

# **Instructive Cultivation Plan for the Program of Vehicle Engineering**

**(Grade 2020)**

**Course code: 080207**

## **1. Orientation**

Vehicle engineering program is oriented to the needs of the automobile manufacturing industry in the Yangtze River Delta region, guided by "career-oriented higher education", with application-oriented undergraduate education as the main body, and is student-centered and output-oriented. This program aims at cultivating application-oriented technical talents of automobile design, manufacturing and automobile testing, etc. who have advantageous direction, good professional quality and solid professional skills.

## **2. Cultivation Objectives**

### **1. General cultivation objective**

The vehicle engineering program aims at cultivating "wide-calibre, practice-oriented, and innovative" application-oriented technical talents who meet the needs of the country's modernization, are comprehensively developed on the aspects of morality, intelligence, physique, beauty, and labor, have a solid foundation in natural sciences, engineering and technology and a certain background in humanities and social sciences, have good ideas, business performance, culture, physical and psychological quality, have good communication skills and teamwork spirits, have a good ability to acquire knowledge and apply knowledge, have strong practical ability and certain innovation ability, be able to engage in complete vehicles and parts manufacturing, process design, testing and inspection, production organization and management, automotive marketing and management and other works in the fields of complete vehicle and component manufacturing, transportation, etc., and have expertise.

(1) Use the basic theories and professional knowledge of mechanical engineering and vehicle construction to carry out structural design, intelligent manufacturing and optimization of automobile assemblies or parts.

(2) Use theories and professional knowledge such as engine principle, automobile theory, automobile testing, automobile experiment, automobile electronics and control, virtual instrument technology, etc. to test and optimize the performance of the entire automobile, assembly or parts.

(3) Test the performance of new energy vehicles by using professional knowledge such as new energy vehicle principles and electrical motor control.

(4) Use professional knowledge of automobile production process control, automobile marketing, automobile insurance and claims settlement to carry out related work in the fields of automobile production site management and automobile service.

### **2. Objective of value guidance**

This program takes the spirit of model workers and craftsmanship as the value orientation to cultivate ingenuity and educate craftsmen. During the implementation of education and teaching, the engineering values and engineering ethics education are embedded in the teaching process through the spirit of craftsmanship, and students are cultivated to develop a rigorous, meticulous, focused and responsible work attitude, meticulously crafted and refined work philosophy, and master superb skills and exquisite skills, so as to promote China's "manufacturing" to China's "intelligent manufacturing" by improving quality, speed, product, and efficiency.

### 3. Objectives students must achieve five years after graduation:

Objective 1: Have a sound personality and good scientific and cultural literacy, have correct professional ethics, professional ethics and a sense of social responsibility.

Objective 2: Have the professional qualities as an engineer, be able to use the professional knowledge of vehicle engineering to engage in technical and management work related to vehicle engineering, and be able to engage in the design and improvement, upgrade or redesign, marketing and management of technology, production technology and production equipment in related engineering fields.

Objective 3: Be familiar with the current situation and trends of vehicle development, have the ability to participate in the formulation of enterprise development plans, and focus on social harmony and sustainable development.

Objective 4: Have a strong team spirit and good communication skills, be able to work in a multi-disciplinary team or a cross-cultural environment, and be able to play an effective role as a member, technical backbone or main person in a technical development or engineering operation team.

Objective 5: Have the ability of life-long learn, be able to improve their professional qualities through corporate experience, and continuously adapt to the needs of social, economic and technological development.

### 3. Requirement for Graduation

According to the 12 general program certification standards and the actual situation of our school, the vehicle engineering program expands the content of the core competence and quality expressions of the 12 graduation requirements. The index points of the graduation requirements are broken down as follows:

**Graduation requirement 1:** Ability to acquire and apply engineering knowledge: be able to apply professional knowledge such as mathematics, natural sciences, basis of mechanical engineering and vehicle structure, vehicle performance, parts processing and manufacturing and technology, and automotive electronic control technology to solve related complicated issues of vehicle engineering design, vehicles manufacturing and testing related fields.

1-1: be able to use the basic knowledge of mathematics, physics, chemistry and professional terminology to identify and express engineering problems.

1-2: be able to apply basic engineering knowledge of mechanics, mechanical engineering, electrical engineering, electronic technology, hydraulics, etc. to basic design, manufacturing and processing process design of vehicle structure and parts.

1-3: be able to use the principles, theories and test methods related to vehicle performance to evaluate and test vehicle performance, analyze the impact of structural parameters on vehicle performance, and make suggestions for improvement.

1-4: master the professional knowledge and applications related to automotive intelligent manufacturing, production lines and equipment.

**Graduation requirement 2:** Ability to analyze problems: be able to apply the basic principles of mathematics, natural sciences and engineering sciences to identify, express, and analyze vehicle engineering issues in structural design and manufacturing, performance design and testing, and electronic control technology through literature research in order to obtain valid conclusions.

2-1: be able to discover and identify the key links and parameters of structural design and

manufacturing, performance design and testing, and electronic control technology in vehicle engineering problems.

2-2: be able to use relevant theoretical knowledge to reason and analyze key links and parameter issues in the above aspects.

2-3: be able to find solutions to problems through a variety of ways of thoughts and means.

**Graduation requirement 3:** Ability to innovate design/develop solutions: be able to design solutions to vehicle engineering problems, design vehicle structure, performance or manufacturing process and test plans that meet the needs, and be able to reflect the sense of innovation in the design or testing process, and comprehensively consider social, health, safety, legal, cultural and environmental factors.

3-1: master the basic methods of engineering design and be able to present design results in the form of reports, drawings or objects.

3-2: be able to formulate solutions based on the characteristics of vehicle engineering problems, and design vehicle structures, performance or manufacturing processes and test plans that meet the needs.

3-3: be able to comprehensively consider social, health, safety, legal, ethical, cultural and environmental factors in the design or testing process and reflect a certain sense of innovation.

**Graduation requirement 4:** Scientific research ability: be able to conduct basic research on complex problems of vehicle engineering based on scientific principles and using scientific methods, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.

4-1: master the background, research status and cutting-edge technology of vehicle engineering in vehicle, component design and manufacturing, new energy vehicles and automotive electronics, and understand the future development trend of the program.

4-2: be able to formulate test plans, select materials properly and construct experimental system based on the structural principle and performance test of the entire vehicle and its parts.

4-3: be able to analyze and interpret experimental data, and obtain reasonable and effective conclusions through comprehensive information.

**Graduation requirement 5:** Ability to use modern tools: be able to develop, select and use appropriate technologies, resources, modern engineering tools and information technology tools for vehicle engineering problems, so as to achieve vehicle design, manufacturing and performance testing.

5-1: understand the using principles and methods of modern instruments, information technology tools, engineering tools and simulation software commonly used in mechanical engineering and vehicle engineering R&D and application fields, and understand the applicability.

5-2: be able to select and use appropriate instruments, engineering tools and professional simulation software to simulate, calculate, analyze and design complex problems in vehicle engineering basic design and application fields.

5-3: familiar with the use of tools, equipment and instruments related to vehicle performance testing, and have the practical ability of some equipment.

**Graduation requirement 6:** Ability to analyze and evaluate the relationship between engineering and society: be able to conduct a reasonable analysis based on the relevant background knowledge

of vehicle engineering, evaluate the impact of professional engineering practice problem solutions on society, health, safety, law and culture, and understand the responsibility to be undertaken.

6-1: Have vehicle engineering practice and social practice experiences.

6-2: Familiar with technical standards, intellectual property rights, laws and regulations related to vehicle engineering, and be able to use them to analyze and identify the potential impact of the development and application of new technologies and new processes on society, health, safety, law, and culture.

6-3: be able to objectively evaluate the impact of vehicle engineering projects on society, health, safety, law and culture, and understand the responsibilities that should be undertaken.

**Graduation requirement 7:** Ability to understand and evaluate the environment and sustainable development: be able to understand and evaluate the impact of professional engineering practices aimed at vehicle engineering issues on the environment and sustainable development of society.

7-1: understand the connotation and significance of vehicle engineering and social sustainable development, and be able to practice the concepts of environmental protection and sustainable development when solving vehicle engineering problems.

7-2: be able to evaluate the potential hazards to humans and the environment for actual engineering projects, and can use professional knowledge to propose constructive and scientific solutions.

**Graduation requirement 8:** Abide by professional standards: have humanities and social science literacy and a sense of social responsibility, be able to understand and abide by industry professional ethics and standards in engineering practice, and perform responsibilities.

8-1: possess a correct outlook on life, values, professional ethics and codes of conduct, and achieve integrity codes, fairness and justice.

8-2: have humanistic qualities, understand and practice the core values of socialism, respect life, care for others, advocate justice, integrity codes, safeguard national interests, and have a sense of responsibility and mission to promote social progress.

8-3: understand the professional nature and responsibilities of vehicle engineers, have legal and social awareness, and consciously abide by professional ethics and regulations in vehicle engineering practice.

**Graduation requirement 9:** Ability to assume individual and team roles: be able to assume the roles of individuals, team members and leaders in a multidisciplinary team.

9-1: be able to assume the role of an individual in a multidisciplinary project covering the vehicle engineering program, give full play to the expertise of the vehicle engineering program, and complete the assigned tasks on time.

9-2: be able to assume the role of team member in a multidisciplinary project covering vehicle engineering, actively learn the subject knowledge mastered by other members of the team, effectively communicate with team members, and reasonably collaborate to complete team tasks.

9-3: be able to assume the role of person in charge in a multidisciplinary project covering vehicle engineering, grasp the progress of the project work, and handle the interpersonal relationship between team members during the project.

**Graduation requirement 10:** Ability to effectively communicate and exchange: be able to effectively communicate and exchange with industry colleagues and the public on vehicle

engineering issues, including writing reports and design manuscripts, presentations, clear expressions or response instructions, and have a certain international perspective, be able to communicate and exchange in a cross-cultural context.

10-1: be able to express one's thoughts through reports, design manuscripts, presentations, and effective communication and exchanges with industry colleagues and the public on vehicle engineering issues.

10-2: master at least one foreign language, be able to read, translate and summarize foreign literature and technical documents in vehicle engineering and related fields, have a certain international perspective, and be able to communicate and exchange in a cross-cultural context.

**Graduation requirement 11:** Ability to manage engineering projects: understand and master the principles of vehicle engineering management and economic decision-making methods, and be able to apply them in multiple disciplines.

11-1: understand and master the important engineering management principles and economic decision-making methods involved in vehicle engineering activities.

11-2: be able to comprehensively consider material costs, mechanical processing feasibility and practical applications, and can apply relevant engineering management principles and economic decision-making methods to the vehicle design, manufacturing and testing process.

**Graduation requirement 12:** Have the consciousness and ability of lifelong learning: have the consciousness of independent learning and lifelong learning, and have the ability to continuously learn and adapt to development.

12-1: be able to correctly understand the necessity of self-exploration and learning, have the awareness of autonomous learning and lifelong learning; master the methods of autonomous learning, understand the ways of knowledge expansion and ability improvement, and be able to maintain interest in new technologies.

12-2: be able to take appropriate methods to learn independently, adapt to development, and demonstrate the effectiveness of independent learning and exploration in accordance with personal or professional development needs.

#### **4. Schooling System**

Four years

#### **5. 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.

#### **6. 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 153 credits for graduation; those who meet the requirements for bachelor's degree can be conferred bachelor degree in engineering.

#### **7. Discipline**

Mechanical engineering, vehicle engineering.

## **8. Core courses**

### **1. Modern engineering drawing**

Through the study of this course, students will master the drawing methods of engineering drawings and basic CAD instructions, operating methods and drawing skills. This course will cultivate students' basic ability of drawing and reading drawings, and cultivate students' patience and meticulous work style and serious work attitude. Through the study of this course, students will obtain a CAD elementary certificate by learning the computer drawing ability of general part two-dimensional graphics.

### **2. Automobile Engine Structure**

This course is a professional basic course for automobile programs. This course takes the typical automobile engine as an example. Through the study of crank connecting rod mechanism, valve mechanism, lubrication system, cooling system, gasoline engine and diesel fuel system, students will master the structure and working principle of each main engine system and parts, and master the general laws of the engine structure and the assembly relationship between various components, thus laying the foundation for subsequent professional courses.

### **3. Automotive Chassis Structure**

This course is a professional basic course for automobile programs. This course takes a typical car as an example. Through the study of the chassis transmission system, driving system, steering system, brake system, etc., students will master the structure and working principle of the main chassis systems and parts, and master the general laws of chassis structure and the assembly relationship between components, thus laying the foundation for subsequent professional courses.

### **4. Automotive Electrical Equipment**

This course is a professional basic course for automobile programs. Through this course, students will learn the engine starting system, ignition system, power supply system, vehicle whole car circuit and vehicle conventional electrical equipment, master the structure and working principle of each system and parts, master the whole car circuit diagram method by taking a typical car as an example, and comprehends the main functional modules of the electrical system by analogy.

### **5. Automotive Electronic Control Technology**

Through the study of modern car engine electronic control system, anti-lock brake control system, airbag, electronically controlled steering system, etc., students will master the composition, working principle and basic control strategy of each system, master the layout of each subsystem and the direction of pipelines, grasp the structure and working principle of each sensor and actuator, and learn the measurement of the electronic control system and the use of the main testing instruments.

### **6. Automobile Manufacturing Technology**

Taking typical automobile parts as an example, students will learn the process design of parts processing; learn the assembly process of the whole vehicle and the main components of each system, including the assembly sequence, the use of special tools, the tightening torque of bolts, the adjustment of the gaps of various parts, etc., thus laying an important foundation for on-site technical work in vehicle and parts companies.

### **7. Automobile Theory**

This course systematically introduces the basic theories of automobile dynamics, economy, handling stability, braking performance and riding comfort, introduces the evaluation indexes and

evaluation methods of each performance, establishes relevant dynamic equations, analyzes the influence of its structural form and structural parameters of the automobile and the components on the using performance, and explains the basic method of performance prediction.

#### 8. Construction of Automobile

This course arranges practical operation links matching with the courses of "Engine Structure", "Chassis Structure", and "Automotive Electrical Equipment". Through the structural disassembly and assembly of the main components of the engine, manual transmission, and automobile systems, as well as the measurement and assembly of the entire car electrical systems, students will master the main structure, composition and working principles of automobiles from two aspects: mechanical structure and electrical system.

#### 9. Comprehensive Practice of Automobile Manufacturing Technology

Through the study of this course, students will master the operating methods and programming techniques of industrial robots, be able to independently complete the teaching and writing of general handling procedures, use robot simulation software to complete the generation of complex trajectories and execute them on the machine, understand the composition and basic working principles of automatic handling vehicles and material conveying systems, and master the operation method of the system.

#### 10. Automobile production process control

Through the study of this course, students will learn the process control process and quality management methods of the automated production line of automobile manufacturing enterprises, understand the system composition and working principle of the automated production line, and be familiar with the parameter setting, data reading, process setting and other methods of the relevant working interface, so as to lay a solid foundation for students to master the automated production technology basis.

#### **9. Practical Training (Related courses)**

Automobile structure practice, automobile assembly process practice, comprehensive practice of automobile manufacturing technology, graduation design (thesis), and so on

**10. Course Structure and Course Hours(excluding extracurricular class)**

Category	Total Credit	%	Total Course Hours	Theory Learning	Practical Training
General Education	53.5	35	1024	956	68
Basic Course	27	18	432	381	51
Professional Course	30	20	480	448	32
Practical Training	31.5	20	904	0	904
General Course	10	7	160	160	0
Total	152	100	3000	1945	1055
Theory : Practice(%)	65:35				



### 11. Teaching schedule (1)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
General Education	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 legal foundation	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	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 Engineering	b2011392	programming language	non-test	2	32	32		autumn 3
	required	College of Arts and Sciences	b1020018	College Chinese	non-test	2	32	32		spring 1
	required	College of Arts and Sciences	b1020062	College Physics A(module 1)	test	3	48	48		spring 1
	required	College of Arts and Sciences	b1020065	College Physics B	test	2	32	32		autumn 2
required	College of Arts and Sciences	b1020066	College Physics C	non-test	1	32		32	spring 1	
required	College of Arts and Sciences	b1020035	College chemistry	non-test	1	32	28	4	autumn 1	

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
		Sciences								
	required	Department 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	College of Arts and Sciences	b1110002	Military theory	non-test	0.5	32	32		autumn 2
★College English (selective) 1 module, 10 credits)	Module A	College of Arts and Sciences	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	College of Arts and Sciences	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	College of Arts and Sciences	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	
★German	College of Arts and Sciences	b1020040	German I	test	3	48	48		autumn 1	
	College of Arts and Sciences	b1020041	German II	test	3	48	48		spring 1	
	College of Arts and Sciences	b1020042	German III	test	4	64	64		autumn 2	
★Japanese	College of Arts and Sciences	b1020077	Japanese I	test	3	48	48		autumn 1	
	College of Arts and Sciences	b1020078	Japanese II	test	3	48	48		spring 1	
	College of Arts and Sciences	b1020079	Japanese III	test	4	64	64		autumn 2	
<b>Total (General Education)</b>						<b>53.5</b>	<b>01024</b>	<b>956</b>	<b>68</b>	
General Course	required	College of Engineering	b2011470	Scientific paper writing and document retrieval	non-test	2	32	32		spring 1
	selective	Others	b0-----	Social Science and Humanities Literacy (4 credits) Natural Science and Technological Innovation (2	non-test	8	128	128		autumn , spring

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
				credits) Public Art (2 credits)						
<b>Subtotal (general course)</b>						<b>10</b>	<b>160</b>	<b>160</b>	<b>0</b>	

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

### 11. Teaching schedule (2)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
Basic professional courses	required	College of Engineering	b2011137	Modern Engineering Drawing I	test	3	48	40	8	autumn 1
	required	College of Engineering	b2011138	Modern Engineering Drawing II	non-test	3	48	32	16	spring 1
	required	College of Engineering	b2011240	Introduction to Vehicle Engineering	non-test	1	16	16		autumn 1
	required	College of Engineering	b2011049	Engineering Mechanics I	test	3	48	48		autumn 2
	required	College of Engineering	b2011050	Engineering Mechanics II	test	3	48	44	4	spring 2
	required	College of Engineering	b2011079	Mechanical Principle	test	3	48	44	4	autumn 2
	required	College of Engineering	b2011077	Mechanical Design	test	3	48	45	3	spring 2
	required	College of Engineering	b2011080	Machinery Manufacturing Foundation	test	3	48	42	6	spring 2
	required	Work training	b2090001	Electrician and Electronics	test	3	48	42	6	autumn 2
	required	College of Engineering	b2011152	Hydraulic and Pneumatic Transmission	test	2	32	28	4	autumn 2
<b>Subtotal (Basic professional courses)</b>						<b>27</b>	<b>432</b>	<b>381</b>	<b>51</b>	
Professional courses	required	College of Engineering	b2011100	Automobile engine structure	test	2	32	32		spring 2
	required	College of Engineering	b2011097	Automobile chassis structure (bilingual)	test	3	48	48		spring 2
	required	College of Engineering	b2011099	Automotive electrical equipment	test	2	32	32		spring 2
	required	College of Engineering	b2011037	Engine principle	test	2	32	32		autumn 3
	required	College of Engineering	b2011102	Car theory	test	3	48	48		autumn 3
	required	College of Engineering	b2011103	Automotive Design	non-test	2	32	32		spring 3
	required	College of	b2011098	Automotive electronic control technology	test	3	48	48		autumn 3

	Engineering								
required	College of Engineering	b2011106	Automobile manufacturing technology	test	2	32	32		autumn 3
required	College of Engineering	b2011105	Automobile Testing	non-test	2	32	16	16	spring 3
required	College of Engineering	b2011235	Virtual instrument technology	non-test	3	48	32	16	spring 3
required	College of Engineering	b2011096	Automotive CAD/CAM (teach in English)	non-test	2	32	32		autumn 3
<b>Subtotal (required professional courses)</b>					<b>26</b>	<b>416</b>	<b>384</b>	<b>32</b>	
★Module, selective,4 credits	Module A	b2011111	Production line equipment and commissioning technology	non-test	2	32	32		autumn 4
		b2011461	Automobile power system testing and simulation	non-test	2	32	32		autumn 4
	Module B	b2011462	Automotive network technology	non-test	2	32	32		autumn 4
		b2011144	Introduction to New Energy Vehicles	non-test	2	32	32		autumn 4
	Module C	b2011101	Introduction to Automobile Regulations	non-test	2	32	32		autumn 4
		b2011463	Auto Marketing and Insurance	non-test	2	32	32		autumn 4
<b>Subtotal (professional course modules)</b>					<b>4</b>	<b>64</b>	<b>64</b>	<b>0</b>	
<b>Subtotal (professional courses)</b>					<b>30</b>	<b>480</b>	<b>448</b>	<b>32</b>	

11. Teaching schedule (3)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
Practice	required	Work training	b4090001	Basic engineering training A	non-test	3	72		72	summer 1
	required	College of Engineering	b4011326	Intelligent assembly project training (smart factory)	non-test	1	24		24	spring 3
	required	College of Engineering	b4011088	Modern Engineering Drawing Surveying and Mapping	non-test	2	48		48	summer 1
	required	College of Engineering	b4011056	Mechanical Design Course Exercise	non-test	2	48		48	summer 2
	required	College of Engineering	b4011070	Car theory course exercise	non-test	1	24		24	autumn 3
	required	College of Engineering	b4011068	Automotive CAD Course Exercise	non-test	1	24		24	autumn 3
	required	College of Engineering	b4011071	Automotive Design Course Exercise	non-test	1	24		24	spring 3
	required	College of Engineering	b4011069	Car construction practice	non-test	4	96		96	summer 2
	required	College of Engineering	b4011073	Automotive assembly process internship	non-test	4	96		96	spring 3
	required	College of Engineering	b4000005	Innovation and Entrepreneurship in Vehicle Engineering	non-test	2	48		48	spring 3
	required	College of Engineering	b4011072	Comprehensive Practice of Automobile Advanced Manufacturing Technology	non-test	4	96		96	summer 3
	required	College of Engineering	b4011339	Labor Education B	non-test	0.5	16		16	spring 3
	required	College of Engineering	b4011249	Graduation Practice and Graduation Design (Thesis) for Vehicle Engineering	non-test	6	288		288	spring 4
<b>Subtotal (professional practice)</b>						<b>31.5</b>	<b>904</b>		<b>904</b>	
Extracurricular Class	required	Others	b5110001	Extracurricular Class	non-test	1	-	-	-	autumn , spring , summer
<b>Total</b>						<b>153</b>	<b>3000</b>	<b>1945</b>	<b>1055</b>	

★ 1. Guidance for professional module courses and practical module courses:

Professional courses are divided into modules according to different ability requirements. Students must take one of the modules and meet the required credits for that module.

1. Module A: be able to use modern simulation tools to evaluate and test the dynamic performance of vehicles, and make suggestions for improvement; solve professional knowledge and applications related to production lines and equipment.
2. Module B: Understand the development direction and cutting-edge technology of new energy vehicles and smart car networks, and be able to use modern tools to test and evaluate the performance of new energy vehicles and vehicle networks.
3. Module C: Be able to be familiar with technical standards, intellectual property rights, laws and regulations, marketing management, insurance and other professional knowledge related to vehicle engineering, and can use them to analyze and identify the potential impact of development and application of new technologies and new processes on society, health, safety, law and culture.

**2. Professional Certificates can be gained after learning following courses:**

Students who have passed the programming language and automobile CAD/CAM courses can participate in the professional qualification certificate assessment related to this program: computer grade certificate, CAD primary certificate.

Students who have obtained computer grade certificates and CAD elementary certificates can apply for exemption from programming language and automotive CAD/CAM courses and obtaining corresponding credits.

## 12. Prerequisite for Course Study

No.	Course name	Prerequisite Course	No.	Course name	Prerequisite Course
1	Car theory	Automobile engine structure	6	Production line equipment and commissioning technology	Automobile engine structure
		Automobile chassis structure			Automobile chassis structure
		Engine principle			Automobile manufacturing technology
2	Automotive electronic control technology	Automobile engine structure			
		Automobile chassis structure			
		Automotive electrical equipment			
3	Automotive Design	Automobile engine structure	8		
		Automobile chassis structure			
		Car theory			
4	Automobile Testing	Automobile engine structure	9		
		Automobile chassis structure			
		Car theory			
5	Automobile manufacturing technology	Automobile engine structure	10		
		Automobile chassis structure			

## 13. 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.