

Mechanical Engineering

I . Degree

Bachelor of Engineering (*B.Eng.*)

II . Normal Period of Study

4 years

III. Objectives

This program aims at training technical engineers, mastering basic theory and knowledge of mechanical engineering, good professional ethics, team spirit, innovation and international competitiveness.

Expected professional goal in five years after graduation:

- 1.Having good scientific accomplishment;
- 2.Basic capability of engaging in R & D, design, manufacture, control, testing and management of various mechanical, electromechanical products and systems in mechanical engineering and related fields;
- 3.Ability to continue learning, to adapt to different work or to enter graduate school;
- 4.Awareness of sustainable development and professional ethics;
- 5.Good skill in communication and collaboration to serve as a member or leader in a team;
- 6.High sense of social responsibility to serve the community.

IV. Requirements

Students are required to acquire the basic theory and knowledge of mechanical design, mechanical manufacturing and control, to receive basic training of mechanical engineer, and to grasp basic ability to engage in design, manufacturing, technology development, scientific research and production organization and management in the field of mechanical engineering.

Graduates should obtain knowledge and ability of the following aspects:

- 1.Engineering knowledge: ability to apply mathematics, natural sciences, engineering fundamentals, and expertise to solve complex engineering problems in the field of mechanical engineering.
- 2.Problem analysis: ability to apply basic principles of mathematics, natural sciences and engineering science to identify, express and analyze complex engineering problems in the field of mechanical engineering through literature research so as to obtain effective conclusions.
- 3.Solution plan for design and development: ability to design mechanical systems, units (components), or process flows that meet specific needs and able to embody an innovative sense in the design process that takes into account social, health, safety, legal, cultural, and environmental factors.

4. Research: ability to using scientific methods and principles to study the complex problems in mechanical engineering, including the design of experiments, analysis and interpretation of data, and making reasonable and effective conclusion through the information synthesis.

5. Scientific tool and resources: ability to and information technology tools for complex engineering problems in the field of mechanical engineering, including the prediction and simulation of the problems, as well as understanding their limitations.

6. Engineering and Society: ability to engineering problem solution on the social, health, safety, legal and cultural, and able to understand the responsibilities to be undertaken.

7. Environment and Sustainable Development: ability to understand and evaluate the impact of engineering practices that address complex engineering issues on environmental and social sustainability.

8. Professional norms: having a humanities-social-sciences accomplishment, sense of social responsibility, able to understand and abide by engineering ethics and norms in the engineering practice and to fulfill the responsibilities.

9. Individuals and teams: ability to take on the role of individual, team member, and leader in a multidisciplinary team.

10. Communication: ability to effectively communicate and exchange the engineering issues with industry peers and the general public, including writing reports and designing drafts, making speeches, and expressing or responding to directives. Having a certain international perspective to communicate and exchange on cross-cultural background.

11. Project Management: ability to understand and master the principles of project management and economic decision-making, which can be applied in a multi-disciplinary environment.

12. Lifelong learning: having consciousness of self-learning and lifelong learning, and able to adapt to fast development.

V. Core courses

Engineering Graphics, Theoretical Mechanics, Mechanics of Materials, Fundamentals of Thermo-Dynamics, Fundamentals of Control Engineering, Engineering Material and Forming Technology, Fundamentals of Machine Design, Fundamentals of Mechanical Manufacture, Hydraulic and Pneumatic Transmission, Interchangeability and Measurement Technology.

VI. Components of the 4-year Curriculum

Category	Credits
1. General Education Courses	22
2. Discipline Education Courses	40.5
3. Specialized Courses	83
Total	145.5

VII. Table of Teaching Plan for Major of Mechanical Engineering

课程编码 Course No	课程名称 Course Name	学 分	总学 时	讲 课	实 验	上 机	实 践	学年-学期 Academic Year-Semester												开课 单位
								I-0	I-1	I-2	II-0	II-1	II-2	III-0	III-1	III-2	IV-0	IV-1	IV-2	
必修课程●通识教育课 (22 学分) Compulsory Course●Course of General Education																				
140228E1	中国概况【英】 Introduction to China[E]	2	32	32					2										114	
210206E1	太极拳【英】 Tai Chi[E]	2	32	32					2										122	
581113E2	汉语入门 (I)【英】 Fundamental Chinese (I)[E]	4	64	64					4										371	
580116E1	中国历史与文化【英】 Chinese History and Culture[E]	2	32	32					2										371	
582113E2	汉语入门 (II)【英】 Fundamental Chinese (II)[E]	4	64	64					4										371	
581114E1	汉语进阶 (I)【英】 Chinese for Specific Purpose (I)	4	64	64						4									371	
582114E1	汉语进阶 (II)【英】 Chinese for Specific Purpose (II)	4	64	64							4								371	
必修课程●学科教育课 (40.5 学分) Compulsory Course●Course of Discipline Education																				
060007E2	Visual C++程序设计【英】 VISUAL C++ Programming[E]	4	64	48		16			4										106	
111233E4	高等数学 (I)【英】 Advanced Mathematics (I)[E]	6	96	96					6										113	
051217E1	工程制图 (I)【英】 Engineering Drawing (I)[E]	3	48	48						3									101	
060009E1	Visual C++课程设计【英】 Course Design of VISUAL C++[E]	1	40			16	24		1										106	
111208E6	大学物理 (I)【英】 College Physics (I)[E]	4.5	72	72					4.5										113	
111209E4	大学物理实验(I)【英】 Experiments on College Physics (I)[E]	1.5	24		24				1.5										113	
112233E1	高等数学 (II)【英】 Advanced Mathematics (II)[E]	6	96	96					6										113	
052217E1	工程制图 (II)【英】 Engineering Drawing (II)[E]	2.5	40	27	13						2.5								101	
110312E3	线性代数【英】 Linear Algebra[E]	3	48	48							3								113	
112208E6	大学物理 (II)【英】 College Physics (II)[E]	4.5	72	72							4.5								113	
112209E4	大学物理实验(II)【英】 Experiments on College Physics (II)[E]	1.5	24		24						1.5								113	
110226E1	概率与统计【英】 Probability and Statistics[E]	3	48	48							3								113	
必修课程●专业基础课 (83 学分) Compulsory Course●Fundamental Specialized Course																				

课程编码 Course No	课程名称 Course Name	学分	总学时	讲课	实验	上机	实践	学年-学期 Academic Year-Semester									开课单位	
								I-0	I-1	I-2	II-0	II-1	II-2	III-0	III-1	III-2		IV-0
010723E1	机械工程导论【英】 Introduction to Mechanical Engineering[E]	1	16	16							1							101
110278E2	理论力学【英】 Theoretical Mechanics[E]	4	64	62	2						4							113
011241E3	机械设计基础（I）【英】 Fundamentals of Mechanical Design (I) [E]	3.5	56	48	8						3.5							101
041264E1	模拟电路与数字电路（I）【英】 Analog & Digital Circuits (I) [E]	2.5	40	40							2.5							104
100213E1	电工学【英】 Electrical Engineering[E]	3	48	40	8						3							104
110205E2	材料力学【英】 Mechanics of Materials[E]	4	64	58	6						4							113
111381E1	工程力学实验（I）【英】 Experiments on Engineering Mechanics (I) [E]	0.5	8		8						0.5							113
230201E5	金属工艺实习【英】 Metal Technics Practice[E]	4	160				160						4					369
160228E3	工程材料及成形工艺【英】 Engineering Materials and Forming Technology [E]	3	48	44	4								3					101
010583E2	热工基础【英】 Fundamentals of Thermo-Dynamics[E]	3	48	44	4								3					101
012241E3	机械设计基础（II）【英】 Fundamentals of Mechanical Design (II) [E]	3.5	56	48	8								3.5					101
040265E1	模拟与数字电路综合实验【英】 Comprehensive Experiments on Analog and Digital Circuits[E]	2	80				80							2				104
042264E1	模拟电路与数字电路（II）【英】 Analog & Digital Circuits (II) [E]	2.5	40	40									2.5					104
112381E1	工程力学实验（II）【英】 Experiments on Engineering Mechanics (II) [E]	0.5	8		8								0.5					113
050227E1	互换性与测量技术【英】 Interchangeability and Measurement Technology [E]	2.5	40	30	10								2.5					101
010242E1	机械设计基础课程设计【英】 Course Design of Fundamentals of	3	120				120							3				101

课程编码 Course No	课程名称 Course Name	学 分	总学 时	讲 课	实 验	上 机	实 践	学年-学期 Academic Year-Semester												开课 单位				
								I-0	I-1	I-2	II-0	II-1	II-2	III-0	III-1	III-2	IV-0	IV-1	IV-2					
	Mechanical Design[E]																							
010263E1	控制工程基础【英】 Fundamentals of Control Engineering[E]	3	48	42	6												3							101
010282E6	微机原理及接口技术【英】 Micro-computer System and Interface Technology[E]	3	48	38	6	4											3							101
050276E1	生产管理与控制【英】 Production Management and Control[E]	2	32	32													2							101
050297E4	液压与气压传动【英】 Hydraulic and Pneumatic Transmission[E]	3	48	44	4												3							101
051242E5	机械制造基础（I）【英】 Fundamentals of Mechanical Manufacture（I）[E]	3	48	42	6												3							101
050279E1	数控技术【英】 Numerical Control Technology[E]	3	48	42	6												3							101
010234E2	机电传动控制基础【英】 Fundamentals of Electromechanical Drive Control[E]	2	32	26	6																2			101
010237E2	测试技术【英】 Measuring and Testing Technology[E]	3	48	38	10																3			101
010492E2	机械制造基础课程设计【英】 Course Design of Mechanical Manufacture Fundamentals[E]	3	120				120														3			101
010779E1	专业综合实践【英】 Professional Comprehensive Practice[E]	3	48	16	32																3			101
052242E5	机械制造基础（II）【英】 Fundamentals of Mechanical Manufacture（II）[E]	2.5	40	34	6																2.5			101
010743E1	毕业设计【英】 Graduation Project[E]	10	560				560															10		101
	必修课程汇总 Compulsory Courses Total	145.5	3040	1731	209	36	1064	0	18	22	0	20.5	20.5	4	17	20	0	13.5	10					

注：学期为“0”的表示夏季学期，“1”秋季学期，“2”春季学期。

Notes: semester '0' stands for Summer semester, '1' and '2' stands for Autumn semester and Spring semester.

