**Materials Science & Engineering Postgraduate Training Program** （Chinese）

First-level discipline code (0805)

### Introduction

The first-level discipline of Materials Science & Engineering includes four second-level disciplines covering Materials Physics & Chemistry, Materials Science, Materials Processing Engineering and Photovoltaic Materials & Devices. A complete training system with bachelor, master and doctor's degree was build.

The discipline has robust research platforms, such as national experimental teaching demonstration center for materials science and engineering, materials science & engineering of dominant discipline in Jiangsu Province, Jiangsu collaborative innovation center of photovoltaic science and engineering, Jiangsu Province cultivation base for state key laboratory of photovoltaic science and technology, Jiangsu Province key laboratory of materials & technology for solar cells, Jiangsu Province key laboratory of surface science & technology, Jiangsu Province key laboratory of environmentally friendly polymeric materials, Jiangsu Engineering Laboratory of Light-Electricity-Heat Energy-Converting Materials and Applications and public technology service platform of new energy materials for small and medium-size enterprise in Jiangsu Province.

The discipline has a vibrant team consisting of 85 full-time teachers, among which 33 members are professors and 56 members have oversea experience.

### Objectives

The aims to provide high-level special talents who has good organization and management ability, solution to the key issue of scientific problems, independent academic exchange, teaching and research in the materials science & engineering field.

1. Adhere to the political of friendship with China, support Chinese foreign policy, understand Chinese basic national conditions, abide by Chinese laws and regulations, and respect Chinese social ethics and customs.
2. Understand Chinese culture, politics, economy and history; master Chinese language and read relevant research literature in Chinese.
3. Master the basic theory and professional knowledge on Materials Science & Engineering; understand the development of Materials Science & Engineering; have good academic ability.
4. Enough innovation ability and research ability on Materials Science & Engineering
5. Have good professional ethics and professional dedication.

### Duration

The diploma usually takes 3 years for the full-time academic postgraduate. The extension period is generally not more than one year, and the longest duration is 4 years.

### Research field

1. New Energy Materials & Devices
	1. Photovoltaic Materials & Devices
	2. Energy Storage Materials
	3. Optoelectronic Film Materials: Preparation & Application
	4. Organic/Polymer Photoelectric Conversion Material & Devices
2. Nanomaterials
	1. Piezoelectric and Ferroelectric Ceramic Fibers and Composites
	2. Advanced Carbon Materials
	3. Optoelectronic Information Materials
	4. Functionalized Inorganic Nonmetallic Materials
3. Metal Materials Surface Engineering

3-1 Advanced Metal Materials

3-2 Metal Materials: Preparation & Processing

3-3 Metal Heat Treatment

3-2 Materials Surfaces & Interfaces

1. Polymer Materials & Engineering

4-1 Functional Polymer Materials

4-2 Polymer Synthesis & Structural Property

4-3 Organic Polymer Optoelectronic Film Processing

4-3 Polymer Processing & Modification

### Curriculum

Total credits: 38 credits.

The postgraduate degree program are 36 credits, which includes 12 credits for public course and 24 credits for professional course, respectively. There are still 2 credits for academic practice. The detailed courses and credits are following：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **TYPE** | **Course Name** | **Credit hours** | **Credits** | **Semester** | **Course type** | **Evaluation methods** | **Note** |
| Public course | General Chinese | 96 | 6 | 1、2 | Taught | test | language |
| Chinese listening and speaking | 32 | 2 | 2 | Taught | test |
| Introduction of China | 32 | 2 | 1 | Taught | test | Culture |
| Chinese culture | 32 | 2 | 2 | Taught | test |
| Materials surfaces & interfaces | 48 | 3 | 1 | Taught/Survey | Term paper | ≥12 creditsLectures 32 credits, and survey 16 credits |
| Data processing software and applications | 48 | 3 | 1 | Taught/Survey | Term paper |
| Solid state physics | 48 | 3 | 1 | Taught /Survey | Term paper |
| Crystal chemistry | 48 | 3 | 1 | Taught /Survey | Term paper |
| Thermodynamics of Materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Advanced Polymer Chemistry | 48 | 3 | 1 | Taught /Survey | Term paper |
| Polymer structure and property | 48 | 3 | 1 | Taught /Survey | Term paper |
| Crystal defects and material properties | 48 | 3 | 1 | Taught /Survey | Term paper |
| Materials Characterization I | 48 | 3 | 1 | Taught /Survey | Term paper |
| Materials Characterization II | 48 | 3 | 1 | Taught /Survey | Term paper |
| Semiconductor physics | 48 | 3 | 1 | Taught /Survey | Term paper |
| **Study options** | Polymer reactive processing | 48 | 3 | 1 | Taught /Survey | Term paper | ≥12 creditsLectures 32 credits, and survey 16 credits |
| Progress in advanced polymer materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Principle of polymer blending modification | 48 | 3 | 1 | Taught /Survey | Term paper |
| Synthesis of organic & polymer materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Progress in Advanced material | 48 | 3 | 1 | Taught /Survey | Term paper |
| Processing principle & preparation of advanced metal materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Introduction to Functional Materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Writing of Scientific and Technological Papers | 48 | 3 | 1 | Taught /Survey | Term paper |
| Nanomaterials Science | 48 | 3 | 1 | Taught /Survey | Term paper |
| Electrochemical Principle | 48 | 3 | 1 | Taught /Survey | Term paper |
| Progress in novel battery | 48 | 3 | 1 | Taught /Survey | Term paper |
| Sol-gel principle and technology | 48 | 3 | 1 | Taught /Survey | Term paper |
| Biomedical Materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Practice | Academic activity | At least 20 times academic lectures | Assessment | 1 credit |
| Practical activity | / | Assessment | 1 credit |

Attention

The postgraduate who meet the graduation level requirements on International Chinese proficiency standard can apply exemption for Chinese course. The exemption credits will be also included in your total credits after the school permission.

### Dissertation

According to Changzhou University Academic Postgraduate Training Program (general provisions).

The postgraduate should publish at least one academic paper or other academic achievements before dissertation defense. The detailed claims are the regulation of publication for full-time postgraduate in Changzhou University.