



COURSE INFORMATION

Course Number: MGT 853
Course Title: Artificial Intelligence: Strategy + Marketing
Term and Year: Spring-2 2022

Class Meeting Time, Day: **Section 01:**
Mon / Wed 2:40 pm – 4:00 pm, Evans Hall 4210

CONTACT INFORMATION

Professor(s)	TA(s)
Name: Vineet Kumar Office Location: 5455 Telephone Number: 203.436.9657 E-mail Address: vineet.kumar@yale.edu Office Hours: By Appointment	Hortense Fong (01) hortense.fong@yale.edu Seung Yoon Lee (01) seungyoon.lee@yale.edu

Review Sessions: *As Needed*

COURSE MATERIALS

Textbook(s): None required
Recommended Books: Instructor will provide required book chapters via Canvas.
Readings: *See Detailed Outline of Class Sessions*
Software: *Excel may be used for assignments and project if needed.*

COURSE DESCRIPTION AND OBJECTIVES

Disclaimer: Syllabus is tentative. Please check latest version on Canvas by “Last Updated” date.

Course Description:

Artificial Intelligence is a general-purpose technology which has the potential to transform many aspects of business and society. In business, the impact ranges from commonplace predictive improvements at one end of the spectrum to opportunities for creating entirely new markets at the other. As background, the course will briefly introduce students to Artificial Intelligence / Machine Learning methods comprising of Unsupervised, Supervised and Reinforcement Learning. Through a combination of lectures and case studies, we will learn how to integrate AI into decision making, focusing on the strategic choices firms face in developing and using AI / ML. We will seek to understand how consumers, decision-makers other stakeholders evaluate decisions made by AI systems and are impacted by it. We will examine the state-of-the-art in explainable and interpretable AI, which aim to make black-box decisions more transparent. Finally, the course will also explore issues at the intersection of AI and Society including fairness and bias, which have proved especially challenging to address.

Logistics: The course will be taught **in-person only** (there is no virtual option as per SOM policy), unless public health concerns require YSOM to change course.

Audit Policy: This is an elective class designed for graduate students at the Yale School of Management. Please note that this *course will not be available for audit*, and students must be officially registered to attend.

Course Objectives:

The course is designed to provide a strategic perspective on AI technologies, but given the broad scope of the topic, I've had to make tradeoffs in selecting areas to examine in depth. My goal is that a student who completes the course successfully should be able to:

- Understand the basics of AI and ML models
- Determine how AI objectives connect to business objectives and strategy
- Understand a framework for decisions on AI / ML and identify the major resources required to implement the chosen AI strategy
- Develop a perspective regarding new emerging AI technologies and how they could reshape markets and firms
- Evaluate the broader societal implications of AI, and how different stakeholders (consumers, employees, firms, regulators, investors and others) are impacted by AI.

Note: This is NOT a computer science ML course. We will briefly review selected ML algorithms; we should not expect a comprehensive or in-depth examination of how these algorithms work.

COURSE REQUIREMENTS

Course Component	Details	Points
Assignments (Individual and Group)	See details below	50
Attendance and Class Participation (Individual)	Every class	30
Paper Presentation (Group)	See details below	25

Please see the Yale SOM Grading Policy at <http://portal.som.yale.edu/page/grading-policy>

Class Participation: AI Strategy is a class where significant value is derived from in-class discussions. You will be encouraged, and likely cold-called to air your views in class. Evaluation will be on the quality and to a lesser degree, the number of comments you make. Please come prepared to each class by reading the assigned material and thinking carefully about the preparation questions.

DESCRIPTIONS OF ASSIGNMENTS/PROJECTS/PROBLEM SETS

You will be required to form a group of **3-4** people within your section for the group assignment and project. If you need help forming a group, the TAs will help. Note that assignment groups CAN overlap with project groups.

Project: After forming a group, students select a research paper to present at the end of the course.

We will provide a curated list of academic papers representing cutting edge or seminal research in ML / AI to select from.

Note: Students may also check with the instructor if they want to do a custom project. In all cases, groups will receive the same presentation time in class.

Note: The same or similar project(s) cannot be submitted or presented in multiple courses.

You will need to set up a meeting with the professor / TAs to go over the paper and obtain feedback and approval. We will send out links to help schedule meeting times during predefined blocks.

NOTE: Project selections must be submitted on canvas by Apr 11, 2022.

The final project deliverable will be a slide deck designed to be presented at the end of the course. Students do not need to turn in a report separately. Students will be evaluated on both the presentation and the content in the slides. The instructor will discuss project details in class.

Projects will be evaluated on the following aspects: (a) clarity of thought and presentation, (b) depth of analysis, (c) insights obtained and (d) value to audience. Depth is valued more than a comprehensive but superficial presentation. Interpreting the model, results, and learnings in your own words is valued, rather than merely repeating what the paper says.

Assignments: Group assignments can be done in groups of 3-4 students, whereas **Individual assignments** must be submitted by each person. Please indicate the contribution of each person for group assignments. Everyone in the group is expected to make a significant contribution to **each** assignment, so please budget time to discuss assignments. Late assignments will not be graded. *No extensions or exceptions to any due dates should be expected.* We don't have any makeup assignments for missed classes or assignments. However, if you have an extenuating circumstance, please contact **AASL**, and they will determine an appropriate course of action.

Project Presentation assignment (Group): All groups should be prepared to present in class. It is important to submit **Slides** through Canvas, so we can load them up well before class.

Assignments: Your assignment submissions must be **4 pages or fewer** (excluding any exhibits), in 11 or 12-point text font and double-spaced text. Please convert everything to one PDF file before submission and submit through Canvas. Please name the file in the following format. For Group assignments,

A1_Group04.pdf (Assignment 1, Group 4)

Similarly, for individual assignments, **A1_LastName_FirstName.pdf**

Details of Assignments will be posted on Canvas. Due dates are listed in "Outline of Class Sessions" below. If you have any questions at all, please don't hesitate to check with the professor or TAs.

YALE SOM POLICIES

Please see the Yale School of Management Bulletin at <http://www.yale.edu/printer/bulletin/htmlfiles/som/rights-and-responsibilities-of-students.html> for Rights and Responsibilities of students and for information on requesting a course recording.

Laptop/Device Policy

Usage NOT allowed without the express permission of the instructor. There will be a couple of sessions where laptops will be useful in class, and the instructor will mention these in class.

OUTLINE OF CLASS SESSIONS (All Dates 2022)

Session	Date	Topic	Assignment Due (9 am)
Module 1: AI Foundations (Algorithm Overview)			
1	Mar 28 (Mon)	Course Introduction	
2	Mar 30 (Wed)	Supervised and Unsupervised Algorithms	
3	Apr 04 (Mon)	Deep Learning and Reinforcement Learning (In-class exercise)	A1 (Group)
Module 2: AI Decision Making Framework			
4	Apr 06 (Wed)	Economics of AI AI \leftrightarrow Business Strategy	
5	Apr 11 (Mon)	Decision Making with AI Interpretable and Explainable AI Interfacing Human Knowledge \leftrightarrow AI	A2 (Individual) Project Selection Due
Module 3: AI Applications			
6	Apr 13 (Wed)	Zebra Medical (CASE)	
7	Apr 18 (Mon)	Uber (CASE)	A3 (Individual)
8	Apr 20 (Wed)	Data Science and ML in Practice (Guest Speaker)	
Module 4: AI and Society			
9	Apr 25 (Mon)	Algorithmic Fairness and Bias	A4 (Individual)
10	Apr 27 (Wed)	Responsible AI (Guest Speaker)	
11	May 02 (Mon)	Capstone Application	
Student Presentations & Course Wrap			
12	May 04 (Wed)	Presentations	Submit Slides (All groups)
13	May 09 (Mon)	Presentations & Course Wrap	

Note: *The content of some sessions may change.*