Unit Outline

COMP1005 Fundamentals of Programming

Semester 1, 2024

Unit study package code:	COMP1005
Mode of study:	Internal
Tuition pattern summary:	Note: For any specific variations to this tuition pattern and for precise information refer to the Learning Activities section. Lecture: 1 x 2 Hours Weekly Computer Laboratory: 1 x 2 Hours Weekly This unit does not have a fieldwork component.
Credit Value:	25.0
Pre-requisite units:	Nil
Co-requisite units:	Nil
Anti-requisite units:	COMP1001 (v.0) Object Oriented Program Design or any previous version *AND* COMP1007 (v.0) Programming Design and Implementation or any previous version *AND* COMP5005 (v.0) Fundamentals of Programming or any previous version
Result type:	Grade/Mark
Approved incidental fees:	Information about approved incidental fees can be obtained from our website. Visit https://www.curtin.edu.au/students/essentials/fees/understanding-your-fees/ for details.

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Learning Management System:	Blackboard (lms.curtin.edu.au)

Acknowledgement of Country

We respectfully acknowledge the Indigenous Elders, custodians, their descendants and kin of this land past and present. The Centre for Aboriginal Studies aspires to contribute to positive social change for Indigenous Australians through higher education and research.

Coronavirus (COVID-19) Update

Curtin University is committed to supporting all our students and staff whether they are on campus, working remotely or overseas. Your health, safety and wellbeing are our priority and the continuing COVID-19 pandemic may require changes to the unit schedule, learning activities, delivery modes and assessment to provide flexible and safe options to our community. Curtin will endeavour to keep changes and disruptions to a minimum at all times. For current advice and further information visit https://www.curtin.edu.au/novel-coronavirus/.

Syllabus

This unit aims at equipping students with the ability to write simple programs as part of managing large volumes of data. Topics include data representation in a computer, algorithm design, submodules, Boolean expressions, selection and repetition control structures, basic Object Oriented programming design and File I/O. These will be discussed in the context of implementation in the Python programming language.

Introduction

This unit has been developed as an introduction to programming for engineering, science and particularly data science students. It responds to an increasing focus on data analytics and computational science in research and industry. You can't go far in science or engineering without using a computer. To do research, or anything that hasn't been done before, you need to be coding. The unit is not just "Fundamentals of Programming"... it will give you valuable simulation and research tools to apply and extend in your later studies and careers.

Unit Learning Outcomes

All graduates of Curtin University achieve a set of six Graduate Capabilities during their course of study. These inform an employer that, through your studies, you have acquired discipline knowledge and a range of other skills and capabilities which employers would value in a professional setting. Each unit in your course addresses the Graduate Capabilities through a clearly identified set of learning outcomes. They form a vital part in the process referred to as assurance of learning. The learning outcomes notify you of what you are expected to know, understand or be able to do in order to be successful in this unit. Each assessment for this unit is carefully designed to test your knowledge of one or more of the unit learning outcomes. On successfully completing all of the assessments you will have achieved all of these learning outcomes.

Your course has been designed so that on graduating you will have achieved all of Curtin's Graduate Capabilities through the assurance of learning processes in each unit.

	On successful completion of this unit students can:	Graduate Capabilities addressed
1	Describe data representation in a computer	
2	Design and implement and document simple algorithms	
3	Recognise the purpose of modularising computer programs	
4	Compare and contrast design choices and communicate design and design decisions in a manner appropriate to the audience	

Curtin's Graduate Capabilities

	Apply discipline knowledge, principles and concepts		Innovative, creative and entrepreneurial		Effective communicators with digital competency
	Globally engaged and responsive		Culturally competent to engage respectfully with local First Peoples and other diverse cultures		Industry connected and career capable
Find out more about Curtin's Graduate Capabilities at the Learning Innovation and Teaching Excellence Centre (LITEC) website: litec.curtin.edu.au					

Learning Activities

The lectures provide the theoretical foundations for achieving the unit learning outcomes. The practical worksheet exercises further develop on the lecture concepts to give students hands-on experience of the underlying theories. Students should ensure that they stay current with the practical exercises since falling behind will likely prevent the successful completion of the unit.

We allow resubmission of the Practical Tests for two weeks after their scheduled date. The tests are about ensuring your competency in the skills and challenges that are key to this unit. By completing these challenges, most students find they learn and consolidate their knowledge with each Practical Test.

The assignment will extend these concepts in solving a challenging programming project, reinforcing the learning from the lectures and practicals.

Learning Resources

Online resources

- Scipy Lecture Notes: One document to learn numerics, science, and data with Python (http://www.scipy-lectures.org/)

Essential software

All required software is available through the provided **Virtual Machines**: https://mydesktop.curtin.edu.au/
Students are encouraged to set up an alternative environment for home use, it should include:

- **Linux environment** - Gitbash recommended for Windows users (https://gitforwindows.org/), Mac users can use Terminal, which is available in MacOS
- **Python** - minimum Version 3 installed to allow programs to be run on the command line
  - Python Software Foundation (PSF) - https://www.python.org/downloads/
  - Anaconda distribution - https://www.anaconda.com/download
- **Jupyter Notebook** - install for PSF via "pip install jupyter", installed in Anaconda distribution, or can be installed within Visual Studio Code

Assessment

Assessment policy exemptions

- There are no exemptions to the assessment policy

Assessment schedule

	Task	Value %	Date Due	Unit Learning Outcome(s) Assessed	Late Assessments Accepted?*	Assessment Extensions Considered?*
1	Assignment	40%	**Week:** Week 10 **Day:** 29th April **Time:** 12pm (midday - WST)	1,2,4	Yes	Yes
2	Practical Test	20%	**Week:** Weeks 3, 5, 8, 11, 13 **Day:** During assigned practical **Time:** During assigned practical	2,3	Yes	Yes
3	Final Examination	40%	**Week:** Examination Period **Day:** TBA **Time:** TBA	1,2,3,4	No	Yes

*Please refer to the Late Assessment and the Assessment Extension sections below for specific details and conditions.

Detailed information on assessment tasks

1. You will have at least four weeks to complete the Assignment. After submission, you will be required to demonstrate the assignment during your practical to gain a proportion of the overall marks. Refer to the assignment specification for more details on the assignment task and assessment.

   A satisfactory assignment submission is required to pass the unit.

2. There will be five (5) practical tests across the semester, each worth 4%, adding up to 20% or your mark.

   Resubmissions are allowed and encouraged - you have two weeks to resubmit each test. We recommend you c**omplete tests as early as possible** to build your competence and confidence ready for subsequent topics and the assignment.

   You must attend the practical to sit the test, have it marked by a tutor AND submit it to Blackboard to be awarded the marks.

3. The Final Exam will cover all aspects of the unit. It is written and closed-book.

   Examples are available on the Assessments page in Blackboard.

Pass requirements

In order to pass the unit a student must:

- score at least 50% overall, and
- score at least 40% in the exam, and
- have submitted a reasonable attempt at the assignment. Note that the assignment specification gives details of what is considered a reasonable attempt

Assessment Moderation

Fair assessment through moderation

Moderation describes a quality assurance process to ensure that assessments are appropriate to the learning outcomes, and that students work is evaluated consistently by assessors. Minimum standards for the moderation of assessments are described in the Assessment and Student Progression Manual, available from policies.curtin.edu.au/findapolicy/

Pre-marking moderation

This unit complies with moderation of assessments as described in the Assessment and Student Progression Manual, available from policies.curtin.edu.au/findapolicy/

Intra-marking / Post-marking moderation

This unit complies with moderation of assessments as described in the Assessment and Student Progression Manual, available from policies.curtin.edu.au/findapolicy/

Late assessment

Where the submission of a late assessment is permitted, late penalties will be consistently applied in this unit.

Where a late assessment **is** permitted for an assessment item or the entirety of the unit (refer to the Assessment Schedule table in this Unit Outline) and the student does not have an approved assessment extension:

1. For assessment items submitted within the first 24 hours after the due date/time, students will be penalised by a deduction of 5% of the total marks allocated for the assessment task;
2. For each additional 24 hour period commenced an additional penalty of 10% of the total marks allocated for the assessment item will be deducted; and
3. Assessment items submitted more than 168 hours late (7 calendar days) will receive a mark of zero.

Where late assessment **is NOT** permitted for an assessment item or the entirety of the unit (refer to the Assessment Schedule table in this Unit Outline) and the student does not have an approved assessment extension:

1. All assessment items submitted after the due date/time will receive a mark of zero.

Assessment extension

Where an application for an assessment extension **is** permitted for an assessment item(s) within this unit (refer to the Assessment Schedule table in this Unit Outline):

1. A student who is unable to complete an assessment item by/on the due date/time as a result of exceptional circumstances beyond the student's control, may apply for an assessment extension on the Assessment Extension Application Form as prescribed by the Academic Registrar. The form is available on the Forms page at https://students.curtin.edu.au/essentials/forms-documents/forms/ and also within the student's OASIS (My Studies tab – Quick Forms) account.
2. The student will be expected to submit their application for an Assessment Extension with supporting documentation via the online form.
3. Timely submission of this information supports the assessment process. For applications that are declined, delayed submission may have significant ramifications on the possible marks awarded.
4. An application may be accepted up to five working days after the due date/time of the assessment item where the student is able to provide a verifiable explanation as to why they were not able to submit the application prior to the assessment due date/time

Where an application for an assessment extension **is NOT** permitted for an assessment item(s) within this unit (refer to the Assessment Schedule table in this Unit Outline):

1. All assessment items submitted after the due date/time will be subject to late penalties or receive a mark of zero depending on the unit permitting late assessment submissions.

Deferred assessments

If your results show that you have been granted a deferred assessment you should immediately check OASIS for details.

Deferred examinations/tests will be held from 15/07/2024 to 24/07/2024 . Notification to students will be made after the Board of Examiners' meeting via the Official Communications Channel (OCC) in OASIS.

Further assessment

Further assessments, if granted by the Board of Examiners, will be held between 15/07/2024 and 24/07/2024 . Notification to students will be made after the Board of Examiners meeting via the Official Communications Channel in OASIS.

It is the responsibility of the student to be available to complete the requirements of a further assessment. If your results show that you have been granted a further assessment you should immediately check OASIS for details.

Reasonable adjustments for students with disabilities/health circumstances likely to impact on studies

A Curtin Access Plan (CAP) is a document that outlines the type and level of support required by a student with a disability or health condition to have equitable access to their studies at Curtin. Carers for people with disability may also be eligible for support. This support can include alternative exam or test arrangements, study materials in accessible formats, access to Curtin's facilities and services or other support as discussed with an advisor from AccessAbility Services.

Documentation is required from your treating Health Professional to confirm your health circumstances or carer responsibilities.

If you think you may be eligible for a CAP, please contact AccessAbility Services. If you already have a CAP please provide it to the Unit Coordinator in week 1 of each study period.

Referencing style

The referencing style for this unit is Chicago 17th Author-Date.

More information can be found on this style from the Library web site:
https://libguides.library.curtin.edu.au/uniskills/referencing/chicago17.

Privacy

As part of a learning or assessment activity, or class participation, your image or voice may be recorded or transmitted by equipment and systems operated by Curtin University. Transmission may be to other venues on campus or to others both in Australia and overseas.

Your image or voice may also be recorded by students on personal equipment for individual or group study or assessment purposes. Such recordings may not be reproduced or uploaded to a publicly accessible web environment. If you wish to make such recordings for study purposes as a courtesy you should always seek the permission of those who are impacted by the recording.

Recording of classes or course materials may not be exchanged or distributed for commercial purposes, for compensation, or for any other purpose other than personal study for the enrolled students in the unit. Breach of this may subject a student to disciplinary action under Statute No 10 – Student Disciplinary Statute.

If you wish to discuss this please talk to your Unit Coordinator.

Copyright

Academic Integrity (including plagiarism and cheating)

Academic Integrity

Curtin's Student Charter, Academic Integrity Program (AIP), and core Values guide expectations regarding student behaviour and responsibilities. Information on these topics can be found on the Academic Integrity Website.

Academic Integrity Warnings

An Academic Integrity Warning may be issued to a student in limited circumstances and only where misconduct is not involved.

Academic Misconduct

Staff members are required to report poor academic practice and suspected misconduct. Academic Misconduct means conduct by a student that is dishonest or unfair in connection with any academic work. This includes all types of plagiarism, cheating, collusion, falsification or fabrication of content, and behaviours like falsifying medical certificates for extension. Contract cheating, the use of file sharing, translation services/apps, paraphrasing tools (text-spinners), article generators, and assignment help websites also may be considered academic misconduct.

Check your assessment instructions carefully before using any generative artificial intelligence (Gen-AI) software (e.g. Chat GPT, Midjourney, GitHub Copilot, etc.). You are not permitted to use Gen-AI software in any assessment task unless written permission is explicitly granted by the Unit Coordinator (e.g. within Blackboard or the assignment specifications). If the use of Gen-AI software has been approved, you must document its use, apply appropriate acknowledgement and attribution rules, and include a statement as to the nature and extent of the use when submitting the assessment. Unapproved, inappropriate, or undisclosed use may be dishonest or unfair behaviour, and thus considered misconduct. For further information on the use of Gen-AI software see the Academic Integrity Website.

The longer term personal, social, and financial consequences of misconduct can be severe, so please ask your tutors or unit coordinator if you need clarification or are unsure what to do. If your work is the subject of an inquiry, you will be given an opportunity to respond and appropriate support will be provided. Academic work under inquiry will not be graded until the process has concluded. Penalties for misconduct may include a warning, a reduced or nil grade, a requirement to repeat the assessment, an annulled grade (ANN) or termination from the course. For more information refer to Statute No.10 Student Discipline and Academic Misconduct Rules.

Information and Communications Technology (ICT) Expectations

Curtin students are expected to have reliable internet access in order to connect to OASIS email and learning systems such as Blackboard and Library Services.

You may also require a computer or mobile device for preparing and submitting your work.

For general ICT assistance, in the first instance please contact OASIS Student Support: oasisapps.curtin.edu.au/help/general/support.cfm

For specific assistance with any of the items listed below, please visit UniSkills and the IT tools and guides webpage.

- Using Blackboard, the I Drive and Back-Up files
- Introduction to PowerPoint, Word and Excel

Additional information

FREE ONLINE GROUP STUDY SESSIONS in this Unit - UniPASS (University Peer Assisted Study Success)

UniPASS is free, interactive and positive face to face and/or online group study sessions and Facebook groups, run by trained, successful students for students. You can increase your grades by around 10 -15% by attending regularly! (That is a PASS to a CREDIT, or a DISTINCTION to a HIGH DISTINCTION – UniPASS benefits ALL students at ANY level). HOW? The active learning environment means you embed content and increase understanding, learning with and from other students, and gain valuable, transferrable academic skills. You can make friends and connect with study buddies – there are thousands of attendees each year at Curtin**. Go to the Blackboard page for this unit and see the UniPASS link for the timetable (posted by end of week 1)** – no registration necessary, just turn up either face to face or online! Search "unipass" on the Curtin website, or contact unipass@curtin.edu.au for more information. Timetables and session links and rooms on Blackboard by end of week 1, sessions start in week 2.

Enrolment

It is your responsibility to ensure that your enrolment is correct - you can check your enrolment through the eStudent option on OASIS, where you can also print an Enrolment Advice.

Student Rights and Responsibilities

It is the responsibility of every student to be aware of all relevant legislation, policies and procedures relating to their rights and responsibilities as a student. These include:

- the Student Charter
- Values and Signature Behaviours
- the University's policy and statements on plagiarism and academic integrity
- copyright principles and responsibilities
- the University's policies on appropriate use of software and computer facilities

Information on all of the above is available through the University's "Student Rights and Responsibilities" website at: students.curtin.edu.au/rights.

Note: In Australia and other jurisdictions, students are required to complete a screening check prior to undertaking any activities that include children (e.g. surveying children at a school as part of a project). If this applies to you, start by contacting your unit coordinator for advice.

Student Equity

There are a number of factors that might disadvantage some students from participating in their studies or assessments to the best of their ability, under standard conditions. These factors may include a disability or medical condition (e.g. mental illness, chronic illness, physical or sensory disability, learning disability), significant caring responsibilities, pregnancy, religious practices, living in a remote location,or another reason. If you believe you may be unfairly disadvantaged on these or other grounds please contact the appropriate service below. It is important to note that the staff of the University may not be able to meet your needs if they are not informed of your individual circumstances, so please get in touch with the appropriate service if you require assistance.

To discuss your needs in relation to:

- Disability or medical conditions, contact AccessAbility Services: https://students.curtin.edu.au/personal-support/disability/
- Elite athletes, contact Elite Athlete Coordinator: https://stadium.curtin.edu.au/sport/academy/elite-athlete-program/
- All other grounds, contact the Student Wellbeing Advisory Service: https://students.curtin.edu.au/personal-support/counselling-guidance/wellbeing/

Recent Unit Changes & Response to Student Feedback

Students are encouraged to provide feedback through student surveys (such as Insight (Curtin's new unit and teaching survey developed in collaboration with students and staff) and the annual Student Experience Survey) and interactions with teaching staff.

Listed below are some recent changes to the unit as a result of student feedback.

- In 2022, the assessment weighting changed from 30% to 40% for the Assignment, and from 50% to 40% for the Final Assessment/Exam.
- In response to the widespread use of Generative AI, the unit returned to written, closed-book, face to face exams in 2023.
- In Semester 1, 2023, significant numbers of students delayed having all of their Practical Tests marked until Study Week, causing long delays and disrupting the demonstration of assignments. In response to complaints, we now have a two-week limit on submissions/assessments.
- The assignment due date is now earlier in semester to reduce clashes with other assessments at the end of semester (Sem 1, 2024).

Program calendar

Program Calendar – Semester 1 2024

Week	Begin Date	Lecture	Practical	Assessment
0.	19 February	**Orientation Week**		
1.	26 February	L1: Introduction - Linux and Python	P0: Introduction to Linux	-
2.	4 March	L2: Strings and Lists	P1: Introduction to Python	-
3.	11 March	L3: Arrays and Plotting	P2: Lists and Strings	**Prac Test 1 (4%)** [Pracs 0-1]
4.	18 March	L4: Multi-dimensional Arrays and Functions	P3: Arrays and Plotting	-
5.	25 March	L5: Files and Grids	P4: Multi-dimensional Arrays and Functions	**Prac Test 2 (4%)** [Pracs 0-3]
6.	1 April	**Tuition Free Week**		
7.	8 April	L6: Modelling the World with Objects	P5: Files and Grids	-
8.	15 April	L7: Object Relationships and Exception Handling	P6: Modelling the World with Objects	**Prac Test 3 (4%)** [Pracs 0-5, and using objects]
9.	22 April	L8: Scripts and Automation	P7: Object Relationships and Exception Handling	-
10.	29 April	L9: Software Development, Quality and Testing	P8: Scripts and Automation	**Assignment (40%)** Demonstrations during Practicals
11.	6 May	L10: Applications: Data Processing and Analytics	P9: Quality and Testing	**Prac Test 4 (4%)** [Pracs 7-8]
12.	13 May	L11: Applications: Engineering and Science	P10: Applications: Data Processing and Analytics	
13.	20 May	L12: Revision and Beyond	P11: Applications: Engineering and Science	**Prac Test 5 (4%)** [Pracs 9-10]
14.	27 May	Study Week		
15.	3 June	**Examinations (Exam weighting is 40%)**		
16.	10 June	**Examinations**		