# **Master Degree Program in Materials Science and**

## **Engineering**

#### **ADMISSION**

The School of Materials Science & Engineering offers graduate program to students pursuing master degree in materials science & engineering. The program aims at bringing about adequate practical training opportunities for engineering graduates and engineering students in sandwich courses to enable them to complete their training and to attain professional status. To reach the target, students must have basic knowledge and profound expertise on materials science & engineering, have the technical ability to the preparation, processing and characterization of advanced materials, have the ability to carry out research works independently and can obtain creative achievements in science or expertise. To begin the master program in materials science and engineering, a student must:

- 1. Have the academic qualification admitted by Jiangsu University.
- 2. Have obtained a Bachelor degree in Materials science or a related engineering major..

#### **RESEARCH FIELDS**

- 1. Materials physics and chemistry
  - laser micromachine and engineering application
  - photons and Photoelectric Information Functional Material
- micro nano material and device fabrication
- Surface design and preparation of bionics function materials
- 2. Materials science
  - Materials surface techniques and applications
  - Design and Strength-Toughening technology of materials
  - Functional materials and nano technology
  - Advanced inorganic materials

- 3. Materials processing engineering
  - Preparation and processing technics of advanced composites
  - Forming and processing technology of advanced materials
  - Advanced interconnection techniques
  - laser processing, Tool and Die Technology

## **DEGREE REQUIREMENTS**

The master degree in Materials Science & Engineering is based on successful completion of a minimum of 30 graduate credit hours following an approved program plan. A research proposal, thesis and oral examination in defense of the thesis are required.

### **CURRICULUM**

<b>Courses Category</b>		Course Name	Credit	Term	Remarks
Degree Courses	Public Compulsory Foundation Theory	Overview of China	2	1	All
		Chinese	4	1	7 111
		Numerical Analysis	3	1	At least 1
		Numerical Statistics	2	1	At least 1
		Elemental modern Physics	2	2	At least 1
		Advanced Inorganic Chemistry	2	2	At least 1
	Specialized Courses	Materials Chemistry	2	2	At least 2
		Materials Physics	2	2	
		Thermodynamics of	2	2	
		Materials			
		Solid-state Phase	2	1	
		Transformation and Diffusion			
		Polymer Chemistry and	2	2	
		Physics			
		Solidification Theory and	2	1	
		Technology of Metals			
		Physical Metallurgy	2	1	
Compensatory		Physical Properties of Materials			Student who
Elective Courses		Fundamentals of Inorganic			got equivalent

Materials Science					education level	
		Principles of Metallography			before	
		Principles of Material Molding			enrollment or	
					interdisciplinary	
		Polymer Chemistry			must select two	
		j			courses	
		Research Progress and				
		Development Trend in	2	1		
		Materials			At least 2	
		Modern Characterizations in	2	2		
		Materials Science	2			
		External Field and Performance		2		
		Analysis of Materials	2			
		Functional Materials and The		1		
		Preparation	2			
		Nanomaterials and fabrication		1		
	Materials Physics and Chemistry	technology	2			
		Design and Simulation of	2	2		
		Materials				
		Photonic Manufacturing	2	1		
		Science		1		
		Film Growth and		2		
		Characterization		2		
		Soft Chemical Synthesis of		1		
Elective		Materials		1		
Courses		Laser physics		2		
		Laser and		2		
		Micro Nano Fabrication		2		
		Bionic Technology of	2	2		
		Functional Surface	2			
	Materials Science	Research Progress and				
		Development Trend in	2	1		
		Materials				
		Modern Characterizations in	2	2		
		Materials Science	2	2		
		External Field and Performance	2	2	- At least 2	
		Analysis of Materials	2			
		Functional Materials and The	2	2 1		
		Preparation				
		Nanomaterials and fabrication	2	2 1		
		technology				
		Design and Simulation of	2	2		
		Materials		2		
		Reliability and Life Prediction	2	1		

		of Materials			
			2	2	
		Crystal Defects Advanced Ceramics	2		
				2	
		High Performance Polymers	2	1	
		Failure Analysis and	2	2	
		Prevention	_		
		Materials Toughening	1	1	
		Technology			
		Interface Theory and Modern	2	2	
		Surface technology			
		Friction and wear with solid	1	2	
		lubricant			
		An introduction to energy	2	2	
		materials			
		Material deformation and	2	1	
		fracture			
		Research Progress and			
		Development Trend in	2	1	
	Materials Processing Engineering	Materials			
		Modern Characterizations in	2	2	
		Materials Science		2	
		External Field and Performance	2	2	
		Analysis of Materials		2	
		Functional Materials and The	2	1	
		Preparation		1	
		Nanomaterials and fabrication	2	1	
		technology		1	
		Design and Simulation of	2		
		Materials		2	
		Principles and Techniques of	2	1	At least 2
		Advanced Connection			
		Metal-forming and its	2	2	
		Simulation			
		Advanced Composite Materials	2	2	
		and Technologies			
		Purification of Metals and	2	2	
		Alloys and Toughening			
		Special molding and processing	2	2	
		technology			
		Material Forming Technology	2	2	
		and Mould Design			
		Biological Materials and	2	2	
		Preparation Technology		_	
		Treparation recimiology	]		