

# Training plan of majors related to mechanical and power engineering

## **1. Objectives、 International Certification Standards**

To cultivate high-level engineering and technical students who know China, are friendly to China, and meet the international certification standards, students who have a solid foundation in natural science and broad mechanical and power professional knowledge, and have a strong international vision, practical ability, innovative consciousness, team spirit and good communication skills, students who have a good humanities and social science literacy, a strong sense of social responsibility, good professional ethics, and students who are familiar with international rules and can be engaged in product R & D, design, manufacturing, project management and other work in related fields.

## **2. Graduation Requirements**

Graduation Requirement 1-Engineering knowledge: Be able to apply mathematics, natural sciences, fundamental and professional knowledge of engineering to complex engineering problems in the field of mechanical power industries;

Graduation Requirement 2-Problem analysis: Be able to apply fundamental principles of mathematics, natural and engineering sciences to identify, deliver and conduct literature review on related complex engineering problems, and to reach valid conclusions;

Graduation Requirement 3-Design/develop solutions: Be able to design solutions to complex engineering problems in the field of mechanical power industries, and to design systems, units (components) or processes that meet the requirements of specific mechanical products, and to reflect the innovation awareness in the design process, taking into account the social, health, safety, legal, cultural and environmental factors;

Graduation Requirement 4-Research: Be able to conduct research on complex engineering problems in the field of mechanical power industries based on scientific principles and using scientific methods, including designing experiments, analysing and interpreting data, and synthesizing information, and to obtain reasonable and valid conclusions;

Graduation Requirement 5-Use of Modern tools: Be able to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for complex engineering problems in the field of mechanical power industries, including prediction and simulation of complex engineering problems, and to understand the related limitations;

Graduation Requirement 6-Engineering and Society: Be able to perform reasonable analyses based on relevant background knowledge of the mechanical power industries, and to evaluate the impacts of the engineering practices and the solutions to complex engineering problems on the society, health, safety, legislation and culture, and to understand the responsibilities to be assumed.

Graduation Requirement 7-Environment and Sustainable development: Be able to understand and evaluate the impacts of engineering practices that address complex engineering problems related to mechanical, power and material systems on the environmental and social sustainable development;

Graduation Requirement 8-Professional norms: To possess humanities and social science literacy as well as social responsibility, and to be able to understand and comply with the professional ethics and norms of mechanical engineering in practices related to the mechanical power industries, and to fulfil responsibilities;

Graduation Requirement 9-Individual and Team: Be able to assume the role of an individual, a team member and the leader in the international team of mechanical power that integrates multi-disciplinary knowledge of mechanics, material science, electromechanical control technology, electronics, testing technology, computer technology, etc.;

Graduation Requirement 10-Communication: Loving Chinese culture, and being familiar with the norms of both the Chinese and international industries, and being able to effectively communicate and interact with the industry peers and the public on complex engineering issues in the field of mechanical power, including writing reports, designing manuscripts, presenting speeches, and clearly articulating or responding to instructions. To have an international perspective and also to have the ability to communicate and interact in a cross-cultural context;

Graduation Requirement 11-Project management: Be able to understand and master the principles of engineering management and the methods of economic decision-making in the field of mechanical power, as well as applying the related knowledge in a multi-disciplinary environment;

Graduation Requirement 12-Lifelong learning: To have the awareness of self-directed and lifelong learning, and to have the ability to continuously learn and adapt to development.

### 3. Majors (including discipline fields, major category, major name and code)

Discipline fields	Major category	Major name	Major code
Engineering	Machinery	Mechanical Manufacturing and Automation	080202
Engineering	Energy and Power	Energy and Power Engineering (Fluid Machinery and Its Automatic Control)	080501
Engineering	Materials	Materials Science and Engineering	080401

### 4. Training System and Course Module

#### 1) Course System

It consists of general education courses, basic courses in general discipline, professional courses, and elective courses of independent research and study, and practice modules. Specific credits and class hours are arranged as follows:

(1) 62.5 credits for general education courses, including 56.5 credits for compulsory courses and 6 credits for elective courses.

(2) 37.5 credits for major basic courses, including 37.5 credits for compulsory courses.

(3) 20 credits for professional courses, including 14 credits for compulsory courses and 6 credits for elective courses.

(4) 15 credits for self-study courses: including three modules: advanced professional courses, interdisciplinary courses, and advanced Chinese courses.

(5) 6 credits for quality development: including academic seminars, salons and club activities, social practice and voluntary public service, scientific research and innovation competitions, and innovation courses.

(6) 37 credits for practical links: including basic engineering training, curriculum design, professional comprehensive practice, production practice and graduation design (thesis).

## 2) School-enterprise cooperation training

In regard to the engineering training, curriculum design, professional comprehensive practice, production practice and enterprise practice, students are required to enter the enterprise, and be cultivated together with the enterprise, in the form of the combination of decentralization and integration, to ensure that the time of school enterprise joint training is not less than one year.

## 5. Duration and Degree

The school system is four years, and the flexible school system is three to eight years. Bachelor of Engineering is awarded.

## 6. Minimum Required Credits for Graduation

The minimum credits for graduation are 176 credits.

## 7. Distribution Sheet for Credits and Hours

category	credit	Hours or weeks	Percentage of credits
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		Class hours	Number of weeks	Required course credits	proportion	Credits of elective courses	proportion
General education course	62.5	1338	/	56.5	90%	6	10%
Major basic courses	37.5	624	/	37.5	100%	0	0
Professional courses	20	336	/	14	70%	6	30%
Independent research	15	240	/			15	100%
quality development	6					6	100%
practice	37		37	37	100%		
total	176	2506		145	82%	21	18%

## 8. Other instructions

1. Each student must complete 15 credits of independent research during their studies, including 9 credits for advanced professional courses, 4 credits for interdisciplinary courses, and 2 credits for advanced Chinese courses. Among them, interdisciplinary courses can be selected from the professional courses of other majors or other interdisciplinary majors.

2. During the period of school, each student must complete six quality development credits, which mainly cover four aspects: academic research, salon and community activities, social practice and voluntary public service, scientific research and innovation competition, and innovative curriculum. For the specific ways to obtain credits, please refer to the "quality development credit identification method for mechanical and power undergraduates in Jiangsu University".

3. This major actively reforms teaching methods, classroom organization and assessment methods, and sets up MOOC, SPOC, PBL and Cbl inquiry courses and other new teaching mode courses. See the course list for details.

