UNSW Course Outline

HDAT9000 Clinical Artificial Intelligence - 2024

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General Course Information

Course Code : HDAT9000
Year : 2024
Term : Term 2
Teaching Period : T2
Is a multi-term course? : No
Faculty : Faculty of Medicine and Health
Academic Unit : School of Biomedical Sciences
Delivery Mode : Multimodal
Delivery Format : Standard
Delivery Location : Kensington
Campus : Sydney
Study Level : Undergraduate, Postgraduate
Units of Credit : 6

Useful Links

Handbook Class Timetable

Course Details & Outcomes

Course Description

This course is designed to equip you with the skills you need in order to contribute to the use of AI technologies in healthcare, with a focus on the use of AI for clinical tasks. The course starts by looking into the fundamentals of AI. In this phase of the course you will learn about what is

artificial intelligence, the main approaches to build intelligent machines, how machines learn from data and what is the basic concept underpinning the success of deep learning algorithms. The course then looks into the lifecycle of clinical AI technologies. In this part you will gain insights into the fundamental concepts and best practices that drive the creation, assessment, and implementation of clinical AI tools. The course then concludes by looking into real-world examples of AI technology in clinical care. In this phase of the course you will learn about the challenges, and opportunities of AI tools that aim to automate and/or augment basic clinical care tasks, namely: diagnosis, prognosis, risk assessment, and treatment decisions.

Course Aims

This course aims to provide you with the knowledge and tools needed to drive, critically appraise and implement AI solutions in medicine, with a focus on technologies used in clinical practice.

Relationship to Other Courses

Assistance with progression checking:

If you are unsure how this course fits within your program, you can seek guidance on optimising your program structure from staff at the Nucleus Student Hub.

Progression plans for UNSW Medicine and Health programs can be found on the UNSW Medicine & Health website.

This course is a core course for BSc (Med) Hons specialising in Clinical Artificial Intelligence, and an elective course of the Master of Science in Health Data Science.

Course Learning Outcomes

Course Learning Outcomes
CLO1 : Critically appraise AI terminology, concepts and workflows.
CLO2 : Identify appropriate opportunities for the use of AI in clinical practice.
CLO3 : Apply best practices for the assessment and evaluation of AI solutions in healthcare.
CLO4 : Articulate socio-technical and ethical arguments surrounding the use of AI in medicine.

Course Learning Outcomes	Assessment Item
CLO1 : Critically appraise AI terminology, concepts and workflows.	• Final Project • Tutorial Assignments
CLO2 : Identify appropriate opportunities for the use of AI in clinical practice.	• Final Project • Tutorial Assignments
CLO3 : Apply best practices for the assessment and evaluation of AI solutions in healthcare.	• Final Project • Tutorial Assignments
CLO4 : Articulate socio-technical and ethical arguments surrounding the use of AI in medicine.	• Final Project • Tutorial Assignments

Learning and Teaching Technologies

Open Learning | Microsoft Teams

Learning and Teaching in this course

All course materials and course announcements are provided on the course learning management system, Open Learning.

Assessments

Assessment Structure

Assessment Item	Weight	Relevant Dates
Final Project Assessment Format: Individual	60%	Due Date: Week 7: 08 July - 14 July, Week 10: 29 July - 04 August, Week 12: 12 August - 18 August
Tutorial Assignments Assessment Format: Individual	40%	Due Date: Week 3: 10 June - 16 June, Week 4: 17 June - 23 June, Week 5: 24 June - 30 June, Week 7: 08 July - 14 July

Assessment Details

Final Project

Assessment Overview

For this assessment, you will choose an example of an existing or newly proposed clinical AI technology and describe the lifecycle of the technology including intended use, algorithm performance, expected clinical utility, human factors and clinical impact.

Delivery of this assessment will take place in three stages:

1. a proposal (worth 10%)
2. an oral presentation (worth 20%)
3. and a written report (circa 1000-2000 words) (worth 30%)

You will be provided with feedback individually marked against specifically designed rubrics within 10 days from the submission date for stages 1 and 2, and in week 13 for stage 3.

Course Learning Outcomes

- CLO1 : Critically appraise AI terminology, concepts and workflows.
- CLO2 : Identify appropriate opportunities for the use of AI in clinical practice.
- CLO3 : Apply best practices for the assessment and evaluation of AI solutions in healthcare.
- CLO4 : Articulate socio-technical and ethical arguments surrounding the use of AI in medicine.

Detailed Assessment Description

Final project will be issued in Week 5.

The proposal is due in week 7, the oral presentation is due in week 10 and the written report is due in week 12. Feedback will be provied within one week of the due date.

Detailed information about this assessment will be provided on the course Open Learning page.

Submission notes

Refer to Open Learning for submission information

Assessment information

Use of AI tools, such as ChatGPT to aid in your final assignment is allowed but under strict conditions. Your work must be substantially your own and simply copy-pasting information from ChatGPT is not allowed. Any use of ChatGPT in your final assignment must be reported,

including details of how it was used.

Further information about the use of AI can be found at:

https://www.student.unsw.edu.au/assessment/ai

Assignment submission Turnitin type

Not Applicable

Tutorial Assignments

Assessment Overview

You will complete four tutorial assignments which entail answering quizzes or short practical exercises. Each tutorial assignment is worth 10% of the final grade. You will be provided with feedback individually for each assignment within 10 days from the submission date.

Course Learning Outcomes

- CLO1 : Critically appraise AI terminology, concepts and workflows.
- CLO2 : Identify appropriate opportunities for the use of AI in clinical practice.
- CLO3 : Apply best practices for the assessment and evaluation of AI solutions in healthcare.
- CLO4 : Articulate socio-technical and ethical arguments surrounding the use of AI in medicine.

Detailed Assessment Description

4 x Tutorial Quizzes. Issue dates: Weeks 1,2,3, and 4. Due dates: Weeks 3,4,5, and 7 respectively. Feedback provided within one week of the due date.

Detailed information about this assessment will be provided on the course Open Learning page.

Submission notes

Refer to Open Learning for submission information

Assessment information

Use of AI tools, such as ChatGPT to aid in your tutorial quizzes is allowed.

Assignment submission Turnitin type

Not Applicable

General Assessment Information

Use of AI: Use of AI tools, such as ChatGPT to aid in your tutorial quizzes is allowed. Use of AI tools, such as ChatGPT to aid in your final assignment is allowed but under strict conditions.

Your work must be substantially your own and simply copy-pasting information from ChatGPT is not allowed. Any use of ChatGPT in your final assignment must be reported, including details of how it was used.

Further information about the use of AI can be found at:

https://www.student.unsw.edu.au/assessment/ai

Detailed instructions regarding assessments for this course are provided on the course Open Learning page.

For student information on results, grades, and guides to assessment see: https://student.unsw.edu.au/assessment

Grading Basis

Standard

Requirements to pass course

In order to pass this course students must:

- Achieve a composite grade of at least 50 out of 100.

Course Schedule

Teaching Week/Module	Activity Type	Content
Week 1 : 27 May - 2 June	Blended	Lectures and Tutorials. Topic: Fundamentals of AI
Week 2 : 3 June - 9 June	Blended	Lectures and Tutorials. Topic: Algorithm Performance
Week 3 : 10 June - 16 June	Blended	Lectures and Tutorials. Topic: Clinical Utility and Impact
Week 4 : 17 June - 23 June	Blended	Lectures and Tutorials. Topic: Human Factors
Week 5 : 24 June - 30 June	Blended	Lectures and Tutorials. Topic: Business Models and Innovation
Week 6 : 1 July - 7 July	Other	Flexibility Week
Week 7 : 8 July - 14 July	Blended	Lectures and Tutorials. Topic: AI for Diagnosis
Week 8 : 15 July - 21 July	Blended	Lectures and Tutorials. Topic: AI for Prognosis
Week 9 : 22 July - 28 July	Blended	Lectures and Tutorials. Topic: AI for Treatment Recommendation
Week 10 : 29 July - 4 August	Assessment	Student Presentations

Attendance Requirements

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

General Schedule Information

This course is offered as multimodal delivery (online lectures, face-to-face tutorials) or fully

online.

This course has two sessions per week:

- **Session 1 Lectures for ALL:** Wed morning 11am - 12pm @Online via TEAMS
- **Session 2 Tutorials for FULLY ONLINE delivery:** Wed afternoon 1pm - 2pm @Online via TEAMS
- **Session 2 Tutorials for MULTIMODAL delivery:** Wed afternoon 3pm - 4pm @K-F23-106 - Mat 106

Tutorial (afternoon) sessions are not recorded.

Course Resources

Recommended Resources

Recommended resources for this course are provided on the course Open Learning page.

Additional Costs

There are no additional costs associated with this course.

Course Evaluation and Development

Student feedback is taken seriously, and continual improvements are made to the course based, in part, on such feedback.

We use student feedback from myExperience surveys to develop and make improvements to the course each year. We do this by identifying areas of the course that require development from both the rating responses and written comments. Please spare a few minutes to complete the myExperience surveys for this course posted at the top of the Moodle page at the end of term.

Staff Details

Position	Name	Email	Location	Phone	Availability	Equitable Learning Services Contact	Primary Contact
Convenor	Blanca Gallego Luxan					Yes	Yes

Other Useful Information

Academic Information

As a student of UNSW Medicine & Health you are expected to familiarise yourself with the contents of this course outline and the UNSW Student Code and policies and procedures related to your studies.

Student Code of Conduct

Throughout your time studying at UNSW Medicine & Health, you share a responsibility with us for maintaining a safe, harmonious and tolerant University environment. This includes within the courses you undertake during your degree and your interactions with the UNSW community, both on campus and online.

The UNSW Student Code of Conduct website provides a framework for the standard of conduct expected of UNSW students with respect to both academic integrity and your responsibility as a UNSW citizen.

Where the University believes a student may have breached the code, the University may take disciplinary action in accordance with the Student Misconduct Procedure.

The Student Conduct and Integrity Office provides further resources to assist you to understand your conduct obligations as a student at UNSW.

Academic Honesty and Plagarism

Academic integrity

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 the principle of academic integrity, and ethical scholarship of learning is fundamental to your success at UNSW Medicine & Health.

Plagiarism, contract cheating, and inappropriate use of generative AI undermine academic integrity and are not tolerated at UNSW. For more information see the Academic Integrity and Plagiarism toolkit.

In addition to the information you are required to review in your ELISE training, UNSW Medicine &

Health strongly recommends that you complete the Working with Academic Integrity module before submitting your first assessment task.

Referencing

Referencing is a way of acknowledging the sources of information that you use to research your assignments. Preferred referencing styles vary among UNSW Medicine & Health disciplines, so check your course Learning Management System (e.g. Moodle or Open Learning) page for information on preferred referencing styles.

For further information on referencing support and styles, see the Current Student Referencing page.

Academic misconduct and plagiarism

At UNSW, academic misconduct is managed in accordance with the Student Misconduct Procedure. Allegations of plagiarism are generally handled according to the UNSW Plagiarism Management Procedure. Plagiarism is defined in the UNSW Plagiarism Policy and is not tolerated at UNSW.

Use of Generative AI and other tools in your assessment

UNSW has provided guiding statements for the use of Generative AI in assessments. This will differ, depending on the individual assessment task, your course requirements, and the course stage within your program.

Your course convenor will outline if and how you can use Generative AI in each your assessment tasks. Options for the use of generative AI include: (1) no assistance; (2) simple editing assistance; (3) planning assistance; and (4) full assistance with attribution.

You may be required to submit the original generative AI responses, or drafts of your original work. Inappropriate use of generative AI is considered academic misconduct.

See your course Moodle (or Open Learning) page for the full instructions for individual assessment tasks for your course.

Submission of Assessment Tasks

Special Consideration

In cases where illness, misadventure or other circumstances beyond your control will prevent you from submitting your assessment by the due date and you require an extension, you need to formally apply for Special Consideration through myUNSW.

UNSW has a **Fit to Sit/Submit rule**, which means that by sitting or submitting an assessment on the scheduled assessment date, you are declaring that you are fit to do so and cannot later apply for Special Consideration.

Timed online assessment tasks

If you experience a technical or connection problem during a timed online assessment, such as a timed quiz, you can apply for Special Consideration. To be eligible to apply you need to contact the Course Convenor and advise them of the issue immediately. You will need to submit an application for Special Consideration immediately, and upload screenshots, error messages or other evidence of the technical issue as supporting documentation. Additional information can be found on: https://student.unsw.edu.au/special-consideration

Examinations

Information about the conduct of examinations in your course is provided on your course Moodle page.

Other assessment tasks

Late submission of assessment tasks

UNSW has standard late submission penalties as outlined in the UNSW Assessment Implementation Procedure, with no permitted variation. All late assignments (unless extension or exemption previously agreed) will be penalised by 5% of the maximum mark per calendar day (including Saturday, Sunday and public holidays).

Late submissions penalties are capped at five calendar days (120 hours). This means that a student is not permitted to submit an assessment more than 5 calendar days (120 hours) after the due date for that assessment (unless extension or exemption previously agreed).

Failure to complete an assessment task

You are expected to complete all assessment tasks for your courses. In some courses, there will be a minimum pass mark required on a specific assessment task (a “hurdle task”) due to the

need to assure clinical competency.

Where a hurdle task is applicable, additional information is provided in the assessment information on your course Moodle page.

Feedback on assessments

Feedback on your performance in assessment tasks will be provided to you in a timely manner. For assessment tasks completed within the teaching period of a course, other than a final assessment, feedback will be provided within 10 working days of submission, under normal circumstances.

Feedback on continuous assessment tasks (e.g. laboratory and studio-based, workplace-based, weekly quizzes) will be provided prior to the midpoint of the course.

Any variation from the above information that is specific to an assessment task will be clearly indicated in the course and assessment information provided to you on your course Moodle (or Open Learning) page.

Faculty-specific Information

Additional support for students

The university offers a wide range of support services that are available for students. Here are some links for you to explore.

- The Current Students Gateway: https://student.unsw.edu.au
- Academic Skills and Support: https://student.unsw.edu.au/academic-skills
- Student support: https://www.student.unsw.edu.au/support
- Student Wellbeing, Health and Safety: https://student.unsw.edu.au/wellbeing

Mind Smart Guides are a series of mental health self-help resources designed to give you the psychological flexibility, resilience and self-management skills you need to thrive at university and at work.

- Mind Smart Guides: https://student.unsw.edu.au/mindsmart
- Equitable Learning Services: https://student.unsw.edu.au/els
- Guide to studying online: https://www.student.unsw.edu.au/online-study

Most courses in UNSW Medicine & Health use Moodle as your Learning Management System. Guidance for using UNSW Moodle can be found on the Current Student page. Difficulties with Moodle should be logged with the IT Service Centre.

- Moodle Support: https://student.unsw.edu.au/moodle-support

The IT Service Desk is your central point of contact for assistance and support with remote and on-campus study.

- UNSW IT Service Centre: https://www.myit.unsw.edu.au/services/students

Course evaluation and development

At UNSW Medicine & Health, students take an active role in designing their courses and their overall student experience. We regularly seek feedback from students, and continuous improvements are made based on your input. Towards the end of the term, you will be asked to participate in the myExperience survey, which serves as a source of evaluative feedback from students. Your input to this quality enhancement process is valuable in helping us meet your learning needs and deliver an effective and enriching learning experience. Student responses are carefully considered, and the action taken to enhance educational quality is documented in the myFeedback Matters section of your Moodle (or Open Learning) course page.

School-specific Information

Laboratory or practical class safety.

For courses where there is a laboratory or practical-based component, students are required to wear the specified personal protective equipment (e.g., laboratory coat, covered shoes, safety glasses) indicated in the associated student risk assessments. The student risk assessments will be provided on the course Moodle page and must be read and acknowledged prior to the class.

Master of Science in Health Data Science courses

Courses in the Master of Science in Health Data Science are hosted through Open Learning. Additional resources are available on the Health Data Science Student Hub.

Recording of lectures, tutorials and other teaching activities (MSc. HDS only)

Lectures, tutorials and other teaching activities may be recorded. Students should be advised that they are consenting to the recording by their enrolment in the course or participation in the activity. The purpose of audio and video recordings is to enhance the student experience by supporting engaged learning in an online teaching environment and ensure equitable access to all course resources for our students. If you have concerns about accessing course recordings, or being recorded, please contact the Course Convenor.

School Contact Information

School guidelines on contacting staff:

Course questions

All questions related to course content should be posted on Moodle (or Open Learning) or as directed by your Course Convenor.

In cases where email communication with course convenors is necessary, we kindly request the following:

- Use your official email address for any correspondence with teaching staff.
- We expect a high standard of communication. All communication should avoid using short-hand or texting language.
- Include your full name, student ID, and your course code and name in all communication.

Our course convenors are expected to respond to emails during standard working hours of Monday to Friday, 9am-5pm.

Administrative questions

If you have an administrative question about your program of study at the School please submit

your enquiry online at UNSW Ask Us.

Complaints and appeals

Student complaints and appeals: https://student.unsw.edu.au/complaints

If you have any grievances about your studies, we invite you to address these initially to the Course Convenor. If the response does not meet your expectations, you may then contact:

School Grievance Officer, Prof Nick Di Girolamo (n.digirolamo@unsw.edu.au)

Health Data Science programs: School Grievance Officer, Dr Sanja Lujic (s.lujic@unsw.edu.au)