

The Hong Kong University of Science and Technology
Undergraduate Course Syllabus (Fall 2026-27)

Course: Large Language Models

Course code: COMP 4901B

Credits: 3

Prerequisites: COMP 3211 AND (ELEC 2600 OR ELEC 2600H OR IEDA 2520 OR IEDA 2540 OR MATH 2411 OR MATH 2421 OR MATH 2431)

Class meetings: Tuesdays and Thursdays, 4:30-5:50 p.m.

Venue: To be confirmed via SIS and Canvas

Name: Prof. Yi R. (May) Fung

Email: yrfung@ust.hk

Office hours: Weekly time to be announced on Canvas; Room 3539 or Zoom by arrangement

Course Description

This undergraduate course develops both conceptual and practical understanding of large language models (LLMs). It begins with language modeling and Transformer foundations, then examines pretraining, adaptation, evaluation, and alignment. Later modules address reasoning models, synthetic-data training, LLM agents, retrieval-augmented generation, and model safety. Teaching combines lectures with in-class discussion, programming assignments, and a group mini-project.

Intended Learning Outcomes (ILOs)

By the end of this course, students should be able to:

- Explain how autoregressive language models and Transformer architectures are trained and used to generate language.
- Implement core LLM workflows for adaptation, prompting, evaluation, and retrieval-augmented generation.
- Design controlled experiments that evaluate LLM capability, reliability, efficiency, and robustness.
- Analyze alignment, hallucination, bias, privacy, and safety risks using technical evidence.
- Develop and communicate a reproducible group mini-project that applies or investigates an LLM method.

Assessment and Grading

This course uses criterion-referenced assessment; grades are not assigned on a curve. Each task is evaluated against the published requirements and rubric. Task-specific instructions and point allocations will be released on Canvas.

Assessments:

The assessment structure balances individual programming work, a collaborative application of LLM methods, demonstrated engagement, and cumulative conceptual understanding.

Assessment Task	Contribution to Overall Course Grade (%)	Due Date
Attendance and in-class quizzes	10%	Throughout the term
Individual homework assignments	18%	Dates to be announced on Canvas
Group mini-project	25%	Date to be announced on Canvas
Closed-book final examination	47%	HKUST exam period, 7-19 Dec 2026

* *Assessment marks for individual tasks will normally be released within two weeks of the due date.*

Attendance and in-class quizzes. Occasional quizzes will record participation.

Assignments. Three programming-centered assignments are completed individually. Each may require a concise report that explains the method, experiments, and results.

Mini-project. Students work in groups of two or three to implement or investigate an LLM method and communicate the result through the deliverables specified on Canvas.

Final examination. The final examination is closed book and assesses cumulative conceptual understanding and technical reasoning.

Late assignments. Each student has three free calendar late days across the three assignments. After these days are used, the assignment mark is reduced by 20% for each additional late day. No assignment is accepted more than three days after its deadline; any part of a 24-hour period counts as one late day.

Mapping of Course ILOs to Assessment Tasks

The mapping below shows where each learning outcome is directly assessed.

Assessed Task	Mapped ILOs	Explanation
Attendance and in-class quizzes	ILO 1, ILO 3, ILO 4	Checks timely engagement with core concepts and guided analysis of LLM behavior and risks.
Individual assignments	ILO 1-4	Assesses implementation, experimental design, evaluation, and evidence-based analysis of LLM methods.
Group mini-project	ILO 2-5	Assesses reproducible system development, rigorous investigation, teamwork, and technical communication.
Final examination	ILO 1, ILO 3, ILO 4	Assesses cumulative understanding, technical reasoning, evaluation choices, and analysis of limitations.

Grading Rubrics

Task-specific rubrics will accompany each assessment on Canvas. The following common criteria apply:

- Assignments: functional correctness, methodological soundness, quality of experimental evidence, code clarity and reproducibility, and written explanation.
- Mini-project: technical depth and correctness, experimental rigor, originality and relevance, reproducibility, quality of the report or presentation, and effective teamwork.
- Final examination: correctness of concepts and derivations, completeness of reasoning, appropriate use of evidence, and clarity of communication.
- Attendance quizzes: participation is assessed; correctness does not affect the attendance mark.

Final Grade Descriptors:

Final letter grades reflect achievement of the course ILOs across the complete body of assessed work.

Grade	Short Description	Course-Level Descriptor
A	Excellent Performance	Demonstrates comprehensive understanding of LLM principles and applies methods accurately. Produces rigorous, insightful, and reproducible work with clear technical communication.
B	Good Performance	Demonstrates solid understanding and generally correct application of LLM methods. Uses appropriate experiments and analysis, with only minor gaps in rigor or communication.
C	Satisfactory Performance	Demonstrates adequate knowledge of core concepts and can apply familiar methods. Work provides partial experimental support but may contain notable limitations or errors.
D	Marginal Pass	Meets the minimum threshold for core knowledge and basic technical application. Work shows significant gaps, weak analysis, or incomplete communication but achieves essential outcomes.
F	Fail	Does not demonstrate the minimum required understanding or technical competence. Work contains serious misconceptions, lacks adequate evidence, or fails to achieve essential outcomes.

Course AI Policy

Generative AI tools such as ChatGPT and Claude may be used to assist with coding and debugging in homework unless an assessment states otherwise. Students may not directly copy AI-generated text into reports, answers, or other submitted writing. Every student remains responsible for understanding, testing, and being able to explain all submitted work.

Communication and Feedback

Canvas is the primary channel for announcements, materials, technical questions, submissions, and grades. Students should use the relevant Canvas discussion thread for course-content and assignment questions; private or personal matters may be emailed to the teaching staff. Assignment feedback will identify strengths and areas for improvement in correctness, experimental design, analysis, and reproducibility. Students with questions about feedback or marks should contact the instructor within five working days after receiving it.

Resubmission Policy

Routine resubmission or reassessment is not offered. Exceptions require prior approval from the instructor or an approved accommodation under University procedures. The late-assignment policy above applies unless an assessment brief explicitly states otherwise.

Required Texts and Materials

There is no required textbook because LLM research evolves rapidly. Required lecture slides, papers, technical articles, software instructions, and datasets will be posted or linked on Canvas. Students should have access to a Python development environment and the course-specified machine-learning libraries.

Academic Integrity

Students are expected to adhere to the university's academic integrity policy. Students are expected to uphold HKUST's Academic Honor Code and to maintain the highest standards of academic integrity. The University has zero tolerance of academic misconduct. Please refer to [Academic Integrity | HKUST – Academic Registry](#) for the University's definition of plagiarism and ways to avoid cheating and plagiarism.

Course-specific expectation: Assignments must be completed independently unless collaboration is explicitly authorized. A confirmed honor-code violation may result in failure of the course, subject to University procedures.

Additional Resources

Lecture recordings will be released through Canvas when available. Canvas discussions, HKUST Library resources, instructor-recommended papers, and official documentation for the software used in assignments provide supplementary support. Recordings do not replace required participation in class activities.