Department of Materials Science and Engineering PhD Study Guide Map in Academic Year 2025

Educational Objectives

培育具獨立研究能力及創新思維及國際視野之跨領域整合人才。

To cultivate multi-disciplines engineers with independent research ability, innovative thinking, and an international perspective.

	Ph.D. Year 1		Ph.D. Year 2		Career Prospects
Professional Required Courses	Thesis Guide(I)	Thesis Guide(II)	Thesis Guide(III)	Thesis Guide(IV)	**Further Study:** Students can apply for domestic and foreign Master's and Ph.D. programs in Materials Science, or related graduate institutes in fields such as Electronics, Electrical Engineering, Mechanical Engineering, Chemical Engineering, and Biomedical Engineering.
	Seminar(I)	Seminar(II)	Seminar(III)	Seminar(IV)	
				Research Ethics	
				Doctoral dissertation	
Professional Elective Courses	Advanced Metallurgilcal Themodynamics	Advanced Physical Metallurgy	Advanced Chemical Reaction Engineering	Special Alloys and Processing	**Employment:** **1. Various Traditional Industries:** CSC, YUSCO, FPC, Tien Tai, Walsin, Kuang Tai, AIDC... etc. **2. Semiconductor Industry:** TSMC, Nanya, ASE, UMC, Mosel, ProMOS, SPIL, CTBC... etc. **3. Electronics and Optoelectronics Industry:** AUO, Chimei, Radiant, EDT, UMC, Gintech, Compal... etc. **4. Instruments, Materials, and Equipment Industry:** Fanda, UITS, San Kwang, Fantech, Chili, E-HUNG... etc. **5. Research Institutes:** ITRI, MIRDC, NCSIST, DCB, NSRRC... etc. **6. Job Titles:** R&D, PE, QE, SE, OP... etc.
	Advanced Ceramic Materials	Materials Defects	High temperature oxdation and corrosion	Polymer electronic and photonic	
	Introduction to Powder Characteristics	Alloy Strengthening Theories	Introduction to carbonaceous materials	Fracture and fatigue of materials	
	Transmission Electron Microscopy	Defect Analysis in Materials science	Special topics in flectron microscopy	Wear of metals	
	Advanced compostite materials	X-ray Crystallography		Advanced sintering theory	
	Advanced solid state physics	Advanced surface treoryAdvanced electronic ceramics		Defect chemistry in ceramics	
	Advanced solid thermo-dynamics	Diffusion Theory		Steelmaking processing and analysis	
	Electron microscopy laboratory	Applications of Transmission Electron Microscopy		Theory of solidification	
	Weldling Metallurgy	Advanced Quantum Physics			
	Quantum Chemistry	Materials Characterization and Analysis			
	Powder Metallurgy	Advanced Phase Transformation			
	High Temperature Plastic Deformation	Statistical Thermodynamics and Mechanics			