Mechanical Engineering

(Grade 2022)

Course code: 080201

I. Cultivation Objectives

This program strives to strengthen the fundamental task of establishing moral values and educating people, promote the spirit of craftsmanship and the value orientation of the spirit of model workers, cultivate high quality applied technical talents with solid basic theories of natural science and engineering, good humanistic qualities and professional ethics, good communication and collaboration and lifelong learning ability, and comprehensive development of morality, intellect, physique, aesthetics and labour, who master the professional knowledge of mechanical design, mechanical manufacturing and its automation, have strong engineering practice ability, and can engage in design and manufacturing, technology development, engineering application, production management and technical services in mechanical engineering and its related fields.

Five years after graduation, students in this program should achieve the following objectives:

(1)Be able to meet the technological developments in mechanical engineering and propose solutions to complex engineering problems in mechanical engineering and related fields in practical work using professional theories and engineering knowledge.

(2)Have spirit of technological innovation, the ability to perform engineering innovation, the ability to comprehensively use expertise and modern tools, and the ability to engage in the design, development and production of products related to complex engineering problems in mechanical engineering and related fields to meet the needs of companies, institutions and users.

(3)Have the sense of social responsibility, an understanding of and adherence to professional standards, and the ability to integrate legal, safety, environmental and sustainability considerations into engineering practice

(4)Have good scientific and humanistic qualities, dedication to work, selflessness, teamwork, effective communication skills and the ability to manage engineering projects

(5)Have the ability to follow the latest developments and trends at both domestic and international levels in the field of mechanical engineering in practical work, have an international perspective, and the ability for independent and lifelong learning.

II. Requirement for Graduation

According to the motto of Shanghai Polytechnic University and the 12 graduation requirements of the General Standard of China Engineering Education Accreditation Association (CEEAA), the mechanical engineering program has expanded the core competencies and quality expressions of the 12 graduation requirements in accordance with the orientation of talent cultivation in our university, and the indicators of each graduation requirement are listed as follows:

1. Engineering Knowledge: The ability to apply mathematical, natural science and engineering fundamentals and expertise to the solution of complex engineering problems in mechanical engineering and related fields.

1-1: Master the concepts and principles of mathematics, physics and other natural sciences and engineering fundamentals, be able to understand their role in solving complex problems in the field of mechanical engineering and have the ability to apply them to mechanical engineering expertise.

1-2: Be able to develop and solve a mathematical model for a complex mechanical system or mechanical engineering process.

1-3: Be able to apply relevant knowledge and mathematical models to the derivation, analysis and discrimination of solutions to complex engineering problems in mechanical engineering and related fields.

1-4: Be able to apply mathematical models and relevant engineering knowledge to analyse, compare and attempt to improve solutions to complex engineering problems in mechanical engineering and related fields.

2. Analysis of the Problem: Be able to apply the fundamental principles of mathematics, natural and engineering sciences to identify, represent, and through literature research to analyse complex engineering problems in mechanical engineering and related fields in order to reach valid conclusions.

2-1: Be able to apply the fundamental principles of mathematics, natural and engineering sciences to identify and determine the key techniques and parameters of complex engineering problems in mechanical engineering and related fields.

2-2: Be able to correctly represent and analyse complex engineering problems in mechanical engineering and related fields based on relevant scientific principles and mathematical models.

2-3: Be able to recognize that there are multiple options for solving complex engineering problems in mechanical engineering and related fields and seek alternative and stand-by solutions through literature research.

2-4: Be able to apply basic principles of mechanical engineering and related fields to analyse how solutions may be affected during implementation and obtain valid conclusions.

3. Design/Development of Solutions: Be able to design solutions to complex engineering problems in mechanical engineering and related fields, to design mechanical systems, mechanical components or machining processes that meet specific needs, and demonstrate the spirit of innovation in the design process, taking into account social, health, safety, legal, cultural and environmental factors.

3-1: Master the basic design/development methods and techniques for the full life cycle and full process of mechanical engineering design and mechanical product development. Be able to describe design objectives and understand the factors that influence design objectives and technical solutions.

3-2: Be able to develop solutions and complete component and part designs for complex engineering problems in mechanical engineering and related fields.

3-3: Be able to design complex mechanical systems or manufacturing processes that meet specific requirements and to demonstrate the spirit of innovation in the design.

3-4: Be able to comprehensively consider social, health, safety, legal, ethical, cultural and environmental factors in design.

4. Research: Be able to use scientific principles and methods to investigate complex engineering problems in mechanical engineering and related fields, including designing experiments, analyzing and interpreting data, and synthesizing information to reach reasonable and valid conclusions.

4-1: Be able to investigate and analyse complex engineering problems in mechanical engineering and related fields based on scientific principles, combined with literature research or related methods.

4-2: Be able to select routes of research and design experimental protocols based on the characteristics of complex engineering problems in mechanical engineering and related fields, such as mechanical systems and control systems.

4-3: Be able to construct experimental systems based on experimental protocols, conduct experiments in a safe and standardized manner, and collect experimental data correctly.

4-4: Be able to correctly analyse and interpret experimental results and synthesise information to reach reasonable and valid conclusions.

5. Use of Modern Tools: Be able to develop, select and use appropriate techniques, resources, modern engineering tools and information technology tools for complex engineering problems in mechanical engineering and related fields, including prediction and simulation of complex engineering problems in mechanical engineering and related fields, and be able to understand their limitations.

5-1: Understand the principles and methods of using modern instruments, information technology tools, engineering tools and simulation software commonly used in mechanical engineering, and understand the limitations of their use.

5-2: Be able to select and use appropriate instruments, information resources, engineering tools and specialist simulation software to analyse, calculate and design complex engineering problems in mechanical engineering and related fields.

5-3: Be able to develop or select modern tools to meet specific needs, simulate and predict specialist problems for specific objects of complex engineering problems in mechanical engineering and related fields and be able to analyse their limitations.

6. Engineering and Society: Be able to perform reasonable analysis based on engineering-related contextual knowledge and evaluate how engineering practices and solutions to complex engineering problems in mechanical engineering and related fields may impact society, health, safety, law, and culture, and understand the responsibilities involved.

6-1: Understand the system of technical standards, intellectual property rights, industrial policies and laws and regulations in fields related to mechanical engineering and understand the impact of different social cultures on engineering activities.

6-2: Be able to analyze and evaluate the impacts of mechanical engineering practices and complex engineering problems on society, health, safety, law, culture and the impacts of these constraints on project implementation, and understand the responsibilities involved.

7. Environment and Sustainable Development: Be able to understand and evaluate the impacts of engineering practices for complex engineering problems in mechanical engineering and related fields on environment and sustainable development of society.

7-1: Understand the meaning and significance of environmental protection and sustainable development of society and be able to practise environmental protection and sustainable development of society when solving complex engineering problems in mechanical engineering and related fields.

7-2: Be able to evaluate the potential damage and hazards to humans and the environment in relation to actual mechanical engineering projects, and understand the social, safety and legal responsibilities involved.

8. Professional Codes: Have humanistic, social and scientific qualities, social responsibility, and the ability to understand and comply with engineering ethics and codes in the practice of mechanical engineering and fulfill the responsibilities.

8-1: Have humanistic, social and scientific qualities, correct values, understanding of the relationship between the individual and society, and knowledge of the Chinese context.

8-2: Understand the engineering ethics and codes of honesty, fairness and integrity, and be able to consciously observe them in the practice of mechanical engineering.

8-3: Understand the social responsibility of mechanical engineers for the safety, health and well-being of the public, and for environmental protection, and be able to consciously exercise this responsibility in the practice of mechanical engineering.

9. Individual and Team: Be able to assume the role of individual, team member and leader of multidisciplinary team.

9-1: Be able to communicate effectively and collaborate proactively with members of other disciplines.

9-2: Be able to work independently or cooperatively in a team and have good teamwork spirit.

9-3: Be able to assume the role of team leader, manage the work schedule of the project, and organize and coordinate the work of team members.

10. Communication: Be able to communicate and interact effectively with industry peers and the public on complex engineering issues in mechanical engineering and related fields, including writing reports and design submissions, presenting statements, clearly expressing or responding to instructions, and having an international perspective and the ability to communicate and interact in a cross-cultural context.

10-1: Be able to express views accurately, respond to challenges and understand the differences in communication with industry peers and the public on complex engineering issues in mechanical engineering and related fields, either orally, in manuscripts, diagrams or drawings.

10-2: Understand international trends and research hotspots in the field of mechanical engineering, as well as understand and respect the differences and diversity of different cultures around the world.

10-3: Be able to communicate verbally and in writing across cultures and to communicate and interact in a basic way in the cross-cultural context on complex engineering issues in mechanical engineering.

11. Project Management: Understand and master the principles of engineering management and economic decision-making methods and be able to apply them in a multidisciplinary environment.

11-1: Master the principles of engineering management and economic decision-making methods involved in mechanical engineering activities.

11-2: Understand the cost components of engineering and mechanical products throughout their life cycle and processes, and understand the engineering management and economic decision-making issues involved.

11-3: Be able to apply engineering management and economic decision-making methods in the design and development of mechanical engineering project solutions in a multidisciplinary environment (including simulated environment).

12. Lifelong Learning: Have the spirit of independent and lifelong learning and the ability to learn and adapt to development constantly.

12-1: Be able to properly understand the necessity of self-exploration and lifelong learning and have the spirit of independent and lifelong learning.

12-2: Master the methods of independent learning, understand the ways to expand knowledge and abilities, pay attention to the dynamics of development of the profession and have the ability to adapt to development and update knowledge.

The Support of Graduation Requirements for Cultivation Objectives

Requirements for Graduation	Objective 1	Objective 2	Objective 3	Objective 4	Objective 5
1. Engineering Knowledge	√				
2. Analysis of the Problem	√				
3. Design/Development of Solutions	√				
4. Research		√			
5. Use of modern tools		√			
6. Engineering and Society			√		
7. Environment and Sustainable Development			√		√
8. Professional Codes			√		
9. Individual and Team		√		√	
10. Communication				√	√
11. Project Management				√	
12. Lifelong Learning					√

III. Schooling System

Four years.

IV. Length of Study

Flexible study period, generally four years, the minimum length of flexibility is not less than three years, the longest not more than six years.

V. Requirements for Graduation and Degree Conferring

Students of this program must complete the minimum credits required for each category of courses and complete all the content specified in extracurricular class according to the requirements of the instructional training plan, and the total credits must reach 165 credits for graduation; those who meet the requirements for bachelor's degree can be conferred bachelor degree in engineering.

VI. Discipline

Mechanical Engineering, Mechanics.

VII. Core Courses

Introduction to Engineering, Modern Engineering Drawing I, Modern Engineering Drawing II, Engineering Mechanics I, Engineering Mechanics II, Principles of Mechanics, Mechanical Design, Electrical and Electronic Engineering, Fundamentals of Mechanical Engineering, Mechanical Engineering Processes, CNC Machine Tools and Programming, Production Management for Intelligent Manufacturing (MES/ERP), Practice of Interchangeability and Measurement Technology, Practice of Computer Aided Design and Manufacturing, Practice of CNC Programming and Machining, Practice of Mechanism Processes Design, Comprehensive Practice of Mechanical Engineering.

VIII. Course Structure and Course Hours (Excluding Extracurricular Class)

Category	**Total Credit**	**%**	**Total Course Hours**	**Theory Learning**	**Practical Training**
Public Fundamental Course	59.5	36	1088	1004	84
General Education	10	6	160	160	0
Engineering Fundamental Course	20	12	320	278	42
Professional Fundamental Course	18	11	288	253	35
Professional Course	19	12	304	240	64
Professional Practice	37.5	23	1048	0	1048
Total	164	100	3208	1935	1273
Theory: **Practical** (%)	60: 40				

IX. Teaching schedule (1)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hours	Theory Learning	Practical Training	Recommended Semester
Public Fundamental Course	required	School of Marxism	b1080006	Outline of Modern Chinese History	non-test	3	48	42	6	Autumn 1
	required	Others	b1110004	Mental Health Education for University Students	non-test	2	32	16	16	Autumn 1
	required	School of Marxism	b1080001	Basic Principles of Marxism	test	3	48	42	6	Spring 1
	required	School of Marxism	b1080009	Ethics and the Rule of Law	non-test	3	48	42	6	Spring 1
	required	School of Marxism	b1080004	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics I	test	3	48	42	6	Autumn 2
	required	School of Marxism	b1080007	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics II	test	2	32	28	4	Spring 2
	required	School of Marxism	-----	Situation and Policy (Modules 1 to 4)	non-test	2	32	28	4	Autumn 1 to Spring 2
	required	School of Marxism	b1080008	Labour Education A	non-test	0.5	16	16		Autumn 2
	required	College of Arts and Sciences	b1020080+	Advanced Mathematics A1	test	4	64	64		Autumn 1
	required	College of Arts and Sciences	b1020081+	Advanced Mathematics A2	test	4	64	64		Spring 1
	required	College of Arts and Sciences	b1020012	Linear Algebra	test	2	32	32		Autumn 2
	required	College of Arts and Sciences	b1020013	Probability Theory and Mathematical Statistics	test	2	32	32		Autumn 2
	required	College of Arts and Sciences	b1020023	Functions of complex variables and integral transformations	non-test	2	32	32		Spring 2
	required	College of Arts and Sciences	b1020076	Calculation method	test	2	32	32		Spring 2
	required	College of Arts and Sciences	b1020062	Academic Physics A (Module 1)	test	3	48	48		Spring 1
	required	College of Arts and Sciences	b1020065	Academic Physics B	test	2	32	32		Autumn 2
	required	College of Arts and Sciences	b1020111	Academic Physics C	non-test	2	32		32	Spring 1
	required	College of Resources and Environment	b1013001	Academic Chemistry	test	2	32	28	4	Autumn 1
	required	College of Arts and Sciences	b1020018	Academic Chinese	non-test	2	32	32		Spring 1
	required	Others	b1110003	Military Skills	non-test	0.5	2W			Autumn 1
	required	College of Arts and Sciences	b1110002	Military Theory	non-test	0.5	32	32		Autumn 2
	required	College of Physical Education	-----	Physical Education I to VI	non-test	3	160	160		Autumn 1 to Autumn 4
	Foreign Language Module (two choose one)	English Modules	b1020003	General English III	test	3	48	48		Autumn 1
			b1020004	General English IV	test	3	48	48		Spring 1
			b1020005	General Academic English A	test	2	32	32		Autumn 2
			---	English Knowledge Expansion	non-test	2	32	32		Spring 2
		German modules	b1020090	Academic German 1	test	3	96	96		Autumn 1
			b1020061	Training of German 1	non-test	(6)	(96)	(96)		Autumn 1
			b1020091	Academic German 2	test	2	64	64		Spring 1
			b1020067	German 2 Training Course	non-test	(10)	(160)	(160)		Spring 1
			b1020092	Academic German 3	test	3	96	96		Autumn 2
			b1020031	German 3 Training Course	non-test	(6)	(96)	(96)		Autumn 2
			b1020093	Academic German 4	test	2	64	64		Spring 2
			b1020033	German 4 Training Course	non-test	(6)	(96)	(96)		Spring 2
Subtotal			**Subtotal**	**(Public Fundamental Course)**		**59.5**	**1088**	**1004**	**84**	
General Education	selective	Art Education Center	b0 ---	Aesthetic Education	non-test	2	32	32		Autumn, Spring
	selective	Each Colleges	b0 ---	Social Sciences and Humanistic Qualities	non-test	4	64	64		Autumn, Spring
				Natural Sciences and Technology Innovation	non-test	4	64	64		Autumn, Spring
Subtotal			**Subtotal**	**(General Education)**		**10**	**160**	**160**	**0**	

IX. Teaching schedule (2)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hours	Theory Learning	Practical Training	Recommended Semester
Engineering Fundamental Course	required	School of Intelligent Manufacturing and Control Engineering	b2011137jx	Modern Engineering Drawing I	test	3	48	40	8	Autumn 1
	required	School of Intelligent Manufacturing and Control Engineering	b2011138jx	Modern Engineering Drawing II	non-test	3	48	32	16	Spring 1
	required	School of Intelligent Manufacturing and Control Engineering	b2011397jx	Fundamentals of Engineering Materials	test	2	32	28	4	Spring 1
	required	School of Intelligent Manufacturing and Control Engineering	b2011049jx	Engineering Mechanics I	test	3	48	48		Autumn 2
	required	School of Intelligent Manufacturing and Control Engineering	b2011050jx	Engineering Mechanics II	test	3	48	44	4	Spring 2
	required	Engineering Training	b2090001	Electrical and Electronic Engineering	test	3	48	42	6	Spring 2
	required	School of Intelligent Manufacturing and Control Engineering	b2011901jx	Fundamentals of Thermal Engineering and Fluid Mechanics	test	3	48	44	4	Autumn 3
Subtotal (Engineering Fundamental Course)						**20**	**320**	**278**	**42**	
Professional Fundamental Course	required	School of Intelligent Manufacturing and Control Engineering	b2011188jx	Introduction to Engineering	non-test	1	16	16		Autumn 1
	required	Engineering Training	b2090012	Fundamentals of Programming C++	test	2	32	26	6	Autumn 2
	required	School of Intelligent Manufacturing and Control Engineering	b2011079jx	Mechanical principles	test	3	48	42	6	Spring 2
	required	School of Intelligent Manufacturing and Control Engineering	b2011080jx	Fundamentals of machine building	test	3	48	42	6	Spring 2
	required	School of Intelligent Manufacturing and Control Engineering	b2011077jx	Mechanical design	test	3	48	45	3	Autumn 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011047jx	Principles of engineering control	test	2	32	30	2	Autumn 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011016jx	Testing techniques	non-test	2	32	26	6	Spring 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011143jx	Project Management	non-test	2	32	26	6	Spring 3
Subtotal (Professional Fundamental Course)						**18**	**288**	**253**	**35**	
Professional Course	required	School of Intelligent Manufacturing and Control Engineering	b2011520	Scientific and Technical Paper Writing and Literature Search	non-test	1	16	16	0	Autumn 2
	required	School of Intelligent Manufacturing and Control Engineering	b2011182jx	Programmable Controllers (PLC)	non-test	2	32	24	8	Autumn 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011902jx	Mechanical manufacturing processes	test	2	32	26	6	Autumn 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011903jx	CNC machines and programming	test	2	32	26	6	Autumn 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011152jx	Hydraulic and Pneumatic Transmission	test	2	32	28	4	Spring 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011055jx	Industrial robots and applications	non-test	2	32	24	8	Spring 3
	required	School of Intelligent Manufacturing and Control Engineering	b2011433jx	Management for Intelligent Manufacturing (MES/ERP)	test	2	32	24	8	Spring 3
	Subtotal (Required Professional Course)					**13**	**208**	**168**	**40**	
	Selective 6 credits	School of Intelligent Manufacturing and Control Engineering	b2011904jx	Fundamentals of Micro Control Unit technology	test	2	32	24	8	Autumn 3
		School of Intelligent Manufacturing and Control Engineering	b2011181jx	Electromechanical Transmission control	non-test	2	32	24	8	Autumn 3
		School of Intelligent Manufacturing and Control Engineering	b2011494jx	Intelligent control systems	test	2	32	26	6	Autumn 3
		School of Intelligent Manufacturing and Control Engineering	b2011141jx	Modern design theory and methods	non-test	2	32	26	6	Spring 3
		School of Intelligent Manufacturing and Control Engineering	b2011156jx	Finite Element Analysis and Practice	non-test	2	32	24	8	Spring 3
		School of Intelligent Manufacturing and Control Engineering	b2011469jx	Precision and ultra-precision machining technology	non-test	2	32	26	6	Spring 3
		School of Intelligent Manufacturing and Control Engineering	b2011135jx	Advanced Manufacturing Technology	non-test	2	32	26	6	Autumn 4
		School of Intelligent Manufacturing and Control Engineering	b2011905jx	Additive manufacturing technology	non-test	2	32	24	8	Autumn 4
		School of Intelligent Manufacturing and Control Engineering	b2011906jx	Fault diagnosis and analysis of intelligent equipment	non-test	2	32	24	8	Autumn 4
		School of Intelligent Manufacturing and Control Engineering	b2011907jx	Artificial intelligence technologies and applications	non-test	2	32	26	6	Autumn 4
	Subtotal (Selective Professional Course)					**6**	**96**	**72**	**24**	
Subtotal (Professional Course)						**19**	**304**	**240**	**64**	

IX. Teaching schedule (3)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hours	Theory Learning	Practical Training	Recommend Semester
Professional Practice	required	Engineering Training	b4090001	Basic Engineering Training A	non-test	3	72		72	Summer 1
	required	School of Intelligent Manufacturing and Control Engineering	b4011088jx	Modern Engineering Drawing and Surveying	non-test non-test	2	48		48	Summer 1
	required	School of Intelligent Manufacturing and Control Engineering	b4011106jx	Corporate Awareness Internship	non-test	1	24		24	Summer 2
	required	School of Intelligent Manufacturing and Control Engineering	b4011255jx	Practice of Interchangeability and Measurement Technology A	non-test	3	72		72	Summer 2
	required	School of Intelligent Manufacturing and Control Engineering	b4090005	Internship of Electrical Engineering Skills	non-test	1	24		24	Summer 2
	required	School of Intelligent Manufacturing and Control Engineering	b4011059jx	Practice of Computer Aided Design and Manufacturing	non-test	3	72		72	Autumn 3
	required	School of Intelligent Manufacturing and Control Engineering	b4011111jx	Practice of CNC Programming and Machining	non-test	3	72		72	Spring 3
	required	School of Intelligent Manufacturing and Control Engineering	b4000012	Innovation and Entrepreneurship in Mechanical Engineering	non-test	2	48		48	Spring 3
	required	School of Intelligent Manufacturing and Control Engineering	b4011339	Labour Education B	non-test	0.5	16		16	Spring 3
	required	School of Intelligent Manufacturing and Control Engineering	b4011302jx	Mechanical Design and Course Design (English)	non-test	2	48		48	Spring 3
	required	School of Intelligent Manufacturing and Control Engineering	b4011166jx	Design practice of mechanism process protocols	non-test	2	48		48	Summer 3
	required	School of Intelligent Manufacturing and Control Engineering	b4011905jx	Mechanical systems design and precision manufacturing project integration	non-test	2	48		48	Summer 3
	required	School of Intelligent Manufacturing and Control Engineering	b4011256jx	Multi-axis machining and practice of simulation	non-test	2	48		48	Autumn 4
	required	School of Intelligent Manufacturing and Control Engineering	b4011906jx	Mechanical Engineering Internship	non-test	2	48		48	Autumn 4
	required	School of Intelligent Manufacturing and Control Engineering	b4011264jx	Comprehensive Practice of Mechanical Engineering	non-test	3	72		72	Autumn 4
	required	School of Intelligent Manufacturing and Control Engineering	b4011247	Mechanical Engineering Graduation Internship and Graduation Design (Thesis)	non-test	6	288		288	Spring 4
Subtotal (Professional Practice)						**37.5**	**1048**		**1048**	
Extracurricular Class	required	Others	b5110001	Extracurricular Class	non-test	**1**	-	-	-	Autumn, Spring, Summer
Total						**165**	**3208**	**1935**	**1273**	

Explanation of the relevance of professional certificates to the course:

Through the courses of "Modern Engineering Drawing", "Modern Engineering Drawing and Surveying" and "Practice of Computer Aided Design and Manufacturing", mechanical engineering students can take the examinations for UG/Solidworks Advanced Certificate and other professional certificates related to this program; through the courses of "Machinery Manufacturing Process", "CNC Machine Tools and Programming", "Practice of CNC Programming and Machining", "Mechanical System Design and Precision Manufacturing Project Integration", mechanical engineering students can take the examinations for professional certificates related to this program such as CNC Milling, CNC assembly, commissioning and maintenance as well as can apply for the trainee professional engineer qualification certificate (China Construction Machinery Society).

X. Prerequisite for Course Study

No.	Course Name	Prerequisite Course	No.	Course Name	Prerequisite Course
1	Engineering Mechanics I	Advanced Mathematics A1	9	Practice of Interchangeability and Measurement Technology A	Modern Engineering Drawing
		Advanced Mathematics A2			Fundamentals of Engineering Materials
		Academic Physics			Fundamentals of machine building
2	Mechanical principles	Advanced Mathematics A1	10	Mechanical Design and Course Design (English)	Mechanical principles
		Advanced Mathematics A2			Mechanical design
		Engineering Mechanics I			Practice of Computer Aided Design and Manufacturing
3	Mechanical design	Modern Engineering Drawing	11	Hydraulic and Pneumatic Transmission	Advanced Mathematics A1
		Engineering Mechanics I			Advanced Mathematics A2
		Engineering Mechanics II			Modern Engineering Drawing
		Mechanical principles			Fundamentals of Thermal Engineering and Fluid Mechanics
4	Electrical and Electronic Engineering	Advanced Mathematics A1	12	Industrial robots and Applications	Programmable controllers (PLC)
		Advanced Mathematics A2			Hydraulic and Pneumatic Transmission
		Academic Physics			Testing techniques
5	Principles of engineering control	Advanced Mathematics A1	13	Practice of Computer Aided Design and Manufacturing	Modern Engineering Drawing
		Advanced Mathematics A2			Fundamentals of machine building
		Academic Physics			Mechanical manufacturing processes
		Electrical and Electronic Engineering			CNC machines and programming
6	Fundamentals of machine building	Modern Engineering Drawing	14	Design practice of mechanism process protocols	Fundamentals of machine building
		Fundamentals of Engineering Materials			Mechanical manufacturing processes
		Basic Engineering Training A			CNC machines and programming
7	Mechanical manufacturing processes	Modern Engineering Drawing	15	Mechanical systems design and precision manufacturing project integration	Programmable Controllers (PLC)
		Mechanical design			CNC machines and programming
		Fundamentals of machine building			Industrial robots and applications
		Practice of Interchangeability and measurement technology			Practice of Computer Aided Design and Manufacturing
8	CNC machines and Programming	Modern Engineering Drawing	16	Comprehensive Practice of Mechanical Engineering	Mechanical manufacturing processes
		Fundamentals of machine building			Programmable Controllers (PLC)
		Mechanical manufacturing processes			Hydraulic and Pneumatic Transmission
		Practice of Interchangeability and measurement technology			Practice of Computer Aided Design and Manufacturing

XI. Credit of Extracurricular Class

Through taking extracurricular classes, students are encouraged to take part in academic lectures, social practice activities, campus cultural and sports activities, innovative and entrepreneurial activities, voluntary activities, etc. to improve their social adaptability and enhance the competitiveness in the job market. Details are specified in Students' Manual.