

# School of Mechanical Engineering

## 1. Brief Introduction

**The School of Mechanical Engineering of USST** (University of Shanghai for Science and Technology) was founded in May, 1999. It was formed by the merger of the former Mechanical Engineering Department on USST campus and Mechanical Engineering Department on Fuxing Road campus. The history of the school can be traced back to 1912 when Electromechanical Engineering College of Deutsche Medizinschule was created. After nearly 90 years of development, School of Mechanical Engineering has become a dominant national training base for advance manufacturing professionals and the scientific research provision of advanced manufacturing technology in Shanghai.

The school consists of seven departments: Mechatronic Department, Automotive Engineering Department, Mechanical Manufacturing Department, Mechanical Design Department, Engineering Foundation Department, Fundamental Experiment Center and Professional Experiment Center. Our school also undertakes the management of Engineering Training Center.

School of Mechanical Engineering is an accredited organization to award doctoral and master degree in Mechanical Engineering discipline, covering areas of Mechanical Manufacture and Automation, Mechanical Design and Theory, Mechatronic Engineering and Automotive Engineering. Undergraduate programs include Mechanical Design Manufacturing Automation and Automotive Engineering. Mechanical Design Manufacturing Automation program has been designated by Shanghai Education Commission as specialized discipline of professional learning. The school also owns Key Laboratory of Precision Grinding Technology; Key Laboratory of NC Machine Tools Optimization; Key Laboratory of Strength and Reliability Evaluation for Automobile Chassis Components. We also have a Service Station for Shanghai NC Machine Optimization and a Research Center for Shanghai NC Equipment Engineering Technology.

With a staff of over 100, our school employs 21 full-time professors, 35 associate professors, and a number of distinguished fulltime teachers, including state-level candidates of "Millions of Talents Project", national model teachers, provincial and ministerial academic leaders and Shanghai master teachers, etc. Besides, we hire a group of well-known scholars as guest professors. The result is the formation of an organization with efficient and energetic teaching staff which satisfies the needs of modern discipline, curriculum and teaching development.

The main research areas include NC technology, NC equipment design and manufacture, electromechanical control and measuring technology, production system automation, CAD/CAM/CAE technology, precision machining technology, dynamic design of mechanical structure, optimization design, vibration and noise control, reliability design of mechanical equipment, condition monitoring and fault diagnosis, virtual design, automotive engineering, metal functional materials, enterprise information technology, etc. Distinctive features have been formed in the areas of numerical control technology, mechanical optimization design technology and the vehicle strength design.

Our school has established partnerships with a number of universities in Germany, Japan, Korea and Hong Kong. Dozens of undergraduates and postgraduates go overseas for learning and exchange every year.

## 2. Undergraduate Education



The school offers two undergraduate programs: Mechanical Design Manufacturing Automation and Automotive Engineering. Currently there are 1300 undergraduate students. Mechanical Design Manufacturing Automation specializes in "numerical control technology" and "digital design and manufacture". With the integration of machinery, electronics and computer as its direction, NC technology, CAD & CAM as its features, this program focuses on cultivating senior technical and managerial engineering talents. The aim is to equip students with fundamental theories and methods, basic skills of computer application and electromechanical control techniques. They should be able to engage in

jobs related to designing, producing, developing and applying machinery equipments, products and projects.

### 3. Master Degree Programs



The main research areas are:

Mechanical Manufacturing and Automation Specialty: 1) CAD/CAM; 2) NC technology; 3) Modern materials processing technology; 4) Advanced manufacturing technology; 5) Automatic equipment and system.

Mechatronic Engineering Specialty: 1) Precise measuring technology; 2) Mechanical control engineering; 3) Electromechanical integration; 4) Mechanical fault detection and diagnosis; 5) Intelligent control.

Mechanical Design and Theory Specialty: 1) Application of modern design in mechanical design; 2) Dynamic design and simulation of machine system; 3) Mechanical transmission design theory; 4) Robot and artificial intelligence; 5) Ergonomics.

Automotive Engineering Specialty: 1) Automotive modern design theory; 2) Automotive electronic control technology; 3) Auto detection and fault diagnosis; 4) Vehicle power system and matching techniques; 5) Vehicle dynamics simulation.



Mechanical Engineering Specialty (Professional Degree): 1) Precision measurement and intelligent control; 2) NC technology; 3) CAE technology and application.

Vehicle Engineering Specialty (Professional Degree): 1) Design of modern automotive components; 2) Development of automotive electronic control system; 3) Auto parts recycling technology.

#### **4. Doctoral Programs**

The main research areas are:

- 1) Precision Engineering and Associated Manufacturing Technology
- 2) Advanced Design Theories and Methods of Mechanical Equipments
- 3) Vehicle Parts Design and Optimization Program
- 4) Non-traditional Processing Technology
- 5) Advanced Manufacturing System and Management

#### **5. Scientific Research Bases**

- 1) Key Laboratory of Precision Grinding Technology
- 2) Key Laboratory of Strength and Reliability Evaluation for Automobile Chassis Components

- 3) Key Laboratory of Optimization Technology for NC Machine Tools
- 4) Technology Service Platform for Shanghai NC Machine, Shanghai
- 5) Research Center of Engineering Technology for NC Equipments

## **6. Academic Research**

The main research expertise are:

- 1) Precision Grinding Technology
- 2) Design Technologies on Optimization of Mechanical System and Structure
- 3) Simulation Technology and Optimization for Mechanical Design
- 4) Design and Development for Special-purpose NC machine tools
- 5) Digital Manufacture and Digital Management Technology
- 6) Development of Rapid Design System
- 7) Lightweight Design Theory and Method for Auto Parts
- 8) Research on Evaluation Method for Automotive Parts Strength and Reliability
- 9) Combustion System Optimization and Emission Control for Automobile Engine