UNSW Course Outline

COMP9032 Microprocessors and Interfacing - 2024

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General Course Information

Course Code : COMP9032
Year : 2024
Term : Term 3
Teaching Period : T3
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Computer Science and Engineering
Delivery Mode : In Person
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course introduces the students to the basics of microprocessors. It covers microprocessor architecture, assembly laguage programming, I/O interfacing and microprocessor applications. By taking this course, students gain a deep understanding of microprocessor architecture,

programming techniques, and the skills required to interface microprocessors with a range of devices, which is valuable for careers in embedded systems, hardware design, firmware development, and other fields where the integration of microprocessors with external systems is essential.

Course Aims

This course aims to provide students with a solid theoretical foundation and practical skills in microprocessors and interfacing, preparing students for careers in fields such as embedded systems, computer architecture, hardware design, firmware development.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Demonstrate a good understanding of microprocessor architecture and the interface between software and hardware.
CLO2 : Have sound assembly programming skills (based on the AVR microprocessor).
CLO3 : Understand how the communication between microprocessor and I/O devices works.
CLO4 : Understand how analog signals are converted into digital signals and vice versa.
CLO5 : Demonstrate the ability to solve various problems with the AVR microcontroller.
CLO6 : Demonstrate the ability to work in teams for lab tasks and design project.

Course Learning Outcomes	Assessment Item
CLO1 : Demonstrate a good understanding of microprocessor architecture and the interface between software and hardware.	• Final Exam
CLO2 : Have sound assembly programming skills (based on the AVR microprocessor).	• Lab exercises (programming and designs) • Assignment - Microprocessor application design project • Final Exam
CLO3 : Understand how the communication between microprocessor and I/O devices works.	• Lab exercises (programming and designs) • Assignment - Microprocessor application design project • Final Exam
CLO4 : Understand how analog signals are converted into digital signals and vice versa.	• Lab exercises (programming and designs) • Assignment - Microprocessor application design project • Final Exam
CLO5 : Demonstrate the ability to solve various problems with the AVR microcontroller.	• Lab exercises (programming and designs) • Assignment - Microprocessor application design project • Final Exam
CLO6 : Demonstrate the ability to work in teams for lab tasks and design project.	• Lab exercises (programming and designs) • Assignment - Microprocessor application design project • Final Exam

Learning and Teaching Technologies

Moodle - Learning Management System | Microsoft Teams

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Lab exercises (programming and designs) Assessment Format: Individual	25%	
Assignment - Microprocessor application design project Assessment Format: Group	25%	
Final Exam Assessment Format: Individual	50%	

Assessment Details

Lab exercises (programming and designs)

Assessment Overview

Some lab exercises may need students to work in group. But the lab exercises are assessed mainly on an individual basis, where each student is required to explain and demonstrate their designs during peer assessment. Through peer assessment, students can learn from each other and get feedback from peers and tutors. An assessment guide is given in the lab spec for each lab.

Course Learning Outcomes

- CLO2 : Have sound assembly programming skills (based on the AVR microprocessor).
- CLO3 : Understand how the communication between microprocessor and I/O devices works.
- CLO4 : Understand how analog signals are converted into digital signals and vice versa.
- CLO5 : Demonstrate the ability to solve various problems with the AVR microcontroller.
- CLO6 : Demonstrate the ability to work in teams for lab tasks and design project.

Generative AI Permission Level

No Assistance

This assessment is designed for you to complete without the use of any generative AI. You are not permitted to use any generative AI tools, software or service to search for or generate information or answers.
For more information on Generative AI and permitted use please see here.

Assignment - Microprocessor application design project

Assessment Overview

The assignment is assessed in three parts: group presentation, lab demonstration, and project

written report. Assessment criteria will be given in the assignment spec and feedback will be given by tutors.

Course Learning Outcomes

- CLO2 : Have sound assembly programming skills (based on the AVR microprocessor).
- CLO3 : Understand how the communication between microprocessor and I/O devices works.
- CLO4 : Understand how analog signals are converted into digital signals and vice versa.
- CLO5 : Demonstrate the ability to solve various problems with the AVR microcontroller.
- CLO6 : Demonstrate the ability to work in teams for lab tasks and design project.

Generative AI Permission Level

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Final Exam

Assessment Overview

It is a written exam, which covers all topics discussed in this course.

Course Learning Outcomes

- CLO1 : Demonstrate a good understanding of microprocessor architecture and the interface between software and hardware.
- CLO2 : Have sound assembly programming skills (based on the AVR microprocessor).
- CLO3 : Understand how the communication between microprocessor and I/O devices works.
- CLO4 : Understand how analog signals are converted into digital signals and vice versa.
- CLO5 : Demonstrate the ability to solve various problems with the AVR microcontroller.
- CLO6 : Demonstrate the ability to work in teams for lab tasks and design project.

Generative AI Permission Level

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General Assessment Information

Grading Basis

Standard

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
	Hui Guo					Yes	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- Attendance
- UNSW Email Address
- Special Consideration

- Exams
- Approved Calculators
- Academic Honesty and Plagiarism
- Equitable Learning Services

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: https://www.unsw.edu.au/engineering/student-life/student-resources/program-design.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit: student.unsw.edu.au/plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students

one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

Faculty-specific Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

School Contact Information

CSE Help! - on the Ground Floor of K17

- For assistance with coursework assessments.

The Nucleus Student Hub - https://nucleus.unsw.edu.au/en/contact-us

- Course enrolment queries.

Grievance Officer - grievance-officer@cse.unsw.edu.au

- If the course convenor gives an inadequate response to a query or when the courses convenor does not respond to a query about assessment.

Student Reps - stureps@cse.unsw.edu.au

- If some aspect of a course needs urgent improvement. (e.g. Nobody responding to forum queries, cannot understand the lecturer)

You should **never** contact any of the following people directly:

- Vice Chancellor

- Pro-vice Chancellor Education (PVCE)

- Head of School

- CSE administrative staff

- CSE teaching support staff

They will simply bounce the email to one of the above, thereby creating an unnecessary level of indirection and a delay in the response.