Course Outline

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Course Details

Course Code	**COMP3411/9814**
Course Title	**Artificial Intelligence**
Units of Credit	**6**
Course Website	**http://cse.unsw.edu.au/~cs3411 (http://cse.unsw.edu.au/~cs3411)**
Handbook Entry	**http://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP3411.html (http://www.handbook.unsw.edu.au/undergraduate/courses/current/COMP3411.html)**
Lecturer-in-Charge	Claude Sammut <cs3411@cse.unsw.edu.au>
Course Admin	Armin Chitizadeh <cs3411@cse.unsw.edu.au>

Timetable

	Monday	Tuesday	Wednesday	Thursday	Friday
09:00 - 10:00					

10:00 - 11:00				Tut - H10A Zachary Partidge	Tut - F10A Dominic Wong	Tut - F10B Jatin Wadhwa
11:00 - 12:00				Tut - H11A Zachary Partidge	Tut - F11A Ethan Brown	
12:00 - 1300				Tut - H12A Adam Stucci	Tut - F12A Ethan Brown	Tut - F12B Jatin Wadhwa
13:00 - 14:00				Tut - H13A Adam Stucci	Tut - F13A Jatin Wadhwa	
14:00 - 15:00			Lecture	Tut - H14A Jingying Gao	Lecture	
15:00 - 16:00				Tut - H15A Jingying Gao		
16:00 - 17:00			Tut - W16A Jingying Gao	Tut - H16A Jingcheng Li	Tut - F16A Dominic Wong	
17:00 - 18:00			Tut - W17A Anna Trofimova	Tut - H17A Jingcheng Li	Tut - H17B AnnaTrofimova	
18:00 - 19:00			Tut - W18A Anna Trofimova			
19:00 - 20:00						

Course Summary

Artificial Intelligence is concerned with the design and construction of computer systems that "think". This course will introduce students to the main ideas and approaches in AI - including agent architectures, Prolog programming, search techniques, knowledge representation and reasoning, machine learning, natural language processing, logical inference and robotics.

This course will introduce you to the following main ideas and approaches in AI, which will be presented in four main modules:

1. *Artificial Intelligence, Intelligent Agents and Prolog*

- Introduction and history of AI
- Agents and Autonomous Systems

2. *Knowledge and Reasoning*

- Path Search

- Heuristic Path Search
- Constraint Satisfaction
- Logical Agents
- Uncertainty

3. Machine *Learning*

- Learning and Decision Trees
- Reinforcement Learning and Neural Networks

4. *Additional topics:*

- Natural Language Processing
- Computer Visions
- Robotics

Assumed Knowledge

COMP3411

Pre-requisite: COMP1927 or COMP2521

COMP9814

Pre-requisite: COMP9024

Student Learning Outcomes

Students successfully completing this course will:

- Gain a working knowledge of fundamental AI methods and techniques.
- Be able to demonstrate knowledge of AI methods by explaining certain features or aspects of these algorithms.
- Describe how the techniques would be applied to particular problems.
- Develop competency in the AI programming.
- Gain practical experience through the assignments to understand what is involved in designing and implementing a functional AI system.

Teaching

There will be four hours of lectures per week, plus one hour of tutorial. The major AI algorithms and learning techniques will be presented in lectures and illustrated on sample problems, along with historical background and theoretical motivation.
Tutorials give students a chance to clarify the ideas mentioned in lectures and practice their problem-solving skills in a small (and hopefully more personal) class with the assistance of a tutor. Students are expected to prepare for and actively participate in tutorials. Most tutorials will also include one or two questions of a speculative nature - which can lead to more in-depth discussion of particular topics, depending on the interests of the students.

Assessment

The assessable components of the course are:

Component	Mark
Assignments	40%
Written Exam	60%

Further details about the assignments will be posted on the Course Web site. Programming assignments give the students an opportunity to put into practice the ideas and approaches that have been presented in lectures and discussed in tutorials. They may, for example, involve writing a program to:

- enable an agent to act in a simulated environment
- solve a problem using search techniques
- play a game
- apply a machine learning algorithm
- enable communication or co-operation between agents

In order to pass the course, students must score:

- at least 16/40 for the assignments
- at least 24/60 for the exam
- a combined mark of at least 50/100

Resources for Students

The recommended textbook for this course is:

- David L. Poole and Alan K. Mackworth *Artificial Intelligence: Foundations of Computational Agents* , 2nd Edition (https://artint.info/2e/html/ArtInt2e.html)

There is an electronic version of the book, as well as print. Here are the links to both:

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

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.
- Nils J. Nilsson, *Artificial Intelligence: a New Synthesis* , Morgan Kaufmann, 1998, ISBN 1-55860-467-7.
- 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.

Student Conduct

The **Student Code of Conduct** (Information (https://student.unsw.edu.au/conduct) , Policy (https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf)) sets out what the University expects from students as members of the UNSW community. As well as the learning, teaching and research environment, the University aims to provide an environment that enables students to achieve their full potential and to provide an experience consistent with the University's values and guiding principles. A condition of enrolment is that students *inform themselves* of the University's rules and policies affecting them, and conduct themselves accordingly.

In particular, students have the responsibility to observe standards of equity and respect in dealing with every member of the University community. This applies to all activities on UNSW premises and all external activities related to study and research. This includes behaviour in person as well as behaviour on social media, for example Facebook groups set up for the purpose of discussing UNSW courses or course work. Behaviour that is considered in breach of the Student Code Policy as discriminatory, sexually inappropriate, bullying, harassing, invading another's privacy or causing any person to fear for their personal safety is serious misconduct and can lead to severe penalties, including suspension or exclusion from UNSW.

If you have any concerns, you may raise them with your lecturer, or approach the School Ethics Officer (mailto:ethics-officer@cse.unsw.edu.au) , Grievance Officer (mailto:grievance-officer@cse.unsw.edu.au) , or one of the student representatives.

Plagiarism is defined as (https://student.unsw.edu.au/plagiarism) using the words or ideas of others and presenting them as your own. UNSW and CSE treat plagiarism as academic misconduct, which means that it carries penalties as severe as being excluded from further study at UNSW. There are several on-line sources to help you understand what plagiarism is and how it is dealt with at UNSW:

- Plagiarism and Academic Integrity (https://student.unsw.edu.au/plagiarism)
- UNSW Plagiarism Procedure (https://www.gs.unsw.edu.au/policy/documents/plagiarismprocedure.pdf)

Make sure that you read and understand these. Ignorance is not accepted as an excuse for plagiarism. In particular, you are also responsible that your assignment files are not accessible by anyone but you by setting the correct permissions in your CSE directory and code repository, if using. Note also that plagiarism includes paying or asking another person to do a piece of work for you and then submitting it as your own work.

UNSW has an ongoing commitment to fostering a culture of learning informed by academic integrity. All UNSW staff and 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.

If you haven't done so yet, please take the time to read the full text of

- UNSW's policy regarding academic honesty and plagiarism (https://student.unsw.edu.au/plagiarism)

The pages below describe the policies and procedures in more detail:

- Student Code Policy (https://www.gs.unsw.edu.au/policy/documents/studentcodepolicy.pdf)
- Student Misconduct Procedure (https://www.gs.unsw.edu.au/policy/documents/studentmisconductprocedures.pdf)
- Plagiarism Policy Statement (https://www.gs.unsw.edu.au/policy/documents/plagiarismpolicy.pdf)
- Plagiarism Procedure (https://www.gs.unsw.edu.au/policy/documents/plagiarismprocedure.pdf)

You should also read the following page which describes your rights and responsibilities in the CSE context:

- Essential Advice for CSE Students (https://www.engineering.unsw.edu.au/computer-science-engineering/about-us/organisational-structure/student-services/policies/essential-advice-for-cse-students)

Course Evaluation and Development

This course is evaluated each session using the myExperience system.

Resource created 4 months ago (Saturday 06 February 2021, 09:10:59 PM), last modified 4 months ago (Thursday 11 February 2021, 07:06:38 PM).

Comments

(/COMP3411/21T1/forums/search?forum_choice=resource/57683)

(/COMP3411/21T1/forums/resource/57683)



Haotian Lyu (/users/z5283856) 3 months ago (Sun Mar 14 2021 13:11:15 GMT+1100 (Australian Eastern Daylight Time))

I just want to ask do we still use prolog in Assignment 2? or something else?



Sarah Lay (/users/z5161194) 4 months ago (Fri Feb 26 2021 11:08:59 GMT+1100 (Australian Eastern Daylight Time))

Hi, is there any update on Mia's question regarding a summary of assignment dates?



Claude Sammut (/users/z8400090) 4 months ago (Mon Mar 01 2021 16:36:40 GMT+1100 (Australian Eastern Daylight Time))

Just answered: week 5 and week 10.



Armin Chitizadeh (/users/z3323393) 4 months ago (Mon Mar 01 2021 16:36:26 GMT+1100 (Australian Eastern Daylight Time))

Hi Sarah, let me know if I have answered your question correctly.

Cheers,
Armin



Mia Dobell (/users/z5254542) 4 months ago (Mon Feb 22 2021 13:54:22 GMT+1100 (Australian Eastern Daylight Time))

Assignment Due Dates?

Hello, I cannot seem to find anywhere an overview of what weeks the assignments for this course will be due in. Have I missed this somewhere, or has the information not been released yet? If it is the latter, when will we find it out?

Having an understanding in advance of when the assignments are due greatly helps to plan for what is expected of us and when, so it would be great to know what weeks the assignments will be due.

Thank you!



Armin Chitizadeh (/users/z3323393) 4 months ago (Mon Mar 01 2021 16:36:03 GMT+1100 (Australian Eastern Daylight Time))

Hi Mia,
We are developing new assignments which are relatable to the current state of AI. There will be two assignments. The first one has been announced. For the second one, we are expecting the deadline to be on week10. However it might slightly change.

Cheers,
Armin



Claude Sammut (/users/z8400090) 4 months ago (Mon Mar 01 2021 16:35:38 GMT+1100 (Australian Eastern Daylight Time))

You've already got the date for the first assignment, i.e. Friday of week 5. The second assignment will most likely be due in week 10.