Faculty of Science, Engineering and Technology

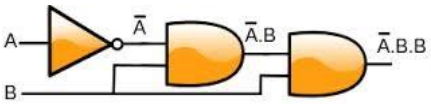
SWINBURNE UNIVERSITY OF TECHNOLOGY

Unit Outline

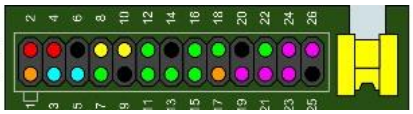
COS10004

Computer Systems

Semester 2 2022



Computer Systems



Please read this Unit Outline carefully. It includes:

PART A Unit summary

PART B Your Unit in more detail

PART C Further information

PART A: Unit Summary

Unit Code		**COS10004**	
Unit Title		**Computer Systems**	
Duration		One Semester or equivalent	
Total Scheduled* Contact Hours		48 hours Blended ☐	
Delivery Locations		☑ On-campus ☑ Sarawak ☐ OUA ☐ SOL ☐ Hawthorn Online ☐ Other:……..	
Requisites:			
	Pre-requisites	One of: ENG10004 Digital and Data Systems OR EAT10016 Digital and Data Systems OR ICT10001 Problem Solving with ICT	
	Co-requisites		
	Concurrent pre-requisites	COS10009 Introduction to Programming	
	Anti-requisites		
	Assumed knowledge	Assumed familiarity with Boolean algebra and number systems	
Credit Points		12.5	
Assessment		Continuous: 40-50%	Post-unit On-line Question and Answer : **50**%
Grading Schema		HED Graded Mark	
Owning Organisation Unit		Faculty of Science, Engineering and Technology (FSET)	
Department Responsible for Teaching		Department of Computer Science and Software Engineering	

Aims

Students will become familiar with the design, programming, operation, and design constraints of computing hardware.

Unit Learning Outcomes (ULO)

Students who successfully complete this Unit will be able to:

1. Read and write assembly language programs for a simple microcomputer.
2. Identify the hardware components of a computer and the functions they perform.
3. Describe the overall behaviour of compilers, assemblers, linkers and interpreters.
4. Argue some of the trade-offs between hardware and software that occur in computer system design.

Key Generic Skills

During this unit students will receive feedback on the following key generic skills:
- problem solving skills
- analysis skills
- ability to work independently

Content

- Assembly language programming

- An introduction to program timing considerations and interrupts
- Serial and parallel input /output
- Memory types and organisation
- Basic computer organisation: Von Neumann and Harvard architectures
- The internals of a microcomputer using a RISC CPU
- An introduction to interfacing to the analogue world
- A block diagram of a complete CPU
- An introduction to data storage technologies

Learning and Teaching Structure

*Scheduled face to face: Lectures (24 hours), Computer Lab (24 hours)

*Scheduled synchronous online Learning events (N/A)

Non-scheduled online learning events and activities (N/A)

Non-scheduled learning events and activities including independent study (approx. 102 hours)

Assessment Details

Types	Individual or Group task	Weighting	Assesses attainment of these ULOs
Examination	Individual	50%	1,2,3,4
Lab work	Individual	10%	1, 2
Assignment 1	Individual	20%	1, 2
Assignment 2	Individual	20%	1, 2, 3.

Minimum requirements to pass this unit

As the minimum requirements of assessment to pass the unit and meet all Unit Learning Outcomes to a minimum standard, a student must achieve:

(i) An aggregate mark of 50% or more, and

(ii) Obtain at least 40% in the final exam

Students who do not successfully achieve hurdle requirement (ii) will receive a maximum of 44% as the total mark for the unit and will not be eligible for a conceded pass.

Reference Materials

Some labs and assessments will use the Logisim Evolution Logic simulator available here: https://github.com/reds-heig/logisim-evolution or via the unit outline.

PART B: Your Unit in more detail

Unit Improvements

Feedback provided by previous students through the Student Survey has resulted in improvements that have been made to this unit. Recent improvements include:

- New teaching team, hardware platform, lectures and assessment items.

Unit Teaching Staff

Name	Role	Room	Phone	Email	Consultation Times
Dr Chris McCarthy	Unit Convenor	EN508e	9214 8672	cdmccarthy@swin.edu.au	By appointment only
Jai Cornes	Sessional Lecturer			jcornes@swin.edu.au	TBD
Dr Caslon Chua	Moderator	EN506e	9214 5397	cchua@swin.edu.au	N/A

Shalmoly Mondal	Tutor			shalmolymondal@swin.edu.au	TBD
Teja Gowda	Tutor			tgowdaswin.edu.au	TBD
Kafil Uddin	Tutor			mdkafiluddin@swin.edu.au	TBD
Daniel Petrovsky	Tutor			dpetrovski@swin.edu.au	TBD
Zafaryab Rasool	Tutor			zrasool@swin.edu.au	TBD
Mukesh Malani	Tutor			malaniofcl@gmail.com	TBD

Learning and Teaching Structure

Activity	Total Hours	Hours per Week	Teaching Period Weeks
Lectures	24 hours	2 hours	Weeks 1 to 12
Labs	24 hours	2 hour	Weeks 1 to 12

Week by Week Schedule

Week	Week Beginning	Teaching and Learning Activity	Student Task or Assessment
1	August 1	Intro to unit. Bits, Bytes and Boolean Algebra	Lab 1: Logisim: Gates
2	August 8	Storing bits with Flip Flops	Lab 2: Logisim: Adder and Flip-flops
3	August 15	Putting Flip Flops to work - Registers, shift registers and counters	Lab 3: Logisim: Counters and Registers
4	August 22	Memory, stacks, and computing architectures	Lab 4:. Assignment 1 released
5	August 29	Encoders, decoders and multiplexers, and number representation	Lab 5: Logisim: encoders, decoders, stacks,
6	September 5	Data communication, Programming Language Fundamentals	Lab 6:,
	September 12	Non-teaching week	
7	September 19	ARM Assembly Programming Basics, Addressing and Registers, ARM instruction Basics	Lab 7: ARMLite intro, Assignment 1 due
8	September 26	Bitwise operators, Branching and Looping, Indirect and Indexed Addressing, Arrays	Lab 8:
9	October 3	The Stack, Subroutines and Interrupt handling (pin)	Lab 9: Assignment 2 released
10	October 10	Consolidate - let's write Snake	Lab 10:
11	October 17	Guest Lecture	Lab 11:
12	October 24	Unit wrap up and revision	Lab 12: Assignment 2 due

Assessment

a) Assessment Overview

Tasks and Details	Individual or Group	Weighting	Unit Learning Outcomes that this assessment task relates to	Assessment Due Date
0. Lab Work	Individual	10%	1, 2	Weeks 1-12
1. Assignment 1	Individual	20%	1, 2	Week 6
2. Assignment 2	Individual	20%	1, 2, 3	Week 12
3. Examination	Individual	50%	1, 2, 3, 4, 5	Formal Exam Period

b) Minimum requirements to pass this Unit

To pass a Faculty of Science, Engineering and Technology (FSET) unit, you must achieve:

- achieve at least 35% in the final exam, and
- achieve an aggregate mark for the subject of 50% or more.

If you do not achieve at least 35% of the possible marks for the Examination Assessment Component, you will receive a maximum of 44% as your total mark for the unit.

c) Examinations

If the unit you are enrolled in has an official examination, you will be expected to be available for the entire examination period including any Special Exam period.

d) Submission Requirements

Assignments must be submitted through the ESP assessment submission system (https://esp.ict.swin.edu.au).

Please ensure you keep a copy of all assessments that are submitted.

An Assessment Cover Sheet will be submitted with your assignment when submitted through ESP. For reference, the standard Assessment Cover Sheet is available from the Current Students web site (see Part C).

e) Extensions and Late Submission

Late Submissions - Unless an extension has been approved, you cannot submit an assessment after the due date without incurring a penalty. If this penalty does occur, you will be penalised 10% of the assessment's worth for each calendar day the task is late up to a maximum of 5 days. After 5 days a zero result will be recorded.

f) Referencing

To avoid plagiarism, you are required to cite a reference whenever you include information from other sources in your work. Further details regarding plagiarism are available in Section C of this document.

Referencing conventions accepted for this unit are: Harvard or Vancouver styles

Helpful information on referencing can be found at
http://www.swinburne.edu.au/lib/studyhelp/harvard-quick-guide.pdf

g) Groupwork Guidelines

Not applicable

Required Textbook(s)

None

Recommended Reading Materials

- Nisan, H; Schocken, S. The Elements of Computer Systems, MIT Press 2005.
- ARM Information Center, http://infocenter.arm.com/help/index.jsp

PART C: FUTHER INFORMATION

For further information and links to resources for the following topics, refer to Swinburne's Current Students web page http://www.swinburne.edu.au/student/

Student Charter

Please familiarise yourself with Swinburne's Student Charter. The charter describes what students can reasonably expect from Swinburne in order to enjoy a quality learning experience. As students contribute to their own learning experience and to that of their fellow students, the charter also defines the University's expectations of students.

Student behaviour and wellbeing

Swinburne has a range of policies and procedures that govern how students are expected to conduct themselves throughout the course of their relationship with the University. These include policies on expected standards of behaviour and conduct which cover interaction with fellow students, staff and the wider University community, in addition to following the health and safety requirements in the course of their studies and whilst using University facilities.

All students are expected to familiarise themselves with University regulations, policies and procedures and have an obligation to abide by the expected guidelines. Any student found to be in breach may be subject to relevant disciplinary processes. Some examples of relevant expected behaviours are:

- Not engaging in student misconduct
- Ensuring compliance with the University's Anti-Discrimination, Bullying and Violence and Sexual Harassment requirements
- Complying with all Swinburne occupational health and safety requirements, including following emergency and evacuation procedures and following instructions given by staff/wardens or emergency response.

In teaching areas, it is expected that students conduct themselves in a manner that is professional and not disruptive to others. In all Swinburne laboratories, there are specific safety procedures which must be followed, such as wearing appropriate footwear and safety equipment, not acting in a manner which is dangerous or disruptive (e.g. playing computer games), and not bringing in food or drink.

Blackboard

You should regularly access the Swinburne Course Management System (Blackboard) available via http://ilearn.swin.edu.au. Blackboard is regularly updated with important Unit information and communications.

Communication

All communication will be via your Swinburne email address. If you access your email through a provider other than Swinburne, then it is your responsibility to ensure that your Swinburne email is redirected to your private email address.

Plagiarism

Plagiarism is the action or practice of taking and submitting or presenting the thoughts, writings or other work of someone else as though it is your own work. Plagiarism includes any of the following, without full and appropriate acknowledgment to the original source(s):

- The use of the whole or part of a computer program written by another person;
- the use, in essays or other assessable work, of the whole or part of a written work from any source including but not limited to a book, journal, newspaper article, set of lecture notes, current or past student's work, any other person's work, a website or database;
- The paraphrasing of another's work;
- The use of musical composition, audio, visual, graphic and photographic models,
- The use of realia that is objects, artefacts, costumes, models and the like.

Plagiarism also includes the preparation or production and submission or presentation of assignments or other work in conjunction with another person or other people when that work should be your own independent work. This remains plagiarism whether or not it is with the knowledge or consent of the other person or people. It should be noted that Swinburne encourages its students to talk to staff, fellow students and other people who may be able to contribute to a student's academic work but that where independent assignment is required, submitted or presented work must be the student's own.

Enabling plagiarism contributes to plagiarism and therefore will be treated as a form of plagiarism by the University. Enabling plagiarism means allowing or otherwise assisting another student to copy or otherwise plagiarise work by, for example, allowing access to a draft or completed assignment or other work.

Swinburne University uses plagiarism detection software (such as Turnitin) for assignments submitted electronically via Blackboard. Your Convenor will provide further details.

The penalties for plagiarism can be severe ranging from a zero grade for an assessment task through to expulsion from the unit and in the extreme, exclusion from Swinburne. Consequently you need to avoid plagiarism by providing a reference whenever you include information from other sources in your work.

Student support

You should talk to your Unit Convenor or Student Services, for information on academic support services available for Swinburne students.

Special consideration

If your studies have been adversely affected due to serious and unavoidable circumstances outside of your control (e.g. severe illness or unavoidable obligation) you may be able to apply for special consideration (SPC).

Applications for Special Consideration will be submitted via the SPC online tool normally no later than 5.00pm on the third working day after the submission/sitting date for the relevant assessment component.

Special needs

Sometimes students with a disability, a mental health or medical condition or significant carer responsibilities require reasonable adjustments to enable full access to and participation in education. Your special needs can be addressed by Swinburne's Disability Services, who can negotiate and distribute an 'Education Access Plan' that outlines recommendations for university teaching and examination staff. You must notify the University Disability Liaison Officer of your disability or condition within one week after the commencement of a unit of study to allow the University to make reasonable adjustments.

Review of marks

An independent marker reviews all fail grades for major assessment tasks. In addition, a review of assessment is undertaken if your final result is a marginal fail (45-49) or within 2 marks of a grade threshold.

If you are not satisfied with the result of an assessment you can ask the Unit Convenor to review the result. Your request must be made in writing within 10 working days of receiving the result. The Unit Convenor will review your result against the marking guide to determine if your result is appropriate.

If you are dissatisfied with the outcomes of the review you can lodge a formal complaint.

Feedback, complaints and suggestions

In the first instance you may discuss any issues with your Unit Convenor.

If you are dissatisfied with the outcome of the discussions with the Unit Convenor or would prefer not to deal with your Unit Convenor, then you can complete a feedback form.

Advocacy

You are advised to seek advice from the staff at the Swinburne Student Amenities Association (SSAA) if you require assistance with any academic issues.