

課程中文名稱 Title of Course in Chinese : **人工智慧**

課程英文名稱 Title of Course in English : **Artificial Intelligence**

應修系級 Major : **資訊管理研究所1 , 財務金融英語碩士學位學程1 , 財務金融英語碩士學位學程2 , 英語授課商學碩士學分學程 , 金融科技與量化金融學士學分學程 ,**

授課教師 Instructor : **戴敏育**

選修類別 Required/Elective : **選**

全半學年 Whole or Half of the Academic Year : **半學年**

學 分 Credit(s) : **3** 學分

時 數 Hour(s) : **3** 小時

教師網址 Instructor's Website : <http://web.ntpu.edu.tw/~myday/>

教師專長 Instructor's Specialty : **電子商務 (Electronic Commerce), 金融科技 (Financial Technology), 人工智慧 (Artificial Intelligence), 大數據分析 (Big Data Analytics), 資料探勘與文字探勘 (Data Mining and Text Mining)**

課綱附檔 Attachments :

先修科目 : **None**

Prerequisites : **None**

教學目標 :

1. 瞭解人工智慧基本概念與研究議題。
2. 具備人工智慧實務操作能力。
3. 進行人工智慧相關之資訊管理研究。

Course Objectives :

1. Understand the fundamental concepts and research issues of Artificial Intelligence.
2. Equip with Hands-on practices of Artificial Intelligence.
3. Conduct information systems research in the context of Artificial Intelligence.

本課程包含永續發展(SDGs)目標(→[點此瞭解永續相關目標](#)←) :

**SDG4 | 優質教育 (Quality Education)**

**SDG9 | 產業創新與基礎設施 (Industry, Innovation and Infrastructure)**

內容綱要 :

本課程介紹人工智慧基本概念、研究議題、與實務操作。課程內容包括人工智慧概論、人工智慧和智慧代理人、問題解決、知識推理和知識表達、不確定知識和推理、機器學習：監督式與非監督式學習、學習理論與綜合學習、深度學習、強化學習、深度學習自然語言處理、電腦視學與機器人技術、生成式人工智慧、人工智慧的哲學與倫理與人工智慧的未來、與人工智慧個案研究。

Course Outline :

This course introduces the fundamental concepts, research issues, and hands-on practices of Artificial Intelligence. Topics include Introduction to Artificial Intelligence, Artificial Intelligence and Intelligent Agents, Problem Solving, Knowledge, Reasoning and Knowledge Representation, Uncertain Knowledge and Reasoning, Machine Learning: Supervised and Unsupervised Learning, The Theory of Learning and Ensemble Learning, Deep Learning, Reinforcement Learning, Deep Learning for Natural Language Processing, Computer Vision and Robotics, Generative AI, Philosophy and Ethics of AI and the Future of AI, and Case Study on AI.

學生核心能力關連(Student's Core Competence) :

(八大核心能力為百分比；合計100%；Total 100%)

**財務金融英語碩士學位學程 113年 系核心能力：**

Communication: Each student will be able to demonstrate proficiency in oral and written communication. **5 %**

Teamwork: Each student will demonstrate the ability to work well in teams. **5 %**

Professionalism: Each student will have the ability to address and analyze business problems and provide suggestions to the related fields. **70 %**

Business values: Each student will be aware of sustainable and ethical issues and their implications. **20 %**

Global awareness: Each student will gain global awareness by participating in related activities. 10 %

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資訊管理研究所 113年 系核心能力：  
 資訊科技新知探索與系統開發應用 80 %  
 網路行銷企劃能力 10 %  
 論文寫作與獨立研究能力新知 10 %

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**校四大基本素養**  
**Four Fundamental Qualities**

專業 Professionalism		人際 Interpersonal Relationship		倫理 Ethics		國際觀 International Vision	
創意思考 與問題解 決 (Creative thinking and Problem- solving) 40 %	綜合統整 (Comprehensive and Integration) 30 %	溝通協調 (Communication and Coordination) 5 %	團隊合作 (Teamwork) 5 %	誠信正直 (Honesty and Integrity) 5 %	尊重自省 (Self- Esteem and Self- reflection) 5 %	多元關懷 (Caring for Diversity) 5 %	跨界宏觀 (Interdisciplinary Vision) 5 %

商學院學習目標(College Learning Goals)：  
 Ethics/Corporate Social Responsibility  
 Global Knowledge/Awareness  
 Communication  
 Analytical and Critical Thinking

系所學習目標(Department Learning Goals)：  
 Information Technologies and System Development Capabilities  
 Internet Marketing Management Capabilities  
 Research capabilities

教學進度(Teaching Contents)：

週別 (Weekly Schedule)	日期 (Date)	教學預定進度 (Tentative teaching schedule) (若有調整，依教師實際授課為準; Adjustments are made according to instructor's actual teaching schedule)	教學方法與教學活動 (Teaching methods and activities)
Week 1	20240910	Introduction to Artificial Intelligence	講授Lecture 討論Discussion
Week 2	20240917	Mid-Autumn Festival (Day off)	講授Lecture 討論Discussion 實習Practicum
Week 3	20240924	Artificial Intelligence and Intelligent Agents; Problem Solving	講授Lecture 討論Discussion 實習Practicum
Week 4	20241001	Knowledge, Reasoning and Knowledge Representation; Uncertain Knowledge and Reasoning	講授Lecture 討論Discussion 實習Practicum
Week 5	20241008	Case Study on Artificial Intelligence I	討論Discussion
Week 6	20241015	Machine Learning: Supervised and Unsupervised Learning	講授Lecture 討論Discussion 實習Practicum
Week 7	20241022	The Theory of Learning and Ensemble Learning	講授Lecture 討論Discussion 實習Practicum
Week 8	20241029	Midterm Project Report	討論Discussion

Week 9	20241105	Self-Learning	講授Lecture 討論Discussion 實習Practicum
Week 10	20241112	Deep Learning and Reinforcement Learning	講授Lecture 討論Discussion 實習Practicum
Week 11	20241119	Case Study on Artificial Intelligence II	討論Discussion
Week 12	20241126	Deep Learning for Natural Language Processing	講授Lecture 討論Discussion 實習Practicum
Week 13	20241203	Computer Vision and Robotics	講授Lecture 討論Discussion 實習Practicum
Week 14	20241210	Generative AI, Philosophy and Ethics of AI and the Future of AI	講授Lecture 討論Discussion 實習Practicum
Week 15	20241217	Final Project Report I	討論Discussion
Week 16	20241224	Final Project Report II	討論Discussion
彈性補充教學		<p>課程於16週內上完，彈性補充教學規劃如下：</p> <p><input type="checkbox"/> 問題討論 <input type="checkbox"/> 翻轉教學 <input type="checkbox"/> 展演實作 <input type="checkbox"/> 校外參訪</p> <p><input type="checkbox"/> 校內外各類演講/講座 <input type="checkbox"/> 線上作業 <input type="checkbox"/> 數位自學 <input type="checkbox"/> 課業輔導</p> <p><input type="checkbox"/> 遠距教學(同步) <input type="checkbox"/> 遠距教學(非同步) <input checked="" type="checkbox"/> 學生自主學習 <input checked="" type="checkbox"/> 其他</p> <p>Flexible supplementary teaching is not included in grade evaluation: Self-learning</p>	

評量方式(Evaluation Methods)：

課堂之前測(Pre-test) 0 %

課堂之隨堂測驗(Quiz) 0 %

期中考-筆試(Mid-Term Exam) 0 %

期末考-筆試(Final Exam) 0 %

個案分析報告(Case Report) 10 %

課堂參與(Class Participation) 10 %

個人報告(Individual Presentation) 60 %

團體報告(Group Presentation) 10 %

作業(Assignment) 10 %

其他評量方式(Other Evaluation Methods)

指定用書(Required Texts)：

Stuart Russell and Peter Norvig (2020), Artificial Intelligence: A Modern Approach, 4th Edition, Pearson.

參考書目(Reference Books)：

Numa Dhamani and Maggie Engler (2024), Introduction to Generative AI, Manning

Denis Rothman (2024), Transformers for Natural Language Processing and Computer Vision - Third Edition: Explore Generative AI and Large Language Models with Hugging Face, ChatGPT, GPT-4V, and DALL-E 3, 3rd ed. Edition, Packt Publishing

Ben Auffarth (2023), Generative AI with LangChain: Build large language model (LLM) apps with Python, ChatGPT and other LLMs, Packt Publishing.

Aurélien Géron (2019), Hands-On Machine Learning with Scikit-Learn, Keras, and TensorFlow: Concepts, Tools, and Techniques to Build Intelligent Systems, 2nd Edition, O'Reilly Media.

Steven D'Ascoli (2022), Artificial Intelligence and Deep Learning with Python: Every Line of Code Explained For Readers New to AI and New to Python, Independently published.

Nithin Buduma, Nikhil Buduma, Joe Papa (2022), Fundamentals of Deep Learning: Designing Next-Generation Machine Intelligence Algorithms, 2nd Edition, O'Reilly Media.

其他參考資料(Other References)：

『請遵守智慧財產權』及『不得非法複製及影印』

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