# 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：Adhimoorthy

Instructor:Adhimoorthy Pra

課程名稱：特殊有機材料專論

Course Title：Special Topics on Organic Materials

2026/5/6

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| 課程代號： TX6103701<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 | T5(IB-506) T6(IB-506) T7(IB-506) |
| 專業核心能力：<br>Core Professional Competencies | |
| 課程網址：<br>Course Website | |
| 課程宗旨：<br>Course Objectives | Welcome to Special Topics on Organic Materials!<br>This course is designed to be simple and easy to learn the design, synthesis, characterization, and application of organic materials for high-tech uses. Emphasis is placed on classic examples of organic materials, including semiconducting polymers, liquid crystals, molecular devices, self-assembled systems, molecular machines, and surface functionalization, as well as recent advances from the literature. We will study how the structure of organic molecules dictates material properties and ultimately determines function. The main objective of the course is to learn structure–property–function relationships in carbon-based materials.<br><br>Course Objectives<br>- Introduce fundamental concepts of organic chemistry relevant to advanced materials.<br>- Explore the design, synthesis, and characterization of organic materials for modern applications.<br>- Understand how molecular structure influences material properties and functions.<br>- Examine both classic and emerging organic materials, including polymers, nanomaterials, and supramolecular systems.<br>- Develop critical thinking through literature analysis, presentations, and discussions. |
| 課程大綱：<br>Outline of Lectures | - Basic Concepts of Organic Chemistry<br>2–3. Introduction to High Carbon-Content Materials<br>- Carbon-Based Nanomaterials (Carbon Nanotubes, Graphene)<br>- Organic Polymers<br>- Liquid Crystalline Polymers / Organic Light-Emitting Devices<br>- Superconductors and Semiconductors<br>- Organic Solar Cells<br>- Supramolecular Assembly<br>- Organic Biomedical Materials<br>- Organic Energy Storage<br>- The Future of Organic Electronics<br>- Organic Membranes<br>- Surface Functionalized Materials<br>- Organic Porous Materials |

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| 授課方式：<br>Method of Instruction | 講授 Lecture：50%<br>分組討論 Group discussion：20%<br>案例研討 Case study：20%<br>操做練習 Practical exercises：10%<br>講授 Lecture：% |
| 教科書：<br>Textbooks | |
| 參考書目：<br>References | |
| 修課須知：<br>Notice | |
| 評量方式：<br>Grading | • Assessment I (Exam): 50 marks<br>• Presentation (Topic on Organic Material & Applications): 30 marks<br>• Attendance & Participation: 20 marks |
| 備註說明：<br>Notes | |