# Master Program in Materials Science and Engineering

**1. Introduction**

Materials Science is a subject field researching on the relationship among the formation, structure, processing, property and performance of materials. It is committed to the [performance](app:ds:performance) [optimization](app:ds:optimization), processing optimization, and development & application of materials.

**2. Research Directions**

(1) New metal and advanced composite materials

(2) Nano-materials and technology

(3) Advanced functional [materials](app:ds:materials)

(4) New energy materials

(5) Biomaterials,

(6) Inorganic Non-metallic Materials

(7) Surface engineering

(8) Advanced materials processing technology

(9) Bonding engineering

**3. Duration of studies**

Full time master students are expected to complete their studies and earn their degrees in 2.5 to 5 years, and they will be disqualified from the program after 5 years.

**4. Credits requirements**

Students are required to complete at least 28 degree credits from courses in Section 5 with a minimum of 26 coursework credits and 2 obligatory courses.

**5.** [**Curriculum**](http://dict.youdao.com/w/curriculum/)

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| --- | --- | --- | --- |
| **Course No.** | **Course Name** | **Semester** | **Credits** |
| ***I. Fundamental Courses*** | | | **6** |
| L371A001 | Chinese I | Fall | 4 |
| L371A003 | Introduction to Chinese Classics | Fall | 2 |
| ***II. Core Courses*** | | |  |
| L113A002 | Applied Statistics | Spring | 2 |
| S116B003 | Phase Transformation and Kinetics in Materials | Fall | 3 |
| S116B007 | Quantum Mechanics and Solid State Physics | Fall | 3 |
| S116B009 | Advanced Characterization Techniques For Materials | Spring | 2 |
| S116B004 | Physical Foundation for Crystal Growth | Fall | 3 |
| ***III. Major Electives:*** 6of the following | | |  |
| L116C003 | Modern Detection of Materials and Structures | Spring | 2 |
| L116C009 | Photoelectric Functional Materials Experiment | Spring | 2 |
| L116C012 | Solidification theory | Spring | 2 |
| L116C013 | Synthesis and Preparation Method of Materials | Spring | 2 |
| S116B010 | Mechanics of [Composite Materials](http://dict.baidu.com/s?wd=composite%20material) | Fall | 2 |
| L116C005 | Materials for Renewable Energy and Sustainable Environment | Spring | 2 |
| L116C011 | Tissue Engineering | Spring | 2 |
| ***IV. Thesis Credits*** | | | |
| L0000001 | Thesis Proposal | Fall | **2** |
| L0000002 | Academic Activities | Spring |
| **Total Credits Required** | | | **28+** |
| NOTE: Graduate students are usually expected to meet the course requirements in the first academic year, including: I. Fundamental Courses, II. Core Courses, and sufficient elective courses in III. Major Electives. | | | |

**6. Thesis Topic and Proposal**

A master student is supposed to choose his/her research direction under an advisor’s guidance. The student should actively study, research and survey in the chosen research direction. The student is expected to choose a research topic for the postgraduate thesis and confirm the significance of the topic in a thesis proposal. The thesis proposal should be submitted and defended at the beginning of the second year of study.

Detailed regulations and requirements on master's thesis can be found in the "***NJUST Regulations about the Topic Selection, Research Proposal and Composition of Postgraduate Theses and Dissertations***".

**7. Publication**

Before graduation, each master student should have at least one academic paper published or accepted for publication. Detailed requirements are documented in "***NUST regulations on a postgraduate’s publications of their research work***".

**8. Degree Thesis Requirement**

MA Degree thesis is one of the most important parts for graduate education, which provides students with training on academic research or specific technology application, enhances students’ abilities to innovate and to apply the knowledge to their research, and encourages them to discover, analyze and solve problems in their fields.

Detailed regulations and requirements on master's thesis are documented in the "***NJUST Regulations about the Topic Selection, Research Proposal and Composition of Postgraduate Theses and Dissertations***", and "***NUST Style Sheet for Theses and Dissertations***". For a joint effort with others, or a follow-up of previous work, the student should clearly specify his/her contribution to the thesis.