

 國立東華大學
教學計劃表 Syllabus

課程名稱(中文) Course Name in Chinese	物理冶金(一)			學年/學期 Academic Year/Semester	115/1
課程名稱(英文) Course Name in English	Physical Metallurgy (I)				
科目代碼 Course Code	MS__21000	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 1: The structure of metals (1)				
2	Chapter 1: The structure of metals (2)				
3	Chapter 2: Characterization techniques (1)				
4	Chapter 2: Characterization techniques (2)				
5	Chapter 3: Crystal binding (1)				

6	Chapter 3: Crystal binding (2)	
7	Chapter 4: Introduction to dislocation (1)	
8	Chapter 4: Introduction to dislocation (2)	
9	期中考試週 Midterm Exam	
10	Chapter 5: Dislocations and plastic deformation (1)	
11	Chapter 5: Dislocations and plastic deformation (2)	
12	Chapter 6: Elements of grain boundaries (1)	
13	Chapter 6: Elements of grain boundaries (2)	
14	Chapter 7: Vacancies	
15	Chapter 8: Annealing (1)	
16	Chapter 8: Annealing (2)	
17	期末考試週 Final Exam	

彈性 教學 規劃 Flexible Teaching Plan	請勾選(至少需勾選1 個項目): Please tick the box(es). (At least one item is required.): ☒ 問題討論 Problem-based Discussion ☐ 翻轉教學 Flipped Classroom ☐ 展演實作 Performance / Practical Presentation ☐ 校外參訪 Off-campus Visit ☐ 講座活動 Lecture / Seminar ☐ 線上作業 Online Assignments ☒ 自主學習 Self-directed Learning ☐ 課業輔導 Academic Support ☐ 實驗操作 Experiment Operation ☐ 遠距教學(同步) Distance Learning (Synchronous) ☐ 遠距教學(非同步) Distance Learning (Asynchronous) ☐ 其他(請填寫) Others (Please specify.): 備註: 本校學期週數自115 學年度起調整為17 週, 為符合1學分18 小時之原則, 請教師規劃安排彈性教學。 Note: From the 115th academic year, the semester will be 17 weeks. Please include flexible teaching activities to meet the required 18 hours per credit.
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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(含出席) General Performance (Attendance Record)	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									
General performance (平時成績): 10% Homework (作業): 20% Exams (考試): 70%									
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.)									
Reza Abbaschian and Lara Abbaschian, Physical Metallurgy Principles, 5th ed., Cengage Learning, 2026, 滄海書局(趙竣), 04-27088787 (0932-597322) 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(趙竣), 04-27088787 (0932-597322)									
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)									