

**Division of Continuing and Extension Education of KUAS      2014 Academic Year      Chemical Engineering and Materials Engineering      Master Courses**

Academic year		First Year		Second Year	
Semester		First Semester	Second Semester	Third Semester	Fourth Semester
Compulsory subjects		Seminar (1)2/2	Seminar (2)2/2		Master thesis 6/6
Electives subjects (28/28)	Specialty Chemicals	Specialty Chemicals 3/3 Advanced Organic Chemistry 3/3 Synthesis of Organic Chemistry 3/3 Special Topics in Industrial Chemistry 3/3 Colloid and surface science 3/3	Special Topics of Surface Chemistry 3/3 Analysis of Organic Chemistry 3/3 Specialty chemicals manufacturing process 3/3 Cosmetics Practice 3/3 Interfacial Technology I and Application 3/3	Seminar (3)2/2 Special synthetic resin 3/3 Manufacturing Process of Surfactant 3/3 Sol-Gel Science and Powder Technology 3/3	Seminar (4)2/2 Optical technology specialty chemicals 3/3 Biomedical specialty chemicals 3/3 Colloid Technology and Applications 3/3
	Materials Technology	Polymer materials 3/3 Physical Chemistry of Polymer 3/3 Polymer structure and physical properties 3/3 X-Ray Diffraction 3/3 Solid State Chemistry 3/3 Ceramic materials 3/3 Diffusion Theory 3/3 Crystal chemistry 3/3 Special Topics on Organic Optoelectronic Materials 3/3 Transmission Electron Microscopy 3/3	Polymer characterization 3/3 Mechanical Properties of Polymer Materials 3/3 Processing and applications of polymeric materials 3/3 Electronic ceramics 3/3 Special Topics of Ceramic Processing 3/3 Thin Film Materials 3/3 Small Angle X-Ray Diffraction 3/3 Materials of Thin Films 3/3 Microscopy Techniques and Analysis 3/3 Principles of plasma 3/3	Polymer morphology 3/3 Polymer Rheology 3/3 Functional polymer materials 3/3 Vacuum film engineering 3/3 Semiconductor Theory and Process 3/3 Surface Science and Analysis 3/3 Special Topics in Film manufacturing process 3/3 Special Topics of Optical-Electrical Materials 3/3 Technology of material examination 3/3 Solidification phenomena and principles in materials processing 3/3	Special Topics of Polymer Optoelectronic Materials 3/3 Advanced Composite Materials 3/3 Conducting Polymer Materials 3/3 Superconductor material 3/3 Special topics of assembly and fabrication of semiconductor materials 3/3 Special Topics in Nano-materials 3/3 Special Topics on Surface Treatment of Material 3/3 Plasma processing for ic manufacturing 3/3 Optical Polymer Materials 3/3 Special topics on fabrication of ceramic film 3/3
	Chemical Process	Advanced numerical analysis 3/3 Reactor design 3/3 Advanced Transport Phenomena and Unit Operation 3/3 Advanced Thermodynamics 3/3	Advanced Process Control 3/3 Phase Equilibrium 3/3 Statistics and Experimental Design 3/3 Advanced Chemical Reaction Engineering 3/3	Special Topics on Process Design 3/3 Process integration with computer-aided design 3/3	System Engineering of Manufacturing Process 3/3
	Electrochemical and Energy Technology	Special topics in electrochemistry 3/3 Advanced Electrochemistry 3/3 Special Topics on Energy Technology 3/3 Principle and Application for Panel Display 3/3	Sensor For Electrochemistry 3/3 Energy storage devices 3/3 Synthesis and Analysis For Electrochemistry 3/3	Electrochemical anticorrosive Technology 3/3 Development and fabrication of batteries 3/3 Special Topic of Solar Cells 3/3 Special Topics in Electrochemical Deposition Technology 3/3	Noble metal materials processing technology 3/3 Special topics on fuel cells 3/3
	Environmental Technology	Advanced Environmental Chemistry 3/3 Special Topics on Environmental Engineering 3/3 Special topics of nanotechnology for environmental engineering 3/3	Special Topics of Waste-Water Treatment 3/3 Special topics of air pollution control 3/3 Environment Examination 3/3 Special Topics on Pollution Control 3/3	Treatment toxic chemicals 3/3 Environmental Toxicology 3/3 Advanced Water Purification Technology 3/3	Selected Topics on Waste Treatment 3/3 Special Topics in cleaner production 3/3 Special Topics in Environmental Biotechnology 3/3
	Biochemical Technology	Special Topics in Biotechnology 3/3 Industrial Microbial Processes 3/3	Special Topics in Biochemical Engineering 3/3	Bioseparation 3/3	Special Topics in Biosensor 3/3
	other		Scientific Reports and Writing 3/3	English writing for science and technology 3/3	

\*When the number of credits in each subject "credit / hour" mark.