MONASH College

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	Interpret and follow verbal instructions
	Follow sequential instructions within multimedia tutorials
Recognise links between verbal resources and the course content	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	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
Use vocabulary accurately and focusing on correct pronunciation	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	Interpret and follow written instructions
	Follow sequential instructions within written tutorials
Use a range of resources to assist with the comprehension of written resources	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	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 that allow for reflection on completed tasks	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 Designing a Relational Database	13 Aug – 17 Aug 2018	20%	SA1: Database
Task 2: Practical Assignment Data Science	3 Sept – 7 Sept 2018	20%	SA2: Data Science
Task 3: Programming Task 3a - Written Test Task 3b – Practical Assignment	 5 Oct 2018 8 Oct – 12 Oct 2018	 10% 10%	SA3: Programming
Task 4: Participation	On going	10%	
External Assessment (30%)			
Examination 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.		30%	All Study Areas

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 2018	Study Area 3 – Programming 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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