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 course 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: Student is not undertaking work experience in industry.

Does Recognition of Prior Learning apply to this Unit?   No

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 and submitted all major assessment tasks.

CourseLevel:

Level of Unit in Course	AQF Level of Course					
	5	6	7	8	9	10
Introductory			✔			
Intermediate						
Advanced						

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.

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.

S2. Write and implement a solution algorithm using basic programming constructs.

S3. Demonstrate debugging and testing skills whilst writing code.

S4. Describe program functionality based on analysis of given program code.

Application of knowledge and skills:

A1. Design and write program solutions to identified problems using accepted design constructs.

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**ttributes **S**kills and **K**nowledge) provide a targeted focus on five key transferable Attributes, Skills, and Knowledge that are be 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 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, interact and work with others both individually and in groups. Students will be required to display skills in-person and/or online in: • 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: • 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: • 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: • 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: • 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 course 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 course.

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 course.	Test(s)	20 - 40%

Alignment to the Minimum Co-Operative Standards (MiCS)

The Minimum Co-Operative Standards (MiCS) are an integral part of the Co-Operative University Model. Seven criteria inform the MiCS alignment at a Course level. Although Units must undertake MiCS mapping, there is NO expectation that Units will meet all seven criteria. The criteria are as follows:

1. Co-design with industry and students
2. Co-develop with industry and students
3. Co-deliver with industry
4. FedTASK alignment
5. Workplace learning and career preparation
6. Authentic assessment
7. Industry-link/Industry facing experience

MiCS Course level reporting highlights how each Course embraces the principles and practices associated with the Co-Operative Model. Evidence of Course alignment with the MiCS, can be captured in the Course Modification Form.

MICS Mapping has been undertaken for this Unit   No

Date:

Adopted Reference Style:

APA

Refer to the library website for more information

Fed Cite - referencing tool