課程規劃/大綱

編號	課程名稱	上課時間/備註	授課教師	課程大綱	學分數
1	光電材料與元件	週一 2/17~6/23 (18:30~21:20)	薛顯宗老師	1.前言(第 1 週) 2.材料之基本結構(第 2.3 週) 3.材料之電子性質(第 4.5 週) 4.材料之光學性質(第 6 週) 5.發光及雷射二極體材料(第 7.8 週) 6.期中考(第 9 週) 7.檢光器材料(第 10.11 週) 8.光纖材料與光纖放大器(第 12.13 週) 9.光學鍍層材料(第 14.15 週) 10.積體光學材料(第 16.17 週) 11..期末考(第 18 週)	3 學分(54 小時)
2	輕金屬材料製程	週一 2/17~6/16 (18:30~21:20)	汪俊延老師	1. Introduction to light alloys(第 1.~3 週) 2. Physical metallurgy of aluminium alloys(第 4~6 週) 3. Wrought aluminium alloy(第 7~9 週)Presentation about light metal materials 4. Cast aluminium alloys(第 10~12 週) 5. Magnesium alloys(第 13~15 週) 6. Titanium alloys(第 16~18 週) Final report	3 學分(54 小時)
4	相變化	週二 2/18~6/17 (18:30~21:20)	張立信老師	1. 相與相變化簡介 Introduction Phase and phase transformations 2. 熱力學 Thermodynamics 3. 晶體化學與結晶學 Crystal Chemistry and Crystallography 4. 界面 Interfaces 5. 相變化速率 (動力學) Velocity of Phase Transformation (Kinetics) 6. 孕核 Nucleation 7. 相變化產物成長 Growth of Transformation Products 8. 液固相變化 (凝固) Liquid-Solid Phase Transformation (Solidification) 9. 離相分解 Spinodal Decomposition 10. 麻田散相變化 Martensitic Transformation 11. 薄膜氣相沈積 Vapor Deposition of Thin Films	3 學分(54 小時)

編號	課程名稱	上課時間/備註	授課教師	課程大綱	學分數
5	非晶形材料	週三 2/19~6/18 **(18:30~21:20)**	何永鈞老師	1. Overall Introduction 2. Amorphous materials – Overview 3. Glass – Structure and fabrication 4. Glass – Optical and mechanical properties 5. Glass – Electrical properties and chemical resistance 6. Glass – Applications (Midterm presentation) 7. Amorphous semiconductors – Growth process 8. Amorphous semiconductors – Optical and electrical properties 9. Amorphous semiconductors – Applications 10. Metallic glass – Theories of metallic glass formation 11. Metallic glass – Magnetic and mechanical properties 12. Metallic glass – Applications(Midterm presentation) 13. Final presentation	**3 學分(54 小時)**
6	繞射原理	週四 2/20~6/19 **(18:30~21:20)**	曾文甲老師	1. Introduction: History of X-Ray The continuous and characteristic spectrum 2. Filters：Production of X-ray、Detection of X-ray 3. Crystal lattices：Miller Indices and Reciprocal Lattices 4. Crystal Systems：Symmetry Operation and Point Groups 5. Bragg's Law：Diffraction Methods 6. Scattering Theories ：Structural Factor Calculations (1) 7. Structural Factor Calculations (2) 8. Other Factors that may contribute to diffraction ntensity 9. Diffraction from real samples: crystallite size, residual strains, amorphous samples 10. Diffractometry (1) 11. Diffractometry (2) 12. Phase identification: methods and practices 13. Phase identification: lab demonstration 14. Determination of crystal structure 15. Precise parameter measurements 16. Structure of polycrystalline aggregates 17. Stress measurement 18. Concluding remarks	**3 學分(54 小時)**

編號	課程名稱	上課時間/備註	授課教師	課程大綱	學分數
7	**電子顯微鏡原理**	週六 2/22~6/21 **(9:10~12:00)**	武東星老師	1. Microscopy with light and electrons I 2. Microscopy with light and electrons II 3. Electron-specimen interactions: processes and detectors I 4. Electron-specimen interactions: processes and detectors II 5. The electron microscope family I 6. The electron microscope family II 7. Specimen preparation for electron microscopy I 8. Specimen preparation for electron microscopy II 9. Midterm exam 10. The interpretation and analysis of micrographs I 11. The interpretation and analysis of micrographs II 12. Analysis in the electron microscope I 13. Analysis in the electron microscope II 14. Specialised EM- and other microscopical and analytical techniques I 15. Specialised EM- and other microscopical and analytical techniques II 16. Examples of the use of electron microscopy I 17. Examples of the use of electron microscopy II	**3 學分(54 小時)**