



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	材料相圖		學年/學期 Academic Year/Semester	112/1	
課程名稱(英文) Course Name in English	Phase Diagrams in Materials Science				
科目代碼 Course Code	MS_41140	系級 Department & Year	學四	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	/紀渥德				
先修課程 Prerequisite					
課程描述 Course Description					
The class provides a basic information on phase diagrams. The different types of binary and ternary phase diagrams will be discussed.					
課程目標 Course Objectives					
- to teach students understanding of phase diagrams - to give students opportunity for learning a basic knowledge of materials science					
系專業能力 Basic Learning Outcomes					課程目標與系專業能力相關性 Correlation between Course Objectives and Dept.'s Education Objectives
A	具備材料科學所需的物理、化學及數學的知識。Acquire required basic physical, chemical, and mathematic knowledge for materials science and engineering.				●
B	具備材料科學的專業知識，並能應用於解決工程上之問題。Acquire required professional knowledge for materials science and engineering, applicable in solving engineering problems.				
C	具備邏輯思考、實驗執行、報告撰寫與數據解釋之能力。Equipped with capabilities of logic thinking, execution of experiment, and data interpretation.				
D	具備專業道德及責任感，與良好的溝通及團隊合作的能力。Acquire professional morality and responsibility, and capability of quality communication and team cooperation				
E	具備適當的英文能力，應用於學習與交流。Acquire English capability used for learning and interaction.				●
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 phase diagrams.				
2	Systems with continuous solid and liquid solutions				
3	Systems with miscibility gap in solid phase				
4	Systems with eutectic reactions				
5	Systems with peritectic reactions				
6	Systems with monotectic reactions 1.				

7	Systems with monotectic reactions 2.	
8	Systems with intermediate phases	
9	期中考試週 Midterm Exam	
10	Ternary phase diagrams - introduction: isothermal and isoplethal sections, liquidus projection, 3D figures	
11	3 systems with continuous solid and liquid solution	
12	2 systems with continuous solid and liquid solution and eutectic system	
13	2 systems with continuous solid and liquid solution and peritectic system	
14	Ternary eutectic system	
15	Ternary peritectic system	
16	Miscibility gaps in ternary systems	
17	Ternary systems with intermediate phases	
18	期末考試週 Final Exam	

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 Industry-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	50%		✓						
期中考成績 Midterm Exam	20%		✓						
期末考成績 Final Exam	20%		✓						
作業成績 Homework and/or Assignments	5%		✓						
其他 Miscellaneous (_____)	5%		✓						

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.)

A. Prince, "Alloy Phase Diagrams" - available online.

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.)

<http://www.msiport.com/msi-research/free-tools/a-prince-alloy-phase-equilibria/>

A. Prince, "Alloy Phase Diagrams"

其他補充說明 (Supplemental instructions)