;

**Required Readings:**

1. Digital Design Principles and Practices by John F. Wakerly The fourth edition, Prentice Hall;
2. Advanced Signal Integrity for High-Speed Digital Design, Stephen H. Hall and Howard L. Heck , Wiley;

**Recommended Readings:**

**OFFERINGS**

1. CENG3430 Acad Organization=CSD; Acad Career=UG

**COMPONENTS**

LAB : Size=30; Final Exam=N; Contact=1  
LEC : Size=30; Final Exam=Y; Contact=2  
TUT : Size=30; Final Exam=N; Contact=1

**ENROLMENT REQUIREMENTS**

1. CENG3430

**Enrollment Requirement Group:**

Prerequisite: CSCI2510 or ENGG2020 or ENGG2120 or ESTR2104 or its equivalent  
For senior-year entrants, the prerequisite will be waived.  
Not for students who have taken ESTR3100

**New Enrollment Requirement(s):**

Pre-requisite = no change  
Exclusion = no change

**CAF**

eLearning hrs for blended cls 0  
No. of micro-modules 0  
Research components (UG) 0%

---

---

< END OF REPORT >