UNSW Course Outline

ENGG1811 Computing for Engineers - 2024

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General Course Information

Course Code : ENGG1811
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Computer Science and Engineering
Delivery Mode : Multimodal
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Computing is an integral part of modern engineering. Computing is used in the design, automation, experimentation, monitoring, diagnosis, data collection, data analysis, visualisation and many other aspects of engineering. A very important skill for engineers is to be able to use

computers to help them to solve problems efficiently. The aim of this course is to give an introduction to computing for engineers with an emphasis on computational problem solving. In order to realise this aim, the students will learn to use the Python programming language and some its many packages to solve problems. Since the course is designed primarily for engineers, the computing examples are often presented together with an engineering context to help the students to appreciate the applications of computing in engineering. This course also includes a minor component in Matlab and spreadsheet.

Course Aims

Computational thinking an important tool that all modern engineers need. The course aims to equip students with the skills required to use programming and computational thinking to solve problems in engineering and related areas, and to assists students in developing familiarity with tools they will use within their own disciplines in later courses.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Design algorithms to solve computation problems
CLO2 : Implement algorithms using the Python programming language
CLO3 : Write Python programs to automate many different tasks
CLO4 : Use, at a simple level, the numerical computation packages of Matlab and Excel

Course Learning Outcomes	Assessment Item
CLO1 : Design algorithms to solve computation problems	• Labs • Assignment 1 • Assignment 2 • Final exam
CLO2 : Implement algorithms using the Python programming language	• Labs • Assignment 1 • Assignment 2 • Final exam
CLO3 : Write Python programs to automate many different tasks	• Labs • Assignment 1 • Assignment 2 • Final exam
CLO4 : Use, at a simple level, the numerical computation packages of Matlab and Excel	• Labs • Final exam

Learning and Teaching Technologies

Moodle - Learning Management System | Echo 360 | Microsoft Teams | EdStem | CSE Labs

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Labs Assessment Format: Individual	20%	Due Date: At the end of the week
Assignment 1 Assessment Format: Individual	20%	Start Date: Week-3 or 4 Due Date: Thursday of Week-7
Assignment 2 Assessment Format: Individual	20%	Start Date: Week-7 Due Date: Friday of Week-10
Final exam Assessment Format: Individual	40%	Due Date: During UNSW Exam Period

Assessment Details

Labs

Assessment Overview

There are two types of labs: weekly labs on Python and two self-directed labs.

The weekly Python labs require you to work on some exercises on Python to solve some computation problems. You are asked to demonstrate your completed work to the tutor for marking during your lab time slot. The marking is based on correctness and completeness of your work. The tutors will provide feedback to your work. You will also need to answer one multiple choice question during your lab time.

The two self-directed labs are on spreadsheet and Matlab. You are asked to watch a number of videos on the topic and to complete exercises which you will need to submit for marking. The marking of the self-directed lab is based on the correctness of your submitted work. For the self-directed lab on spreadsheet, a marking report will be provided. For the self-directed lab on Matlab, the online platform indicates whether you have successfully completed the questions.

The lab marks are weighted as follows:

- 8 labs (weeks 2, 3, 4, 5, 7, 8, 9, 10). Each lab is marked out of 3 marks: one mark for an on-line multiple choice question, and two marks for satisfactorily demonstrating your lab work during the respective lab. (16% for 8 labs, 2% each lab). Note your mark out of 3 will be scaled to a

mark out of 2
- Each self-directed lab (aka "virtual lab") is marked out of 2 marks. There are two virtual labs. (4% for two self-directed lab)

Course Learning Outcomes

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- CLO3 : Write Python programs to automate many different tasks
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Assignment 1

Assessment Overview

The aim of the assignment is to give you an opportunity to develop your Python program and computational thinking skills by solving an extended computational problem. For that, the assignment specification will ask you to write a number of Python programs which you will need to submit for marking.

Your programs will be marked according to two criteria: correctness and style. Here, correctness means that your programs can successfully perform the tasks required in the assignment specification. The style requirements are given in the assignment specification and a style guide is provided. The weighting for the correctness and style marks are provided in the assignment specification.

The students will be provided with a report after the assignment has been marked. The report will indicate which tests the program code has passed, the marks, and any feedback from the tutor on the style.

Course Learning Outcomes

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Assignment 2

Assessment Overview

The aim of the assignment is to give you an opportunity to develop your Python program and computational thinking skills by solving an extended computational problem. For that, the assignment specification will ask you to write a number of Python programs which you will need to submit for marking.

Your programs will be marked according to two criteria: correctness and style. Here, correctness means that your programs can successfully perform the tasks required in the assignment specification. The style requirements are given in the assignment specification and a style guide is provided. The weighting for the correctness and style marks are provided in the assignment specification.

The students will be provided with a report after the assignment has been marked. The report will indicate which tests the program code has passed, the marks, and any feedback from the tutor on the style.

Course Learning Outcomes

- CLO1 : Design algorithms to solve computation problems
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Final exam

Assessment Overview

The final exam will be a practical exam in the laboratory The exam will take place in the university exam period. The expected duration is 2-3 hours. The exam will consist of programming questions and multiple choice questions. The questions will be marked based on their correctness.

Course Learning Outcomes

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General Assessment Information

The laboratory exercises will be based on the content presented in previous weeks.

Grading Basis

Standard

Requirements to pass course

In order to pass this course, you need to have a final mark which is 50 or higher.

Course Schedule

Attendance Requirements

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

General Schedule Information

The course **lecture** schedule is subject to change.

The **laboratory** exercises will be based on the content presented in previous weeks.

Online Modules : There are two online modules and self-directed labs that have to be completed. These two online modules are on Spreadsheet and Matlab respectively. The online module for Spreadsheet will be available in Week 5 and should be completed by Week 8. The online module for Matlab will be available in Week 7 and should be completed by Week 10.

Course Resources

Prescribed Resources

Lecture notes, sample programs, lab exercises will be available at the WebCMS3 course web-site.

Course Evaluation and Development

This course is evaluated each session using the myExperience system.

In this session, the lecturer will improve the lecture materials and to provide more practice problems for the students to work on.

Every term, student feedback is requested in a survey using UNSW's myExperience online survey system where the feedback will be used to make improvements to the course.

Students are also encouraged to provide informal feedback during the session, and to let course staff know of any problems as soon as they arise. Suggestions will be listened to openly, positively, constructively, and thankfully, and every reasonable effort will be made to address them.

According to feedback from the last offering, the course was very well received. In particular, the "Live Coding Sessions" each week proved to be popular with students who needed extra help. As a result, we will continue to offer these sessions every week for an hour. Furthermore, our

objective is to enhance student engagement in both laboratory and lecture courses.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Lecturer	Ashesh Mahidadia					No	No
	Raymond Louie					No	No
Administrator	George Muscat					No	No
	COURSE EMAIL					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.