Please consult Intellectual Property Rights before making a photocopy. Please use the textbook of copyrighted edition.

②國玄東華大學

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			
課程名稱(英文) Course Name in English	Physical Metallurgy (II)							
科目代碼 Course Code	MS_30300	系級 Department 學二 & Year		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 Credit(s)/Hou		3	3.0/3.0			
授課教師 Instructor	/陳俊良							
先修課程 Prerequisite								
All for late to Courage Degrament in								

課程描述 Course Description

物理冶金是探討金屬材料結構與其物理性質之關係的基礎材料領域,尤其著重在各種控制金屬材料物理性質之理論闡釋,為材料系重要的一門核心課程,對往後在先進材料(半導體材料,光電材料)之研習有極大的助益。物理冶金(I)教授關於金屬晶體構造與差排理論等內容。然而,物理冶金(II)承續了先前相關知識,並進一步涵蓋金屬退火過程,固容方式,相圖,原子擴散,金屬固化過程,成長動力學,析出硬化,鐵碳合金系統與非鐵金屬等,培養學生物理冶金之基礎概念並將所學與未來相關研究結合。

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.	0
В	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.	•
С	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	0
Е	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.	0

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	Annealing (I)	
2	Annealing (II)	
3	Solid Solutions	

4	Phase					
5	Binary Phase Diagrams					
6	Diffusion in Substitutional Solid Solutions (I)					
7	Diffusion in Substitutional Solid Solutions (II)					
8	Interstitial Diffusion					
9	期中考試週 Midterm Exam					
10	Solidification of Metals (I)					
11	Solidification of Metals (II)					
12	Nucleation					
13	Growth Kinetics					
14	Precipitaion Hardening					
15	The Iron-Carbon alloy system					
16	The hardening of steel					
17	Selected Nonferrous Alloy System					
18	期末考試週 Final Exam					
	教學策略 Teaching Strategies					
✓ 課堂講	授 Lecture					
其他Mis	scellaneous:					
	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)					
■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■ ■						
社會責任(Social Responsibility)						
在地實踐Community Practice						
跨域合作(Transdisciplinary Projects)						
一 跨界教學Transdisciplinary Teaching						
業師合授 Courses Co-taught with Industry Practitioners						
其它 othe:	r:					

學期成績計算及多元評量方式 Grading & Assessments									
配分項目	配分比例 Percentage	多元評量方式 Assessments							
Items		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(含出缺席) General Performance (Attendance Record)	15%		~						
期中考成績 Midterm Exam	30%	~							
期末考成績 Final Exam	30%	~							
作業成績 Homework and/or Assignments	25%		~						
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.)

Physical Metallurgy Principles 4th Edition by Reza Abbaschian (Author), Robert E. Reed-Hill (Author), 2008

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)