

Unit of Study: ICT5358 Unleashing the Power of Generative AI Models

Overview:

Unleashing the Power of Generative AI Models equips students with the knowledge and skills to harness the capabilities of generative AI models.

Throughout the course, students will explore the world of generative AI, uncovering its applications across various domains. They will dive into state-of-the-art language models, and discover how to leverage them effectively. The course delves into text-to-image models, enabling students to create compelling visual content from textual prompts. Students will also gain expertise in prompt engineering, system prompts, and fine-tuning pre-trained models for optimal performance. Students also explore ethical considerations, legal implications, and measuring the success and impact of generative AI projects.

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| Course(s) | Master of Information Technology |
| Credit Points | 8 credit points |
| Duration | 12 weeks (10 teaching weeks; 1 revision week; 1 final assessment week) |
| Level | Postgraduate Intermediate |
| Student Workload | Students should expect to spend approximately 13 hours per week over 12 weeks (totalling approximately 156 hours) on learning activities for this unit. |
| Mode(s) of Delivery | Online |
| Pre-Requisites | ICT5356 Principles of Artificial Intelligence |
| 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 Analyse generative AI models with respect to their roles and capabilities in performing generative AI tasks.
- ULO2 Apply prompt engineering to Large Language Models (LLMs) and text-to-image models to achieve desired outputs.
- ULO3 Plan and design processes to fine-tune pre-trained generative models to optimise their performance for specific tasks.
- ULO4 Critique the use of generative AI models with respect to new opportunities and their ethical/legal implications.
- ULO5 Appraise the success and impact of generative AI projects.

Weekly Schedule

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

| Week | Topic |
|---------|---|
| Week 1 | Introduction to Machine Learning and Generative AI Technology |
| Week 2 | Generative AI Models and Deep Learning |
| Week 3 | Language Models |
| Week 4 | Text-to-Image Models |
| Week 5 | Introduction to Prompt Engineering |
| Week 6 | Advanced Prompt Engineering |
| Week 7 | APIs and Automating Generative AI |
| Week 8 | Fine-tuning Pre-trained Models |
| Week 9 | Under the Hood: Generative AI Machine Learning |
| Week 10 | Implementing Generative AI in Applications |
| Week 11 | REVISION |
| Week 12 | FINAL ASSESSMENT |

Assessments








1. All assessments are compulsory.
2. 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.

3. 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.

| Assessment Task | Type | Weighting | Length | Due | ULO's Assessed |
|--|---|-----------|------------|---------------|--------------------------------------|
| Assessment 1: Quiz Respond to questions to describe and/or design generative AI approaches within an application or use case. | Individual  Invigilated  | 12% | 800 words | Weeks 3, 5 | ULO1 ULO4 |
| Assessment 2: Applied Project Report to outline the retail and wholesale application of large language models. | Individual  | 20% | 1000 words | Week 4 | ULO1 ULO4 |
| Assessment 3: Laboratory Practicum Regular invigilated practical tests, implementing prompt engineering experiments and designing API use cases. | Individual  Invigilated  | 18% | 500 words | Weeks 6, 8, 9 | ULO1 ULO2 ULO3 ULO5 |
| Assessment 4: Applied Generative AI Model Report outlining the methodology, observations, results and evaluations of prompt engineering experiments. | Group  | 25% | 1000 words | Week 7 | ULO1 ULO2 ULO5 |
| Assessment 5: Case Study Design document outlining a proposed application of generative AI in a business use case. | Individual  | 25% | 1000 words | Week 12 | ULO1 ULO2 ULO3 ULO4 ULO5 |

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

Recommended Readings:

Taulli, T., 2023. Generative AI: How ChatGPT and Other AI Tools Will Revolutionize Business, First Edition. Apress Berkeley, USA.

NVIDIA, “Large Language Models Explained”, URL: <https://www.nvidia.com/en-us/glossary/data-science/large-language-models/>

NVIDIA, “What is Generative AI?”, URL: <https://www.nvidia.com/en-us/glossary/data-science/generative-ai/>

Other Resources Requirements:

Unit is completed online via a computer or similar device. Students need access to a computer.

Academic integrity

Ethical conduct and 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

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| <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 for the unit.

This Unit of Study Guide was last modified on 2nd April 2024.