**Master of Information Technology**

**Techniques in Programming**

**Section A: Teaching, Learning and Assessment**

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| **Subject Name & Code** | **Techniques in Programming MIT121** |
| **Semester/year** | **Semester 1 2025** |
| **Credit Point Value** | **10** |
| **Duration** | **One semester** |
| **AQF Level** | **9** |
| **Student Workload** | **10 hours a week** |
| **Pre-Requisite** | **ICT Systems, Operations, and Ethics, Software Design and Engineering** |

**Presentation Team**

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| --- | --- |
| **Subject Coordinator** | **Saina Akbari** |
| **Lecturers** | **Saina Akbari (Canberra Lecturer)**  **Md Monir Hossain (Sydney Lecturer)** |
| **Campuses** | **Sydney Campus: 302-306 Elizabeth St Surry Hills NSW 2010**  **Canberra Campus: Level 1, 15 Moore st, Canberra, ACT 2601** |
| **Email** | **Saina Akbari (saina.akbari@win.edu.au)**  **Md Monir Hossain (monir.hossain@win.edu.au)** |
| **Phone** | **(02) 8252 9999 (Sydney) or (02) 6112 8839 (Canberra)** |
| **Consultation times** | **30 mins before class or after class or by appointment** |

**Teaching methods/strategies**

Three-hour class contact: 1 hour lecture and 2 hour tutorial.

This subject adopts the following teaching and learning strategies:

Real-world programming scenarios where you apply in-class the material which you have learned prior to coming to class. The subject also incorporates active in-class learning experiences where you collaborate with other students to discuss programming problems.

**Preparation outside class:**

One of the principal learning strategies for this subject involves the preparation of assigned material prior to class. Students are required to read and reflect upon assigned readings and problems from the textbook, workbook and other sources and are expected to apply this learning when they come to class.

**In-class activities:**

For computer tutorial / laboratory sessions, students work with a tutor to explore in more detail the

knowledge covered in the lecture for that week, participate in practical exercises or develop projects.

Students will be expected to attend all lectures and computer laboratory sessions. Students are expected to read material in the required reading list prior to each lecture and to conduct independent

learning activities as required.

**Consultation with subject teaching staff:**

All subject teaching staff are available for one-on-one consultation with students. The specific times that staff are available for consultation will be advised in seminars by your lecturer and can also be found on the cover page of this outline. Meeting staff during consultation provides an opportunity for students to receive feedback on their learning in this subject.

**Brief Subject Description**

In this subject, students learn and apply modern software development techniques designed to streamline and improve the accuracy and reliability of computer programming practice. Students use

an interactive development environment (IDE) to author, test and execute their computer software code. Students analyse operational problems using pseudo-code, structure charts. They plan technical

solutions, and create algorithms and data structures to address said problems. The ability to distinguish

and make appropriate use of procedural and event-driven programming paradigms is established. Students learn to initiate, plan, and implement unit testing procedures for their own code and provided code.

**Subject Learning Outcomes**

After successfully completing this subject, students will be able to:

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| **a** | Deconstruct processes, and develop algorithms and data structures to address given technical problems |
| **b** | Perform unit testing of self-authored and provided program code |
| **C** | Develop code using an IDE and format code using appropriate style, etiquette and  Commenting |
| **d** | Design and develop well-structured programs using procedural programming |
| **e** | Design and develop well-structured programs using fundamental event-driven programming |

**Weekly Schedule (Semester 1, 2025)**

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| --- | --- | --- | --- |
| **Week** | **Date (Week beginning Monday** | **Topics** | **Required Reading** |
| 1 | 10.03.2025\* | Introduction to IDE, coding styles, variable naming, commenting | See Resources on Canvas |
| 2 | 17.03.2025 | Assignment, Arithmetic, and Input statements | See Resources on Canvas |
| 3 | 24.03.2025 | Integers, Floats, Strings  **Assessment 1: Individual Assignment (part 1)** | See Resources on Canvas |
| 4 | 31.03.2025 | Control flow (Decision Structures, Indefinite, Infinite Loops) | See Resources on Canvas |
| 5 | 07.04.2025 | Text Processing (text files) | See Resources on Canvas |
| 6 | 14.04.2025\*\* | Software development (Program Design, Flowcharts, Pseudocode)  **Assessment 1: Individual Assignment (part 2)** | See Resources on Canvas |
| **7** | **21.04.2025** | **Intra-Semester Break** |  |
| 8 | 28.04.2025 | Software testing, unit testing | See Resources on Canvas |
| 9 | 05.05.2025 | Functions (information passing, built in  functions, and use of Modules) | See Resources on Canvas |
| 10 | 12.05.2025 | Event Driven Programming | See Resources on Canvas |
| 11 | 19.05.2025 | Lists, dictionaries, tuples | See Resources on Canvas |
| 12 | 26.05.2025 | Sets, sorting and selection | See Resources on Canvas |
| 13 | 02.06.2025\*\*\* | Subject Review  **Assessment 2: Individual Assignment and presentation** |  |
| 14 | 09.06.2025^^ | **Study Week – No Classes** |  |
| **15** | **16.06.2025** | **Exam Week** |  |
| **16** | **23.06.2025** | **Exam Week** |  |

\* Monday 10 March is a public holiday in Canberra only (Canberra Day). There will not be any classes in Canberra on this date.

\*\* Friday 18 April is public holiday in both Sydney and Canberra (Good Friday). There will not be any classes on this date.

\*\*\*Monday 2 June is public holiday in Canberra only (Reconciliation Day). There will not be any classes in Canberra on this date. However, it is required to upload a **pre-recorded online** class uploaded in Canvas for students in Canberra. Additionally, please extend an invitation for a 3-hour study support class during study week, if needed.

^^ Monday 09 June is also a public holiday in both Sydney and Canberra (King’s Birthday).

**Summary of Assessment**

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| **Assessment Task** | **%** | **Relevant Learning**  **Outcomes** | **Due Date** |
| **Assessment 1: Individual Assignment (part 1)** | 5% | A and C | Week 3 |
| **Assessment 1: Individual Assignment (part 2)** | 15% | A and C | Week 6 |
| **Assessment 2: Individual Assignment** | 40% | B, D, E | Week 13 |
| **Assessment 3: Final Exam** | 40% | A, B and C | Exam Week |

The full marking criteria and rubric can be found in this subject’s Canvas site. Please go to the tabs on the left-hand side of the home page, click on ‘Assignments’ and the click onto the assignment.

The marking rubric shown there will be used to assess your work, so please ensure that you have read and understood it before commencing work on your assignment.

**Please Note:**

• Students **MUST** achieve a mark of at least **40%** in the final exam (or final assessment item if no exam), **AND** at least a mark of **50%** in total, to pass this subject.

• All end of semester exams will be **face to face on campus (NOT online).**

**Detailed Assessment Guidelines**

**Assessment 1: Individual Assignment (Part 1)**

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| **Due date:** | Week 3 |
| **Weighting:** | 5% |
| **Length and Format**: | Program code |
| **Assessment Details:** | Given a detailed process, students develop an algorithm and select appropriate data structures to represent the process logically. Given a correct algorithm, develop a working program with minimum error. |
| **Assessment addresses SLOs** | SLO A: Deconstruct processes, and develop algorithms and data structures to address given technical problems  SLO C: Develop code using an IDE and format code using appropriate style, etiquette and commenting |
| **Marking Criteria** | Please refer to Marking Rubric on Canvas |

**Assessment 1:** **Individual Assignment (Part 2)**

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| **Due date:** | Week 6 |
| **Weighting:** | 15% |
| **Length and Format**: | Program code, in-class closed book exam |
| **Assessment Details:** | Given a detailed process, students develop an algorithm and select appropriate data structures to represent the process logically. Given a correct algorithm, develop a working program. |
| **Assessment addresses SLOs** | SLO A: Deconstruct processes, and develop algorithms and data structures to address given technical problems  SLO C: Develop code using an IDE and format code using appropriate style, etiquette and commenting |
| **Marking Criteria** | Please refer to Marking Rubric on Canvas |

**Assessment 2: Individual Assignment**

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| **Due date:** | Week 13 |
| **Weighting:** | 40% |
| **Length and Format**: | Word (max 1000), program code, presentation |
| **Assessment Details:** | Given a problem featuring a client-facing graphical user interface (GUI),  students must:  1. Develop a GUI featuring event-driven hooks, and,  2. Develop and document working procedural code to execute functions |
| **Assessment addresses SLOs** | SLO D: Design and develop well-structured programs using procedural programming  SLO E: Design and develop well-structured programs using fundamental event-driven programming |
| **Marking Criteria** | Please refer to Marking Rubric on Canvas |

**Assessment 3: Final Exam**

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| **Due date:** | During the exam week |
| **Weighting:** | 40% |
| **Length and Format**: | 2-hour invigilated written exam |
| **Assessment Details:** | Laboratory examination comprising practical and theoretical elements.  Summative assessment of the course. This will be 2 hours closed book  exam and will consist of fill-in the program code, short answers and essay questions. Students will need to demonstrate the ability to design and  develop a program by creating flowcharts, and pseudocode and writing  some code for a given problem. Students will also be examined on their  understanding of the theory |
| **Assessment addresses SLOs** | SLO A: Deconstruct processes, and develop algorithms and data structures to address given technical problems  SLO B: Perform unit testing of self-authored and provided program code  SLO C: Develop code using an IDE and format code using appropriate style, etiquette and commenting |
| **Marking Criteria** | Please refer to Marking Rubric on Canvas |

**Texts and References**

**Prescribed text:**

Lecture slides and online resources

**Recommended Reading**

1. Gaddis, T. (2021) Starting Out with Python, Pearson Education, Limited, Harlow

2. Google (2021) ‘Google Style Guides’, styleguide, viewed 19 October 2021,

<https://google.github.io/styleguide/>

3. Wagner, B. (2021) Microsoft C# Coding Conventions, viewed 19 October 2021,

<https://docs.microsoft.com/en-us/dotnet/csharp/fundamentals/coding-style/coding-

conventions>

4. Heinold, B. (2019). An Intuitive Introduction to Data Structures (2nd ed.).

https://www.brianheinold.net/ds/An\_Intuitive\_Introduction\_to\_Data\_Structures\_Heinold\_v2.pdf

5. Hunt, J. (2019) Advanced Guide to Python 3 Programming, Springer, Cham, Switzerland

6. Kent, L., & Hubbard, S. (2014). Data structures and algorithms with Python. Springer.

7. Goodrich, M. T., Tamassia, R., & Goldwasser, M. H. (2013). Data structures and algorithms in Python. Wiley.

8. Heinold, B. (2012). A Practical Introduction to Python Programming.

https://www.brianheinold.net/python/A\_Practical\_Introduction\_to\_Python\_Programming\_Heinold.pdf

9. Hetland, M. L. (2010). Python Algorithms: Mastering basic algorithms in the python language. Apress.

**Online and Other Resources**

1. Automate the Boring Stuff with Python Retrieved from https://automatetheboringstuff.com/ Python Tutorial retrieved from https://www.w3schools.com/python/

2. Learn Python Programming Retrieved from https://pythonbasics.org/

**Section B – Additional Institute Information**

**Detailed descriptors for each grade**

High Distinction (HD)

An analytical piece of work that offers originality in synthesis or analysis and utilises a multitude of relevant sources to justify arguments and produce a critical and intelligent piece of work. Work of this standard will require flawless referencing and will contain few, if any, grammatical errors. All areas of criteria will be of an excellent standard.

Distinction (D)

Comprehensively analyses the question, understands and compares approaches systematically, critical comments on literature, excellent examples and illuminating insights. Work of this standard will be consistent and clear with appropriate referencing and use of grammar throughout.

Credit (C)

Analytical and explanatory discussion, some theoretical insights, good use of sources and examples, focused argument that could be improved. Work of this standard may achieve good levels of performance on some of the criteria but not all. The discussion will address the question but could lean towards description rather than analysis.

Pass (P)

Competent descriptive discussion, some grasp of the topic, coherent style and composition, essentially a superficial discussion. Work of this standard might only include a limited range of source material and provide information rather than argument. Structure and presentation could require improvement and the introduction and conclusion might not clearly convey the position and findings of the author.

Fail (F)

Discussion fails to answer the set question or relies on few, if any, source material. Answer contains grammatical errors and/or inappropriate referencing technique and, of course, an absence of any referencing. Work of this standard is often brief and is unable to demonstrate a clear understanding of the topic and relevant issues. Responses fail to meet the learning objectives for the assessment.

**Plagiarism**

A similarity report provides an important indicator of whether a student's work is original or plagiarised. Generally, a similarity report of more than 25% warrants close scrutiny to assess whether the problem relates to poor writing technique or plagiarism.

**Artificial Intelligence**

An Artificial Intelligence report provides an important indicator of whether a student's work is their own. Whilst use of Artificial Intelligence platforms may be allowed within the assignment details, students are still required to cite and reference any Artificial Intelligence use and where requested provide details of any prompts and/or Artificial Intelligence outputs generated. Depending on the nature of the assessment task, a high Artificial Intelligence report of more than 25% warrants scrutiny to assess whether the problem relates to poor writing/referencing technique or contract cheating.

**Canvas and Turnitin**

This subject will use the Canvas learning management system. Canvas can be accessed by first clicking onto the Student Portal link on the WIN home page, and then clicking onto Canvas.

The Canvas home page for this subject will include the subject outline, information on assessment items and other subject information, a notice board, and a weekly folder of relevant course materials, including Power Point slides and a tutorial guide for each topic.

All communications with students in the subject will use the Notice Board and the Canvas email system. Emails will use only students' WIN email addresses.

Grades will also appear in the My Grades section of Canvas once marking for each assessment has been completed.

It is an expectation that all students will check the subject's Canvas site (and their WIN student email) on a regular basis each week.

Assessments will be submitted using the drop boxes that are included in the Canvas site for this subject. All assignments will be subject to checking using Turnitin text matching programs. Turnitin is a software product that reports on similarities between your paper and other documents, including those written using Artificial Intelligence. Turnitin is used by over 1000 organisations, including universities and colleges around the world. They are an important tool to assist students with their academic writing by promoting awareness of plagiarism and contract cheating.

When you submit your assignment through the Canvas drop box, you will receive an originality report, based on a matching of your work to that in Turnitin’s extensive databases. If you submit your assignment within a reasonable time before the due date, you will have time to act on the originality report, if necessary. For example, a high matching percentage may mean that you need to fully acknowledge your source materials, or it may mean that you need to better paraphrase the source materials in your own words. Therefore, if you use Turnitin in this way, it can be of considerable assistance in helping you to improve your writing skills. The key is to allow enough time to make any changes after viewing the originality report - do not leave your submission until the last minute!

**Grade Descriptions**

Students may be awarded a raw numerical mark for each subject which will then be converted to one of the following:

HD – High Distinction 85% and above

D – Distinction 75 – 84%

C – Credit 65 – 74%

P – Pass 50 – 64%

F – Fail – below 50%

CF – Compulsory Fail (this may be a mark of over 50%, however the student did not achieve at least 40% in the final assessment item)

For more information on please refer to the Institute’s policy ‘Student Assessment Policy and Procedure’ available on the Institute’s website.

**Assignment Submissions**

Students are required to submit assessment items at the time and date specified in this *Subject Outline*. Assessment items submitted after the due date will be subject to a penalty unless the Lecturer or Course Coordinator has given prior approval in writing for an extension of time to submit that item.

Assessments should be submitted in the form specified in the subject outline or as notified by the Lecturer. Where assessment items are submitted electronically, the date and time the email was received will be considered the date and time of submission. Written papers or other physical submissions are to be time and date stamped as a record of receipt.

Students whose ability to submit or attend an assessment item is affected by sickness, misadventure, or other circumstances beyond their control, may be eligible for special consideration. No consideration is given when the condition or event is unrelated to the student's performance in a component of the assessment, or when it is considered not to be serious.

Please refer to the Institute’s policy ‘Student Assessment Policy and Procedure’ available on the Institute’s website for details.

**Assignment Extensions and Penalties**

Assignments must be submitted on the due date. Late assignments will incur a penalty as outlined in the Institute’s policy ‘Student Assessment Policy and Procedure’ available on the Institute’s website.

**Academic Misconduct**

Academic misconduct involves cheating, collusion, plagiarism or any other conduct that deliberately or inadvertently claims ownership of an idea or concept, including those generated through Artificial Intelligence, without acknowledging the source of the information. This includes any form of activity that negates the academic integrity of the student or another student and/or their work.

Plagiarism occurs when students fail to acknowledge that the ideas of others are being used. Specifically, it occurs when:

* A person or entity’s work and/or ideas are paraphrased and presented without a reference, including Artificial Intelligence;
* other students’ work is copied or partly copied;
* other people’s designs, codes or images are presented as the student’s own work;
* phrases and passages are used verbatim without quotation marks and/or without a reference to the author or a web page;
* lecture notes are reproduced without due acknowledgement.

Cheating occurs when a student seeks to obtain an unfair advantage in an examination or in other written or practical work required to be submitted or completed for assessment.

Collusion (unauthorised collaboration) involves working with others without permission to produce work which is then presented as work completed independently by the student. Collusion is a form of plagiarism. Students should not knowingly allow their work to be copied.

There are substantial penalties for academic misconduct. Please refer to the Institute’s ‘Academic Integrity and Honesty Policy and Procedure’ available on the web site for more information.

**Referencing Procedures**

The Institute has adopted the APA Style for the referencing of sources. Please refer to the Institute’s web site or the library for information on how to reference using the APA style.

**Subject Evaluation**

At the end of each semester all students will be asked to fill in a subject evaluation form. This information will assist us in making improvements to enhance the quality of delivery.

Evaluations will include questions about the content, the assessment, delivery mode and other features. You will also have an opportunity to make open-ended comments. Subject evaluations are important to us and are taken seriously so please ensure that your responses accurately reflect how you feel. All evaluations are anonymous to ensure privacy.

**Learning Support Services**

If you have any queries or requests about the course and this subject in particular, you should first approach your Lecturer or Tutor. You may also approach the Course Coordinator if you are unable to resolve your issue with the Lecturer or Tutor. Contact details are provided below.

The Institute wants to ensure that you have the best learning environment available to maximise your chances to do well in the course. We have staff on hand to provide student support and assistance with administrative matters when required. We also have a Student Success and Wellbeing Centre that can provide assistance and support with any personal matters. Contact details are provided below.

If you are experiencing language difficulties, please discuss this with your lecturer who may refer you to the Student Success and Wellbeing Centre for additional assistance. Depending on the level of support required, there may be some additional costs imposed.

The Institute has a Student Success and Wellbeing Centre. As part of this Centre, there are on-going workshops available if you need assistance with study skills, presentation skills, writing skills, how to reference information sources using the APA style etc. Please check with the Study Support Officer to access these services.

Prior to your enrolment, the Institute makes every effort to ensure that your verbal and written skills in English are at the appropriate level to successfully complete a bachelor’s degree. Each of the subjects will be delivered by lecturers who are sensitive to the needs of students from a NESB. For this reason, important vocabulary will be pre-taught. Nevertheless, if you are experiencing language difficulties, you may be referred by your lecturer to the Student Success and Wellbeing Centre for additional support.

All lecturers are instructed to carefully monitor each student’s language proficiency in the first four weeks of subject delivery through in-class participation, to determine if there are any problems with your understanding and usage of written and spoken academic English. The Institute offers specially developed modules of study designed to enhance your language and study skills. The level of language support you will require will be determined by our specially trained staff, qualified “IELTS” testers, in order to ensure that you have all the necessary support to succeed in your studies.

Depending on the level of support required, there may be some additional costs imposed.

**Additional Contacts**

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| Keri Spooner | [keri.spooner@win.edu.au](mailto:keri.spooner@win.edu.au) | Dean |
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| Iris Weng | [iris.weng@win.edu.au](mailto:iris.weng@win.edu.au) | Academic Support Manager |
|  |  |  |
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| Steve Li | [steve.li@win.edu.au](mailto:steve.li@win.edu.au) | IT Manager |
| Accounting team | account1[@win.edu.au](mailto:Tavia.xiang@win.edu.au) | Accounts |
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