UNSW Course Outline

COMP3411 Artificial Intelligence - 2024

Published on the 12 Feb 2024

General Course Information

Course Code : COMP3411
Year : 2024
Term : Term 1
Teaching Period : T1
Is a multi-term course? : No
Faculty : Faculty of Engineering
Academic Unit : School of Computer Science and Engineering
Delivery Mode : Multimodal
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

Machine intelligence. Principles: knowledge representation, automated reasoning, machine learning. Tools: AI programming languages, control methods, search strategies, pattern matching. Applications: computer vision, speech recognition, natural language processing,

expert systems, game playing, computer-aided learning. Philosophical and psychological issues.

Lab: logic programming assignments.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Explain fundamental AI methods and techniques.
CLO2 : Explain features or aspects of AI algorithms.
CLO3 : Describe how AI techniques are applied to particular problems.
CLO4 : Employ AI programming and practices.
CLO5 : Implement or develop a functional AI system

Course Learning Outcomes	Assessment Item
CLO1 : Explain fundamental AI methods and techniques.	• Assignment 1 • Assignment 2 • Assignment 3 • Exam
CLO2 : Explain features or aspects of AI algorithms.	• Assignment 1 • Assignment 2 • Assignment 3 • Exam
CLO3 : Describe how AI techniques are applied to particular problems.	• Assignment 1 • Assignment 2 • Assignment 3 • Exam
CLO4 : Employ AI programming and practices.	• Assignment 1 • Assignment 2 • Assignment 3 • Exam
CLO5 : Implement or develop a functional AI system	• Assignment 1 • Assignment 2 • Assignment 3 • Exam

Learning and Teaching Technologies

Moodle - Learning Management System

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Assignment 1	12%	Due Date: TBA
Assignment 2	12%	
Assignment 3	16%	Due Date: TBA
Exam	60%	Due Date: TBA - Exam Period

Assessment Details

Assignment 1

Course Learning Outcomes

- CLO1 : Explain fundamental AI methods and techniques.
- CLO2 : Explain features or aspects of AI algorithms.
- CLO3 : Describe how AI techniques are applied to particular problems.
- CLO4 : Employ AI programming and practices.
- CLO5 : Implement or develop a functional AI system

Assignment 2

Course Learning Outcomes

- CLO1 : Explain fundamental AI methods and techniques.
- CLO2 : Explain features or aspects of AI algorithms.
- CLO3 : Describe how AI techniques are applied to particular problems.
- CLO4 : Employ AI programming and practices.
- CLO5 : Implement or develop a functional AI system

Assignment 3

Course Learning Outcomes

- CLO1 : Explain fundamental AI methods and techniques.
- CLO2 : Explain features or aspects of AI algorithms.
- CLO3 : Describe how AI techniques are applied to particular problems.
- CLO4 : Employ AI programming and practices.
- CLO5 : Implement or develop a functional AI system

Exam

Course Learning Outcomes

- CLO1 : Explain fundamental AI methods and techniques.
- CLO2 : Explain features or aspects of AI algorithms.

- CLO3 : Describe how AI techniques are applied to particular problems.
- CLO4 : Employ AI programming and practices.
- CLO5 : Implement or develop a functional AI system

General Assessment Information

Grading Basis

Standard

Course Schedule

Attendance Requirements

Students are strongly encouraged to attend all classes and review lecture recordings.

General Schedule Information

Course Schedule (tentative)

Week 1 - Introduction to AI and Search

Week 2 - Search

Week 3 - Reinforcement Learning

Week 4 - Robot Vision and Neural Networks

Week 5 - Knowledge Representation

Week 7 - Machine Learning

Week 8 - Planning

Week 9 - Reasoning under Uncertainty

Week 10 - Communicating agents, Course review

Course Resources

Recommended Resources

Resources for Students

The recommended textbooks for this course are:

- David L. Poole and Alan K. Mackworth *Artificial Intelligence: Foundations of Computational Agents* , 2nd Edition
- Nils J. Nilsson, *Artificial Intelligence: a New Synthesis* , Morgan Kaufmann, 1998, ISBN 1-55860-467-7.

There are electronic versions of the books, as well as print. Here are the links to Poole & Mackworth:

- Print - https://www.bookshop.unsw.edu.au/details.cgi?ITEMNO=9781107195394
- Digital - https://artint.info/2e/html/ArtInt2e.html

and for Nilsson:

- Digital - https://www-sciencedirect-com.wwwproxy1.library.unsw.edu.au/book/9781558604674/artificial-intelligence-a-new-synthesis

The following books might also serve as additional reference material:

- Stuart Russell and Peter Norvig, *Artificial Intelligence: a Modern Approach* , 3th Ed., Prentice Hall, 2010.
- Ivan Bratko, *Prolog Programming for Artificial Intelligence* , 4th Edition, Pearson, 2013.
- Valentino Braitenberg, *Vehicles: Experiments in Synthetic Psychology* , MIT Press, 1984, ISBN 0-262-52112-1.

Links to other electronic resources will be provided on the course web page throughout the session.

Course Evaluation and Development

This course is evaluated each session using the myExperience system.

In the previous offering of this course, students noted that the webcsm3 forums were less than optimal and that it was difficult to get engaged (with other students) online. Students also noted that their questions were answered with delays.

The Webcms3 forum have been re-written to incorporate the requested features. This term, we also hired three tutors and a course admin to answer the forum in addition to the three lecturers of the course.

Students also noted that there were not enough assessment through out the term and they received late feedback for their assignments. To address this, we introduced three auto-marked assignments to this course. We also introduced five quizzes which will familiarise students with the final exam.

Students are always welcome to provide feedback at any point in the term on their experience by emailing the course account or completing the feedback form linked in the sidebar.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Alan Blair					Yes	No
	COURSE EMAIL					No	Yes

Other Useful Information

Academic Information

I. Special consideration and supplementary assessment

If you have experienced an illness or misadventure beyond your control that will interfere with your assessment performance, you are eligible to apply for Special Consideration prior to, or within 3 working days of, submitting an assessment or sitting an exam.

Please note that UNSW has a Fit to Sit rule, which means that if you sit an exam, you are declaring yourself fit enough to do so and cannot later apply for Special Consideration.

For details of applying for Special Consideration and conditions for the award of supplementary assessment, please see the information on UNSW's Special Consideration page.

II. Administrative matters and links

All students are expected to read and be familiar with UNSW guidelines and polices. In particular, students should be familiar with the following:

- Attendance
- UNSW Email Address
- Special Consideration
- Exams
- Approved Calculators
- Academic Honesty and Plagiarism
- Equitable Learning Services

III. Equity and diversity

Those students who have a disability that requires some adjustment in their teaching or learning environment are encouraged to discuss their study needs with the course convener prior to, or at the commencement of, their course, or with the Equity Officer (Disability) in the Equitable Learning Services. Issues to be discussed may include access to materials, signers or note-takers, the provision of services and additional exam and assessment arrangements. Early notification is essential to enable any necessary adjustments to be made.

IV. Professional Outcomes and Program Design

Students are able to review the relevant professional outcomes and program designs for their streams by going to the following link: https://www.unsw.edu.au/engineering/student-life/student-resources/program-design.

Note: This course outline sets out the description of classes at the date the Course Outline is published. The nature of classes may change during the Term after the Course Outline is published. Moodle or your primary learning management system (LMS) should be consulted for the up-to-date class descriptions. If there is any inconsistency in the description of activities between the University timetable and the Course Outline/Moodle/LMS, the description in the Course Outline/Moodle/LMS applies.

Academic Honesty and Plagarism

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW students have a responsibility to adhere to this principle of academic integrity. Plagiarism undermines academic integrity and is not tolerated at UNSW. *Plagiarism at UNSW is defined as using the words or ideas of others and passing them off as your own.*

Plagiarism is a type of intellectual theft. It can take many forms, from deliberate cheating to accidentally copying from a source without acknowledgement. UNSW has produced a website with a wealth of resources to support students to understand and avoid plagiarism, visit: student.unsw.edu.au/plagiarism. The Learning Centre assists students with understanding academic integrity and how not to plagiarise. They also hold workshops and can help students one-on-one.

You are also reminded that careful time management is an important part of study and one of the identified causes of plagiarism is poor time management. Students should allow sufficient time for research, drafting and the proper referencing of sources in preparing all assessment tasks.

Repeated plagiarism (even in first year), plagiarism after first year, or serious instances, may also be investigated under the Student Misconduct Procedures. The penalties under the procedures can include a reduction in marks, failing a course or for the most serious matters (like plagiarism in an honours thesis or contract cheating) even suspension from the university. The Student Misconduct Procedures are available here:

www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf

Submission of Assessment Tasks

Work submitted late without an approved extension by the course coordinator or delegated authority is subject to a late penalty of five percent (5%) of the maximum mark possible for that assessment item, per calendar day.

The late penalty is applied per calendar day (including weekends and public holidays) that the assessment is overdue. There is no pro-rata of the late penalty for submissions made part way through a day. This is for all assessments where a penalty applies.

Work submitted after five days (120 hours) will not be accepted and a mark of zero will be awarded for that assessment item.

For some assessment items, a late penalty may not be appropriate. These will be clearly indicated in the course outline, and such assessments will receive a mark of zero if not completed by the specified date. Examples include:

- Weekly online tests or laboratory work worth a small proportion of the subject mark;
- Exams, peer feedback and team evaluation surveys;
- Online quizzes where answers are released to students on completion;
- Professional assessment tasks, where the intention is to create an authentic assessment that has an absolute submission date; and,
- Pass/Fail assessment tasks.

Faculty-specific Information

Engineering Student Support Services – The Nucleus - enrolment, progression checks, clash requests, course issues or program-related queries

Engineering Industrial Training – Industrial training questions

UNSW Study Abroad – study abroad student enquiries (for inbound students)

UNSW Exchange – student exchange enquiries (for inbound students)

UNSW Future Students – potential student enquiries e.g. admissions, fees, programs, credit transfer

Phone

(+61 2) 9385 8500 – Nucleus Student Hub

(+61 2) 9385 7661 – Engineering Industrial Training

(+61 2) 9385 3179 – UNSW Study Abroad and UNSW Exchange (for inbound students)

School Contact Information

CSE Help! - on the Ground Floor of K17

- For assistance with coursework assessments.

The Nucleus Student Hub - https://nucleus.unsw.edu.au/en/contact-us

- Course enrolment queries.

Grievance Officer - grievance-officer@cse.unsw.edu.au

- If the course convenor gives an inadequate response to a query or when the course convenor does not respond to a query about assessment.

Student Reps - stureps@cse.unsw.edu.au

- If some aspect of a course needs urgent improvement. (e.g. Nobody responding to forum queries, cannot understand the lecturer)