

ISOM 5310 - Transforming Business with Artificial Intelligence 2024-2025 Fall Term (the 2nd half)

General Information

- Course Type: Flexible Core
 - No. of Credits: 2 (Letter Grades)
 - Teaching Mode: Face-to-Face
 - > Time: Tuesday 19:00-22:20 (Oct 29 - Dec 17)
 - > Venue: Business School Central
 - Instructor: Prof. Jean Wang Email: jeanwang@ust.hk (Office hour by appointment)
 - Teaching Assistant: Miss Anson Wan Email: imanson@ust.hk (Office hour by appointment)
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Course Description

The use of artificial intelligence (AI) becomes an emerging trend in various business areas and industries for its exponential power to transform operations, customer experiences, and business management. Harnessing AI's potential for competitive performance requires a new type of professionals, who understand how machine learning (ML) models work, what they can deliver and how they can be applied into various business context.

This course is intended to **bridge the gap between business strategy and technical knowhow**. Through guest speaker talks, lectures, case discussion, and experiments in real-world data sets, students will gain a broad understanding of ML and AI concepts, explore the state-of-art use cases of AI and ML technology in business, identify new opportunities and potential risks brought by AI, and recognize how to effectively communicate with the data science and machine learning team.

Course Intended Learning Outcomes

On successful completion of the course, students will be able to:

- Understand the core technical attributes of ML and AI
 - Identify current AI development trends
 - Connect business insights to technological possibilities of AI
 - Navigate the ethical and societal implications of AI projects
 - Facilitate effective communication between technical and managerial teams
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Assessments and Weighting (tentative)

- Class Preparation + Participation* (30%)

Students are required to attend all lectures* and actively participant in class. The score is linked to the class participation and quality of contribution to the open discussion. Students are also expected to complete certain steps in Azure labs for the preparation of performing AI experiments in class.

* Attendance policy complies with the MBAO's. Prior notification to the instructor and the MBA office (mmbaft@ust.hk or mmbap@ust.hk) is required for any absence.

- Individual Assignment (30%)

In the lab sessions, students will be provided with some real-world business datasets and a set of instructions to create resources essential for training a machine learning model on the cloud. Students must complete certain steps before the class and bring their work to class to finish the task. Following the class, there will be

individual assignments which consist of follow-up questions related to the in-class exercises. The details each assignment will be released in the lab notes later.

- **Final Examination (40%)**

The final examination will take place in week 8 and will be conducted online using online Canvas Quiz. Details regarding the logistics of the final exam will be announced later.

Teaching Schedule (tentative)

Guest talks will be arranged in some of the weeks. Please refer to Canvas announcement for the updated schedule. Case discussion may also be conducted inside the class if time permits. Any prior-reading will be announced earlier on Canvas.

WK	Class Topic	Lab
Week 1 <i>Oct 29</i>	Introduction to Artificial Intelligence and Machine Learning <ul style="list-style-type: none"> - Business trend, technology trend, job market, AI project development cycle, major types of machine learning models 	<i>No Lab</i>
Week 2 <i>Nov 5</i>	AI for Financial Service <ul style="list-style-type: none"> - Supervised learning and evaluation - Technology: classification, regression 	Lab1 - Credit Card Default Prediction
Week 3 <i>Nov 12</i>	AI for Human Resource Management <ul style="list-style-type: none"> - Unsupervised learning and evaluation - Technology: clustering, anomaly detection - <i>Guest Speaker: Mr. Mike Cheung (Microsoft HK)</i> 	Lab2 - Employee Retention Analysis by Clustering
Week 4 <i>Nov 19</i>	AI for Sales & Marketing <ul style="list-style-type: none"> - Recommendation engines, Time series forecast - Technology: collaborative filtering, content-based filtering - <i>Guest Speaker: Mr. Ronald Lok (Microsoft HK)</i> 	Lab3 - Bike Rental Demand Forecast by Regression
Week 5 <i>Nov 26</i>	AI for Customer Service <ul style="list-style-type: none"> - Natural language processing - Technology: recurrent neural network (RNN), large language models (LLM) 	Lab4 - Financial News Sentiment and Entity Recognition
Week 6 <i>Dec 3</i>	AI for Supply Chain Management <ul style="list-style-type: none"> - Computer vision - Technology: convolutional neural network (CNN), generative adversarial network (GAN), generative AI 	Lab5 - Image Classification by Azure Custom Vision and Python Deployment
Week 7 <i>Dec 10</i>	AI Project Risks and Operations <ul style="list-style-type: none"> - Responsible AI principles - MLOps (Machine Learning Operations) practices - Technology: self-supervised learning transfer learning, knowledge distillation, explainable AI, privacy preserving machine learning - <i>Guest Speaker: Mr. Fred Sheu (Microsoft HK)</i> 	<i>No Lab</i>
Week 8 <i>Dec 17</i>	Final Examination	

References

- Microsoft: AI Business School
<https://www.microsoft.com/en-us/ai/ai-business-school>
- Microsoft: Machine Learning Crash Course
<https://aischool.microsoft.com/en-us/machine-learning/learning-paths/ml-crash-course>
- Cases | Harvard Business Publishing Education
<https://hbsp.harvard.edu/cases/>
- State of AI Report 2024
<https://www.stateof.ai/>
- Stanford University – AI Index Annual Report 2024
<https://aiindex.stanford.edu/report/>
- McKinsey: The State of AI in 2023: Generative AI's Breakout Year
<https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year>
- McKinsey Survey: The State of AI in Early 2024: Gen AI Adoption Spikes and Starts to Generate Value
<https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai>