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：蔡孟霖

Instructor:Meng-Lin Tsai

課程名稱：奈米光電元件設計

Course Title：Design of Nano Optoelectronic Devices

2026/5/5

課程代號： TX6405701 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	M6(華夏恆毅樓D401) M7(華夏恆毅樓D401) M8(華夏恆毅樓D401)
專業核心能力： Core Professional Competencies	1. 具備基礎光電子理論基礎與材料工程專業知識之整合、創新能力。 2. 具備蒐集奈米材料文獻與分析能力及口頭報告分享之能力。 3. 具備執行相關專題研究及報告撰寫之能力。 4. 具備團隊分工之工作能力。
課程網址： Course Website	
課程宗旨： Course Objectives	This course aims to provide a brief review of the fundamental principles of optoelectronics and photonics. From practical approaches, students will also learn the unique optoelectronic properties of nanomaterials and how scientists or engineers utilize the properties for device applications.
課程大綱： Outline of Lectures	The outline of this course can be separated into two main topics. The first part of this course will be the review of fundamental knowledges of optoelectronics and photonics, which will be offered based on the textbook by the lecturer. The second part of this course will be the discussion of recent designs of nano-optoelectronics devices, which will be offered through group discussion. 1. Semiconductor Science and Light-Emitting Diodes 2. Photodetectors 3. 2D Materials Growth/Characterization/Device Design Lab 4. Written Standard Operating Procedures (SOP)/Experimental Results Teaching strategies: 1. Powerpoint Slides 2. Lab Experiment
授課方式： Method of Instruction	講授 Lecture：30% 分組討論 Group discussion：10% 案例研討 Case study：30% 操做練習 Practical exercises：30% 講授 Lecture：%
教科書： Textbooks	S. O. Kasap, Optoelectronics and Photonics, 2nd Ed., 2013, Prentice Hall
參考書目： References	Journal papers

修課須知： Notice	
評量方式： Grading	1. Attendance 30% 2. Midterm 35% 3. Final Report 35%
備註說明： Notes	This course is designed for students with various backgrounds who has basic knowledge of physics and optics.