# Doctoral 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 PhD students are expected to complete their studies and earn their degrees in 4 to 6 years, and they will be disqualified from the program after 6 years.

**4. Credits requirements**

Students are required to complete at least 18 degree credits from courses in Section 5 with a minimum of 16 coursework credits and 2 obligatory courses.

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

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| **Course No.** | **Course Name** | **Semester** | **Credits** |
| ***I. Fundamental Courses*** | | | **4** |
| L371A002 | Chinese | Fall | 2 |
| L371A003 | Introduction to Chinese Classics | Fall | 2 |
| ***II. Core Courses*** | | | **8+** |
| L113A015 | Elastic Mechanics | Spring | 3 |
| S116B007 | Quantum Mechanics and Solid State Physics | Fall | 3 |
| S116B003 | Phase Transformation and Kinetics in Materials | Fall | 3 |
| S116B004 | Physical Foundation for Crystal Growth | Fall | 3 |
| ***III. Major Electives*** | | | **4+** |
| S116B009 | Advanced Characterization Techniques for Materials | Spring | 2 |
| S116B010 | Mechanics of Composite Materials | Fall | 2 |
| ***IV. Thesis Credits*** | | | |
| L0000003 | Dissertation Proposal II | Fall | **2** |
| L0000004 | Academic Activities II | Fall |
| **Total Credits Required** | | | **18+** |
| 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. PhD Dissertation Topic and Research Proposal**

PhD dissertation proposal should be no less than 10000 words long and has at least 80 references, half of which must be published in the recent 5 years. A PhD student should choose a research topic for the PhD dissertation and spend no less than 2 years on the dissertation research and writing, all under an advisor’s guidance.

Detailed regulations and requirements on PhD dissertation are documented in the "***NJUST Regulations about the Topic Selection, Research Proposal and Composition of Postgraduate Theses and Dissertations***". The PhD dissertation research proposal writing and defense should be completed in no later than the second academic year of the program.

**7. Publication**

To meet the degree requirements, a PhD student is required to have a certain number of academic publications related to the dissertation research. Detailed requirements are documented in "***NUST regulations on a postgraduate’s publications of their research work***".

**8. PhD Dissertation Requirements**

Detailed regulations and requirements on PhD dissertation 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.