



# GLOBAL SUMMER PROGRAMME 2024

## COR2222 ARTIFICIAL INTELLIGENCE FOR SOCIAL TRANSFORMATION

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### A. COURSE DESCRIPTION

The notion that Artificial Intelligence (AI) has the capacity to transform the way society operates has long been a part of popular culture. Androids have been dreaming of electric sheep since 1968, and Tom Cruise was already arresting pre-criminals in 2002. With the explosion of data available to governments and companies, and cloud computing platforms making supercomputing power widely available, science fiction and reality have never been closer. However, the true capabilities and limitations of AI are often poorly understood, as some predict doom, while others promise the moon. Modern AI techniques have the capacity to improve the way organisations operate, improving decision-making and increasing human and environmental wellbeing, but also carry the potential to cause harm if used irresponsibly or ignorantly.

Accessible to technical and non-technical students alike, this course will introduce you to key techniques, showing how they can be flexibly applied to a range of problems, from using game theory to intercept wildlife poachers, through machine learning models for crime prediction, to risk-aware logistics scheduling. The course will guide you through the ethical implications of AI, considering the effects of biased data and the uncritical application of techniques. By the end of the course you will have a working understanding of the capacities and limitations of practical AI, equipping you to critically analyse new developments, and engage in responsible, informed decision-making in the workplace.

### B. LEARNING OBJECTIVES

By the end of the course, students will:

- Have an accurate understanding of the potential impact of AI and its ethics, and be able to apply the understanding to assess the ethical implications of applying AI to other domains.
- Be able to apply the problem-solving process of breaking down a problem and selecting appropriate AI techniques to apply to its resolution.
- Be able to explain a range of AI techniques for societal transformation. This will equip them to act as a bridge in the workplace between technical and non-technical colleagues, to foster common understanding.

**C. PRE-REQUISITES / REQUIREMENTS / MUTUALLY EXCLUSIVE COURSES (IF ANY)**

This course does not require any pre-requisite.

**D. ASSESSMENT METHODS / GRADING DETAILS**

Type of Assessment	Weight
Individual assessments <ul style="list-style-type: none"> <li>• Class participation (10%)</li> <li>• Quiz (30%)</li> <li>• Reflections (30%)</li> </ul>	70%
Group Project <ul style="list-style-type: none"> <li>• Project final presentation (15%)</li> <li>• Project poster/written explanation (15%)</li> </ul>	30%
<b>Total</b>	<b>100%</b>

**E. ACADEMIC INTEGRITY**

All acts of academic dishonesty (including, but not limited to, plagiarism, cheating, fabrication, facilitation of acts of academic dishonesty by others, unauthorized possession of exam questions, or tampering with the academic work of other students) are serious offences.

All work (whether oral or written) submitted for purposes of assessment must be the student's own work. Penalties for violation of the policy range from zero marks for the component assessment to expulsion, depending on the nature of the offense.

When in doubt, students should consult the instructors of the course. Details on the SMU Code of Academic Integrity may be accessed at <http://www.smuscd.org/resources.html>.

**F. ACCESSIBILITY**

SMU strives to make learning experiences accessible for all. If students anticipate or experience physical or academic barriers due to disability, please let the instructor know immediately. Students are also welcomed to contact the university's disability services team if they have questions or concerns about academic provisions: [DSS@smu.edu.sg](mailto:DSS@smu.edu.sg).

Please be aware that the accessible tables in the seminar room should remain available for students who require them.

**G. INSTRUCTIONAL METHODS AND EXPECTATIONS**

Instructional Method	Expectations
Lecture: Total 12	Student must attend and participate in the seminar-room lectures
In class individual and team activities/discussions	Discussions will be graded for participation. The purpose is to share ideas and develop deeper understanding of materials.
Group Project	Group presentation, 1 poster/written explanation

## H. CLASSROOM POLICIES

As required per Singapore Management University

## I. IMPORTANT ASSIGNMENT DATES

1.	Reflection 1	Lesson 1-6
2.	Quiz	Lesson 7
3.	Reflection 2	Lesson 7-11
4.	Team Presentations:	Lesson 12

## J. CONSULTATIONS

- Class general communication is via Teams
- Consultation scheduled via email / Teams

## K. RECOMMENDED TEXT / READING LIST / CASE STUDIES LIST

- Class notes, articles, and references

LESSON PLAN	
LESSONS	TOPICS
LESSON 1 Tuesday 25 June	Overview and Introduction – What is AI?
LESSON 2 Wednesday 26 June	AI Methods: Machine Learning 1
LESSON 3 Thursday 27 June	AI Methods: Machine Learning 2
LESSON 4 Tuesday 2 July	AI Case Studies: Public Health & Wellbeing
LESSON 5 Wednesday 3 July	AI Methods: Decision-making & Agents
LESSON 6 Thursday 4 July	AI Methods: Game Theory AI Case Studies: AI and the Environment
LESSON 7 Tuesday 9 July	Guest Lecture Quiz (30%) Reflection 1 due (15%)
LESSON 8 Wednesday 10 July	AI Methods: Optimization
LESSON 9 Thursday 11 July	AI Case Studies: Law Enforcement
LESSON 10 Tuesday 16 July	Social Transformation Snapshots Project Group Formation, Initial brainstorming
LESSON 11 Wednesday 17 July	Group Project research and design
LESSON 12 Thursday 18 July	<ul style="list-style-type: none"> <li>• Project presentations and submissions (30%)</li> <li>• Peer reviews</li> <li>• Reflection 2 due (15%)</li> </ul>