



教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	物理冶金(二)		學年/學期 Academic Year/Semester	112/2	
課程名稱(英文) Course Name in English	Physical Metallurgy (II)				
科目代碼 Course Code	MS_30300	系級 Department & Year	學二	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	/魏茂國				
先修課程 Prerequisite					
課程描述 Course Description					
讓學生在修習此一課程後，能對物理冶金的基本理論有全面的了解，以利材料科學知識的建立。					
課程目標 Course Objectives					
讓學生在修習此一課程後，能對物理冶金的基本理論有全面的了解，以利材料科學知識的建立					
This course will enable students to gain a comprehensive understanding of the basic theories of physical metallurgy for the building of knowledge in 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	Chapter 9: Solid solution (1)				
2	Chapter 9: Solid solution (2)				
3	Chapter 10: Phases				
4	Chapter 11: Binary phase diagrams (1)				
5	Chapter 11: Binary phase diagrams (2)				

6	Chapter 12: Diffusion in substitutional solid solutions (1)	
7	Chapter 12: Diffusion in substitutional solid solutions (2)	
8	Chapter13: Interstitial diffusion (1)	
9	期中考試週 Midterm Exam	
10	Chapter13: Interstitial diffusion (2)	
11	Chapter 14: Solidification of metals (1)	
12	Chapter 14: Solidification of metals (2)	
13	Chapter 15: Nucleation and growth kinetics (1)	
14	Chapter 15: Nucleation and growth kinetics (2)	
15	Chapter 16: Precipitation Hardening (1)	
16	Chapter 16: Precipitation Hardening (2)	
17	期末考試週 Final Exam	
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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	10%								出席
期中考成績 Midterm Exam	35%	✓							
期末考成績 Final Exam	35%	✓							
作業成績 Homework and/or Assignments	20%		✓						
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.)

1. R. Abbaschian, L. Abbaschian, and R. E. Reed-Hill, Physical Metallurgy Principles, 4th ed., Cengage Learning, 2010, 滄海書局
2. 劉偉隆、曾春風、張柳春、洪廷甫譯，物理冶金，SI制第四版，滄海書局

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.)

東華e學院

其他補充說明 (Supplemental instructions)