

ISOM5240: Deep Learning Business Applications with Python

L1: 19:00 - 22:20, 2, 9, 16, 23, 27, 30 Sept. and 7, 21 October

Venue: Central

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Learning Outcomes

By the end of this course, you will be able to:

1. Model business problems logically (PILO: 2, 3, 5)
2. Develop programming solutions to solve business problems (PILO: 2, 3, 5, 7)
3. Write computer programs with common programming practices (PILO: 2, 3, 5)
4. Identify and fix logical and runtime errors in computer programs (PILO: 2, 3, 5)

Course description

Deep Learning (DL) represents a highly promising approach to developing applications in Artificial Intelligence (AI). Its capacity to effectively train on large, unstructured historical datasets and accurately predict outcomes positions it as an exceptionally valuable tool across various business domains, including finance, marketing, customer service, and information security. Furthermore, the intrinsic neural network architecture of DL empowers it to outperform existing non-AI systems.

This course has been meticulously designed to introduce students to the Python programming language, with a specific focus on developing DL-based business applications. Throughout this course, students will cultivate a comprehensive understanding of both current and future trends in DL, equipping them to adeptly design and develop DL-based applications tailored for the business sector.

Python naturally emerges as the optimal choice for DL-based business application development, owing to its ability to establish high-level abstractions and optimized frameworks that form the bedrock of successful DL implementation. Moreover, Python readily supports GPU-accelerated

computing environments and offers an array of practical DL libraries, rendering it an indispensable tool for professionals operating within this domain.

Use of generative AI

Students are permitted to utilize generative artificial intelligence (AI) tools exclusively for enhancing programming tasks within this course. Nonetheless, students are obligated to duly acknowledge and credit any employment of generative AI. In the context of producing video presentations, employing generative AI tools is strictly prohibited for students.

- Leveraging ChatGPT, individuals can effortlessly generate content devoid of grammatical errors. As a result, during assessment, we presuppose that the content is devoid of any grammatical blunders.
- During the grading process, our emphasis is on two key aspects: "Proficiency in Python" and "Understanding of Business and User Requirements."

We anticipate students to acquire coding skills by independently employing ChatGPT. For instance, when seeking additional practice and examples, ChatGPT can provide valuable assistance.

Teaching approach

The teaching approach employed in this course is founded upon the concept of sustained, deep learning, achieved through the application of acquired knowledge via case studies and various assessments. Lecture sessions are carefully structured to actively engage students in the learning process through pre-readings, in-class discussions of questions, cases, and videos, as well as reflective discussions of personal views.

In addition to lectures, lab sessions offer an interactive environment for students to immerse themselves in application development, providing practical, hands-on experience and the opportunity to apply techniques taught in lectures.

Assessment scheme

Evaluation and grading constitute intrinsic components of any university course. Nevertheless, the most pivotal assessment lies in the students' self-evaluation. Did the course present novel and valuable concepts and skills? Did it prompt a shift in perspectives concerning oneself, collaborative work, and organizational dynamics? If such transformations occurred, the students' endeavors in the course have been truly meaningful.

The final grade distribution will be determined based on the following percentages, which will be used to evaluate the course objectives:

Components	Percentage of the grade
A. Lab Assignment	20%
B. Group Project – Business App	25%
C. Group Project – Model	15%
D. Group Project – Expected Results	10%
E. Group Project – Coding	20%
F. Group Project – Documentation and Presentation	10%
TOTAL:	100%

A. Lab Assignment (20%):

There is only **ONE** individual lab assignment. The deadline will be announced in the class.

B. Group Project – Business App (25%):

The "Business Application" section of the rubric evaluates how well students define clear, measurable, and practical objectives, address significant business challenges with innovative deep learning applications, and develop a fully functional, user-friendly, and impactful business application.

C. Group Project – Model (15%):

The "Model" criterion assesses students on their ability to choose the most appropriate models. It considers the efficiency of the model in optimizing resources while maintaining performance, the effectiveness of the model in demonstrating exceptional accuracy and solving the business problem, and the suitability of the chosen model in addressing the specific business problem, reflecting a deep understanding of the problem space.

D. Group Project – Expect Results (10%):

In the "Expected Results" category, students excel when they fully meet their project objectives and deliver outcomes that surpass user expectations. Additionally, they demonstrate the potential

of their solution by achieving exceptional results, showcasing both the effectiveness and impact of their work.

E. Group Project – Coding (20%):

In the coding category, students who utilize Python effectively demonstrate a deep understanding of the language, along with creativity in their approach. Their design and implementation processes are not only logical and efficient but also innovative. Additionally, their code operates flawlessly, having undergone thorough testing and error handling to ensure its reliability.

F. Group Project – Documentation and Presentation (10%):

For the Documentation and Presentation category, students are evaluated on their ability to produce comprehensive documentation that adheres to guidelines and thoroughly explains all aspects of their work. Additionally, their presentation should be clear and engaging, effectively communicating all key points, with the quality of the video also being considered in the grading.

Arrangement for Group Project

The course includes a group project that must consist of no more than two students per group. The project details are provided in a separate file. On the final day of the course, selected groups are required to present their project either through a video presentation or in-person, depending on the situation and our arrangement. All groups must submit a video presentation, and failure to do so will result in a deduction of 10% of their mark.

Late Submission: Late submissions within 3 hours will result in a 30% mark deduction. Submissions more than 3 hours late will not be accepted.

Attendance Requirement

MBA Attendance Policy

- **Attendance**
 - **Absent for 25% of a course, i.e. 2/8 OR 1/4 sessions = 1/3 grade deduction (A- > B+).**
 - *Note: On grade roster remark column submission to ARO, include "1/3 grade deduction due to attendance issue"*
 - **Absent for > 25% of course = "F" grade**
 - No online accessibility (i.e. zoom) to any students in face-to-face courses. Virtual attendance is only eligible for Digital MBA courses. If you receive any special request, you may reject it or pass it to the MBA Office for handling.
- **Punctuality policy**
 - **Late arrival and early departure may be considered as absent, subject to instructor's decision**
 - For online classes, students' cameras must remain on for the duration of the session for participation and interaction.
Camera turned off for 15 minutes or longer during a session can be considered absent, subject to the instructor's decision
 - Students should contact the instructor and TA, copying the MBAO to report the absence prior / as soon as they know, along with valid justifications and proof.
 - *Any unauthorized/unreported absence may result in an "F" grade for the course directly, subject to the instructor's decision.*

Student learning resources

[Course Website](#)

Students are strongly encouraged to regularly monitor our Canvas site for continuous updates pertaining to the course content and other pertinent information throughout the duration of the course.

Provisional Course Schedule: (Kindly refer to the course website for the most up-to-date schedule and reading materials, as dates and locations are subject to possible modifications.)

Week	Date	Time	Topics	Remarks
1	2 Sep	19:00-22:20	Intro Course, Intro DL	
2	9 Sep	19:00-22:20	Python Basics + Datasets	
3	16 Sep	19:00-22:20	DNN + Implementation	Assignment due at 15:00 on 20 Sep
4	23 Sep	19:00-22:20	Transformers Basics + Pipeline	
5	27 Sep	19:00-22:20	Business Application with Pipeline	
6	30 Sep	19:00-22:20	Business Application with Own Dataset	
7	7 Oct	19:00-22:20	Deep Learning Business Applications	Project submission due at 17:00 on 19 Oct (Sat.)
8	21 Oct	19:00-22:20	Project presentation	

Contact Details for Instructor and TA

Prof. Kwok's office is located in room LSK4080, and he extends a warm invitation for you to visit during his office hours or at your convenience for any queries you may have. For urgent concerns, feel free to reach out via email (jkwok@ust.hk) or phone (2358-7652); however, he does emphasize that email is the preferred mode of communication as he frequently monitors it. Additionally, the Teaching Assistant (TA) assigned to this course is available to address inquiries related to grading, attendance, assignments, and any administrative matters.

Academic honesty

Upholding academic integrity stands as a fundamental principle within our university community. Any breach of integrity undermines the foundation of our learning environment and the essence of inquiry that is vital for the institution's effectiveness. I maintain a zero-tolerance stance towards cheating, and no exceptions will be entertained. Students found engaging in acts of cheating, plagiarism, or any form of academic dishonesty will face a reduction of their course grade by a minimum of one letter grade. Moreover, it is my responsibility to report any instances of unethical conduct or indications of dishonesty in this course to the University.

Please bear in mind the current university regulation: any occurrence of cheating, irrespective of its magnitude, will result in an "X" grade notation on the student's academic record, signifying that the grade was attained through dishonest means. This "X" grade will persist on the student's record until graduation. Should a student be caught cheating again and subsequently receive another "X" grade, they will be dismissed from the University.

Plagiarism encompasses the act of copying text or ideas from external sources without appropriate citation. Even if you rephrase the concept using your own words, citing the origin is necessary when utilizing someone else's idea. It is imperative to exercise extreme caution to prevent presenting someone else's work as your own. Proper citations are obligatory when incorporating external sources' ideas, arguments, or any content. Whether drawing from research or the Internet, it is mandatory to acknowledge the source, even if you employ the general notion rather than verbatim wording.

Learning environment

I wholeheartedly embrace feedback on my teaching during the entirety of the semester. I strongly encourage you to reach out to me or my TA whenever you have questions, suggestions, concerns, or if you seek advice. Your input is valued and will contribute to enhancing the learning experience. Feel free to contact us at your convenience.