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# ②國玄東華大學

## 課 網 Course Outline

#### 材料科學與工程學系學士班

中文課程名稱 Course Name in Chinese	材料動力學概論				
英文課程名稱 Course Name in English	Introduction to Kinetics in Materials				
科目代碼 Course Code	MS_31300	班 別 Degree	學士班 Bachelor's		
修別 Type	學程 Program	學分數 Credit(s)	3. 0	時 數 Hour(s)	3. 0
先修課程 Prerequisite	無				

#### 課程目標 Course Objectives

材料動力學是解釋各種材料形成與製造所需要的基本知識。目的是使修習者獲得這些基本知識後,能夠有基礎而對各種材料現象能提出動力學上的理論基礎。

Introduction to Kinetics in Materials is the basic knowledge needed to explain the formation and manufacture of various materials. The goal is to provide a foundation for students to acquire this basic knowledge and to develop a theoretical basis of dynamics for various material phenomena.

### 系教育目標 Dept.'s Education Objectives 奠定理論基礎 1 Set the theoretical foundation 訓練實用技能 Train the practical skill 培養優質人格 3 Form the positive cher 啟發創新思 Promote creative thinking 開展國際視野 5 Develop global vision 課程目標與系專業能 力相關性

系專業能力 Basic Learning Outcomes	Correlation between Course Objectives and
basic bearining outcomes	Dept.'s Education Objectives
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.	•

	具備材料科學的專業知識,並能應用於解決工程上之問題。					
В	Acquire required professional knowledge for materials science					
	and engineering, applicable in solving engineering problems.					
	具備邏輯思考、實驗執行、報告撰寫與數據解釋之能力。					
C	Equipped with capabilities of logic thinking, execution of					
	experiment, and data interpretation.					
	具備專業道德及責任感,與良好的溝通及團隊合作的能力。					
D	Acquire professional morality and responsibility, and	$\bigcirc$				
	capability of quality communication and team cooperation					
Е	具備適當的英文能力,應用於學習與交流。					
L	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						
	課程大綱					
Course Outline						
材制	科缺陷的種類、形成與缺陷間的交互作用、固體表面能與物理性質間的關係、	· 固態擴				
散之	之原理及應用、Fick's law、Darken's law、擴散係數與溫度的關係與實驗	<b>儉方法、相變化</b>				
的成核與成長、Spinodal相變化、反應動力學及速率決定步驟等。						
Types of material defects, interaction between formation and defects, relationship						
bet	between solid surface energy and physical properties, principles and applications of					
	solid-state diffusion, Fick's law, Darken's law, relationship between diffusion					
1	efficient and temperature and experimental methods, nucleation and					
change, Spinodal phase change, reaction kinetics and rate determination steps, etc.						
資源需求評估(師資專長之聘任、儀器設備的配合・・・等)						
Resources Required (e.g. qualifications and expertise, instrument and equipment, etc.)						
本所師資						
Teachers of MSE department.						
課程要求和教學方式之建議						
Course Requirements and Suggested Teaching Methods						
課堂講授為主。						
Classroom lectures.						
	其他					
Miscellaneous						