HIT137 Software Now

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| **Credit points:** | 10 | **Mode:** | Internal and external delivery |
| **Assumed knowledge:** | None | **Location:** | Casuarina |
| **Pre-requisite(s):** | None | **Learning method:** | OLR |
| **Year:** | 2020 |  |  |
| **Semester:** | Summer | **Unit coordinator:** | Sami Azam |
| **School:** | College of Engineering, IT and Environment | **phone:** | 08 8946 7646 |
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**Unit Description**

The unit will provide an introduction to a first programming language including basic control structures common across languages. It introduces concepts and technologies associated with platform-independent, object-oriented programming. Students will combine practical experience in using professional standard Integrated Development Environments (IDEs) to create applications with associated theoretical concepts.

**Learning Outcomes**

On completion of this unit a student should be able to:

1. Implement programming solutions to problems
2. Write simple programs using basic control structures and methods
3. Generate code that is easily maintainable
4. Compare alternate solutions to identify elegant solutions to actual problems
5. Develop collaborative group skills
6. Develop written communication skills required in the university context

**Teaching and Learning** **Strategies**

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| The best way to learn programming is by writing and testing. The workshops will cover the theoretical content and provide opportunities for practicing software development techniques.  In this unit you will learn the theoretical and practical skills for collaborative group work. Practical hands on problem solving and experimentation using laptop computers form an integral part of the delivery of this unit. |

**Participation**

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| **Internal:** All sessions take place in a wireless workshop. You will be expected to actively participate in all sessions, participate in relevant Learnline forums and also submit weekly tasks by their due dates.  **External:** You will need to use your computer, Learnline resources and textbook for learning sessions. You will be expected to keep apace of the teaching schedule, participate in relevant Learnline forums and also submit weekly tasks by their due dates.  The recommended study commitment for all students is 10 hours per week, which includes formal contact hours for internal students.  Specific details of individual class times can be obtained by accessing the class timetable at  <http://www.cdu.edu.au/student-central/timetables> |

**Overview of Assessment**

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| --- | --- | --- | --- | --- | --- |
| **Item** | **Description/Focus** | **Due Date** | **Length** | **Value** | **Relates to Learning Outcomes** |
| Assignment 1 | Coding Submission  (approximately 20 hours) | Friday Week 5 | As required | 20% | 1 – 6 |
| Assignment 2 | Coding Submission  (approximately 30 hours) | Friday Week 11 | As required | 30% | 1 – 6 |
| Exam | All topics covered in Weeks 1 - 12 | Refer to Central Examination Timetable | Refer to Central Examination Timetable | 50% | 1, 2, 3, 4 |

Submission of successfully completed weekly tasks through Learnline contributes to marks for both assignments 1 and 2.

**Assessment item details**

Further details of all assessment items will be given in the workshops and through Learnline as these items are made available to students.

Submission links will be placed in Learnline under “Submissions” in the Assessment section, as the assessments are given to students.

The University will centrally organize the final exam. Information about exams including exam rules, past exam papers, exam location and invigilation can be found at: <http://www.cdu.edu.au/engit/examInfo>

**Additional Assessment Information**

For additional assessment information about:

* Assessment coversheet
* Assessment rules
* Plagiarism
* Referencing requirements
* Extensions and late submission
* Scaling
* Grading
* Special exams and special consideration

Please refer to <http://www.cdu.edu.au/engit/assessInfo>

**Special Requirements**

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| None |

**Resources**

**Required textbook(s)**

**Fundamentals of Python: First Programs – Kenneth A. Lambert**

**Learnline (Online Learning System)**

Learnline is Charles Darwin University’s on-line learning system.

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| In this unit, Learnline will be used to:   * Provide information about study requirements, including detailed information about assessment Post announcements about the unit * Distribute study materials * Provide access to online activities * Upload assessment items * Access feedback from tasks and grades for assessable work * Provide a communication point where you contribute to discussions as part of your assessment, and to interact with other students in the unit |

You will need to connect to the Internet to access it, at <http://learnline.cdu.edu.au/>

Access to Learnline may not be available until Day 1 of the Semester.

If this is your first time using Learnline, click on ‘Student Support’ in the left-hand navigation panel before logging in.

It is recommended that all students have access to regular and reliable broadband access to complete unit requirements.

**e-Reserve**

e-Reserve allows electronic copies of journal articles, book chapters and lecturer notes that have been recommended by a lecturer as part of their course reading requirements. You can access e-Reserve at http://www.cdu.edu.au/library/ereserve/index.html.

This site is password protected. Your CDU student login will provide you access. You can then search for items by Lecturer, Unit Code, Title, Author, keyword, Year or Date if you have that information.

**Additional Resources**

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| Required materials:   * USB Drive   Required software:  The following software is required.   * Python 3.7.4 or later * Atom Editor |

**Proposed Learning Schedule**

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| **Week No** | **Workshop** | **Assessment** |
| 1 | Introduction to Python Programming |  |
| 2 | Data types and Expressions |  |
| 3 | Strings and text files |  |
| 4 | Functions and Dictionaries |  |
| 5 | Recursive functions and tutorial solutions |  |
| 6 | GitHub and Slack |  |
|  | Mid Semester Break |  |
|  | Mid Semester Break |  |
| 7 | Python graphics | Assignment 1. |
| 8 | Algorithm Basics |  |
| 9 | OOP |  |
| 10 | Python GUI |  |
| 11 | Pygame |  |
| 12 | Revision | Assignment 2 |
| 13 | Revision Week |  |
| 14 | Test |  |

**Note:** this proposed class schedule may change during the semester and it is the responsibility of the student to check the accuracy of important information (e.g. quizzes, submission dates, etc). Any changes will be announced on Learnline and during workshops.

**CDU Graduate attributes**

CDU graduate attributes refer to those skills, qualities and understandings that should be acquired by students during their time at the University regardless of their discipline of study. (See <http://www.cdu.edu.au/graduateattributes/> ).

In this unit, the following graduate attributes are developed:

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| **Attribute** | **Description** | **Learning outcomes** |
| Acquisition | Can identify, retrieve, evaluate and use relevant information and current technologies to advance learning and execute work tasks. | 2,4 |
| Application | Is an efficient and innovative project planner and problem solver, capable of applying logical and critical thinking to problems across a range of disciplinary settings and has self-management skills that contribute to personal satisfaction and growth. | 1 |
| Creativity | Can conceive of imaginative and innovative responses to future orientated challenges and research. | 2,5 |
| Knowledge base | Has an understanding of the broad theoretical and technical concepts related to their discipline area, with relevant connections to industry, professional, and regional and indigenous knowledge. | 1 |
| Communication | Demonstrates oral, written, and effective listening skills as well as numerical, technical and graphic communication skills in a cross generational environment. | 3, 6 |
| Team work | Has a capacity for and understanding of collaboration and co-operation within agreed frameworks, including the demands of inter-generational tolerance, mutual respect for others, conflict resolution and the negotiation of productive outcomes. | 3, 5 |
| Social responsibility | Is able to apply equity values, and has a sense of social responsibility, sustainability, and sensitivity to other peoples, cultures and the environment. | 2, 3, 4, 5 |
| Flexibility | Can function effectively and constructively in an inter-cultural or global environment and in a variety of complex situations. | 3, 5 |
| Leadership | Can exercise initiative and responsibility, taking action and engaging others to make a positive difference for the common good. | 3, 5 |