國立東華大學

教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	晶體結構與繞射原理			學年/學期 Academic Year/Semester	113/2
課程名稱(英文) Course Name in English	Crystallography and Diffraction Theory				
科目代碼 Course Code	MS__30000	系級 Department & Year	學三	開課單位 Course-Offering Department	材料科學與工程學系
修別 Type	學程 Program	學分數/時間 Credit(s)/Hour(s)	3.0/3.0		
授課教師 Instructor	/黃常寧				
先修課程 Prerequisite					

課程描述 Course Description

The purpose of this course is to focus on two primary material topics, the crystal structure and the principles of diffraction. The content of this course includes lecture and lab work, and both theory and practical applications will be covered in this course.

課程目標 Course Objectives

介紹晶體結構學使學生了解結晶體的週期性，對稱性以及其對材料性質的影響，並教授
基本繞射原理。
Introduce crystallographic to students and enable them to understand the periodicity, symmetry and effects on material properties of crystal, and teach basic winding principles.

圖示說明Illustration ：● 高度相關 Highly correlated ○中度相關 Moderately correlated

授 課 進 度 表 Teaching Schedule & Content

週次Week	內容 Subject/Topics	備註Remarks
1	Introduction to crystallography and diffraction theory	
2	crystal lattices - fundamental concept	
3	Crystal symmetry	
4	Rotation symmetry	
5	The seven crystal systems	
6	Stereographic projection	
7	Internal structure of crystalline matter (I)	
8	Internal structure of crystalline matter (II)	
9	期中考試週 Midterm Exam	
10	The unit-cells of the fourteen Bravais lattices	
11	Interplanar and interzonal angles	
12	X-ray properties & X-ray tube structure	
13	X-ray diffraction theory	
14	Directions of Diffracted Beams	
15	Intensities of Diffracted Beams (I)	

16	Intensities of Diffracted Beams (II)	
17	學期評量	
18	學期成績登錄 彈性補充教學	

教 學 策 略 Teaching Strategies

☑ 課堂講授 Lecture ☐ 分組討論Group Discussion ☐ 參觀實習 Field Trip

☐ 其他Miscellaneous:

教 學 創 新 自 評 Teaching Self-Evaluation

創新教學(Innovative Teaching)

☐ 問題導向學習(PBL) ☐ 團體合作學習(TBL) ☐ 解決導向學習(SBL)

☐ 翻轉教室 Flipped Classroom ☐ 磨課師 Moocs

社會責任(Social Responsibility)

☐ 在地實踐Community Practice ☐ 產學合作 Industy-Academia Cooperation

跨域合作(Transdisciplinary Projects)

☐ 跨界教學Transdisciplinary Teaching ☐ 跨院系教學Inter-collegiate Teaching

☐ 業師合授 Courses Co-taught with Industry Practitioners

其它 other:

學期成績計算及多元評量方式 Grading & Assessments									
配分項目 Items	配分比例 Percentage	多元評量方式 Assessments							
		測驗會考	實作觀察	口頭發表	專題研究	創作展演	卷宗評量	證照檢定	其他
平時成績 General Performance	15%								出席率與課堂表現
期中考成績 Midterm Exam	30%	✓							
期末考成績 Final Exam	40%	✓							
作業成績 Homework and/or Assignments	15%						✓		
其他 Miscellaneous (_____)									

評量方式補充說明
Grading & Assessments Supplemental instructions

教科書與參考書目（書名、作者、書局、代理商、說明）
Textbook & Other References (Title, Author, Publisher, Agents, Remarks, etc.)

D. McKie and C. McKie, Essentials of Crystallography, Blackwell Scientific Publications, 1986.
B. D. Cullity, Elements of X-ray Diffraction, 3rd edition, Prentice Hall, 2001.
C. Klein and C. S. Hurlbut, Manual of Mineralogy, 20th edition, John Wiley & Sons, 1985.
余樹楨，晶體之結構與性質，渤海堂文化公司，1987。
趙珊茸主編，結晶學及礦物學，高等教育出版社，2004。
F. D. Bloss, Crystallography and Crystal Chemistry, Holt, Rinehart and Winston Inc., 1971.
C. Hammond, The Basics of Crystallography and Diffractions, 3rd edition, Oxford, 2009.
A. Putnis, Introduction to Mineral Sciences, Cambridge, 1992.

課程教材網址(含線上教學資訊,教師個人網址請列位於本校內之網址)
Teaching Aids & Teacher's Website(Including online teaching information. Personal website can be listed here.)

其他補充說明 (Supplemental instructions)