

PROGRAM DEVELOPMENT AND INNOVATION

MONASH UNIVERSITY FOUNDATION YEAR

INFORMATION AND COMMUNICATION TECHNOLOGY

UNIT 2

PROGRAMMING, DATABASE, AND DATA SCIENCE

MUF0052

INFORMATION AND COMMUNICATION TECHNOLOGY UNIT 2

Program Development and Innovation

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Unit Overview

In Unit 2 ICT students will focus on how data is acquired, managed, and manipulated to meet a particular need.

In Study Area 1 students will examine how database management systems are used to store and manipulate data. In Study Area 2 students will acquire data sets, from secondary sources, then manipulate the data and create a report. In Study Area 3 students will use a programming language to create working modules.

STUDY AREA	NUMBER OF WEEKS
Database management systems	5 weeks
Data science	3 weeks
Programming	5 weeks

Unit Assessment

Assessment Type	Weighting	Date	Study Area
Task 1: Database management system (DBMS) task	20%	Week 7	Database management systems
Task 2: Data science (group) project	20%	Week 10	Data science
Task 3: Programming practical task	10%	Week 15	Programming
Task 4: Programming written test	10%	Week 15	Programming
Participation	10%	Ongoing	All study areas
Written Examination	30%		All Study Areas



ICT UNIT 2

SUBJECT LEARNING OUTCOMES (SLOS)

SLO1: Create an efficient relational database for a specified content.

SLO2: Analyse data set to solve business problems.

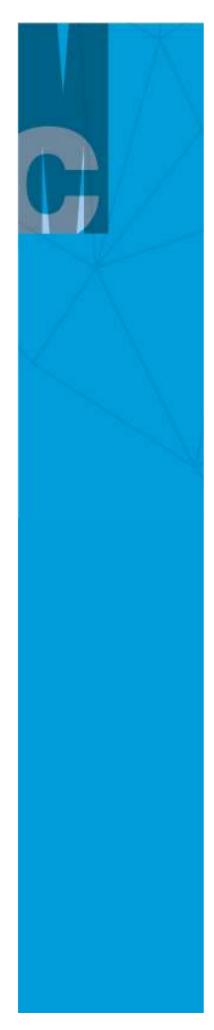
SLO3: Demonstrate the programming techniques and testing strategies by developing a programming solution

Unit Knowledge Outcomes

- 1. Stages involved in the software development process.
- 2. Design tools used to represent software solutions.
- 3. Software types and functions used to manipulate data.
- 4. Techniques used to input and output data and information.
- 5. Characteristics and purposes of data types and data formats.
- 6. Functions and techniques used to validate data.
- 7. Functions and techniques used to test that a solution is working as expected.
- 8. Purpose of data science and techniques used to uncover findings within data sets.

Unit Skills and Behaviours Outcomes

- 1. Develop software solutions following the software development process.
- 2. Use appropriate design tools to plan a software solution.
- 3. Select appropriate data types and formats to store and display data.
- 4. Apply software functions and features to input, manipulate, output and validate data.
- 5. Apply computational thinking skills to develop instructions to solve problems.
- 6. Create and apply a test plan to confirm if a solution is working as expected.
- 7. Work collaboratively to interrogate data to confirm or refute a hypothesis.
- 8. Use a range methods to communicate clearly in English.



Language Outcomes and Skills

Listening

Listen carefully to verbal instructions, class discussion and multimedia resources

Recognise links between verbal resources and the course content

Interpret and follow verbal instructions

Follow sequential instructions within multimedia tutorials

Comprehend the context of class discussions

Recognise technical vocabulary used in verbal and multimedia resources

Respond to questions based upon verbal and multimedia resources

Use online learning tools to develop listening skills

Speaking

Communicate effectively in English in various contexts and situations

Use vocabulary accurately and focusing on correct pronunciation

Participate in discussions related to the concepts covered in class

Communicate in English when working in group situations

Provide constructive feedback to fellow students

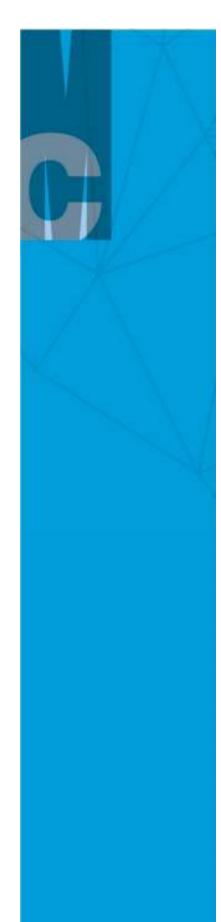
Present findings of research projects to the class

Ask questions to clarify understanding

Speak clearly, using English fluently, focusing on correct pronunciation

Use a range of general and technical vocabulary accurately

Use online learning tools to develop accurate pronunciation



Reading

Interpret and understand written instructions and resources

Use a range of resources to assist with the comprehension of written resources

Interpret and follow written instructions

Follow sequential instructions within written tutorials

Comprehend the context of written text

Recognise technical vocabulary used in written resources

Create notes that summarise written resources

Respond to questions based upon written resources

Use online learning tools to interpret the meaning of written texts

Writing

Produce written responses showing evidence of an understanding of the content

Complete evaluations that allow for reflection on completed tasks

Compose queries and programming instructions in English using the correct syntax

Create summary notes from spoken and written resources

Give reasons to justify data types and formats selected

Construct a data analysis report

Complete evaluations and/or reflections of completed tasks

Develop sample exam and test questions

Participate in online conversations and discussions

Compose written responses to structured questions



Unit Prerequisites

The unit assumes no prior knowledge.

There are no prerequisites required for Unit 2 ICT.

Unit Assessment Details

Internal Assessment (70%)				
Assessment Task	Due Date	Weighting	Study Area	
Task 1: Practical Assignment	13 Aug – 17 Aug 2018	20%	SA1: Database	
Designing a Relational Database				
Task 2: Practical Assignment	3 Sept – 7 Sept 2018	20%	SA2: Data Science	
Data Science				
Task 3: Programming				
Task 3a - Written Test	5 Oct 2018	10%	SA3: Programming	
Task 3b – Practical Assignment	8 Oct – 12 Oct 2018	10%		
Task 4: Participation	On going	10%		
External Assessment (30%)				
Examination		30%	All Study Areas	
Section A - Multiple Choice Questions				
This section will have 10-15 questions.				
Students will be required to select the correct (or best)				
alternative.				
All questions are compulsory.				
Section B - Application Questions				
This section will have 10-15 structured questions.				
Students will be required to apply their knowledge to various				
scenarios.				
All questions are compulsory.				

Course / Teaching Outline

DATES	STUDY AREA
16 July – 17 August 2018	Study Area 1 - Database
	Practical Assignment
	Assessment Task 1 Assessment Week: 13 Aug – 17 Aug 2018
20 August – 7 September 2018	Study Area 2 – Data Science
	Group Project
	Assessment Task 2 Assessment Week: 3 Sept – 7 Sept 2018
10 September – 12 October	Study Area 3 – Programming
2018	Written Test
	Assessment Task 3b: 5 Oct 2018
	Practical Assignment
	Assessment Task 3a: Assessment Week: 8 Oct – 12 Oct 2018
15 October – 26 October 2018	Revision
27 October – 9 November 2018	Final Exam



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