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：梁鍵隴

Instructor:Chien-Lung Lian

課程名稱：愛克斯光繞射及結晶學

Course Title：X-ray Diffraction and Crystallography

2026/11/3

課程代號：TX5004701 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：W6(TR-212) W7(TR-212) W8(TR-212) Time/Location	
專業核心能力： Core Professional Competencies	
課程網址：https://moodle2.ntust.edu.tw/course/view.php?id=19512 Course Website	
課程宗旨： Course Objectives	X-ray Diffraction and Crystallography introduces fundamental concepts in X-ray diffraction & Crystallography. Students who take this course will learn about (1) Crystallography: Geometry and Structures of Crystals, (2) Crystallography: Indexing of Crystals, (3) X-ray Diffraction: Properties of X-rays, (4) X-ray Diffraction: Diffraction Theories, (5) X-ray Diffraction: Diffraction Methods, and (6) X-ray Diffraction: Intensities. There will also be practical XRD experiments in groups for students who take this course. This course will help the students apply XRD techniques and realize the basic principles of them.
課程大綱： Outline of Lectures	The following schedule may be rearranged as needed. W1. Introduction to the Course W2. Crystallography: Geometry and Structures of Crystals W3. Crystallography: Indexing of Crystals W4. X-ray Diffraction: Properties of X-rays & X-ray Diffraction: Diffraction Theories W5. Quiz W6. X-ray Diffraction: Diffraction Methods W7. X-ray Diffraction: Intensities W8. Review of the midterm exam W9. Midterm exam W10. Radiation safety training (invited talk by an industrial expert) W11. Group practical XRD experiments (1) -- Equipment W12. Group practical XRD experiments (2) -- Equipment W13. Group practical XRD experiments (3) -- Equipment W14. Group practical XRD experiments (4) -- Equipment W15. Group practical XRD experiments (5) -- Software W16. Group practical XRD experiments (6) -- Software
授課方式： Method of Instruction	講授 Lecture：60% 分組討論 Group discussion：0% 案例研討 Case study：0% 操做練習 Practical exercises：40% 講授 Lecture：%

教科書： Textbooks	Bernard Dennis Cullity and Stuart R. Stock, “Elements of X-Ray Diffraction,” 3rd Edition, Pearson.
參考書目： References	William D. Callister, Jr. and David G. Rethwisch, "Callister's Materials Science and Engineering, 10th Edition," Global Edition, Wiley.
修課須知： Notice	1. Teaching assistants will help the XRD experiment practices. 2. Office hours: Please feel free to email me anytime if you have questions.
評量方式： Grading	1. Quiz 20% (Open-book) 2. Midterm exam 50% (Closed-book) 3. Attendance 10% (Survey on the “Group practical XRD experiments” dates) 4. Homework (SOP of XRD experiments about equipment and software) 20% Note 1: The questions for exams will 100% come from the ppt slides. Note 2: The questions will be expressed in English, but the solutions to the questions can be answered in Chinese. Note 3: The exam will be fundamental and straightforward. So, please don't cheat!
備註說明： Notes	NA