**Materials Science & Engineering PhD 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. 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.

ESIs (Essential Science Indicators) of Materials Science is among the top 1% in the world. There are several excellent research fields including Photovoltaic Materials & Devices, Functional of Nanomaterials, Hot Dip Galvanizing, Environmentally Friendly Polymeric Materials.

### 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; Proficiency Chinese language and read relevant research literatures in Chinese.
3. Master the basic theory and professional knowledge on Materials Science & Engineering; accurately understand the development of Materials Science & Engineering; have excellent academic ability.
4. Strong innovation ability and independent of 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 PhD. The extension period is generally not more than two years, and the longest duration is 5 years.

### Research field

1. New Energy Materials & Devices
   1. Photovoltaic Materials & Devices
   2. Energy Storage Materials
2. Nanomaterials & Devices
   1. Optoelectronic Functional Materials
   2. Advanced Carbon Materials
3. Metal Materials Surface Engineering

3-1 Surface Nanocrystallization

3-2 Surface Penetration Plating

1. Polymer Materials & Engineering

4-1 Functional Polymer Materials

4-2 Polymer Processing & Modification

4-3 Flexible Devices

5、Biomedical Materials

### Curriculum

Total credits: 22 credits.

The postgraduate degree program are 20 credits, which includes 8 credits for public course and 12 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 culture | 32 | 2 | 2 | Taught | test |
| compulsory course | An overview of Materials Science & engineering | 48 | 3 | 1 | Taught /Survey | Term paper | ≥6 credits  Lectures 32 credits, and survey 16 credits |
| Thermodynamics of Materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Solid state Physics | 48 | 3 | 1 | Taught /Survey | Term paper |
| Organic semiconductor materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Polymeric chemistry and physics | 48 | 3 | 1 | Taught /Survey | Term paper |
| **Study options** | Principle and application of solar cell | 48 | 3 | 1 | Taught /Survey | Term paper | ≥6 credits  Lectures 32 credits, and survey 16 credits |
| Semiconductor physics and devices | 48 | 3 | 1 | Taught /Survey | Term paper |
| Synthesis technology for Organic semiconductor material | 48 | 3 | 1 | Taught /Survey | Term paper |
| Functional polymer materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| New technology of polymer materials | 48 | 3 | 1 | Taught /Survey | Term paper |
| Advanced material manufacturing technology | 48 | 3 | 1 | Taught /Survey | Term paper |
| Materials surfaces & interfaces | 48 | 3 | 1 | Taught /Survey | Term paper |
| Writing of Scientific and Technological Papers | 48 | 3 | 1 | Taught /Survey | Term paper |
| Practice | Seminar | At least 6 times academic seminars | | | | Assessment | 1 credit |
| Academic activity | At least 20 times academic seminars and academic activity; at least one academic conference | | | | 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

PhD thesis is an important method to evaluate the quality of PhD training and academic level. The PhD thesis means that the author should have independent research ability and gain some innovative achievements in science and technology. Additionally, the PhD thesis implies the person who should possess solid basic theory and systematically profession knowledge.

1. Proposal report

Firstly, the PhD student need to collect and read lots of literatures, then finish the thesis proposal report which is fulfilled according to topic selection and proposal report of PhD thesis in Changzhou University.

ii) Mid-term examination

Secondly, the supervisor should regularly check the PhD's research work. The PhD student have to prepare the mid-term examination report which is fulfilled according to mid-term examination of PhD thesis in Changzhou University.

iii) Dissertation

The PhD thesis should not only gain some innovative achievements in his research filed but also have some technological development for materials science & engineering in theory or practice. The PhD thesis implies that the author has mastered solid basic theory and systematically profession knowledge.

PhD thesis should be finished in person according to the Basic Requirements and Format of Doctoral Dissertation in Changzhou University.

### Doctoral Requirements

As the first author to publish two or more than two articles in SCI.

### Dissertation defense and degree awarding

According to Master's and Doctor's degree awarding rules of Changzhou university.