The Hong Kong University of Science and Technology

UG Course Syllabus (Fall 2025-26)

[Course Title] Fundamentals of Artificial Intelligence

[Course Code] COMP 3211

[No. of Credits] 3

[Any pre-/co-requisites] (COMP 2012 OR COMP 2012H) AND COMP 2211

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Course Description

This course provides a comprehensive coverage of the reasoning and decision-making aspects of artificial intelligence (AI). It covers fundamental concepts and techniques of AI, such as search, constraint satisfaction, game theory, game tree search, Markov decision processes, reinforcement learning, multi-agent systems, logic reasoning, and probabilistic reasoning.

List of Topics

- Simple intelligent agents
- Search (Uniformed, Heuristic, Adversarial)
- Learning
- Knowledge Representation, Reasoning, and Planning
- Multiagent systems, game theory and auction
- Uncertainty
- Others

Intended Learning Outcomes (ILOs)

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

1. Identify the fundamental concepts and techniques of AI: autonomous agents, search, knowledge representation, and machine learning.
2. Understand and apply techniques for searching state spaces, including breadth-first, depth-first, best-first, A* search, minmax game tree search, minmax with alpha-beta pruning, and hill-climbing search.
3. Appreciate some cutting edge research in AI such as multiagent systems, game theory, ontology, semantic web, big data, deep learning, and others

Assessment and Grading

This course will be assessed using criterion-referencing and grades will not be assigned using a curve. Detailed rubrics for each assignment are provided below, outlining the criteria used for evaluation.

Assessment Task	Contribution to Overall Course grade (%)
Assignments (including programming assignments)	15%
Midterm exam	35%
Final exam	50%

Assessments:

Assessment Task	Contribution to Overall Course grade (%)	Due date
Assignments	15%	Assignment 1: 26/09/2025 * Assignment 2: 17/10/2025 * Assignment 3: 07/11/2025 *
Midterm exam	35%	28/10/2025 *
Final exam	50%	To be confirmed by ARO *

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

Mapping of Course ILOs to Assessment Tasks

Assessed Task	Mapped ILOs	Explanation
Assignments	ILO1, ILO2, ILO3	The three assignments evaluate students' knowledge on fundamental concepts and techniques of AI (ILO1), techniques for search state spaces (ILO2), cutting edge research in AI (ILO3).
Midterm exam	ILO1, ILO2	The midterm exam evaluates students' knowledge on fundamental concepts and techniques of AI (ILO1), techniques for search state spaces (ILO2).
Final exam	ILO1, ILO2, ILO3	The final exam evaluates students' knowledge on fundamental concepts and techniques of AI (ILO1), techniques for search state spaces (ILO2), cutting edge research in AI (ILO3).

Grading Rubrics

Each assignment and exam have different detailed rubrics, depending on specific problems and the score distribution among the problems.

Final Grade Descriptors:

Grades	Short Description	Elaboration on subject grading description
A	Excellent Performance	[Demonstrates a comprehensive grasp of subject matter, expertise in problem-solving, and significant creativity in thinking. Exhibits a high capacity for scholarship and collaboration, going beyond core requirements to achieve learning goals.
B	Good Performance	Shows good knowledge and understanding of the main subject matter, competence in problem-solving, and the ability to analyze and evaluate issues. Displays high motivation to learn and the ability to work effectively with others.
C	Satisfactory Performance	Possesses adequate knowledge of core subject matter, competence in dealing with familiar problems, and some capacity

		for analysis and critical thinking. Shows persistence and effort to achieve broadly defined learning goals.
D	Marginal Pass	Has threshold knowledge of core subject matter, potential to achieve key professional skills, and the ability to make basic judgments. Benefits from the course and has the potential to develop in the discipline.
F	Fail	Demonstrates insufficient understanding of the subject matter and lacks the necessary problem-solving skills. Shows limited ability to think critically or analytically and exhibits minimal effort towards achieving learning goals. Does not meet the threshold requirements for professional practice or development in the discipline.

Course AI Policy

The students can use generative AI tools to complete assignments, but they must acknowledge in assignments if they do so.

Communication and Feedback

Assessment marks for individual assessed tasks will be communicated via Canvas within two weeks of submission. Feedback on assignments will include scores and detailed comments. Students who have further questions about the feedback including marks should consult the instructor within seven days after the feedback is received.

Resubmission Policy

No late submission or resubmission will be accepted.

Required Texts and Materials

N/A

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.

Additional Resources

N/A