

碩士學分班第 26 期(107 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
107/9/10~108/1/11 每週一 18:20~21:00	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 18. Final Exam	3 學分 (54 小時)
107/9/10~108/1/11 每週二 18:20~21:00	繞射原理	曾文甲老師	01. Introduction: History of X-Ray. The continuous and characteristic spectrum. 02. Filters.	3 學分 (54 小時)

			Production of X-ray. Detection of X-ray. 03. Crystal lattices. Miller Indices and Reciprocal Lattices. 04. Crystal Systems. Symmetry Operation and Point Groups. 05. Bragg's Law. Diffraction Methods. 06. Scattering Theories. Structural Factor Calculations (1) 07. Structural Factor Calculations (2) 08. Other Factors that may contribute to diffraction. Intensity. 09. 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.	
107/9/10~108/1/11	陶瓷材料與製程	劉恒睿老師	01. Introduction	3 學分

<p>每週三</p> <p>18:20~21:00</p>			<p>02. Ceramics structure (1)</p> <p>03. Ceramics structure (2)</p> <p>04. Ceramics processing and ceramic products</p> <p>05. Ceramic raw materials and characterizations</p> <p>06. Powder route –pre-forming processes(1)</p> <p>07. Powder route –pre-forming processes(2)</p> <p>08. Powder route –pre-forming processes(3)</p> <p>09. Powder route –dry and wet forming process (slip casting and rheology)</p> <p>10. Powder route –wet forming process: fundamentals in surface chemistry</p> <p>11. Powder route –wet forming process: fundamentals of interparticle forces in liquid</p> <p>12. Exam week (Midterm written exam)</p> <p>13. Powder route –wet forming process: tape casting and other novel colloidal processes</p> <p>14. Powder route –wet forming process: injection molding and extrusion</p> <p>15. Powder route –post-forming processes</p> <p>16. Liquid route –sol gel, gel casting, etc.</p> <p>17. Vapor route –deposition methods, Sintering</p> <p>18. Exam week (Final written exam)</p>	<p>(54 小時)</p>
<p>107/9/10~108/1/11</p> <p>每週四</p> <p>18:20~21:00</p>	材料缺陷	呂福興老師	<p>01. Holiday (no class)</p> <p>02. Syllabus/Introduction(Class begins)</p> <p>03. Point defects in metallic systems: theory-vacancies and</p>	<p>3 學分</p> <p>(54 小時)</p>

			<p>interstitials</p> <p>04. Point defects in metallic systems: theory: defects complexes</p> <p>05. Point defects in metallic systems experimental</p> <p>06.Point defects: thermal disorder in nonmetallic systems</p> <p>07.Point defects: thermal disorder in nonmetallic systems</p> <p>08.Point defects: component activity dependent disorder in nonmetallic systems (nonstoichiometric compounds)</p> <p>09.Point defects: component activity dependent disorder in nonmetallic systems (nonstoichiometric compounds)</p> <p>10. Prelim</p> <p>11.Point defects in nonstoichiometric compounds: experimental</p> <p>12.Point defects: component activity dependent disorder in nonmetallic systems</p> <p>13.Point defects: component activity dependent disorder in nonmetallic systems: dopant effects</p> <p>14. Si crystal growth and oxidation: processes and defects</p> <p>15.Dislocations/oxidation-induced stacking faults</p> <p>16. Oral report</p> <p>17. Defect etching</p> <p>18. Final remark</p>	
--	--	--	---	--