

國立中興大學材料科學與工程學系 (Department of Materials Science and Engineering, National Chung Hsing University)

教學大綱(Syllabus)-大學部

系務會議通過日期:2007/9/12 updated: 2010//08/26

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課程編碼 (course no.)	U004		學分 (credits)	3					
課程名稱	(中) 物理冶金 (上)								
(course name)	(Eng.) Physical Metallurgy (I)								
開課系所班級	材料科學與工程學系大學部二年級 授課教師 張守一 教授								
(dept. & year)	(Dept. of Mat. Sci. & Engr., Sophomore) (teacher) (Prof. Shou-Yi Cha								
課程類別	必修 授課語言	中文	開課學期	上學期					
(course type)	(Mandatory) (language	(Chinese)	(semester)	(Fall)					
課程簡述 (course description)	(中) 本課程講述物理冶金重排、塑性變形、晶界、空孔能建立材料科學之基礎知識課堂授課為主,並將另外安(Eng.) This course introduce structure of materials, anal deformation, grain boundaries stated in detail. The objective materials science for the stufuture researches. This cours will be arranged for the discussion.	、退火、固溶體 ,並進一步將所 排教學助理時間 s the important l ytical methods, s, vacancies, and e of this course dents and to fur e is a lecture-ori	及相等內容學與未來相 ,針對作業 knowledge of crystal bind nealing, solid is to establis ther connect ented course.	,做一詳細介紹,使學生 關研究結合。此課程為以 進行討論。 physical metallurgy. The ling, dislocations, plastic solutions and phases are h the basic knowledge of the knowledge to related					
課程目標 (course objectives)	(中) 1. 瞭解材料之結構與分析方 2. 瞭解材料內部之晶體鍵結 3. 瞭解材料內部之差排結構 4. 瞭解材料內部之差排結構 5. 瞭解材料內部之晶界與空 6. 瞭解退火處理與其相關影 7. 瞭解固溶體之結構及相之 8. 培養學生收集資料的能力 10. 培養同學書面報告的能力 11. 培養同學團隊合作精神 (Eng.) 1. To understand the structure of n 2. To understand the crystal bindin 3. To understand the plastic deform 5. To understand the plastic deform 5. To understand grain boundaries 6. To understand solid solution structure 7. To understand solid solution structure 8. To cultivate the capability of pro 9. To cultivate the capability of pro 9. To cultivate the capability of pro 10. To cultivate the spirit of teamwood 11. To cultivate the spirit of teamwood 12. To cultivate the spirit of teamwood 13. To cultivate the spirit of teamwood 14. To cultivate the spirit of teamwood 15. To cultivate the spirit of teamwood 16. To cultivate the spirit of teamwood 17. To cultivate the spirit of teamwood 18. To cultivate the spirit of teamwood 19. To cultivate the spirit of teamwood 10. To cultivate the spirit of teamwood 11. To cultivate the spirit of teamwood 12. To cultivate the spirit of teamwood 13. To cultivate the spirit of teamwood 14. To cultivate the spirit of teamwood 15. To cultivate the spirit of teamwood 16. To cultivate the spirit of teamwood 17. To cultivate the spirit of teamwood 18. To cultivate the spirit of teamwood 19. To cultivate the spirit of teamwood	與機制 與機制 凡結構 響 觀念 atterials and analytic g of materials heir mechanism in r nation of materials and vacancies in ma ent and its effects actures and phases oblem solving formation collection esentation	materials						



國立中興大學材料科學與工程學系 (Department of Materials Science and Engineering, National Chung Hsing University)

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17 Phases Homework	17	Pha	'hases				Homework					
18 Final Examination Final Examination	18	Fina	Final Examination				Examination					

(Department of Materials Science and Engineering, National Chung Hsing University)

學習評量方式

(evaluation)

(1) Midterm Examination: 40%

(2) Final Examination: 50%

(3) Homework: 10%

期中考試 (Midterm Examination):

期中考試之目的主要在於評量學生對課堂講授資料的了解程度,培養同學課後複習的習慣以及思考問題的能力,並且作為課程內容調整之依據。

期末考試 (Final Examination):

期末考試之目的主要在於評量學生對課堂講授資料的了解程度,培養同學課後複習的習慣以及思考問題的能力,並且作為課程內容調整之依據。

作業 (Homework):

針對課程章節安排作業,其主要目的在於提供學生自我學習的機會,可讓學生更加熟悉課程內容,並培養學生蒐集整理資料以及分析解決問題的能力,同時可培養學生撰寫報告的能力。

教科書(書名、作者、書局、代理商、說明)

(textbook)

"Physical Metallurgy Principles", R.E. Reed-Hill and R. Abbaschian, 3rd edition, PWS Publishing Co., 1994.

參考書目(書名、作者、書局、代理商、說明

(other references)

課程教材(教師個人網址請列在本校內之網址。)

(teaching aids & teacher's website)

Power Point Files

http://www.mse.nchu.edu.tw/



與學系教育目標之關聯性(材料系)

(relation to educational objective of materials engineering department)

1. 提供材料性質、製程與應用及跨領域知識與訓練

To provide interdisciplinary know-how and training on materials properties, processing, and applications

2. 培育具獨立思考、創新與實作能力之材料科技人才

To train materials technology students for independent thinking, innovation, and practical skills

3. 培養團隊合作精神與溝通協調整合能力

To cultivate the spirit of teamwork and the capacity of integrated cooperation

4. 建立多元價值與國際觀

To inculcate multifarious values and cosmopolitan worldview

5. 強化綠色材料科技教育

To implement educational programs in eco-materials technology

與學系教育核心能力之關聯性(材料系)

(relation to educational core abilities for materials engineering department)

(A) 運用數學、科學及材料工程知識能力

Ability to apply knowledge of mathematics, science, and materials engineering

(B) 設計與執行材料實驗及分析數據之能力

Ability to design and conduct experiments, as well as analyze data

(C) 執行材料工程實務所需之技術與能力

Ability to use techniques and skills for materials engineering practices

(D) 製程整合及及元件實作之能力

Ability to integrate process and make devices

(E) 溝通協調之能力與團隊合作之精神

Ability to communicate effectively and cultivate the spirit of teamwork

(F) 獨立思考及解決問題之能力

Ability to think independently and solve problems

(G) 培養國際觀及認識綠色材料對全球環境的影響

Cultivation of cosmopolitan worldview and understanding effects of eco-materials on global environment

(H) 終身學習之習慣與能力

Ability to cultivate life-long learning habit

(I) 瞭解材料工程人員的社會責任與專業倫理

Understanding materials engineers' social responsibility and professional ethics



課程內涵達成學系【核心能力】比對資料(大學部)

	核心能力								
	A	В	C	D	Е	F	G	Н	I
授課進度與內容	運學學料知力數科材程能	設執料及數能對行實分據力與材驗析之	執料實需術力	製合元作力程及實能	溝調力隊之湖。與合精	獨考決之思解題力	培際認色對環影養觀識材全境響國及綠料球的	終習慣力	瞭料人社任業解工員會與倫材程的責專理
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Crystal Structure	1	1	0	0	0	1	0	1	0
The Structure of Metals – Standard Projections	1	1	0	0	1	1	0	1	0
Analytical Methods – X-Ray Diffraction	1	1	1	0	0	1	0	1	1
Analytical Methods – Microscopy	1	1	1	0	1	1	0	1	1
Crystal Binding	1	1	0	0	1	1	0	1	0
Introduction to Dislocations – Dislocation Structures	1	1	0	0	0	1	0	1	0
Introduction to Dislocations- Stress Field and Strain Energy	1	1	0	0	1	1	0	1	0
Dislocations and Plastic Deformation – Slip	1	1	0	0	0	1	0	1	0
Midterm Examination	1	1	0	0	0	1	0	1	0
Dislocations and Plastic Deformation – Plastic Deformation	1	1	0	0	1	1	0	1	0
Grain Boundaries – Stress Field and Energy	1	1	0	0	0	1	0	1	0
Grain Boundaries – Twist and Tilt Boundaries	1	1	0	0	1	1	0	1	0
Vacancies	1	1	0	0	1	1	0	1	0
Annealing – Recovery and Recrystallization	1	1	1	0	0	1	1	1	0
Annealing – Grain Growth	1	1	1	0	1	1	1	1	0
Solid Solutions	1	1	1	0	1	1	1	1	0
Phases	1	1	1	0	1	1	1	1	0
Final Examination	1	1	0	0	0	1	0	1	0
總計(%)	100%	100%	33%	0%	56%	100 %	22%	100%	11%

1. 所有必修課均須填寫此表。 註:

- 2. 矩陣中請填入關聯性; 1表示相關,0表示無相關。
- 3. 學系教育目標項次請依據表1填寫。