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

2026/11/3

課程代號： TX6103701 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	T5(IB-506) T6(IB-506) T7(IB-506)
專業核心能力： Core Professional Competencies	
課程網址： Course Website	
課程宗旨： Course Objectives	Welcome to Special Topics on Organic Materials! 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. Course Objectives - Introduce fundamental concepts of organic chemistry relevant to advanced materials. - Explore the design, synthesis, and characterization of organic materials for modern applications. - Understand how molecular structure influences material properties and functions. - Examine both classic and emerging organic materials, including polymers, nanomaterials, and supramolecular systems. - Develop critical thinking through literature analysis, presentations, and discussions.
課程大綱： Outline of Lectures	- Basic Concepts of Organic Chemistry 2–3. Introduction to High Carbon-Content Materials - Carbon-Based Nanomaterials (Carbon Nanotubes, Graphene) - Organic Polymers - Liquid Crystalline Polymers / Organic Light-Emitting Devices - Superconductors and Semiconductors - Organic Solar Cells - Supramolecular Assembly - Organic Biomedical Materials - Organic Energy Storage - The Future of Organic Electronics - Organic Membranes - Surface Functionalized Materials - Organic Porous Materials

授課方式： Method of Instruction	講授 Lecture：50% 分組討論 Group discussion：20% 案例研討 Case study：20% 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	• Assessment I (Exam): 50 marks • Presentation (Topic on Organic Material & Applications): 30 marks • Attendance & Participation: 20 marks
備註說明： Notes	