碩士學分班第 32 期(110 學年度第一學期)課程大綱表

上課時間/地點	課程名稱	授課教師	課程大綱	學分數
110/9/6~111/1/8 每週一 **18:20~21:00**	高等物理冶金	汪俊延老師	01. To understand the structure of materials and dislocations 02. To understand the plastic deformation of materials 03. To understand grain boundaries and vacancies in materials 04. To understand annealing treatment and its effects 05. To understand solid solution structures and phase diagrams 06. To understand the diffusion in solid solutions 07. To understand the nucleation and growth in solidification and precipitation 08. To understand deformation twinning and martensite reactions 09. To cultivate the capability of problem solving 10. To cultivate the capability of information collection 11. To cultivate the capability of presentation 12. To cultivate the spirit of teamwork	**3** 學分 **(54** 小時**)**
110/9/6~111/1/8 每週二 **18:20~21:00**	陶瓷材料與製程	曾文甲老師	01. Introduction 02. Ceramics structure (1) 03. Ceramics structure (2) 04. Ceramics processing and ceramic products 05. Ceramic raw materials and characterizations 06. Powder route –pre-forming processes(1) 07. Powder route –pre-forming processes(2) 08. Powder route –pre-forming processes(3)	**3** 學分 **(54** 小時**)**

			09. Powder route –dry and wet forming process (slip casting and rheology) 10. Powder route –wet forming process: fundamentals in surface chemistry 11. Powder route –wet forming process: fundamentals of interparticle forces in liquid 12. Exam week（Midterm written exam） 13. Powder route –wet forming process: tape casting and other novel colloidal processes 14. Powder route –wet forming process: injection molding and extrusion 15. Powder route –post-forming processes 16. Liquid route –sol gel, gel casting, etc. 17. Vapor route –deposition methods, Sintering 18. Exam week（Final written exam）	
110/9/6~111/1/8 每週三 **18:20~21:00**	金屬材料與製程	吳威德老師	1.課程介紹 2.序論 3.金屬材料總論/報告 4.鐵和鋼 5.鋼的熱處理 6.碳鋼 7.合金鋼 8.工具鋼 9.期中考 10.鑄鐵,鑄鐵的熱處理	**3 學分** **(54 小時)**

			11.鑄鐵的種類 12.鋼的表面硬化 13.滲碳與滲氮 14.非鐵金屬材料 15.其他金屬合金 16.複合材料 17.機械工業用主要複合材料 01. 18.期末考	
110/9/6~111/1/8 每週六 **9:10~12:00**	固態熱力學	張立信老師	01. The First Law of Thermodynamics 02. The Second Law of Thermodynamics 03. Statistical Thermodynamics 04. Auxiliary Function 05. The Third Law of Thermodynamics 06. Heat Capacity, Enthalpy, Entropy 07. Heat Capacity, Enthalpy, Entropy 08. Some Relations Between Thermodynamic Quantities 09. Some Relations Between Thermodynamic Quantities 10. Midterm Exam 11. Free Energy of Heterogeneous Reactions 12. Free Energy of Heterogeneous Reactions 13. Solutions 14. The Quasichemical Approach to Solutions 15. Equilibrium Between Phases of Variable Composition 16. Equilibrium Between Phases of Variable Composition 17. Free Energy of Binary Systems	**3** 學分 **(54** 小時**)**

			18. Final Exam	