國立台灣科技大學 114學年 第2學期　課程大綱

Spring 2026 NTUST Course Outline

授課教師：賴源正

Instructor:Yuan-Cheng Lai

課程名稱：人工智慧

Course Title：Artificial Intelligence

2026/11/3

課程代號： MI4004701 Course Code 學分數： 3 Credits	必選修：選修/半學年 Required/Electve:Elective/Half Yr. 先修課程： Prerequisites
節次教室： Time/Location	T2(MA-303) T3(MA-303) T4(MA-303)
專業核心能力： Core Professional Competencies	
課程網址： Course Website	
課程宗旨： Course Objectives	Machine Learning is a key to developing intelligent systems and analyzing data in science and engineering. Machine learning engines enable smart technologies such as Siri, Kinect, or Google self-driving cars, to name a few. This course assumes that you know close to nothing about Machine Learning. Its goal is to give you the concepts, tools, and intuition you need to implement programs capable of learning from data. We will cover many techniques, from the simplest and most commonly used (such as Linear Regression) to some Deep Learning techniques that regularly win competitions. Rather than implementing our toy versions of each algorithm, we will be using production-ready Python frameworks: Scikit-Learn, TensorFlow, and Keras.
課程大綱： Outline of Lectures	Module 1：Basic ML -Linear Regression -Classification -Regulation + Diagnosis -Dimensionality reduction -Unsupervised Learning Module 2：Tree-based ML -Decision Trees -Random Forest -Gradient Boosting/XGBoost/LightGBM Module 3：Neural Networks -Neural Networks -CNN -RNN -GNN -LLM Module 4：XAI -Basic XAI：Model-agnostic vs Model-specific，Local vs Global explanation -XAI：SHAP/LIME -Image XAI Module 5：RL Module 6：Adversial Attacks/defense (optional)
授課方式： Method of Instruction	講授 Lecture：90% 分組討論 Group discussion：0% 案例研討 Case study：0%

	操做練習 Practical exercises：10% 講授 Lecture：%
教科書： Textbooks	
參考書目： References	
修課須知： Notice	
評量方式： Grading	Project (30%) Midterm Exam (30%) Final Report (40%) Roll call (5~10%)
備註說明： Notes	