

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

Course: CENG2400 **Course ID:** 001782 **Eff Date:** 2022-07-01 **Crse Status:** Active **Apprv. Status:** Approved **【Course Rev】**
Embedded System Design 嵌入式系統設計

This course introduces the techniques for building embedded systems such as the use of microprocessors, interfacing memory systems and timing control of digital signals. It also discusses peripheral input/output interfacing methods such as: timer, serial and parallel interfaces, analog-to-digital conversion, polling, interrupt and device driver developments. Assembly language programming will also be introduced: concepts of addressing modes, data manipulation, control flow instructions, programme linkage and relation to high level languages.

本科介紹構建嵌入式系統之方法，如微處理器使用、存儲器接口和控制信號的處理技術等；亦會討論外設輸入／輸出接口如：定時器、串行和並行接口、模擬到數字轉換、輪詢、中斷和設備驅動程序等。相關軟件方面包括彙編語言編程知識如：尋址模式概念、數據處理、控制流指令使用、程序聯動及與高級語言之關係等。

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:

Student will be able to

1. design, implement, program and debug microprocessor-based embedded systems to solve real life problems;
2. write assembly language programs;
3. interface an embedded system with other devices such as integrated circuit devices and displays.

Course Syllabus:

This course introduces the techniques for building embedded systems such as the use of microprocessors, interfacing memory systems and timing control of digital signals. It also discusses peripheral input/output interfacing methods such as: timer, serial and parallel interfaces, analog-to-digital conversion, polling, interrupt and device driver developments. Assembly language programming will also be introduced that includes: concepts of addressing modes, data manipulation, control flow instructions, programme linkage and relation to high level languages.

Assessment Type:

Essay test or exam : 50%

Lab reports	: 20%
Presentation	: 5%
Short answer test or exam	: 25%

Feedback for Evaluation:

1. Midterm evaluation;
2. Questions in labs/tutorials;

Required Readings:

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Recommended Readings:

1. Furber, ARM System-on-Chip Architecture, 2000;
2. Web-based data sheets and teaching materials;

OFFERINGS

1. CENG2400 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. CENG2400 **Enrollment Requirement Group:**
Prerequisite: ENGG2020 or ENGG2120 or ESTR2104.
Not for students who have taken ESTR2100.

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%

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