

Capital University of Economics and Business

Overseas Chinese College

Course Syllabus

Year and Semester	Fall					
Course Name	Introduction to Artificial Intelligence					
Course Code	2423012B					
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					
Instructor	Jessie Tian					
Contact Information	Office: C217					
	Tele: (010)83951082					
	Email: tianjiangxue@cueb.edu.cn					
Office Hour	M: 13:30-17:00; W: 15:25-17:00;					
Learning Centre	M: 18:00-20:00; M/W: 11:35-12:20;					
Grade/Section	2025BA					
Course Time/Place	M: 15:25-17:00/ A101					
Textbook	Artificial Intelligence: A Modern Approach (4th Edition), Stuart Russell & Peter Norvig					

Reference Book

1. Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow, Aurélien Géron
2. Deep Learning, Ian Goodfellow et al.

Course Description

This course provides a comprehensive introduction to the fundamental concepts, methods, and applications of Artificial Intelligence (AI). Students will explore key AI technologies including machine learning, neural networks, natural language processing, and computer vision. The course combines theoretical foundations with practical applications, emphasizing the integration of AI with business and management contexts. Through case studies, group projects, and hands-on practice, students will develop the ability to analyze, design, and evaluate AI-driven solutions.

Student Learning Objectives

After completing this course, students will be able to:

Knowledge:

- ♦ Explain core concepts and historical development of AI.
- ♦ Identify major AI techniques and their applications.
- ♦ Understand ethical and social implications of AI technologies.

Capability:

- ♦ Apply basic AI algorithms to solve real-world problems.
- ♦ Use Python and AI libraries (e.g., TensorFlow, Scikit-Learn) for prototyping.
- ♦ Analyze and present AI case studies in business contexts.

Mindset:

- ♦ Develop critical thinking and ethical reasoning regarding AI deployment.
- ♦ Foster teamwork and communication skills through collaborative projects.

Website Source

1. <https://www.khanacademy.org/computing/ai>
2. <https://www.coursera.org/specializations/ai>
3. <https://github.com/aimacode/aima-python>

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	20%	A cumulative final examination will be given based on all of the contents of the class. A minimum of 25% of the exam (5 of the 20%) will consist of questions utilizing the application of critical thinking.
Mid-Term Test	20%	A cumulative midterm examination will be given based on all of the contents of the first half of the class. A minimum of 25% of the exam (5 of the 20%) will consist of questions utilizing the application of critical thinking.
Homework	15%	Homework problems will be assigned throughout the term, including but not limited to: terminologies, research project, and reading assignments.
Quizzes	15%	There will be at least 2 quizzes during the semester. The purpose of the quizzes is to ensure that students keep up with the readings. It may also be used as a way to check the attendance. Quizzes will test your knowledge of both concepts and the application of those concepts.
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%	

Detailed Grade Computation

	Before Midterm	After Midterm
Attendance	5%	5%
Participation	5%	5%
Homework	5%	10%
Quizzes	5%	10%
Presentation		10%
Midterm test	20%	
Final exam		20%
Total	40%	60%

Grading Policy

A+ 97-100	A 93-96	A- 90-92	B+ 87-89	B 83-86	B- 80-82
C+ 75-79	C 70-74	C- 67-69	D+ 63-66	D 62-60	F 0- 59

Exam Schedule

Midterm Test: Oct.31-Nov.4

Final Exam: Jan.9-Jan.13

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		Course Introduction; What is AI? History and Ethics	
8		● Artificial Intelligence Module I Traditional natural language processing (NLP) applications and large language model (LLM) applications differ in several key aspects. 1. Define AI - Artificial Intelligence (AI) refers to the capabilities of learning, judging, and understanding akin to the human brain. 2. Two major characteristics of AI technology evolution? - The core has shifted from symbolic computation to closely application-linked machine learning; the basic algorithms have transitioned from precise reasoning to probabilistic inference. 3. What is the most effective method for AI? - Deep Neural Networks. 4. Who established the theory of deep learning? - Geoffrey Hinton. 5. What are the basic capabilities of AI? - Memory, computation, learning, discrimination, and decision-making. 6. Five aspects of the large model revolution? - Model scale, conversational ability, practical functionality, learning mechanisms, and content generation. 7. Four drivers of AI development? - Algorithms, computing power, data, and open-source.	Watch the corresponding online course and preview Module II.
9		● Artificial Intelligence Module II 1. The Core of Current Artificial Intelligence - Artificial Intelligence 2. The Three Pillars of Machine Learning - Computer, Data, Algorithm 3. What is Machine Learning? - It is the study of how to enable computer systems to acquire "knowledge" or "patterns" that improve the performance of intelligent functions (also known as models) through data, and to use the models for prediction or decision-making.	Watch the corresponding online course and preview Module III.

		4. The Three Elements of Machine Learning Algorithms - The form of the intelligent function model, the learning criterion, and the optimization algorithm. 5. What is an Intelligent Function? - A function with adjustable parameters, such as linear functions and Sigmoid functions. 6. Types of Machine Learning - Unsupervised Learning, Supervised Learning, Reinforcement Learning, Deep Learning. 7. Two Reasoning Methods in Machine Learning - Inductive Reasoning, Deductive Reasoning	
10		● Artificial Intelligence Module III 1. What are the components of a face recognition system? - Data preprocessing, feature extraction, and similarity calculation. 2. List several deep learning-based object detection algorithms. - Region-based algorithms: R-CNN; Object regression detection: SSD; Search-based object detection and recognition: AttentionNet; Anchor-free algorithms: CornerNet. 3. What are the key technologies in object detection? - Sliding window detectors; Selective search; Non-maximum suppression; Object tracking. ● Intelligent Audio Information Processing 1. What is the research objective of intelligent audio information processing? - To more effectively produce, transmit, store, retrieve, and apply audio information, focusing on the intelligence of audio information processing. 2. What are the main research contents of intelligent audio information processing? - Audio signal acquisition and preprocessing; audio information communication and storage; audio information recognition; audio information retrieval; audio information generation. 3. How is audio transformed into a digital form? - Through sensor collection, it is converted into a voltage signal, which is a continuously varying sound pressure wave, i.e., the voice wave. 4. What are the key factors in signal acquisition? - Sampling rate, sampling precision, bit rate, and the number of audio channels. 5. What are the main acoustic features of speech? - Fundamental frequency, energy, and duration. 6. Outline the MFCC feature extraction process. Multimodal Fusion and Applications in Artificial Intelligence	Summarize all the learned knowledge and draw the mind-map. Prepare for the AI competition.
11		● Employ AI big model platforms and resources to carry out related instructional experiments, curriculum designs, or academic contests through interface or API invocations.	
12		● Final Presentation	

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**

