

Unit of Study: ICT5152 Software and Systems Design

Overview

Through this unit, students will develop foundational knowledge and skills required to construct well-designed computer programs. Students will gain a view of the individual steps within the complete software development life cycle (SDLC) from initial problem definition, design and algorithm development to development and coding. Students will learn the systems analysis techniques, tools, and methods involving requirements analysis, problem identification, feasibility assessment, data modelling, use case analysis, specifications, and sociotechnical issues of the systems development life cycle. They will also build their skills in the foundations of Object-Oriented Programming (OOP), Object-Oriented Analysis and Design (OOAD) and the essential usability design principles.

Course(s)	Graduate Certificate in Information Technology Master of Information Technology
Credit Points	8 credit points
Duration	12 weeks (10 teaching weeks; 1 study week; 1 final assessment week)
Level	Postgraduate Foundational
Student Workload	Students should expect to spend approximately 13 hours per week over 12 weeks (totalling approximately 150 hours) on learning activities for this unit.
Mode(s) of Delivery	On-campus, Blended
Pre-Requisites	None
Unit Coordinator	As per current timetable
Contact Information	Consultation: 1 hour scheduled session

Unit Learning Outcomes:

On successful completion of this unit, students will be able to:

- ULO1 Develop applications using appropriate standards.
- ULO2 Articulate the key principles of interface design and different approaches to the Software Development Life Cycle.
- ULO3 Create justifiable system requirements for a range of situations.
- ULO4 Apply UML modelling to the analysis and design of business information systems.

Weekly Schedule

Detailed information for each week's activities can be found on the Unit's Weekly Modules in Canvas.

Week	Topic
Week 1	Techniques for analysing programming problems.
Week 2	Procedural programming essentials & techniques part 1
Week 3	Procedural programming essentials & techniques part 2
Week 4	System deployment & testing.
Week 5	Elements of high-quality programming.
Week 6	User and systems Interface design (overview of HCI design principles)
Week 7	Systems development lifecycle (SDLC, predictive SDLC, Adaptive SDLC, Agile development)
Week 8	Understanding system requirements. Requirements gathering and modelling
Week 9	Approaches to system analysis (object-oriented and structured) and Unified Modelling Language (UML)
Week 10	Feasibility analysis
Week 11	Revision
Week 12	Final Assessments

Assessments

- All assessments are compulsory.
- To pass the unit, students must:
 - achieve a total of 50% or more of marks offered; and
 - pass all individual invigilated assessments; and
 - have attempted all assessments.

Where one or more of these requirements are not met, the Board of Examiners will consider a student's overall progress towards meeting the unit learning outcomes and any special circumstances before reaching a decision.





- The Board of Examiners may grant a supplementary assessment where a student:
 - achieves a total of 45% or more; and

- has passed all individual invigilated assessments in the unit; and
- has attempted all assessments; and
- has a recommendation for supplementary assessment by the Unit Coordinator and the Head of Discipline?

Where one or more of these requirements are not met, the Board of Examiners will consider a student’s overall progress towards meeting the unit learning outcomes and any special circumstances before reaching a decision. Attendance and engagement in class will be considered.

4. APIC awards common result grades as set out in the [Award of Grade Policy](#).
5. Detailed information for each assessment can be found on the Unit’s Home Page and in the Assessment Brief.

equiv. – equivalent word count based on the Assessment Load Equivalence Guide. It means this assessment is

Assessment Task	Type	Weighting	Due	Length	ULO
Assessment 1: Quizzes In-class quizzes - Students will complete in-class online quizzes about Python language essential elements, requirements, and UML.	Individual 	15%	Quizzes : weeks 4, 6, 8	15 minutes each (Equiv. 1500 words)	ULO1 ULO2 ULO3 ULO4
Assessment 2: Laboratory Practicum In-class activities - Students will complete in-class workshop assessments about Python language basic elements, requirements, and UML activities.	Individual Invigilated 	15%	Labs: weeks 3, 5, 7	(Equiv. 1500 words)	ULO1 ULO2 ULO3 ULO4
Assessment 3: Project Report Design an algorithm to solve a given problem and implement the designed algorithm.	Individual 	40%	Week 8	Report 1000 words + Code (equiv. 2500 words)	ULO1 ULO3
Assessment 4: Case Study Covers information system development and the SDLC.	Group 	30%	Week 11	2000 words	ULO2 ULO3 ULO4

equivalent to the normally expected time requirement for a written submission containing the specified number of words.

Course Reserve

Course Reserve includes all required resources and reading material for the unit of study. You can access Course Reserve via [APIC Library](#) or via the Course Reserve link on the unit’s homepage.

Prescribed text(s):

Starting out with Python (Global 4th edition, 2019) by Tony Gaddis, Pearson Education.
and
Satzinger, WJ, Jackson, BR & Burd, DS 2016, Systems analysis and design in a changing world, 7th edn, Cengage Learning, Boston, Massachusetts.

Recommended Readings:

Hambling, B., & Goethem, P. van. (2013). *User acceptance testing: a step-by-step guide*. BCS.
Bell, M. (2008) *Service-oriented modelling: service analysis, design, and architecture*. Hoboken, N.J.: John Wiley & Sons.

Other Recommended Resources:

Python online documentation: <https://www.python.org/about/gettingstarted/>
 Downloading Python: <https://www.python.org/downloads/>
 Python online Tutorials: https://www.learnpython.org/en/Variables_and_Types
 Create diagrams online using diagrams.net: <https://app.diagrams.net/>

Academic Integrity

Ethical conduct, academic integrity, and honesty are fundamental to the mission of APIC and academic misconduct will not be tolerated by the College. It is the responsibility of every student to make sure that they understand what constitutes academic misconduct and to refrain from engaging in it. Please refer to APIC’s [Academic Integrity Policy](#) for further details.

Other Important Information and Links

<p>Special consideration</p> <p>If your academic work is impacted by significant documented illness, hardship, or other adverse circumstances beyond your control, you may make an application for Special Consideration. Please refer to the Assessment Policy for further details.</p>	<p>Late submission</p> <p>Penalties apply when work is submitted after the due date without approval. Please refer to the Assessment Policy for information about late submission.</p>
<p>Assessment appeals</p> <p>If you are concerned about a mark you have received for an assessment or final grade, you may apply to formally appeal the grade. Please see the Assessment Policy for further details.</p>	<p>Award of grades</p> <p>APIC awards common result grades, set out in the Award of Grade Policy.</p>

<p>Expectations of student conduct</p> <p>Students are expected to conduct themselves in a manner that is consistent with a safe and respectful study environment. More information can be found in the Student Code of Conduct.</p>	<p>Study resources</p> <p>APIC Library and Student Learning Support resources and services can be accessed via the Student Lounge or your Dashboard on the OLS (Canvas).</p>
<p>Student Services</p> <p>The Student Services team provides administrative support for students and handles enquiries about enrolment, timetables, important dates and submitting forms. More information can be found on the Student Services page on the OLS (Canvas).</p>	<p>Key dates</p> <p>Key dates through the academic year, including teaching periods, census, payment deadlines and exams, can be found on the Academic Calendar section of the APIC website.</p>

Changes and Updates to the Unit of Study Guide

This Unit of Study Guide may be updated and amended from time to time. Students will be notified of any changes to the unit via the Online Learning System (Canvas) space.

This Unit of Study Guide was last modified on 13th May 2024.