



課 綱 Course Outline  
材料科學與工程學系學士班

中文課程名稱 Course Name in Chinese	材料機械性質				
英文課程名稱 Course Name in English	Mechanical Behaviors of Materials				
科目代碼 Course Code	MS_20900	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					
課程目標 Course Objectives					
讓學生在修習此一課程後，能對材料機械性質有深入的了解，以利日後就業與研究工作的進行。 This course provides students with an thorough understanding of the mechanical properties of materials for future employment and research.					
系教育目標 Dept.'s Education Objectives					
1	奠定理論基礎 Set the theoretical foundation				
2	訓練實用技能 Train the practical skill				
3	培養優質人格 Form the positive cher				
4	啟發創新思 Promote creative thinking				
5	開展國際視野 Develop global vision				
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

#### 課程大綱

#### Course Outline

基礎彈性力學與基礎塑性力學、單晶塑性變形、差排理論、強化機構、潛變、疲勞性質、硬度、磨耗(性質)、破壞力學簡介、破壞韌性的量測、脆性和塑性材料機械性質之測試及分析。

Basic elasticity and basic plasticity, single crystal plastic deformation, dislocation theory, strengthening mechanism, creep, fatigue properties, hardness, abrasion (properties), introduction to fracture mechanics, measurement of fracture toughness, testing and analysis of mechanical properties of brittle and plastic materials.

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.)

以具有所開課程專長之教師擔任授課；資料整理所需之電腦、影印機；討論所需之投影機、幻燈機等教學設備

Teachers with expertise in the courses offered; computers for data organization, copy machines, projectors.

#### 課程要求和教學方式之建議

#### Course Requirements and Suggested Teaching Methods

以指定教材按預訂進度進行教學。教學以講授及討論為主，必要時以相關文獻資料加以補充。

The course will be taught according to the scheduled of the assigned materials. Teaching is based on lectures and discussions, supplemented by relevant literature when necessary.

#### 其他

#### Miscellaneous