

# **Instructive Cultivation Plan for the Program of Material Forming and Control Engineering**

**(Grade 2021)**

**Program Code: 080203**

## **I. Orientation**

The program of Material Forming and Control Engineering is oriented to the needs of the machinery manufacturing industry in the Yangtze River Delta region, focusing on basic theories and basic skills in the advantageous directions of metal plastic forming technology, polymer material parts forming technology and equipment manufacturing, and cultivate application-oriented technical personnel with good professionalism and solid professional skills for material forming process analysis and equipment manufacturing.

## **II. Cultivation Objectives**

### 1. General cultivation objective

This program intends to cultivate application-oriented engineering and technical talents with material forming process analysis and research capabilities who are comprehensively developed on the aspects of morality, intelligence, physique, beauty and labor, meet the needs of national and regional economic development, have critical thinking and lifelong learning ability, adhere to the core value of socialism, engaged in the development of metal plastic forming and plastic forming products and processes in the field of machinery manufacturing, mold design and manufacturing, product quality control and production management, etc., have computer application capabilities and advanced forming technology research and development capabilities.

### 2. Objective of value guidance

Adhering to the school motto of "Sound in morality, broad in learning, and better in life" and the education concept of "Student-centered, driven by student learning and development outcomes", this program deeply integrates general education and professional education through the talent cultivation mode of core value shaping, comprehensive ability cultivation and multi-dimensional knowledge exploration, and focuses on cultivating application-oriented engineering and technical talents with persistent faith, excellent morality, rich knowledge and excellent skills.

### 3. Objectives to be achieved five years after graduation for students:

1: Have excellent ideological quality, scientific literacy and humanistic quality.

2: Able to solve complex engineering problems using basic theoretical knowledge in the field of Material Forming and Control Engineering.

3: Capable of working in technical development, design and manufacturing and production management in the field of Material Forming and Control Engineering and the intersection of materials science and machine manufacturing.

4: Have a strong sense teamwork and possess the communication skills, organization and coordination skills and leadership skills.

5: Be able to adapt to future development with life-long learning ability, sustainable development concept and international perspective.

6: Able to adapt to the requirements for professionals in advanced materials preparation, processing and machinery manufacturing.

### **III. Requirements for Graduation**

**1. Engineering knowledge: Able to apply mathematics, physics, chemistry, engineering fundamentals and professional knowledge to solve complex engineering issues in material forming.**

1.1 Master mathematical knowledge, have strong mathematical calculation ability and able to apply it to the expression of scientific issues;

1.2 Master physical, chemical, mechanical and other aspects of natural science knowledge, and able to apply it to analyze scientific issues;

1.3 Master technical knowledge related to electrical and mechanical engineering, and able to use it to describe, solve and analyze engineering issues;

1.4 Master basic theoretical knowledge of Material Forming and Control Engineering, able to analyze and solve complex engineering issues of Material Forming and Control Engineering by comprehensive application of mathematics, natural science, engineering foundation and professional knowledge.

**2. Problem analysis: be able to apply basic principles of mathematics, natural science and engineering science to identify, express, and analyze complex Material Forming and Control Engineering issues through literature research, thus obtaining effective conclusions.**

2.1 Able to identify, express and analyze scientific issues in the field of Material Forming and Control Engineering by applying basic principles of mathematics, physics, chemistry, mechanics and machinery;

2.2 Able to analyze and judge the problems related to material forming and control engineering by applying professional basic knowledge and literature retrieval;

2.3 Able to analyze the influencing factors of the process through comprehensive application of basic principles, professional knowledge and skills and literature research to obtain efficacious conclusions.

**3. Designing/developing solutions: Able to design solutions to complex engineering problems generated in material molding process development, mold design and manufacturing, to design parts process, mold design and manufacturing processes that meet specific requirements, in the meanwhile, reflect the consciousness of innovation and fully consider social, health, safety, legal, cultural, environmental and other factors.**

3.1 Master the basic methods and technologies of material forming process, analyze various factors affecting design objectives and technical schemes;

3.2 Able to design/develop forming technology and process flow reasonably based on the basic rules of material composition, organization, structure, production process and performance, aiming at complex engineering problems of material forming process and control process, to satisfy specific requirements;

3.3 Understand relevant domestic and international standards of material forming and control engineering industry, and can reflect the consciousness of innovation and fully consider social, health, safety, legal, cultural, environmental and other factors;

**4. Research: Based on the basic principles of materials science and engineering, able to use**

**scientific methods to study complex engineering issues, including experimental design, analysis and interpretation of experimental data, and obtain reasonable and effective conclusions through information synthesis.**

4.1 Master the basic principles and methods of natural science experiments, and be able to carry out experimental design, analysis and summary for complex engineering issues;

4.2 Able to design analysis, testing, inspection and other experiments related to the major based on the basic principles and scientific methods of material forming and control engineering;

4.3 Able to accurately analyze and interpret experimental results, and obtain reasonable and effective conclusions through information synthesis.

**5. Modern tools: Able to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for complex engineering problems in the field of material forming, conduct prediction and simulation, and able to understand their limitations.**

5.1 Able to develop, select and use modern preparation and testing professional equipment and technology to analyze complex engineering problems of material forming;

5.2 be able to use engineering technology software to analyze complex engineering problems in the field of material forming and control;

5.3 Able to conduct prediction and simulation analysis to complex engineering problems of material forming by applying modern engineering tools and information processing technology, and understand the limitations of the tools and technology.

**6. Engineering and social interaction: Able to conduct reasonable analysis based on the background knowledge of Material Forming and Control Engineering, evaluate the impact of material forming engineering practices and solutions to complex engineering problems on society, health, safety, laws and culture, and understand the corresponding responsibility.**

6.1 Understand the technical standards, intellectual property rights, industrial policies, laws and regulations related to Material Forming and Control Engineering industry;

6.2 Able to correctly analyze and predict the social, health, safety, legal and cultural impacts of product design, technical development and processing procedures in the field of material forming and control engineering, and understand the responsibilities to be assumed.

**7. Environment and sustainable development: be able to understand and evaluate the impact of engineering practices of complex engineering issues generated in material forming on the environment and the sustainable development of society.**

7.1 Understand the connotation and significance of environmental protection and social sustainable development, and able to fulfill the concept of environmental protection and sustainable development when solving complex problems of material forming and control engineering;

7.2 Able to comprehensively evaluate the impact of engineering practices of Material Processing and Control Engineering program on the environment and social sustainable development for actual engineering projects.

**8. Professional norms: With humanistic social science literacy and social responsibility and able to understand and abide by engineering professional ethics and standards in the practice of material forming engineering, and fulfill responsibilities.**

8.1 With good ideological accomplishment, social morality and humanistic social science

accomplishment;

8.2 Able to correctly understand the scientific development path of China's sustainable development and the social responsibility of individuals;

8.3 Able to understand and abide by engineering professional integrity and standards in engineering practice and fulfill responsibilities..

**9. Individuals and teams: Able to assume the roles of individual, team member and leader in a team with a multidisciplinary background.**

9.1 Have basic interpersonal and communication skills, and able to communicate effectively with members of other disciplines and work independently or cooperatively;

9.2 Able to organize, coordinate and conduct team work in a multidisciplinary team.

**10. Communication: Able to effectively communicate and exchange with industry colleagues and the public on complex engineering issues in the field of material forming, including composing reports, designing manuscripts making statements, clearly expressing or responding to instructions, and have a certain international perspective, and able to communicate and exchange in a cross-cultural context.**

10.1 Good verbal and written expression skills, able to effectively communicate and exchange with colleagues in the industry and the public on complex engineering issues related to Material Forming and Control Engineering;

10.2 Have a certain international perspective and the ability of cross-cultural communication, competition and cooperation, able to communicate information and read professional literature in foreign language.

**11. Project management: Understand and master engineering management principles and economic decision-making methods, and able to apply them skillfully in a multidisciplinary environment.**

11.1 Have certain knowledge of market-oriented economy, law and management, and understand engineering management principles and economic decision-making methods;;

11.2 Able to design and develop complex engineering problems of material forming in a multidisciplinary environment using engineering management and economic decision making methods.

**12. Lifelong learning: Have the consciousness of independent learning and lifelong learning, and have the ability to continuously learn and adapt to technological progress and social development.**

12.1 Understand the diversity of the technological environment and the requirements of technological progress on knowledge and capabilities;

12.2 Have the ability to learn continuously and adapt to technological progress and social development.

**IV. Schooling System**

Four years

**V. Length of Study**

Flexible study period, generally four years, the minimum length of flexibility shall not be less than three years, the maximum thereof shall not be more than six years.

## **VI. 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 152 for graduation; those who meet the requirements for bachelor's degree can be conferred Bachelor of Engineering Science.

## **VII. Major Disciplines**

Mechanical Engineering, Material Processing Engineering

## **VIII. Core Courses**

### 1. Modern Engineering Drawing (96 course hours)

Through the study of this course, students will be able to master the basic theory of projection method, master the projection laws of spatial points, lines, surfaces and bodies, master the projection diagram expression methods of mechanical parts, able to draw engineering drawings correctly and skillfully with common drawing tools and instruments, master the computer drawing ability of engineering drawings, master the general methods and specific steps of reading engineering drawings, and comprehensively improve the comprehensive quality of mechanical disciplines.

### 2. Engineering Mechanics I (48 course hours)

"Engineering Mechanics I" is a highly theoretical technical basic course. Through the study of "Engineering Mechanics I", students will be able to select the isolator from the mechanism or structure and draw the free-body diagram accurately; be able to analyze the static force of the component and determine the binding force correctly; understand and solve the friction of the plane force system; correctly calculate the velocity and acceleration of a point, the angular velocity and angular acceleration of a rigid body; understand the relativity of motion, master the method of point motion and synthesis; correctly calculate the velocity and acceleration of each point on a rigid body in plane motion; use dynamics general theorems (theorem of momentum, theorem of moment of momentum, theorem of kinetic energy, theorem of mass center motion, differential equation of fixed axis rotation) to solve dynamic problems; use D'Alembert principle to solve dynamic reaction problems; understand the principle of virtual displacement.

### 3. Engineering Mechanics II (48 course hours)

The course "Engineering Mechanics II" is a basic technical course. Through the study of "Engineering Mechanics II", students will obtain the preliminary ability to simplify general rod-like components into mechanical diagrams; be able to make the internal force diagrams of rods under basic deformation proficiently, calculate their stress and displacement, and carry out strength and stiffness calculations; understand the concept of stress state and strength theory, and apply it to the strength calculation of rods under combined deformation; understand the method of solving simple statically indeterminate problems; understand the concept of stability of compression rods, and be able to calculate the critical load and critical stress of axial compression rod, and check for stability; understand the concepts of dynamic load coefficient in dynamic load and fatigue failure and endurance limit in alternating stress; have a preliminary understanding of the basic mechanical properties and test methods of commonly used materials; have a preliminary understanding of the basic principles and methods of stress analysis in electrical measurement experiments. Engineering and technical personnel who are proficient in the knowledge structure of the basic courses of engineering mechanics will surely be able to play an important role in promoting our country from a manufacturing country to a manufacturing power.

#### 4. Fundamentals of Mechanical Design (80 course hours)

Through the study of "Fundamentals of Mechanical Design", students will understand the working principles and design calculation methods of various mechanisms, have a preliminary ability of determining the transmission system scheme and mechanism, and cultivate and develop innovation ability. Understand the main types, performance, structural characteristics, applications, materials, standards of mechanical components, master the basic principles of mechanical design, working principles of mechanical parts, stress analysis, stress state, failure mode, working capacity calculation criteria, etc. Introduce the course learning from the mechanical design criteria, the history of the development of mechanics and the research and development of heavy machinery of a great power, and integrate the philosophy of socialist value outlook into the mechanical design through conceiving creativity and innovating design.

#### 5. Electrician and Electronics (48 course hours)

This course will enable students to master the basics of electrical engineering and electronics necessary for the program. Through the study of this course, students will master the basic concepts and basic laws of circuits, be familiar with the basic analysis methods of DC and AC circuits; be familiar with the transition process of circuits, and obtain the ability to read and analyze relay contact control circuits; be familiar with the knowledge of factory power transmission and distribution and safe power use; master the application characteristics of common semiconductor components and the application of amplifying circuits and integrated operational amplifiers, be familiar with negative feedback circuits, and be familiar with gate circuits and combinational logic circuits, and trigger sequential logic circuits; be familiar with the basic experimental methods of electrical and electronic application technology. The study of this course is a necessary condition for students to become builders in the field of mechanical and electrical integration in the process of socialist modernization and to inherit the spirit of craftsmanship.

#### 6. Fundamentals of Mechanical Manufacture (48 course hours)

This course teaches the basic knowledge in mechanical manufacturing, including the mechanical properties of commonly used metal materials, selection of metal materials and main heat treatment methods; basic knowledge of metal blank casting, forging, and welding forming methods; basic knowledge of cutting principles; based knowledge required for various cutting and machining methods of commonly used parts, and the machine tools, technology and other aspects required for the cutting process. Through the study of this course, students may promote the development of our country from a manufacturing country to a manufacturing power, and promote the process of socialist construction under the guidance of the spirit of craftsmen and model workers.

#### 7. Stamping Process and Die Design (48 course hours)

This course mainly teaches the characteristics of punching, bending, deep drawing, bulging, flanging and other basic stamping processes, as well as the mold design, expounds the foundation of stamping deformation basis, the basic principles of stamping process design and the basic method of stamping die design, as well as the multi-station progressive stamping forming and die design, stamping forming and die design of automobile covering parts process, special stamping forming technology. To train precise and responsible fresh forces for the progress and upgrading of China's automobile industry.

#### 8. Injection Molding Process and Mold Design (48 course hours)

This course mainly describes the basic composition of polymer materials, the process characteristics of common polymer materials, and the basic concepts and technical foundations of polymer material molding. Combined with the new development of mold technology, this course also explains the polymer material molding process, plastic product design and the theory, methods and skills of mold design. In order to help students understand the basic structure, assembly knowledge and operation principle of molds, this course also arranges corresponding mold disassembly experiments and

practices of visiting to the production site. Through the study of this course, students' ability of injection molding process analysis will be greatly improved, and their dedication to work will be further sublimated.

#### 9. Die Manufacturing (48 course hours)

This course mainly teaches the basic requirements and characteristics of mold manufacturing, mold manufacturing process and process specification formulation and dimension chain, knowledge and methods of positioning, criterion and clamping of mold work-pieces, common processing technology of mold forming parts, processing process of typical mold parts, special processing technology and mold assembly process foundation. This course is to cultivate students' ability to analyze mold structure technology, reasonably design molds, engage in mold manufacturing process technology and organize mold production management. The study of this course is a necessary link for students to truly become applied mold engineers.

#### 10. Intelligent Manufacturing Production Management (MES/ERP)

MES is a kind of monitoring and feedback to ERP planning and a system of field operation level. ERP is the refinement of business management on the production site and a system of business management level. This course introduces the definition and framework of MES as well as the rapid response manufacturing execution mode and technical system; teaches core technologies such as the coordination of manufacturing execution process, the associated management of complex information, the coordination of dynamic batch and material, the control of incremental assembly, production scheduling and so on; introduces the concept, development and general composition of ERP system; the relation and difference between MRP, MRPII and ERP; Manufacturing production planning and product life cycle; Basic ERP data environment such as material master file, bill of materials, process route, lead time and inventory records; Plan management, material management, shop floor control, procurement management and cost management, etc.

### IX. Main Practice

Comprehensive practice of mold drawing, interchangeability and measurement technology practice, mechanical design curriculum design, stamping mold curriculum design, injection mold curriculum design, computer-aided design, comprehensive practice of electromechanical liquid (gas) automation, innovation and entrepreneurship of material forming and control engineering, basic practice of material forming, comprehensive practice of material forming, graduation design (thesis), etc.

### X. Course Structure and Course Hours(excluding the extracurricular class)

Category	Total Credit	%	Total Course Hours	Theory Learning	Practical Training
Public Course	51.5	34	992	924	68
Basic Course	32	21	512	456	56
Professional Course	23	15	368	296	72
Professional Practice	33.5	23	1000	0	1000
General Course	11	7	176	144	32
Total	151	100	3048	1820	1228
Theory : Practice (%)	60:40				

### XI. Teaching Schedule (1)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Recommended Semester	
Public Course	Required	School of Marxism	b1080001	Basic Principles of Marxism	Test	3	48	42	6	Spring 1	
	Required	School of Marxism	b1080003	Ideological and Moral Cultivation and Basic Law Education	Non-test	3	48	42	6	Spring 1	
	Required	School of Marxism	b1080006	Outline of Chinese Modern History	Non-test	3	48	42	6	Autumn 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 (module 1~4)	Non-test	2	32	28	4	Autumn 1~spring 2	
	Required	School of Marxism	b1080008	Labor Education A	Non-test	0.5	16	16		Autumn 2	
	Required	School of Arts and Sciences	b1020080	Advanced Mathematics A1	Test	4	64	64		Autumn 1	
	Required	School of Arts and Sciences	b1020081	Advanced Mathematics A2	Test	4	64	64		Spring 1	
	Required	School of Arts and Sciences	b1020012	Linear algebra	Test	2	32	32		Autumn 2	
	Required	School of Arts and Sciences	b1020013	Probability Theory and Mathematical Statistics	Test	2	32	32		Autumn 2	
	Required	School of Arts and Sciences	b1020018	College Chinese	Non-test	2	32	32		Spring 1	
	Required	School of Arts and Sciences	b1020062	College Physics A(module 1)	Test	3	48	48		Spring 1	
	Required	School of Arts and Sciences	b1020065	College Physics B	Test	2	32	32		Autumn 2	
	Required	School of Arts and Sciences	b1020066	College Physics C	Non-test	1	32		32	Spring 1	
	Required	School of Arts and Sciences	b1020035	College Chemistry	Non-test	1	32	28	4	Spring 1	
	Required	School of Physical Education	----	Physical Education I~VI	Non-test	3	160	160		Autumn 1~autumn 4	
	Required	Others	b1110003	Military skills	Non-test	0.5	2W			Autumn 1	
	Required	School of Arts and Sciences	b1110002	Military theory	Non-test	0.5	32	32		Autumn 2	
	□ College English (10 credits for 1 module)	Module A		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 development	Non-test	2	32	32		Spring 2
		Module B		b1020002	General English II	Test	3	48	48		Autumn 1
				b1020003	General English III	Test	3	48	48		Spring 1
				b1020006	General Academic English B	Test	2	32	32		Autumn 2
				---	English development	Non-test	2	32	32		Spring 2
		Module C		b1020001	General English I	Test	4	64	64		Autumn 1
				b1020002	General English II	Test	3	48	48		Spring 1
			b1020003	General English III	Test	3	48	48		Autumn 2	
□ College German	School of Arts and Sciences	b1020040	College German I	Test	3	48	48		Autumn 1		
	School of Arts and Sciences	b1020041	College German II	Test	3	48	48		Spring 1		
	School of Arts and Sciences	b1020042	College German III	Test	4	64	64		Autumn 2		
□ College Japanese	School of Arts and Sciences	b1020077	College Japanese I	Test	3	48	48		Autumn 1		
	School of Arts and Sciences	b1020078	College Japanese II	Test	3	48	48		Spring 1		
	School of Arts and Sciences	b1020079	College Japanese III	Test	4	64	64		Autumn 2		
<b>Subtotal (public courses)</b>						<b>51.5</b>	<b>992</b>	<b>924</b>	<b>68</b>		



Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Recommended Semester
General Course	Required	Art Education Center	b0----	Aesthetic Education	Non-test	2	32	32		Autumn, spring
	Required	School of Intelligent Manufacturing	b2011470	Scientific paper writing and document retrieval	Non-test	2	32	32		Autumn 1
	Required	School of Intelligent Manufacturing	b2011467	Numerical Computation Method	Non-test	2	32	22	10	Autumn 3
	Required	School of Intelligent Manufacturing	b2011322	Fundamentals of Programming C++	Non-test	3	48	32	16	Spring 3
	Required	School of Intelligent Manufacturing	b2011142	Project Management (Bilingual)	Non-test	2	32	26	6	Autumn 4
<b>Subtotal (general courses)</b>						<b>11</b>	<b>176</b>	<b>144</b>	<b>32</b>	

(★ Note: First foreign language has a total of 10 credits, including College English, College German, and College Japanese. Choose the appropriate language according to your needs; among them, if you choose the College English, please select the appropriate module in module ABC)

## XI. Teaching Schedule (2)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Recommended Semester	
Basic Course	Required	School of Intelligent Manufacturing	b2011241	Introduction to Material Forming and Control Engineering	Non-test	1	16	14	2	Autumn 1	
	Required	School of Intelligent Manufacturing	b2011137	Modern Engineering Drawing I	Test	3	48	40	8	Autumn 1	
	Required	School of Intelligent Manufacturing	b2011138	Modern Engineering Drawing II	Test	3	48	32	16	Spring 1	
	Required	School of Intelligent Manufacturing	b2011049	Engineering Mechanics I	Test	3	48	48		Autumn 2	
	Required	School of Intelligent Manufacturing	b2011080	Fundamentals of Mechanical Manufacturing	Test	3	48	42	6	Autumn 2	
	Required	School of Intelligent Manufacturing	b2011050	Engineering Mechanics II	Test	3	48	44	4	Spring 2	
	Required	School of Intelligent Manufacturing	b2011473	Fundamentals of Mechanical Design	Test	5	80	74	6	Spring 2	
	Required	Engineering Training Center	b2090001	Electrician and Electronics	Test	3	48	42	6	Spring 2	
	Required	School of Intelligent Manufacturing	b2011176	Hydraulic and Pneumatic Transmission	Test	3	48	42	6	Spring 2	
	Required	School of Intelligent Manufacturing	b2011466	Fundamentals of Materials Science(English)	Test	3	48	46	2	Spring 2	
Required	School of Intelligent Manufacturing	b2011465	Thermodynamics and Heat Transfer	Non-test	2	32	32		Autumn 3		
<b>Subtotal (basic courses)</b>						<b>32</b>	<b>512</b>	<b>456</b>	<b>56</b>		
Professional Course	Required	School of Intelligent Manufacturing	b2011126	Principles of Plastic Forming	Test	2	32	30	2	Autumn 3	
	Required	School of Intelligent Manufacturing	b2011468	Material Forming Equipment and Automation	Non-test	2	32	30	2	Autumn 3	
	Required	School of Intelligent Manufacturing	b2011499	Injection Molding Process and Mold Design	Test	3	48	42	6	Autumn 3	
	Required	School of Intelligent Manufacturing	b2011500	Numerical Simulation of Injection Molding	Non-test	2	32	16	16	Autumn 3	
	Required	School of Intelligent Manufacturing	b2011092	Mold Manufacturing	Non-test	3	48	44	4	Autumn 3	
	Required	School of Intelligent Manufacturing	b2011501	Stamping Process and Die Design	Test	3	48	42	6	Spring 3	
	Required	School of Intelligent Manufacturing	b2011502	Numerical Simulation of Sheet Metal Forming	Test	2	32	20	12	Spring 3	
	<b>Subtotal (required professional courses)</b>						<b>17</b>	<b>272</b>	<b>224</b>	<b>48</b>	
	<input type="checkbox"/> Selective (6 credits)		School of Intelligent Manufacturing	b2011476	Additive Manufacturing Technology	Non-test	2	32	24	8	Spring 2
			School of Intelligent Manufacturing	b2011477	Material Surface Engineering	Non-test	2	32	24	8	Spring 2
			School of Intelligent Manufacturing	b2011478	Special Injection Molding Technology	Non-test	2	32	24	8	Spring 3
			School of Intelligent Manufacturing	b2011055	Industrial Robots and Applications	Non-test	2	32	24	8	Spring 3
			School of Intelligent Manufacturing	b2011480	Green Manufacturing and Remanufacturing	Non-test	2	32	24	8	Spring 3
			School of Intelligent Manufacturing	b2011474	Material Forming Lightweight Technology	Non-test	2	32	24	8	Autumn 4
			School of Intelligent Manufacturing	b2011475	Automobile Panel Forming Technology	Non-test	2	32	24	8	Autumn 4
		School of Intelligent Manufacturing	b2011479	Mold Life Cycle Management	Non-test	2	32	24	8	Autumn 4	
	School of Intelligent Manufacturing	b2011433	Intelligent Manufacturing Production Management (MES/ERP)	Test	2	32	24	8	Autumn 4		
<b>Subtotal (selective professional courses)</b>						<b>6</b>	<b>96</b>	<b>72</b>	<b>24</b>		
<b>Subtotal (professional courses)</b>						<b>23</b>	<b>368</b>	<b>296</b>	<b>72</b>		

### XI. Teaching Schedule (3)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Recommended Semester
Professional Practice	Required	School of Intelligent Manufacturing	b4011332	Cognition Practice	Non-test	1	24		27	Spring 1
	Required	School of Intelligent Manufacturing	b4011151	Computer Aided Design	Non-test	2	48		48	Summer 1
	Required	Engineering Training Center	b4090001	Basic Engineering Training A	Non-test	3	72		72	Summer 1
	Required	School of Intelligent Manufacturing	b4011340	Comprehensive Practice of Mold Drawing	Non-test	2	48		48	Autumn 2
	Required	School of Intelligent Manufacturing	b4011048	Comprehensive Practice of Electro-Hydraulic (Gas) Automation	Non-test	1	24		24	Summer 2
	Required	School of Intelligent Manufacturing	b4011043	Interchangeability and Measurement Technology Practice	Non-test	2	48		48	Summer 2
	Required	School of Intelligent Manufacturing	b4011056	Mechanical Design Curriculum Design	Non-test	2	48		48	Summer 2
	Required	School of Intelligent Manufacturing	b4000001	Innovation and Entrepreneurship of Material Forming and Control Engineering	Non-test	2	48		48	Spring 3
	Required	School of Intelligent Manufacturing	b4011333	Injection Mold Curriculum Design	Non-test	3	72		72	Spring 3
	Required	School of Intelligent Manufacturing	b4011339	Labor Education B	Non-test	0.5	16		16	Spring 3
	Required	School of Intelligent Manufacturing	b4011334	Stamping Die Curriculum Design	Non-test	3	72		72	Summer 3
	Required	School of Intelligent Manufacturing	b4011343	Basic practice of Material Forming	Non-test	2	72		72	Autumn 4
	Required	School of Intelligent Manufacturing	b4011344	Comprehensive Practice of Material Forming	Non-test	4	120		120	Autumn 4
Required	School of Intelligent Manufacturing	b4011250	Graduation Practice and Design (Thesis) of Material Forming and Control Engineering Program	Non-test	6	288		288	Spring 4	
<b>Subtotal (professional practice)</b>							<b>33.5</b>	<b>1000</b>	<b>1000</b>	
<b>Extracurricular Class</b>	Required	Others	b5110001	Extracurricular Class	Non-test	1				Autumn, spring, summer

#### Description of the interconnectedness between the courses and professional certificates:

Students who have passed Modern Engineering Drawing, Interchangeability and Measurement Technology Practice, Hydraulic and Pneumatic Transmission, Stamping Process and Die Design (CAD/CAE), Injection Molding Process and Mold Design (CAD/CAE), Mold Manufacturing and other courses can participate in professional qualification certificate assessments related to this program: mold worker (cold stamping die engineer) level three, mold worker (plastic tooling engineer) level three.

## XII. Prerequisite for Course Study

No.	Course name	Prerequisite Course	No.	Course name	Prerequisite Course
1	Engineering Mechanics	Advanced Mathematics A1	6	Principles of Plastic Forming	Advanced Mathematics
		Advanced Mathematics A2			Linear Algebra
		College Physics			Engineering Mechanics
2	Fundamentals of Mechanical Design	Advanced Mathematics A1	7	Computer Aided Design	Modern Engineering Drawing I
		Advanced Mathematics A2			Modern Engineering Drawing II
		Engineering Mechanics I	8	Stamping Process and Die Design	
		Modern Engineering Drawing		Fundamentals of Mechanic Manufacturing	
		Advanced Mathematics A2		Materials Science	Fundamentals of Mechanic Manufacturing
		College Physics			Computer Aided Design
		Modern Engineering Drawing			Fundamentals of Mechanic Manufacturing
4	Fundamentals of Mechanic Manufacturing	Interchangeability and Measurement Technology Practice	10	Mold Manufacturing	
		Basic Engineering Training			
				Comprehensive Practice of Material Forming	

## XIII. Credits for 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 service activities, etc. to improve their social adaptability and enhance the competitiveness in the job market. Please refer to the Students' Manual for details of regulations on *Implementation Measures(Trial) of the Credits for Extracurricular Classes of Shanghai Polytechnic University*.