Capital University of Economics and Business
Overseas Chinese College
Course Syllabus

Year and Semester	2026 Spring					
Course Name	AI4Value: Applications of AI in Financial Scenarios					
Course Code	2125002A					
Course Type	☑ General Education (Required) ☐ General Education (Elective) ☐ Basic Disciplinary Course ☐ Professional Course (Required) ☐Professional Course (Elective) ☐Professional Course (Expanded) ☐Professional Course (Advanced)					
Course Credits	2					
Course Hours	Total Class Hours	32	Lecture Hours	32	Experiment (Computer) Hours	0
Applicable object	☑ Freshman ☐ Sophomore ☐ Junior ☐Senior					
	☑ Business Administration (Accounting)					
	☑ Information Management and Information Systems (Data Governance)					
Prerequisites	Fundamental of Computer Science and Management Knowledge Fundamental of AI Knowledge					
Instructor	Jessie Tian					
Contact Information	Office: C217					
	Tele: (010)83951082					
	Email: tianjiangxue@cueb.edu.cn					
Office Hour	M: 11:35-12:20; TH: 11:35-12:20; 13:30-17:00;					
Learning Centre	M: 13:30-15:05; 18:00-20:00;					
Grade/Section	2025BA1/BA2/BA3/BA4/IT1/IT2					
Course Time/Place	T: 9:55-12:20/BA2/A102; 13:30-15:05/BA1,4/A202; 15:25-17:00/BA3/A104; W: 8:00-9:35/IT1,2/A202					
Textbook	Teacher self-design Slides					

Reference Book

1. Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, by Aurélien Géron. (Focuses on hands-on implementation of predictive models, such as stock price forecasting and customer credit scoring.)
2. Deep Learning, by Ian Goodfellow et al. (Focuses on understanding the theoretical foundations behind complex financial models, such as risk models and algorithmic trading strategies.)
3. Artificial Intelligence in Finance, by Yves Hilpisch. (Focuses on the intersection of financial quantitative analysis and AI, providing numerous Python code examples.)
4. Advances in Financial Machine Learning, by Marcos López de Prado. (Delves into the correct methodologies for applying machine learning given the unique characteristics of financial data, such as low signal-to-noise ratio and high overfitting risk.)

Course Description

This course provides a comprehensive introduction to the application of Artificial Intelligence, specifically machine

learning and deep learning, in the fields of finance and economics. The curriculum systematically explores how AI techniques can be leveraged to solve core financial problems, including quantitative trading, risk management, robo-advisory, credit assessment, and financial text analysis. The course bridges theory and practice; students will learn the complete pipeline from data acquisition and feature engineering to model building, strategy backtesting, and evaluation. Through in-depth case studies and project work based on real-world financial data, students will cultivate the interdisciplinary skills necessary to leverage AI for market insight, decision optimization, and financial risk management.

Student Learning Objectives

After completing this course, students will be able to:

Knowledge:

- Explain the fundamental principles of mainstream AI techniques (e.g., regression, classification, time series analysis, natural language processing) and their applicable scenarios in finance.
- Identify and interpret key AI application cases in the financial sector, such as high-frequency trading, credit approval, fraud detection, and sentiment analysis.
- Understand the unique challenges of applying AI in finance, including market efficiency, overfitting, black-box models, algorithmic fairness, and regulatory technology (RegTech).

Capability:

- Apply Python programming and core AI libraries (e.g., Scikit-Learn, TensorFlow, PyTorch, StatsModels) to process and analyze financial time-series data and unstructured text data.
- Construct and evaluate basic quantitative trading strategies or risk prediction models, validating them through backtesting with historical data.
- Analyze and present AI solutions from fintech companies, critically evaluating them from technical, business model, and ethical perspectives.

Mindset:

- Develop a critical perspective on the limitations of AI models in financial markets, particularly concerning model risk and overfitting.
- Cultivate an awareness of ethics, regulation, and responsible innovation in the design of financial products and algorithmic trading.
- Enhance skills in effective communication and collaboration within interdisciplinary teams (finance + technology) to complete projects.

Website Source

1. QuantConnect: https://www.quantconnect.com/ - A cloud-based platform for algorithmic trading, providing extensive financial data and backtesting engines.
2. Kaggle - Finance Datasets & Competitions: https://www.kaggle.com/ - Access real-world financial datasets and participate in related competitions, such as home price prediction and credit risk modeling.
3. Investopedia: https://www.investopedia.com/ - A quick reference for understanding and mastering financial, economic, and trading terminology and concepts.
4. GitHub - AI in Finance Awesome List: https://github.com/wilsonfreitas/awesome-quant - A curated list of awesome quantitative finance libraries, tools, and resources.
5. Financial Data APIs (e.g., Tushare, AkShare): For accessing A-share market and other financial product data.

Teaching Methods

This course contains online lectures, group discussions, homework, quizzes, presentation and final exam. Textbook content will be introduced first. Then real case and practice questions will be delivered to students as a way to test their understanding of the knowledge. This will require individual or group assignment in or after class.

Grade Criterion

Component	Weight	Description
Final Assignment	40%	A comprehensive project that integrates the knowledge and skills acquired throughout the course. Students will apply AI techniques to analyze a given problem, develop a solution, and present their findings in a structured format. Detailed requirements and evaluation criteria will be provided during the semester.
Online Learning	30%	Students are required to complete designated courses and quizzes on the online learning platform. Progress and performance will be automatically recorded by the system and counted toward the final grade. Specific platform instructions and completion deadlines will be announced in class.
Presentation	10%	The students will be divided into several groups to prepare a presentation. Each student is required to be involved in the presentation. The topics can be selected from the textbook or lectures. Each group need to finish a PPT related to the topic which is given and hand in the related resources to the teacher before the presentation. The percentage is : content50%+organization10%+language15%+performance25%
Participation	10%	Individuals will be asked to participate individually in questions during the semester. Students are required to meet with their teachers every week. Their performances should be counted in their participation.
Attendance	10%	Refer to attendance policy listed below
Total	100%	

Assessment of Student Performance

☞ ***Self-Study and Reading ability Practice***

Instructor will give out the chapters or the reference books to read and use class hours to have discussion; students should be able to show a proactive attitude and ability for self-study and reading. Knowledge and oral English will be elements of homework or presentation score.

☞ ***Homework***

Students should finish their homework by themselves. Copying from others will be treated as cheating and the homework scores will be lowered. Students should hand in all assignments on time. Late assignments will be accepted at the discretion of the instructor (i.e., when the student was ill or had an excused absence). Late assignments without reasonable proof will be reduced in score by 50%.

☞ ***Attendance***

Because the course covers a great deal of material, attending every class session is very important for performing well.

- Being late for 15 minutes or more is considered an absence.
- Five hours or above of unexcused absences will result in the lower level of the final grade by one grade band (e.g. from C – to D +). Any excused absence must be discussed directly with the teacher.
- Absence which is more than 1/3 of the total teaching hours will cause an F (a failing grade) directly, but students are welcome to continue attending classes.
- An incomplete grade (I) will be considered in case of medical or family emergencies.

☞ ***Participation***

- Students should participate in classes actively. Half of participation grade is determined by their presentation in class. They are encouraged to ask questions relevant to the subject and express their own opinions. Every student should respect the ideas, opinions, and questions of their classmates.
- Students should also use office hours to ask questions or talk with the instructor for good communication and effective learning.
- Frequent visiting the instructor and chatting in English during office hours is highly recommended.
- Any misbehavior and non-class related activities in class will result in the lower level of the participation grade, including ringing cell phones.
- All above behaviors will be solely evaluated by the instructor for scoring.

☞ ***Textbook***

Students must bring the textbook to class.

Topical Course Outline

Week	Date	Topics	Homework
1		Development Paradigm • Core formula: AI Technology × Finance & Economics Scenarios = Value Creation • Overview of four key scenario applications (Financial Services, Tax & Audit, Marketing Growth, Intelligent Governance) • Definition of Agent and four development elements • Introduction to “Coze” platform and case demonstration	• Register on Coze platform and experience official agents • Log in to Tuoling LLM platform and complete Chapter 1 online learning • Brainstorm potential agent project topics
2~6		Online Platform Learning Self-paced completion of designated modules (at least 6 modules)	Complete weekly platform quizzes(if any)
7		AI Programming Lesson 1: No-Code Web App Development • "Sandwich Structure" of web apps: Storage-Backend-Frontend • Collaborative relationships among web apps, agents, and workflows • Development "Five Steps": Requirements Analysis → Design → Development → Testing → Deployment • Hands-on: Develop and debug a "Financial Hotspot News Image Generator"	• Iterate and optimize the "Financial Hotspot News Image Generator" • Submit publicly accessible app URL to course platform • Complete related online platform modules
8		AI Agent Development • Core components of AI Agent: LLM + Planning + Memory + Tools + Action • AI Creation vs Low-Code Development • Case study: Mind Map Assistant, Intelligent Customer Service, Anti-Fraud Guardian • Introduction to workflow integration in agents (English Reading Learning Assistant)	• Replicate either "Anti-Fraud Guardian" or "English Reading Learning Assistant" case • Develop an AI Agent related to your major and submit a

			report • Complete related online platform modules
9		AI Programming and Automated Workflow Development (Part 1) • AI-Generated Workflow vs Traditional Workflow • Coze platform core architecture: Nodes, Connections, Data Flow • Hands-on: Build a "Web Page Summary Assistant" workflow • Detailed explanation of node configuration and parameter passing logic	• Replicate the "Web Page Summary Assistant" workflow • Design a blueprint for an AI workflow automation scenario • Complete related online platform modules
10		AI Programming and Automated Workflow Development (Part 2) • Workflow integration with external data: Plugin configuration and application • Hands-on: Build a "Stock Analysis" workflow • Prompt engineering and output control for LLM nodes • Workflow publishing and integration with Bot	• Replicate the "Stock Analysis" workflow and run successful tests • Design a workflow blueprint for another domain • Complete related online platform modules
11~15		Team Project Development and Guidance • Weekly team project progress reports and feedback • Targeted technical guidance and Q&A • Midterm project review and adjustment suggestions • Project testing, optimization, and refinement	• Submit weekly project progress reports • Advance project development according to plan • Prepare final presentation materials
16		Final Project Presentation and Course Summary • Team project presentations and defense • Judge feedback and interactive Q&A • Course summary and outstanding project recognition • Suggestions for further learning paths	• Submit final project report and code • Complete course feedback questionnaire

Note: *Some chapters or sections may leave for self-study, this is the students' duty to learn and understand, they may also be included in the quizzes or exams.*

A review in Chinese may be held during L.C. and O.H. in the semester.

Teacher's Office Hour

- The instructor's office hour is shown in the front of the office door.
- Students are suggested to use the instructor's office hour and learning center to ask questions or talk with the instructor once at least per week for good communication and effective learning, which is recorded in the students' participation.

- The time can be scheduled by instructors or students, or both.

Cheating and Plagiarism

Cheating is not tolerated. Any student caught cheating on a quiz; test or exam will be given a mark of zero (0) for the particular work. At the beginning of the semester the definition of plagiarism will be carefully explained, when any thoughts or writings of another person are used, they must be clearly identified (usually one uses quotation marks) and the source notes. **If any student is caught cheating on any homework assignment, the highest score the student can earn in that course is a "C".**

Important Dates

Midterm Test	**Week 9**
Final Exam	**Week 18 or 19（Refer to the notice of the Academic Affairs Office）**

Note: *This syllabus is tentative and may be changed or modified throughout the semester. All students will be notified and a new syllabus will be given.*

Instructor: _____ **Department Head: Prof. Jingning Li**