Zhejiang Sci-Tech University
Doctoral Degree Program Outline
Materials Science and Engineering
080500

The discipline of "Material Science and Engineering (MSE)" is developed on the basis of the disciplines such as raw silk fiber and textile materials. The MSE is now the key and preponderant discipline approved by Zhejiang Province. Since 2012, Material Science has been ranked among the Top 1% in Essential Science Indicator (ESI). It was authorized to offer Master ' s degree and Doctoral degree on MSE in 2006 and 2018, respectively. At present, the faculties has a quality team of faculties and a solid network of facilities and instruments. The faculties have received many honours and awards from the Chinese governments at provincial and national levels: MOE Innovation Team, board member of the Academic Review Committee of the State Department, the "National Thousand Talent Plan", awardees and innovation leaders of the "National Ten-Thousand Talents Plan", Provincial Senior Specialist, winner of the "National New Century Talents Project", "MOE New Century Excellent Talents Supporting Plan", "Qian Jiang Scholar". The faculties are highly educated, most of whom have overseas study or work experience.The college has 3 national teaching and scientific research platforms, 6 provincial scientific research platforms and 8 innovation service platforms (centers) in Zhejiang Province. In the recent years, the faculties have been in charge of many research projects, supported by the Natural Science Foundation of China and Ministry of Science and Technology of China, etc, and have won 3 National Prizes and more than 80 provincial-level prizes. In the past five years, the college has published more than 700 SCI academic papers in Adv. Mater., Angew. Chem. Int. Ed. and other journals, and authorized more than 270 invention patents.

I. Objectives

1. Abide by laws and disciplines, have good moral character and rigorous style of study; have noble scientific morality, dedication to science, spirit of cooperation and innovation, and actively serve economic construction and social development.

2. Master solid and broad basic theories and systematic and in-depth professional knowledge in the discipline field, and master the development trend of the discipline field. Strong innovation ability, high comprehensive quality, with international vision and the ability to independently engage in scientific research and technological development, and make creative achievements in the field of science or special technology.

3. Be proficient in reading Chinese and English materials of this major, and have good writing and communication skills in both Chinese and English.
4. Have good psychological quality, humanistic cultivation and healthy physique.

II. Research Areas

1.Polymer materials and processing engineering

(1) Fiber preparation and modification; (2) polymer matrix composite preparation and performance; (3) engineering fiber preparation and application; (4) polymer reaction engineering; (5) plastic and rubber modification and processing

2.Materials

(1) Functional polymer materials; (2) organic and inorganic nano hybrid materials; (3) biomass and biomimetic materials; (4) intelligent biomedical materials; (5) cultural relics protection materials

3.Material physics and chemistry

(1) Interface structure design and control of material surface; (2) advanced ceramic materials; (3) semiconductor materials and devices; (4) energy and catalytic materials; (5) synthesis of functional materials; (6) flexible electronic materials and devices

III. Length of Study

The normal length of the doctoral degree program is 3.5 years. Students who finish their courses ahead of schedule and attain the standards of degree conferment can, after approval, apply for the degree at an earlier time (not earlier than 3 years), while the maximum length of schooling is 6 years.

IV. Credit Requirements

The credit system is applied to the course learning of doctoral students. The course learning stage is generally one year, and 16 credits are required before graduation, including 6 credits for public degree courses, 8 credits for professional degree courses and professional elective courses, and 2 credits for academic activities.

V. Curriculum

Course Classification		Course Code	Course Name	Hour/ Credit	Semester			Notes
					I	II	III	
Degree	General	FL20004	The Outline of China	36/2	√			(Entirely in English)

courses	degree courses	CC10009	Basic Chinese (I)	54/3	√			(For beginners of Chinese language among foreign graduate students)	
		FL10026	English Writing of Academic Paper	16/1	√				
		IF20001	Education on China's National Conditions for International Students B	16/1	√				
	Major-related degree courses	MT21010	Progress in Material Research	48/3	√				
		MT21011	Experimental safety education	16/1	√				
		MT21012	Advanced material analysis methods	32/2	√				Optional; minimum course load: 1;
		MT21013	Structure and properties of polymers	32/2	√				
		MT21014	Introduction of Modern Organic Synthesis	32/2	√				
		MT21015	Thermodynamics and kinetics of materials	32/2	√				
Non-degree courses	Major-related optional courses	FL22001	Second Foreign Language (Japanese)	32/2		√			Optional; minimum course load: 1;
		MT22017	Polymer Rheology	32/2	√				
		MT22018		32/2	√				
		MT22019	Composites	32/2	√				
		MT22021	Biomass Materials	32/2	√				
		MT22022	Biomedical Materials	32/2	√				
		MT22023		32/2	√				
		MT22024	Energy Materials	32/2	√				
Academic Seminar		Students are required to attend at least 4 academic meetings within the study duration and present academic reports in at least 10 seminars.		/2	separated				
Practical Training		Students are required to take at least 2 weeks practical training, participate in at least one social investigation, and write relevant report. Normally the training should be completed in the first academic year.			separated				
Notes		Students without an equivalent master's degree are required to take additional courses related to their research areas, or courses requested by their supervisor. The credits earned from these courses cannot be counted toward the degree requirements.							

C=Compulsory, O=Optional

* Students can decide whether to take this optional course or not according to their different research area.

VI. Dissertation Requirement

Thesis work is the main task of graduate students, and it is an important link to cultivate their scientific research ability and innovation ability. The dissertation should be a complete and systematic academic paper, which can show that the author has the ability to engage in scientific research independently, make innovative achievements in the discipline or special technology, have certain theoretical significance and practical value for China's social development and economic construction, and make contributions to the development of the discipline. In the process of paper work, departments and tutors should pay attention to the following aspects:

1. Opening report

Graduate students should complete the opening report before the end of the third semester after enrollment, and form an expert group to answer the opening report of graduate students, and modify and improve the opening report in combination with expert opinions.

2. Mid-term inspection

The mid-term examination is generally arranged about one year after the opening of the examination, and is organized centrally by various disciplines. The mid-term inspection shall summarize the progress, publication and periodical achievements of the dissertation; the mid-term inspection shall submit a written summary report as an integral part of the thesis defense and degree application materials.

3. Thesis writing

In order to ensure the quality of postgraduate dissertation, the time for postgraduate to engage in scientific research and thesis work shall not be less than 1 year from the date of opening. In this paper, we should make a detailed exposition of our own innovative achievements and clarify the previous achievements and contributions in this field.

4. Requirements for paper publication

A master's degree candidate who meets one of the following conditions may apply for dissertation defense:

(1) Take the graduate student as the first author or mentor (or assistant mentor) as the first author and the second author of the graduate student, and ZSTU as the first signed unit, publish or accept 1 paper in SCI TOP journal;

(2) Take the graduate student as the first author or mentor (or assistant mentor) as the first author and the second author of the graduate student, and ZSTU as the first signed unit, publish or accept 3 papers in SCI, first-level and above journal , of which at least SCI journal papers 1 article or 1 Chinese national invention patent authorized;

(3) Won 1 national Chinese level (all completed personnel) or provincial and ministerial level

government scientific research achievements (first five ranked first, second highest ranked three, third ranked first ranking) award, and published or hired SCI, first level 1 paper in the journal or above or 1 Chinese national invention patent (postgraduate must be ranked first).

VII. Teaching Format

1. The system of tutor's responsibility is implemented in postgraduate training, which combines tutor's individual guidance and Guidance Group's collective guidance.
2. The cultivation of academic graduate students adopts the combination of course learning and thesis research, pays attention to the study of basic theory, the training of research methods, and the cultivation of innovation ability. Through the course study and thesis research, we can systematically master the theoretical knowledge of the subject area, and form the corresponding ability to analyze and solve problems.

VIII. Graduation & Degree Conferment

Graduate students who have completed the courses and other links specified in the training plan, passed the examination, passed the Chinese Proficiency Test (HSK) and obtained the Level 3 Certificate, passed the dissertation defense, and met the graduation requirements are allowed to graduate; those who meet the conditions for degree granting are approved by the university degree evaluation committee, and then awarded the degree.

Signature of Program Director:
Signature of Director of School Academic Degree Committee:
Date: