



Unit Outline (Higher Education)

Institute / School: Institute of Innovation, Science & Sustainability

Unit Title: Foundations of Programming

Unit ID: ITECH1400

Credit Points: 15.00

Prerequisite(s): Nil

Co-requisite(s): Nil

Exclusion(s): (ITECH5104)

ASCED: 020103

Description of the Unit:

This unit provides students with a basic understanding of the fundamental programming concepts that are inherent in all computer programs. In addition an introduction is given to the principles involved in designing, developing, testing and debugging applications for information systems.

Grade Scheme: Graded (HD, D, C, P, MF, F, XF)

Work Experience:

No work experience

Placement Component: No

Supplementary Assessment: Yes

Where supplementary assessment is available a student must have failed overall in the Unit but gained a final mark of 45 per cent or above, has completed all major assessment tasks (including all sub-components where a task has multiple parts) as specified in the Unit Description and is not eligible for any other form of supplementary assessment

Course Level:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Intermediate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Advanced	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Learning Outcomes:**Knowledge:**

- K1.** Identify and use the correct syntax of a common programming language.
- K2.** Recall and use typical programming constructs to design and implement simple software solutions, including breaking down problems into manageable parts and setting clear goals.
- K3.** Reproduce and adapt commonly used basic algorithms.
- K4.** Explain the importance of programming style concepts (documentation, mnemonic names, indentation).

Skills:

- S1.** Utilise pseudocode and/or algorithms as a major program design technique, emphasizing the decomposition of problems and the creation of clear plans.
- S2.** Write and implement a solution algorithm using basic programming constructs, including strategies for breaking down complex problems.
- S3.** Demonstrate debugging and testing skills whilst writing code.
- S4.** Describe program functionality based on analysis of given program code, highlighting the decomposition of tasks and problem-solving strategies employed.

Application of knowledge and skills:

- A1.** Design and write program solutions to identified problems using accepted design constructs, emphasizing the decomposition of problems and the systematic approach to problem-solving.

Unit Content:

Topics may include:

- Overview of software development and where programming fits in.
- Problem-solving techniques, program types and programming languages.
- The use of variables, operators and programming syntax.
- Program logic including the use of branching, loops and identifying logic errors.
- Procedures and functions.
- Introduction to the use of data, data persistence and file input/output.
- Main features of procedural programming.
- Introduction to common software development methodologies.

- Searching and sorting techniques.

FEDTASKS

Federation University Federation recognises that students require key transferable employability skills to prepare them for their future workplace and society. FEDTASKS (**T**ransferable **A**tttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are embedded within curriculum, developed gradually towards successful measures and interlinked with cross-discipline and Co-operative Learning opportunities. *One or more FEDTASK, transferable Attributes, Skills or Knowledge must be evident in the specified learning outcomes and assessment for each FedUni Unit, and all must be directly assessed in each Course.*

FEDTASK attribute and descriptor		Development and acquisition of FEDTASKS in the Unit	
		Learning Outcomes (KSA)	Assessment task (AT#)
FEDTASK 1 Interpersonal	Students will demonstrate the ability to effectively communicate, inter-act and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: <ul style="list-style-type: none"> Using effective verbal and non-verbal communication Listening for meaning and influencing via active listening Showing empathy for others Negotiating and demonstrating conflict resolution skills Working respectfully in cross-cultural and diverse teams. 	K4, S4	AT1, AT2
FEDTASK 2 Leadership	Students will demonstrate the ability to apply professional skills and behaviours in leading others. Students will be required to display skills in: <ul style="list-style-type: none"> Creating a collegial environment Showing self-awareness and the ability to self-reflect Inspiring and convincing others Making informed decisions Displaying initiative 	Not applicable	Not applicable
FEDTASK 3 Critical Thinking and Creativity	Students will demonstrate an ability to work in complexity and ambiguity using the imagination to create new ideas. Students will be required to display skills in: <ul style="list-style-type: none"> Reflecting critically Evaluating ideas, concepts and information Considering alternative perspectives to refine ideas Challenging conventional thinking to clarify concepts Forming creative solutions in problem solving. 	K2, A1	AT1, AT2
FEDTASK 4 Digital Literacy	Students will demonstrate the ability to work fluently across a range of tools, platforms and applications to achieve a range of tasks. Students will be required to display skills in: <ul style="list-style-type: none"> Finding, evaluating, managing, curating, organising and sharing digital information Collating, managing, accessing and using digital data securely Receiving and responding to messages in a range of digital media Contributing actively to digital teams and working groups Participating in and benefiting from digital learning opportunities. 	K1, K2, S2, A1	AT1, AT2
FEDTASK 5 Sustainable and Ethical Mindset	Students will demonstrate the ability to consider and assess the consequences and impact of ideas and actions in enacting ethical and sustainable decisions. Students will be required to display skills in: <ul style="list-style-type: none"> Making informed judgments that consider the impact of devising solutions in global economic environmental and societal contexts Committing to social responsibility as a professional and a citizen Evaluating ethical, socially responsible and/or sustainable challenges and generating and articulating responses Embracing lifelong, life-wide and life-deep learning to be open to diverse others Implementing required actions to foster sustainability in their professional and personal life. 	Not applicable	Not applicable

Learning Task and Assessment:

Participation in lectures, tutorials and computer laboratory classes. Completion of all tutorial and laboratory worksheets for the semester. Students are expected to spend time regularly out of scheduled classes by reading reference material as required, reviewing topics already covered in lectures and preparing for forthcoming topics and laboratory classes, and completing assessment tasks. Assessment for this unit will be based on a number of tasks. These may include written assignments, programming tasks and laboratory exercises covering the systems development and programming design. An end of semester test is based on all aspects of the unit.

Learning Outcomes Assessed	Assessment Tasks	Assessment Type	Weighting
K1, K2, K3, K4, S1, S2, S3, S4, A1	Students will utilise pseudocode, basic programming constructs, algorithms, design constructs and standard style concepts to design, write, implement and document solutions to simple problems.	Assignments and exercises	60 - 80%
K1, K2, K3, K4, S2, S3, S4	Students will provide theoretical answers and provide practical solutions to a range of questions and problem types drawn from theory and examples used during this unit.	Test(s)	20 - 40%

Adopted Reference Style:

APA

Refer to the [library website](#) for more information

Fed Cite - [referencing tool](#)