# 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：呂志豪

Instructor:Shih-Hao Lu

課程名稱：數學決策模型與演化式演算法

Course Title：Mathematical Modeling and Evolutionary Algorithm

2026/11/3

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| 課程代號： MA5605701<br>Course Code<br>學分數： 3<br>Credits | 必選修：選修/半學年<br>Required/Electve:Elective/Half Yr.<br>先修課程：<br>Prerequisites |
| 節次教室：<br>Time/Location | M5(MA-405) M6(MA-405) M7(MA-405) |
| 專業核心能力：<br>Core Professional Competencies | 人工智慧輔助決策之程式設計 |
| 課程網址：<br>Course Website | |
| 課程宗旨：<br>Course Objectives | This course explores computational simulation and optimization decision models, focusing on heuristic and evolutionary approaches to solving complex problems. Students will learn key algorithmic principles, analyze efficiency, and apply optimization techniques to real-world decision-making challenges. Through theoretical discussions and hands-on practice, the course equips students with the skills to design and implement effective computational solutions. Course content includes: |
| 課程大綱：<br>Outline of Lectures | In this course, students will learn mathematical programming and optimization decision models to design the tool for solving practical decision making problems. Moreover, they will also learn the basic concept of Artificial Intelligent (AI) and the data-driven decision making concepts during the data collecting and analyzing process. The course topics include:<br>1. Computational Simulation<br>2. Linear and Nonlinear programming<br>3. Optimization Decision Model<br>4. Programming Using Python<br>5. Evolutionary Algorithm<br>6. Final Project Presentation |
| 授課方式：<br>Method of Instruction | 講授 Lecture：40%<br>分組討論 Group discussion：30%<br>案例研討 Case study：0%<br>操做練習 Practical exercises：30%<br>講授 Lecture：% |
| 教科書：<br>Textbooks | No |
| 參考書目：<br>References | Reading materials Will be assigned during classes. |
| 修課須知：<br>Notice | 2 Teaching Assistants |

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| 評量方式：<br>Grading | Class Participation 40%<br>Midterm Presentation 30%<br>Final Presentation 30% |
| 備註說明：<br>Notes | No |