

武汉理工大学汽车工程学院

School of Automobile Engineering of  
Wuhan University of Technology

# 2015 版本本科培养方案

Undergraduate Education Plan (2015)

武汉理工大学教务处

Academic Affairs Office of Wuhan University of Technology

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# 【车辆工程专业】2015 版本本科培养方案

## Undergraduate Education Plan for Specialty in Automotive Engineering(2015)

专业名称	车辆工程	主干学科	机械工程、车辆工程
Major	Automotive Engineering	Major Disciplines	Mechanical engineering, Vehicle Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineer
所属大类	机械类（车辆）	大类培养年限	1年
Disciplinary	Machinery	Duration	1years

### 最低毕业学分规定

#### Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	61	22	\	26	\	190
选修课 Elective Courses	9	4	13	10	\	10	

### 一、培养目标与毕业要求

#### I Educational Objectives & Requirement

##### (一) 培养目标 Educational Objectives

- (1) 身心健康，具有一定的文化素质，较高的科学素养、社会责任感和良好的职业道德。
  - (2) 具有较扎实的工程科学基础，较系统地掌握本专业领域的基础理论知识。
  - (3) 具有本专业必需的工程制图、设计、计算、试验测试、计算机应用、文献检索和基本工艺操作等技能。
  - (4) 具有从事汽车产品的设计、制造、试验、运用等工作所必需的专业知识和解决实际工程问题的能力，了解现代汽车技术的发展动态，在车辆工程的某个专业领域，掌握较扎实的专业技能。
  - (5) 具有一定的艺术和人文社科基础及正确运用本国语言、文字的能力，基本掌握一门外语。
  - (6) 具有较强的创新精神，具备获取新知识、资料收集与信息处理、团结协作和社会活动的的能力。
  - (7) 具有初步的科学研究、技术开发及其组织管理能力。
- (1) Students should have physical and mental health, having a certain cultural quality, high scientific literacy, social responsibility and good occupation moral.
  - (2) They should have solid foundation of engineering science and systematically master the basic theoretical knowledge in this field.
  - (3) They are required to have the essential skills in engineering drawing, design, calculation, experiment test, computer application, references retrieval and basic craft manipulation.
  - (4) They should possess the essential specialty knowledge and work to solve practical

engineering problems, which is applied in automotive product design and manufacturing, experiments and application. They should understand the development trend of modern automobile technology, master solid professional skills in a professional field of vehicle engineering.

- (5) They should have the firm natural science foundation, good humanities, arts and social science basis. They also should make use of their native language with accuracy, and grasp a foreign language.
- (6) They should have creative and cooperating consciousness, ability to obtain new knowledge, data collection and information processing, solidarity and social activity ability.
- (7) Students are capable of primary scientific research, technological development and organizational management capabilities.

## (二) 毕业要求 Educational Requirement

- (1) 身心健康, 具备良好的敬业精神、社会责任感和职业道德。
  - (2) 关注当代科技和社会问题, 具有较强的产品质量意识、市场竞争意识、安全生产意识和环境保护意识。
  - (3) 具有从事机械和车辆工程领域科学研究、工程设计和技术服务等工作所需的数理知识和及其相关的自然科学知识, 并能将这些知识运用于解决实际工程问题。
  - (4) 掌握工程力学、机械原理、机械设计、电工电子技术、计算机应用技术、试验测试技术等机械工程基本理论和知识。
  - (5) 具有工程制图、制造工艺等机械制造工程领域的知识, 熟悉汽车制造工艺流程和制造方法。
  - (6) 掌握汽车构造、理论、设计、测试、电子控制等专业知识, 具备从事汽车产品开发工作的能力。
  - (7) 具有一定的工程实践经历和较强的创新精神, 具有一定的车辆工程相关领域科学研究、科技开发、组织管理能力。
  - (8) 基本掌握一门外语, 能进行交流沟通和熟练地阅读专业文献资料。
  - (9) 了解车辆工程领域的技术标准、产业政策和法律法规。
  - (10) 了解机械工程和车辆工程学科的前沿技术、发展动态和产业需求。
  - (11) 掌握一定的经济、管理知识, 具有一定的技术经济分析、经济效益及社会效益分析能力。
  - (12) 具有一定的自然科学、人文社会科学和工业美学的基础知识, 具有良好的综合素质。
  - (13) 具有一定的国际视野, 具有良好的口头和书面表达及交流沟通能力、良好的团队意识和合作精神。
  - (14) 具有终身教育的意识和继续学习的能力。
- (1) Students should have physical and mental health, having good professional spirit, the sense of social responsibility and occupation moral.
  - (2) They should pay attention to contemporary science and technology problems and social issues, and has strong consciousness of product quality, market competition, safety production and environmental protection.
  - (3) They should have the mathematical knowledge and other related knowledge of natural science needed in the mechanical and vehicle engineering fields of scientific research, engineering design and technical service work, and solve engineering problems with this

knowledge.

- (4) They should master the basic theory and basic knowledge of mechanical engineering, including engineering mechanics, mechanical principle, mechanical design, electrical and electronic technology, computer application technology, testing technology etc.
- (5) They should have the engineering drawing, manufacturing process and other machinery manufacturing knowledge, familiar with the automobile manufacturing process and manufacturing method.
- (6) They should grasp the automobile structure, theory, design, testing, electronic control and other professional knowledge, and have the ability to engage in automobile product development work.
- (7) They should have experiences of some project practices and a strong spirit of innovation. They should have certain ability of scientific research, technology development and organization management in vehicle engineering related field.
- (8) They should basically master a foreign language and can communication and reading professional literature with the foreign language.
- (9) They should understand the technical standards, industry related policies, laws and regulations of the field in vehicle engineering.
- (10) They should understand of advanced technology, development trends and industry demand of mechanical engineering and vehicle engineering.
- (11) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (12) They should have certain basic knowledge of natural science, humanities and social sciences and industrial aesthetics, with good comprehensive quality.
- (13) They should have certain international vision, good oral and written expression and communication skills, sense of team spirit and cooperation.
- (14) They should have the consciousness of lifelong education and the ability to keep on learning.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5	培养目标 6	培养目标 7
毕业要求 1	√						
毕业要求 2	√						
毕业要求 3		√	√				
毕业要求 4		√	√				
毕业要求 5		√	√	√			
毕业要求 6		√	√	√			
毕业要求 7				√		√	√
毕业要求 8					√		
毕业要求 9		√		√			
毕业要求 10		√		√			
毕业要求 11		√			√		√
毕业要求 12	√				√		
毕业要求 13						√	
毕业要求 14						√	

## 二、专业核心课程与专业特色课程

### II Core Courses and Characteristic Courses

#### (一) 专业核心课程:

理论力学、材料力学、机械原理、机械设计、电工与电子技术基础、计算机程序设计基础、汽车构造、汽车理论、汽车设计、汽车试验学、汽车与发动机制造工艺学、汽车性能实验。

Theoretical Mechanics, Mechanics of Materials, Electrical Engineering, Fundamentals of Computer Technology, Mechanism and Machine Theory, Mechanical Design, Construction of Automobile, The Theory of Automobile, Automobile Design, Test Technology of Vehicle, Manufacturing Technology of Automobile and Engine, Auto Performance Test etc.

#### (二) 专业特色课程:

汽车设计、汽车与发动机制造工艺学、专用车结构与设计、汽车车身艺术设计、汽车网络技术、汽车新技术概论、汽车创新设计。

Automobile Design, Manufacturing Technology of Automobile and Engine, Construction and Design of Special Automobile, Automobile Body Art Design, Automobile Network Technology, Automobile New Technology Introduction, Automotive Innovation Design.

附：毕业要求实现矩阵：

专业 核心 课程	专业 特色 课程	课程名称	车辆工程专业毕业要求														
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
		思想道德修养与法律基础	√	√								√				√	√
		中国近现代史纲要	√													√	
		毛泽东思想和中国特色社会主义理论体系概论	√													√	√
		马克思主义基本原理	√										√			√	√
		军事理论	√	√												√	√
		心理健康教育	√	√										√	√	√	√
		体育	√														
		大学英语									√					√	√
		大学计算机基础				√											√
√		计算机程序设计基础				√											√
		创新创业类公选课	√						√						√	√	√
		人文社科类公选课	√						√						√	√	√
		经济管理类公选课	√	√					√				√	√	√	√	√

专业 核心 课程	专业 特色 课程	课程名称	车辆工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		科学技术类公选课				√										
		艺术体育类公选课	√											√	√	√
		专业导论		√		√		√				√				
		高等数学 A			√									√		
		工程图学 A				√	√									
		线性代数 A			√									√		
		概率论与数理统计 B			√									√		
		大学物理			√									√		
		物理实验 B			√									√		
		普通化学基础			√									√		
√		电工与电子技术基础 A				√										
		工程材料				√										
		金属工艺学 B				√	√									
		互换性与测量技术 B				√	√				√					
		汽车 CAD/CAE														
		流体动力学基础 C				√										
		轨道车辆概论						√								
		电子线路 EDA B				√		√								
		热工基础				√										
		电机学基础				√		√								
		MATLAB 及应用			√											
		自动控制原理 C						√								
√		理论力学 A				√										
√		材料力学 C				√										

专业 核心 课程	专业 特色 课程	课程名称	车辆工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
√		机械原理				√										
√		机械设计				√	√		√		√					
√		汽车构造 A						√								
		发动机原理 B						√								
√		汽车理论 A						√			√					
√		汽车试验学 A					√	√			√					
√	√	汽车与发动机制造工艺学					√	√								
√		汽车性能实验					√	√	√		√				√	√
√	√	汽车设计					√	√	√							
		电子控制技术及应用						√								
		汽车电器与电控系统						√								
		汽车自动变速技术						√								
		汽车优化设计						√	√							
		汽车车身结构与设计						√						√		
		新能源汽车结构与原理						√								
		汽车可靠性						√								
		汽车排放与噪声控制						√								
		汽车碰撞与安全						√			√					
	√	专用车结构与设计						√	√							
		汽车结构有限元分析						√								
		汽车液压与气压传动						√								
	√	汽车车身艺术设计						√	√					√		

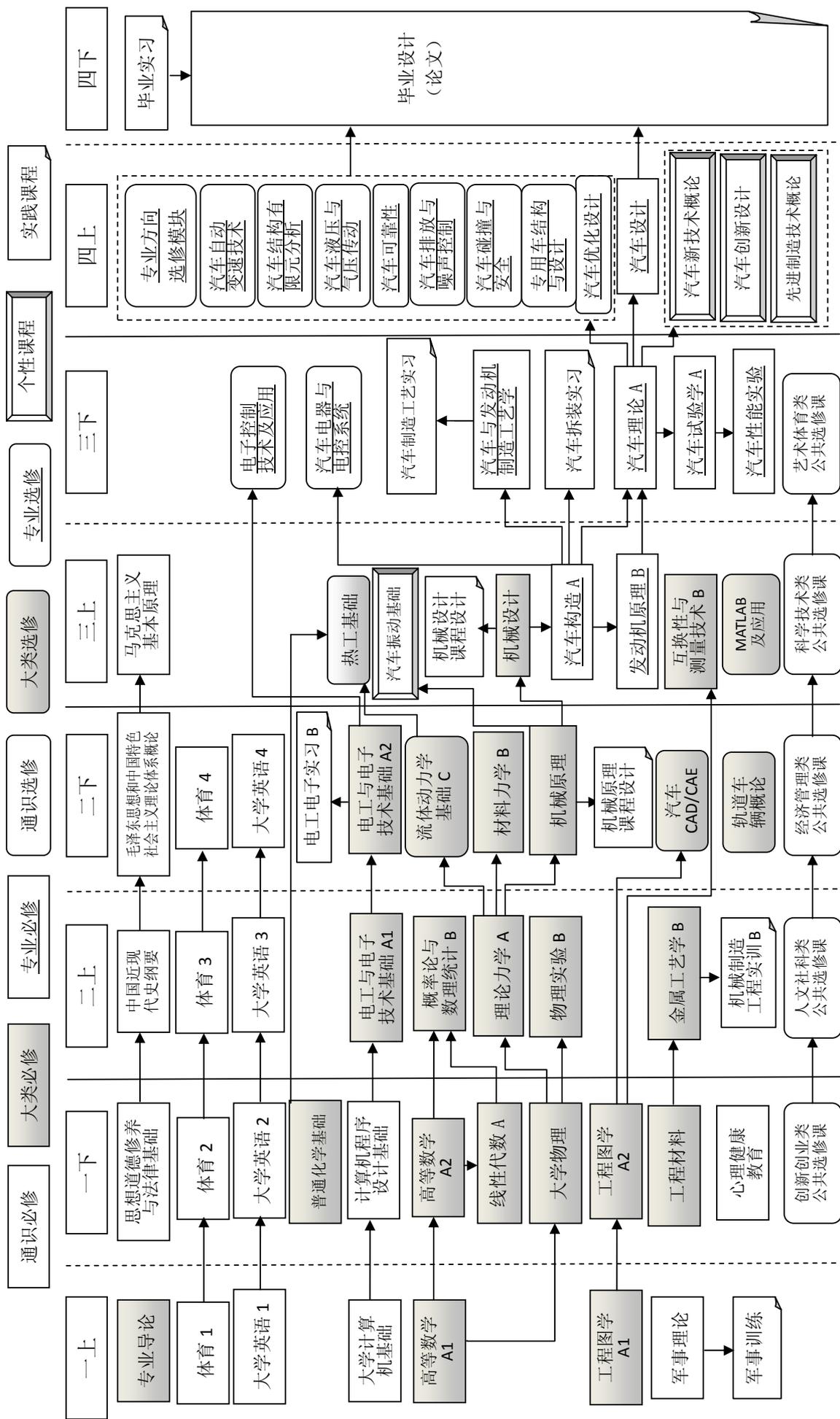
专业 核心 课程	专业 特色 课程	课程名称	车辆工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		汽车材料						√								
		汽车空气动力学						√								
		汽车车身覆盖件制造工艺						√						√		
		汽车模型制作						√	√					√		
		现代汽车生产与管理						√	√				√	√		
		可编程控制系统				√										
		电力拖动与控制系统 C				√										
		信号与系统 B				√										
		传感与检测技术 B				√										
		虚拟仪器及其在汽车中的应用						√								
		控制系统仿真与设计				√										
		汽车故障诊断与处理						√								
√		汽车网络技术						√								
		可编程控制系统				√										
		汽车振动基础			√	√	√	√								
√		汽车新技术概论						√				√			√	
√		汽车创新设计						√	√					√	√	
		先进制造技术概论						√							√	
		电力电子技术 C				√										
		汽车电控系统及设计				√		√								
		汽车电控系统及设计实验				√		√	√						√	
		军事训练	√	√					√						√	√

专业 核心 课程	专业 特色 课程	课程名称	车辆工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		机械制造工程实训 B				√	√		√						√	√
		电工电子实习 B				√			√						√	√
		机械原理课程设计				√			√							√
		机械设计课程设计				√	√		√							√
		汽车拆装实习					√	√	√						√	√
		汽车制造工艺实习					√	√	√				√		√	√
		毕业实习				√	√	√	√				√	√	√	√
		毕业设计(论文)		√		√	√	√	√				√		√	√
		形势与政策	√	√							√	√			√	

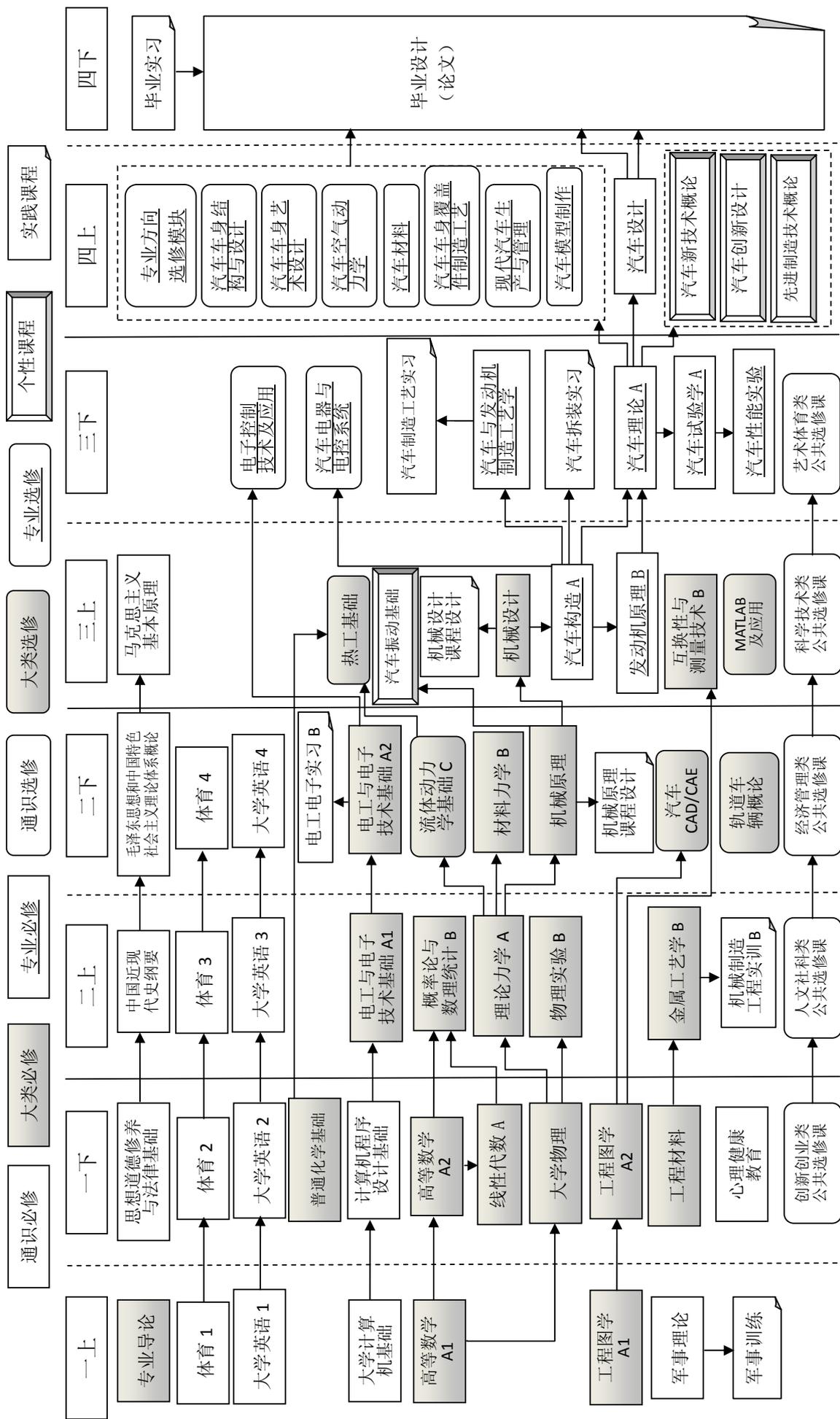
### 三、课程教学进程图

#### III Teaching Process Map

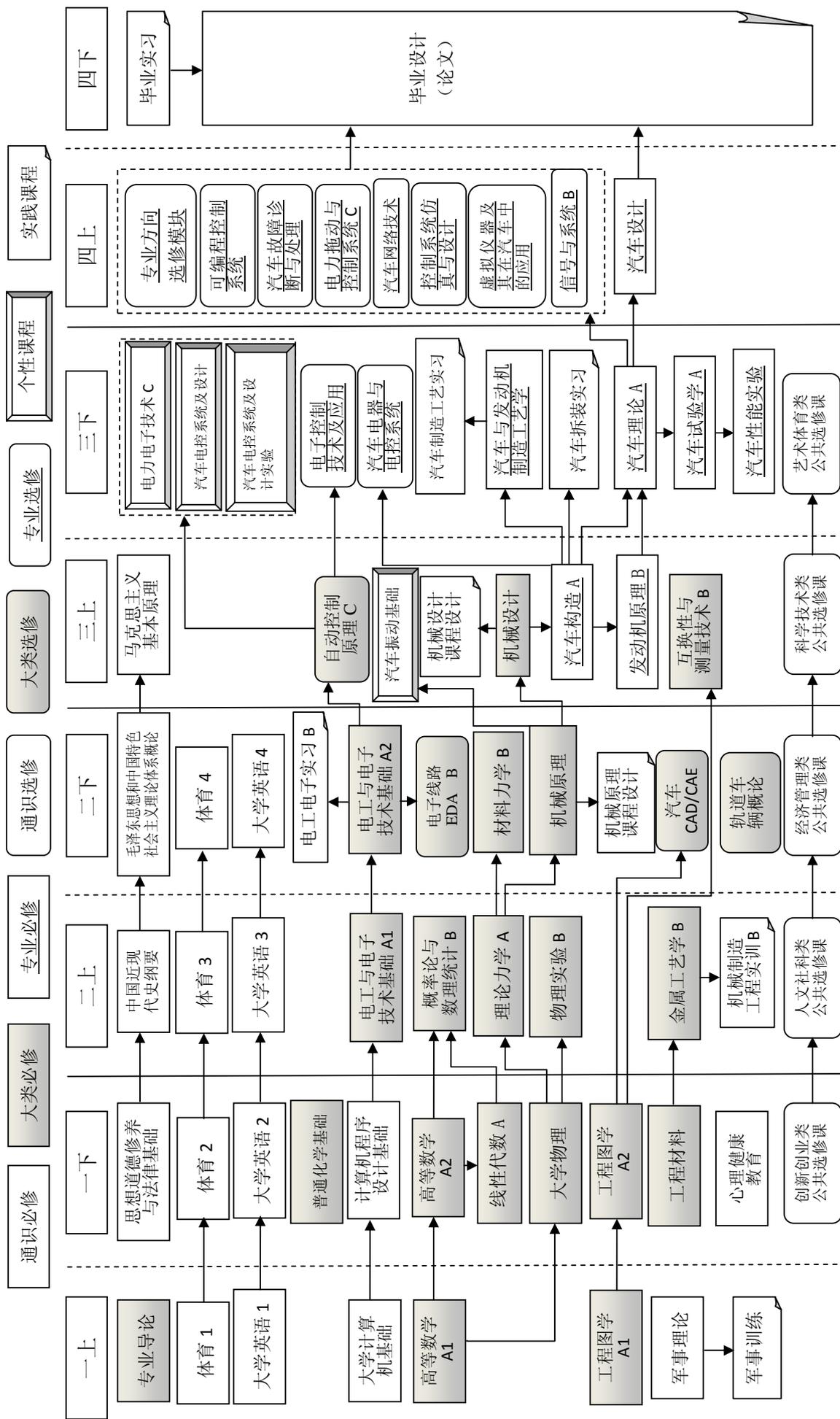
课程教学进程图（汽车底盘方向）



课程教学进程图（车身工程方向）



课程教学进程图（汽车电子方向）



#### 四、理论教学建议进程表

#### IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major		
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term				
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6				
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6				
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6				
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6				
		1060003130	军事理论 Military Theory	1	32			16		1-4				
		1050001130	心理健康教育 Mental Health Education	1	16					1-2				
		4210001110	体育 1 Physical Education I	1	32					1				
		4210002110	体育 2 Physical Education II	1	32					2				
		4210003110	体育 3 Physical Education III	1	32					3				
		4210004110	体育 4 Physical Education IV	1	32					4				
		4030002110	大学英语 A1 College English A I	3	64				16	1				
		4030003110	大学英语 A2 College English A II	3	64				16	2	大学英语 A1			
		4030004110	大学英语 A3 College English A III	3	64				16	3	大学英语 A2			
		4030005110	大学英语 A4 College English A IV	3	64				16	4	大学英语 A3			
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1				
		程序设计语言课程组(二选一, 3 学分) Courses of Computer Program Design (select one out of two, Credits: 3)												
				4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C)	3	48		12			2		
				4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design(VB language)	3	48		12			2		
				小计 Subtotal		35	736		24	64	64			
		选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			全校学生要求至少取得 9 个学分, 且必须选修艺术体育类课程中的艺术类相关课程, 取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程, 其他专业学生至少选修一门科学技术类课程。 All students are required to obtain at least 9 credits, and must select art courses from Art and Physical Education Courses to obtain at least 2 credits. Science and engineering students should select at least one course from Arts and Social Science Courses or Economy and Management Courses, and other students should select at least one course from Science and Technology Courses.								
人文社科类 Arts and Social Science Courses														
经济管理类 Economy and Management Courses														
科学技术类 Science and Technology Courses														



课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including						先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur	建议修读学期 Suggested Term			
选修课 Elective Courses		4090024110	汽车 CAD/CAE Computer Aided Design and Engineering of	2	32		10			4			
		4090021110	流体力学基础 C Fluid Mechanics Elements C	2	32	2				4			
		4090075110	轨道车辆概论 Introduction to Railway Vehicle	2	32					4			
		4110023110	电子线路 EDA B Electronic Circuit EDA(B)	2	32	10				4	汽车电子方向必选		
		4090064110	热工基础 Elements of Thermodynamics	2	32	2				5			
		4090003020	电机学基础 Fundamentals of Electrical Machinery	2	32	2				5			
		4090178140	MATLAB 及应用 MATLAB & Application	2	32		6			5			
		4100065110	自动控制原理 C Automatic Control Principle C	2.5	40	8				5	汽车电子方向必选		
			小计 Subtotal	16.5	264	24	16						
	修读说明：要求至少选修 4 学分。 NOTE: Minimum subtotal credits: 4.												
专业 课程 Required Courses		4090037110	汽车构造 A Construction of Automobile A	4	64			4		5	机械原理		
		4090010110	发动机原理 B Engine Principle B	2	32					5	汽车构造 A		
		4090042110	汽车理论 A The Theory of Automobile A	3.5	56					6	汽车构造 A		
		4090049110	汽车试验学 A Test Technology of Vehicle A	3	48					6	汽车构造 A		
		4090194150	汽车与发动机制造工艺学 Manufacturing Technology of Automobile	3.5	56			16		6	汽车构造 A		
		4090053110	汽车性能实验 Auto Performance Test	1	32	32				6	汽车理论 A		
		4090112120	汽车设计 Automobile Design	5	80			32		7	汽车理论 A		
			小计 Subtotal	22	368	32		52					
选修课 Elective Courses		4090004110	电子控制技术的应用 Technology and Applications of Electronic Control	3	48	8				6	计算机程序设计基础		
		4090028110	汽车电器与电控系统 Automobile Electric Equipment and Control System	3	48	6				6	汽车构造 A		
	汽车底盘方向 Automotive chassis Professional Field (专业方向 1)												
		4090061110	汽车自动变速技术 Technology of Automobile Automatic Transmission	2	32	4		2		7			
		4090056110	汽车优化设计 Optimization Design of Automobile	2	32		12			7			
	4090025110	汽车车身结构与 Construction and Design of Automobile Body	2	32					7				

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			建议修读学期 Suggested Term
		4090069110	新能源汽车结构与原理 Structures and Theory of Electric Vehicle	2	32			2		7		
		4090041110	汽车可靠性 Automobile Reliability	2	32					7		
		4090044110	汽车排放与噪声控制 Automobile Emission and Noise Control	2	32					7		
		4090045110	汽车碰撞与安全 Collision and Safety of Vehicle	2	32					7		
		4090071110	专用车结构与设计 Construction and Design of Special Automobile	2	32			2		7		
		4090040110	汽车结构有限元分析 Finite Element Method Analyze of Automotive configuration	2	32		14			7		
		4090054110	汽车液压与气压传动 Hydraulic and Air Pressure Transmission of Automobile	2	32			2		7		
		小计 Subtotal		20	320	4	26	8				
车身工程方向 Body Engineering Professional Field (专业方向 2)												
		4090025110	汽车车身结构与设计 Construction and Design of Automobile Body	2	32					7		
		4090026110	汽车车身艺术设计 Automobile Body Art Design	2	32		4			7		
		4090102120	汽车材料 Automobile Materials	2	32					7		
		4090110120	汽车空气动力学 Automobile Aerodynamics	2	32					7		
		4090104120	汽车车身覆盖件制造工艺 Automobile Body Panel forming process	2	32			4		7		
		4090111120	汽车模型制作 Automobile Model Execution Technology	2	32	8		4		7		
		4090127120	现代汽车生产与管理 Modern Automobile Production and Management	2	32					7		
		小计 Subtotal		14	224	8	4	8				
汽车电子方向 Automotive Electronics Professional Field (专业方向 3)												
		4110094110	信号与系统 B Signal and System B	3	48	8				6		
		4100004110	传感与检测技术 B Sensors and Testing Techniques B	2	32	8				7		
		4090128120	虚拟仪器及其在汽车中的应用 Virtual Instrument and its Applications in Automobile	2	32					7		
		4090100120	控制系统仿真与设计 Simulation and Design of Control System	2	32					7		
		4090109120	汽车故障诊断与处理 Auto Diagnosis and Treatment	2	32	4				7		
		4090116120	汽车网络技术 Automobile Network Technology	2	32					7		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			建议修读学期 Suggested Term
		4090097120	电力拖动与控制系统 C Electrical Drive and Control System C	2	32					7		
		4090099120	可编程控制系统 Programmable Control System	2	32		10			7		
		小计 Subtotal		17	272	20	10					
修读说明：要求至少选修 13 学分。 NOTE: Minimum subtotal credits: 13.												
个性化课程 Personalized Course	选修课 Elective Courses	4090060110	汽车振动基础 Fundamentals of Vehicle Vibration	2	32					5	机械原理	方向 1、2 优选
		4100019110	电力电子技术 C Power Electronics & Electric Technology C	2.5	40					6		方向 3 优
		4090028110	汽车电控系统 & 设计 Automobile Electronic Control System and Design	3	48	6				6	汽车构造 A	方向 3 优选
		4090157130	汽车电控系统 & 设计实验 Experiment of Automobile Electronic Control System and Design	1	32	32				6	汽车电控系统 & 设计	方向 3 优选
		4090155130	汽车新技术概论 Automobile New Technology Introduction	2	32					7		
		4090156130	汽车创新设计 Automotive Innovation Design	2	32			16		7		
		4090067110	先进制造技术概论 Introduction to Advanced Manufacturing	2	32					7		
		小计 Subtotal		14.5	248	38	0	16				
修读说明：学生从以上个性课程和学校发布的其它专业的个性课程列表中选课，要求至少选修 10 学分。 NOTE: Students can choose any courses from above courses or other majors' personalized courses released by the university. Minimum subtotal credits: 10.												

## 五、集中性实践教学环节

### V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4080150110	机械制造工程实训 B Metal Techniques Practice B	4	4	3	
4100069110	电工电子实习 B Electrical practice B	1	1	4	
4080149110	机械原理课程设计 Mechanical Principles Course Design	1.5	1.5	4	
4080147110	机械设计课程设计 Mechanical Design Course Design	3	3	5	
4090084110	汽车拆装实习 Automobile Construction Practice	2	2	6(分散)	
4090133120	汽车制造工艺实习 Automobile Manufacturing Technology Practice	1	1	6	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
4090081110	毕业实习 Graduation Practice	2	2	8	
4090077110	毕业设计(论文) Graduation Design(Graduation Thesis)	15	10	8	
小计 Subtotal		32.5	26		

## 六、修读指导

### VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7<sup>th</sup> term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：张国方  
专业培养方案责任人：余晨光

# 【能源与动力工程专业】2015 版本本科培养方案

## Undergraduate Education Plan for Specialty in Energy and Power Engineering(2015)

专业名称	能源与动力工程	主干学科	机械工程、动力工程与工程热物理
Major	Energy and Power Engineering	Major Disciplines	Mechanical engineering, Power Engineering and Engineering Thermal Physics
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineer
所属大类	机械类（车辆）	大类培养年限	1年
Disciplinary	Machinery	Duration	1 years

### 最低毕业学分规定

#### Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	58	26	\	25	\	190
选修课 Elective Courses	9	4	13	10	\	10	

### 一、培养目标与毕业要求

#### I Educational Objectives & Requirement

##### (一) 培养目标 Educational Objectives

- (1) 身心健康，具有科学素养、社会责任感和职业道德。
  - (2) 具有较扎实的工程科学基础，较系统地掌握本专业领域的基础理论知识。
  - (3) 具有本专业必需的工程制图、设计、计算、试验测试、计算机应用、文献检索和基本工艺操作等基本技能；
  - (4) 具有动力机械产品的设计制造、试验、运用等所必需的专业知识和解决实际问题的能力，了解现代汽车技术的发展趋势；
  - (5) 具有一定的艺术和人文社科基础及正确运用本国语言、文字的能力，基本掌握一门外语；
  - (6) 具有较强的创新精神和获取新知识的能力、收集处理信息的能力、团结协作和社会活动的的能力。
  - (7) 具有初步的科学研究、科技开发及组织管理能力。
- (1) Students should have physical and mental health, with scientific literacy, social responsibility and occupation moral.
  - (2) They should systematically grasp the comprehensive basic knowledge in this realm, which include: Engineering Mechanics, mechanics, electrotechnics, materialogy, vehicle system analysis and design, fundamentals of vehicle manufacturing, experiment, information process and enterprise management, etc.

- (3) They are required to have the essential skills in design, calculation, experiment test, computer application, references retrieval and basic craft manipulation.
- (4) They should possess the essential specialty knowledge, which is applied in power machinery product design and manufacturing, experiments and application.
- (5) They should have the firm natural science foundation, good humanities, arts and social science basis. They also should make use of their native language with accuracy, and grasp a foreign language (e.g. English or French).
- (6) They should have creative and cooperating consciousness, ability of acquiring knowledge and ability of collecting and analyzing information.
- (7) Students are capable of primary science research, exploitation in science and technology and organization and management.

## (二) 毕业要求 Educational Requirement

- (1) 身心健康，具备良好的敬业精神、社会责任感和职业道德。
- (2) 关注当代科技和社会问题，具有较强的产品质量意识、市场竞争意识、安全生产意识和环境保护意识。
- (3) 具有从事机械和能源与动力工程领域科学研究、工程设计和技术服务等工作所需的数理知识和其它相关自然科学知识，并能将这些知识运用于解决实际工程问题。
- (4) 掌握工程力学、机械原理、机械设计、电工电子技术、计算机应用技术、试验测试技术等机械工程基本理论和知识。
- (5) 具有工程制图、制造工艺等机械制造工程领域的知识，熟悉汽车制造工艺流程和制造方法。
- (6) 掌握汽车构造、理论、设计、测试、电子控制等专业知识，具备从事汽车产品开发工作的能力。
- (7) 具有一定的工程实践经历和较强的创新精神，具有一定的机械和能源与动力工程相关领域科学研究、科技开发、组织管理能力。
- (8) 基本掌握一门外语，能进行交流沟通和熟练地阅读专业文献资料。
- (9) 了解能源与动力工程领域的技术标准、产业政策和法律法规。
- (10) 了解机械工程和能源与动力工程学科的前沿技术、发展动态和产业需求。
- (11) 掌握一定的经济、管理知识，具有一定的技术经济分析、经济效益及社会效益分析能力。
- (12) 具有一定的自然科学、人文社会科学和工业美学的基础知识，具有良好的综合素质。
- (13) 具有一定的国际视野，具有良好的口头和书面表达及交流沟通能力、良好的团队意识和合作精神。
- (14) 具有终身教育的意识和继续学习的能力。
- (1) Students should have physical and mental health, having good professional spirit, the sense of social responsibility and occupation moral.
- (2) They should pay attention to contemporary science and technology problems and social issues, and has strong consciousness of product quality, market competition, safety production and environmental protection.
- (3) They should have the mathematical knowledge and other related knowledge of natural science needed in the mechanical and energy and power engineering fields of scientific research, engineering design and technical service work, and solve engineering problems with this knowledge.

- (4) They should master the basic theory and basic knowledge of mechanical engineering, including engineering mechanics, mechanical principle, mechanical design, electrical and electronic technology, computer application technology, testing technology etc.
- (5) They should have the engineering drawing, manufacturing process and other machinery manufacturing knowledge, familiar with the automobile manufacturing process and manufacturing method.
- (6) They should grasp the automobile structure, theory, design, testing, electronic control and other professional knowledge, and have the ability to engage in automobile product development work.
- (7) They should have experiences of some project practices and a strong spirit of innovation. They should have certain ability of scientific research, technology development and organization management in energy and power engineering related field.
- (8) They should basically master a foreign language and can communication and reading professional literature with the foreign language.
- (9) They should understand the technical standards, industry related policies, laws and regulations of the field in energy and power engineering.
- (10) They should understand of advanced technology, development trends and industry demand of mechanical engineering and energy and power engineering.
- (11) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (12) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (13) They should have certain international vision, good oral and written expression and communication skills, sense of team spirit and cooperation.
- (14) They should have the consciousness of lifelong education and the ability to keep on learning.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5	培养目标 6	培养目标 7
毕业要求 1	√						
毕业要求 2	√						
毕业要求 3		√	√				
毕业要求 4		√					
毕业要求 5		√	√				
毕业要求 6		√		√			
毕业要求 7		√		√			
毕业要求 8		√		√			
毕业要求 9		√		√			
毕业要求 10	√				√		
毕业要求 11					√		
毕业要求 12						√	
毕业要求 13						√	
毕业要求 14							√

## 二、专业核心课程与专业特色课程

### II Core Courses and Characteristic Courses

#### (一) 专业核心课程:

传热学、发动机原理、汽车发动机设计、热能与动力机械测试技术、汽车与发动机制造工艺学

Core Courses: Heat Transfer, Fundamentals of Internal Combustion Engine, Automobile Engine Design, Measurement Technology in Thermal Energy and Power Machinery, Manufacturing Technology of Automobile

#### (二) 专业特色课程:

汽车构造、热能与动力机械测试技术、汽车新能源及其动力装置

Characteristic Courses: Automobile Construction, Measurement Technology in Thermal Energy and Power Machinery, Automotive New Energy and Power Unit

附: 毕业要求实现矩阵:

专业 核心 课程	专业 特色 课程	课程名称	能源与动力工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		思想道德修养与法律基础	√	√						√				√	√	
		中国近现代史纲要	√											√		
		毛泽东思想和中国特色社会主义理论体系概论	√											√	√	
		马克思主义基本原理	√								√			√	√	
		军事理论	√	√										√	√	
		心理健康教育	√	√								√		√	√	
		体育	√													
		大学英语											√	√	√	
		大学计算机基础				√	√								√	
		计算机程序设计基础				√	√								√	
		创新创业类公选课	√									√		√	√	√
		人文社科类公选课	√									√		√	√	√
		经济管理类公选课	√	√							√	√		√	√	√
		科学技术类公选课				√										
		艺术体育类公选课	√									√		√	√	
		专业导论		√		√		√	√							

专业 核心 课程	专业 特色 课程	课程名称	能源与动力工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		高等数学 A			√		√					√				
		工程图学 A				√	√									
		线性代数 A			√		√					√				
		概率论与数理统计 B			√		√					√				
		大学物理			√							√				
		物理实验 B			√		√					√				
		电工与电子技术基础 A				√										
		工程材料				√										
		金属工艺学 B				√										
		互换性与测量技术 B				√					√					
		理论力学 A				√										
		材料力学 C				√										
		机械原理				√										
		机械设计				√					√					√
		发动机 CAD/CAE					√									
		燃烧理论基础				√		√								
		电机学基础						√								
		热能与动力机械基础				√		√								
		流体动力学基础 A				√										
		工程热力学				√										
√		传热学				√										
	√	汽车构造 A						√								
√		发动机原理 A						√								

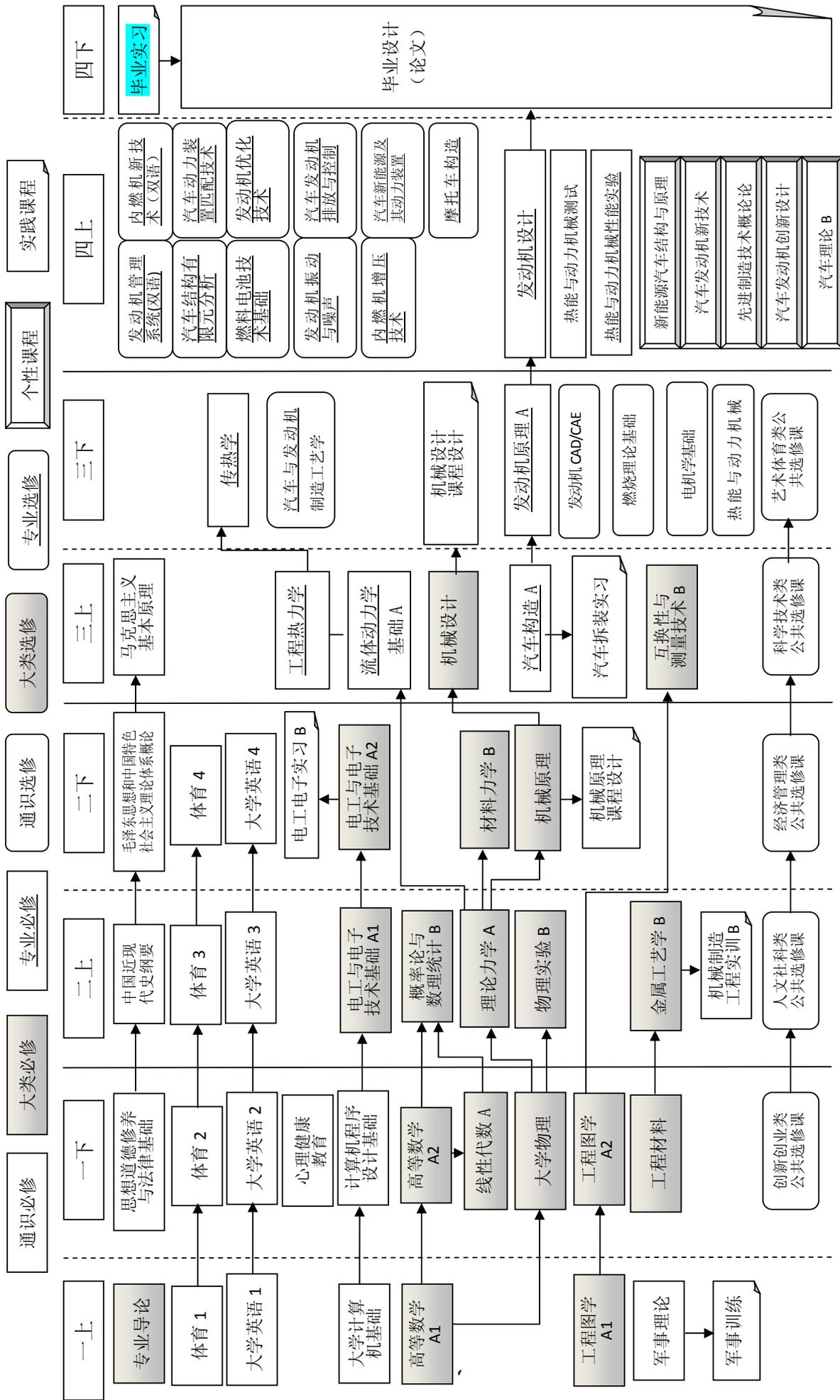
专业 核心 课程	专业 特色 课程	课程名称	能源与动力工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
√	√	热能与动力机械测试技术						√		√						
√		汽车发动机设计						√							√	
		热能与动力机械性能实验					√	√		√				√	√	√
√		汽车与发动机制造工艺学					√	√								
		内燃机新技术						√	√			√				
		发动机管理系统						√	√							
		汽车动力装置匹配技术						√								
		汽车结构有限元分析					√	√								
		发动机优化技术					√	√								
		发动机振动与噪声						√								
		汽车发动机排放与控制						√								
		内燃机增压技术						√								
	√	汽车新能源及其动力装置						√								
		电动汽车设计基础						√								
		电动汽车电驱动理论与控制						√								
		汽车性能建模与仿真基础						√								
		汽车电控系统设计基础						√								
		可编程控制系统						√								
		电池及其管理系统						√								
		燃料电池技术基础						√								
		智能充换电服务网络						√								
		摩托车构造与设计						√								

专业 核心 课程	专业 特色 课程	课程名称	能源与动力工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		新能源汽车结构与原理						√	√							
		汽车理论 B						√								
		汽车发动机新技术						√	√							
		汽车发动机创新设计						√	√							
		先进制造技术概论						√	√					√		
		军事训练	√	√										√	√	√
		机械制造工程实训 B				√								√	√	√
		电工电子实习 B				√								√	√	√
		机械原理课程设计				√									√	√
		机械设计课程设计				√									√	√
		汽车拆装实习						√						√	√	√
		毕业实习				√		√			√	√		√	√	√
		毕业设计(论文)		√		√		√			√			√	√	√
		形势与政策	√	√					√	√				√		

### 三、课程教学进程图

#### III Teaching Process Map

课程教学进程图（汽车发动机方向）





### 三、理论教学建议进程表

#### III Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
通 识 课 程  Public Basic Courses	必 修 课 程  Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6			
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6			
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6			
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6			
		1060003130	军事理论 Military Theory	1	32			16		1-4			
		1050001130	心理健康教育 Mental Health Education	1	16					1-2			
		4210001110	体育 1 Physical Education I	1	32					1			
		4210002110	体育 2 Physical Education II	1	32					2	体育 1		
		4210003110	体育 3 Physical Education III	1	32					3	体育 2		
		4210004110	体育 4 Physical Education IV	1	32					4	体育 3		
		4030002110	大学英语 A1 College English A I	3	64				16	1			
		4030003110	大学英语 A2 College English A II	3	64				16	2	大学英语 A1		
		4030004110	大学英语 A3 College English A III	3	64				16	3	大学英语 A2		
		4030005110	大学英语 A4 College English A IV	3	64				16	4	大学英语 A3		
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1			
		程序设计语言课程组(三选一, 3 学分)											
			4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design (C Language)	3	48		12			2		
			4120024110	计算机程序设计基础(FORTRAN 语言) Fundamentals of Computer Program Design (FORTRAN Language)	3	48		12			2		
			4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design (VB Language)	3	48		12			2		
		小 计 Subtotal	35	736		24	64	64					

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i> , and other students should select at least one course from <i>Science and Technology Courses</i> .									
	人文社科类 Arts and Social Science Courses											
	经济管理类 Economy and Management Courses											
	科学技术类 Science and Technology Courses											
	艺术体育类 Art and Physical Education Courses											
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4090091110	专业导论 Introduction to Materials Physics	1	16			2		1		
		4050063110	高等数学 A1 Advanced Mathematics A I	5	80					1		
		4050064110	高等数学 A2 Advanced Mathematics A II	5	80					2	高等数学 A1	
		4080039110	工程图学 A1 Engineering Graphics A I	3.5	56					1		
		4080040110	工程图学 A2 Engineering Graphics A II	2.5	40					2	工程图学 A1	
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050024110	大学物理 C Physics B	4.5	72					2		
		4050224110	物理实验 B Physics Lab. B	1	32	32				3		
		4050058110	概率论与数理统计 B Probability and Mathematics Statistic B	3	48					3		
		4080034110	工程材料 Engineering Materials	2.5	40	4				3		
		4050129110	理论力学 A Theoretical Mechanics A	4.5	72					3		
		4100009110	电工与电子技术基础 A1 Fundamentals of Electrical and Electronic Technology A I	3.5	56	10				3		
		4100010110	电工与电子技术基础 A2 Fundamentals of Electrical and Electronic Technology A II	3.5	56	10				4	电工与电子技术基础 A1	
		4080062110	机械原理 Mechanism and Machine Theory	3.5	56	4				4		
		4050018110	材料力学 C Mechanics of Materials C	4	64	4				4		
		4080078110	金属工艺学 B Metallurgical Technology B	2.5	40	4				4		
4080060110	机械设计 Mechanical Design	4	64	6				5				
4080054110	互换性与测量技术 B Interchangeability and Measurement B	2	32	4				5				

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
		小 计 Subtotal		58	944	78		2					
	选修课 Elective Courses	4090005110	发动机 CAD/CAE Engine Computer Aided Design/Computer	2	32		10			6			
		4090063110	燃烧理论基础 Fundamentals of Combustion Theory	2	32					6			
		4090003110	电机学基础 Fundamentals of Electrical Machinery	2	32	2				6			
		4090125120	热能与动力机械基础 basic thermal and power equipment	2	32					6			
		小 计 Subtotal		8	128	2	10						
		修读说明：要求至少选修 4 学分。 NOTE: Minimum subtotal credits: 4.											
专业 课程 Required Courses	必修课 Required Courses	4090019110	流体力学基础 A Fluid Mechanics in Thermal and Power	3	48	4				5			
		4090150130	工程热力学 Engineering Thermodynamics	3.5	56	4				5			
		4090037110	汽车构造 A Automobile Construction A	4	64			4		5			
		4090002110	传热学 Heat Transfer	3	48	4				6	工程热力学		
		4090008110	发动机原理 A Fundamentals of Internal Combustion	3.5	56	4				6	汽车构造 A		
		4090065110	热能与动力机械测试技术 Measurement Technology in Thermal and Power Machinery	3	48	4				7			
		4090033110	汽车发动机设计 Automobile Engine Design	5	80			32		7			
		4090066110	热能与动力机械性能实验 Performance Experiment in Thermal Energy and Power Machinery	1	32	32				7	热能与动力机械测试技术		
		小 计 Subtotal		26	432	52		36					
		Specialized Courses	选修课 Elective Courses	汽车发动机方向 Automotive Engine Professional Field (专业方向 1)									
4090159130	汽车与发动机制造工艺学 Manufacturing Technology of Automobile			4	48			32		6	汽车构造 A		
4090031110	汽车动力装置匹配技术 Automobile Power Device Matching Technology			2	32					6			
4090074110	内燃机新技术 Advanced Engine Technology			1	16					7			
4090006110	发动机管理系统 Engine Management System			3	48	4				7			
4090040110	汽车结构有限元分析 Automobile Finite Element Analysis			2	32		14			7			
4090007110	发动机优化技术 Engine Optimal Technology Control			2	32					7			
4090073110	发动机振动与噪声 Vibration and Noise of Engine			2	32					7			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		4090032110	汽车发动机排放与控制 Automobile Engine Exhaust Emission and Control	2	32					7		
		4090022110	内燃机增压技术 Internal Combustion Engine Turbocharged	2	32					7		
		4090052110	汽车新能源及其动力装置 Automotive New Energy and Power Unit	2	32					7		
		4090062110	燃料电池技术基础 Fundamentals of Fuel Cell Technology	2	32					7		
		4090072110	摩托车构造与设计 Motorcycle Construction and Design	2	32					7		
			小 计 Subtotal	25	400	4	14	32				
新能源汽车方向 New Energy Automobile Professional Field (专业方向 2)												
		4090159130	汽车与发动机制造工艺学 Manufacturing Technology of Automobile	4	48			32		6	汽车构造 A	
		4090031110	汽车动力装置匹配技术 Automobile Power Device Matching Technology	2	32					6		
		4090052110	汽车新能源及其动力装置 Automotive New Energy and Power Unit	2	32					7		
		4090195150	电动汽车设计基础 Electric Vehicle Design Basis	2	32					7		
		4090196150	电动汽车电驱动理论与控制 Electric Drive Theory and Control of Electric Vehicle	2	32			2		7		
		4090095120	电池及其管理系统 Battery and Management System	2	32					7		
		4090062110	燃料电池技术基础 Fundamentals of Fuel Cell Technology	2	32					7		
		4090197150	汽车电控系统设计基础 Design Basis of Automobile Electronic Control system	2	32					7		
		4090099120	可编程控制系统 Programmable Control System	2	32		10			7		
		4090188120	汽车性能建模与仿真基础 Fundamentals of Performance modeling and simulation	2	32					7		
		4090191120	智能充换电服务网络 Intelligent Charger for Electric Service Network	2	32					7		
		4090074110	内燃机新技术 Advanced Engine Technology	1	16					7		
			小 计 Subtotal	25	400		10	34				
修读说明：要求至少选修 13 学分。 NOTE: Minimum subtotal credits: 13.												

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
个性化课程 Personalized Course	选修课 Elective Courses	4090069110	新能源汽车结构与原理 Structures and Theory of Electric Vehicle	2	32			2		7		
		4090043110	汽车理论 B Theory of Vehicle B	2	32					7		
		4090160130	汽车发动机新技术 New Technology of Automobile Engine	2	32					7		
		4090161130	汽车发动机创新设计 Innovative Design of Automobile Engine	2	32			16		7		
		4090067110	先进制造技术概论 Introduction of Advanced Manufacturing	2	32					7		
		小 计 Subtotal		10	160			18				
		修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE: Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.										

#### 四、集中性实践教学环节

##### V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4080150110	机械制造工程实训 B Practice of Technology of Metals B	4	4	3	
4100069110	电工电子实习 B Practice of Electrical Engineering & Electronics B	1	1	4	
4080149110	机械原理课程设计 Mechanical Principles Course Design	1.5	1.5	4	
4090084110	汽车拆装实习 Automobile Construction Practice	2	2	5(分散)	
4080147110	机械设计课程设计 Mechanical Design Course Design	3	3	6	
4090080110	毕业实习 Practice for Graduation	2	2	8	
4090078110	毕业论文（设计） Graduation Thesis	15	10	8	
小 计 Subtotal		31.5	25		

#### 五、修读指导

##### VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7<sup>th</sup> term. The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：张国方  
专业培养方案责任人：徐 阳

# 【汽车服务工程专业】2015 版本科培养方案

## Undergraduate Education Plan for Specialty in Automotive Support Engineering(2015)

专业名称	汽车服务工程	主干学科	机械工程、管理工程
Major	Automotive Support Engineering	Major Disciplines	Mechanical engineering, Managing Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineer
所属大类	机械类（车辆）	大类培养年限	1 年
Disciplinary	Machinery	Duration	1 years

### 最低毕业学分规定

#### Graduation Credit Criteria

课程类别 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	58.5	24	\	27	\	190
选修课 Elective Courses	9	4	12.5	10	\	10	

### 一、培养目标与毕业要求

#### I Educational Objectives & Requirement

##### (一) 培养目标 Educational Objectives

- (1) 热爱祖国，身心健康，具有一定的文化素质，较高的科学素养、社会责任感和良好的职业道德。
- (2) 具有较扎实的工程科学基础，较系统地掌握本专业领域的基础理论知识。
- (3) 具有本专业必需的工程制图、设计、计算、试验测试、计算机应用、文献检索和基本工艺操作等技能。
- (4) 掌握实用的专业技能，具有从事汽车技术支持、汽车营销及相关服务、汽车服务运作与规划等相关领域工作所必需的专业知识和解决实际问题的能力；了解现代汽车技术的发展动态，在车辆工程的某个专业领域，掌握较扎实的专业技能
- (5) 具有一定的艺术和人文社科基础及正确运用本国语言、文字的能力，基本掌握一门外语。
- (6) 具有较强的创新精神，具备获取新知识、资料收集与信息处理、团结协作和社会活动的的能力。
- (7) 具有初步的科学研究、技术开发及其组织管理能力。

- (1) Students should love the homeland; have physical and mental health, having a certain cultural quality, high scientific literacy, social responsibility and good occupation moral.
- (2) Students should systematically grasp the specially basic knowledge in Automobile Service Engineering with Mechanical (Automobile) Engineering Theory and Scientific Theory of Management, which including Engineering Mechanics, Mechanics, Electrical and Electronics, Engineering Materials, Automobile Structure and Property, Marketing Management, Service Operations Management etc.
- (3) They are required to have the essential skills in engineering drawing, design, calculation, experiment test, computer application, references retrieval and basic craft manipulation.
- (4) They should possess practical abilities of professional skill in field of automotive engineering support,

- automotive marketing and service; they should understand the development trend of modern automobile technology, master solid professional skills in a professional field of Automotive Support Engineering.
- (5) They should have the firm natural science foundation, good humanities, arts and social science basis. They also should make use of their native language with accuracy, and grasp a foreign language.
- (6) They should have creative and cooperating consciousness, ability to obtain new knowledge, data collection and information processing, solidarity and social activity ability.
- (7) Students are capable of primary scientific research, technological development and organizational management capabilities.

## (二) 毕业要求 Educational Requirement

- (1) 热爱祖国，身心健康，具备良好的敬业精神、社会责任感和职业道德。
- (2) 关注当代科技和社会问题，具有较强的产品质量意识、市场竞争意识、安全生产意识和环境保护意识。
- (3) 具有从事机械和汽车服务工程领域科学研究、工程设计和技术服务等工作所需的数理知识和及其相关的自然科学知识，并能将这些知识运用于解决实际服务工程问题。
- (4) 掌握工程力学、机械学、电工电子学、工程材料、汽车结构与性能、营销管理、服务运作管理等机械工程和管理科学的基本理论和知识。
- (5) 具有工程制图、制造工艺等机械制造工程领域的知识，熟悉汽车制造工艺流程和制造方法。
- (6) 掌握汽车现代汽车技术支持、汽车营销管理与决策、汽车服务运作与规划等专业知识，具备从事汽车技术支持、汽车营销、产品规划、服务系统设计与管理工作的能力。
- (7) 具有一定的工程实践经历和较强的创新精神，具有一定的汽车服务工程相关领域科学研究、科技开发、组织管理能力。
- (8) 基本掌握一门外语，能进行交流沟通和熟练地阅读专业文献资料。
- (9) 了解车辆工程领域的技术标准、产业政策和法律法规。
- (10) 了解机械工程和车辆工程学科的前沿技术、发展动态和产业需求。
- (11) 掌握一定的经济、管理知识，具有一定的技术经济分析、经济效益及社会效益分析能力。
- (12) 具有一定的自然科学、人文社会科学和工业美学的基础知识，具有良好的综合素质。
- (13) 具有一定的国际视野，具有良好的口头和书面表达及交流沟通能力、良好的团队意识和合作精神。
- (14) 具有终身教育的意识和继续学习的能力。
- (1) Students should love the homeland, have physical and mental health, having good professional spirit, the sense of social responsibility and occupation moral.
- (2) They should pay attention to contemporary science and technology problems and social issues, and has strong consciousness of product quality, market competition, safety production and environmental protection.
- (3) They should have the mathematical knowledge and other related knowledge of natural science needed in the mechanical and vehicle engineering fields of scientific research, engineering design and technical service work, and solve support engineering problems with this knowledge.
- (4) They should master the basic theory and basic knowledge of Engineering Mechanics, Mechanics, Electrical and Electronics, Engineering Materials, Automobile Structure and Property, Marketing Management, Service Operations Management etc.
- (5) They should have the engineering drawing, manufacturing process and other machinery manufacturing knowledge, familiar with the automobile manufacturing process and manufacturing method.

- (6) They should have the basic capacity with modern automotive technology support, management and decision-making of automotive marketing and operation and planning of automotive support, and have the practical ability in field of automotive technology support, automotive marketing, product planning and design and management of support system.
- (7) They should have experiences of some project practices and a strong spirit of innovation. They should have certain ability of scientific research, technology development and organization management in Automotive Support Engineering related field.
- (8) They should basically master a foreign language and can communication and reading professional literature with the foreign language.
- (9) They should understand the technical standards, industry related policies, laws and regulations of the field in Automotive Support Engineering.
- (10) They should understand of advanced technology, development trends and industry demand of mechanical engineering and Automotive Support Engineering.
- (11) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (12) They should have certain basic knowledge of natural science, humanities and social sciences and industrial aesthetics, with good comprehensive quality.
- (13) They should have certain international vision, good oral and written expression and communication skills, sense of team spirit and cooperation.
- (14) They should have the consciousness of lifelong education and the ability to keep on learning.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5	培养目标 6	培养目标 7
毕业要求 1	√						
毕业要求 2	√						
毕业要求 3		√	√				
毕业要求 4		√	√				
毕业要求 5		√	√	√			
毕业要求 6		√	√	√			
毕业要求 7				√		√	√
毕业要求 8					√		
毕业要求 9		√		√			
毕业要求 10		√		√			
毕业要求 11		√			√		√
毕业要求 12	√				√		
毕业要求 13						√	
毕业要求 14						√	

## 二、专业核心课程与专业特色课程

### II Core Courses and Characteristic Courses

#### (一) 专业核心课程:

专业核心课程：汽车构造、汽车理论、汽车电子控制系统、汽车电器设备

Core Courses: Construction of Automobile, The Theory of Automobile, Vehicle Electronic Control System, Vehicle Electric Equipment

(二) 专业特色课程:

专业特色课程: 汽车服务系统规划、汽车营销与策划、汽车维修工程

Characteristic Courses: Vehicle Support System Programming, Vehicle Marketing and Planning, Vehicle Maintenance and Repair Engineering

附: 毕业要求实现矩阵:

专业 核心 课程	专业 特色 课程	课程名称	汽车服务工程专业毕业要求															
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)		
		思想道德修养与法律基础	√	√								√				√	√	
		中国近现代史纲要	√													√		
		毛泽东思想和中国特色社会主义理论体系概论	√													√	√	
		马克思主义基本原理	√										√			√	√	
		军事理论	√	√												√	√	
		心理健康教育	√	√											√	√	√	
		体育	√															
		大学英语									√					√	√	
		大学计算机基础					√	√									√	
		计算机程序设计基础					√	√									√	
		创新创业类公选课	√							√						√	√	√
		人文社科类公选课	√							√						√	√	√
		经济管理类公选课	√	√						√				√	√	√	√	√
		科学技术类公选课					√			√								
		艺术体育类公选课	√													√	√	√
		专业导论		√			√		√			√						
		高等数学 A				√		√								√		
		工程图学 A					√	√										
		线性代数 A				√		√								√		
		概率论与数理统计 B				√		√								√		
		大学物理 B				√										√		
		物理实验 B				√		√								√		
		电工与电子技术基础 A					√											
		工程材料					√											

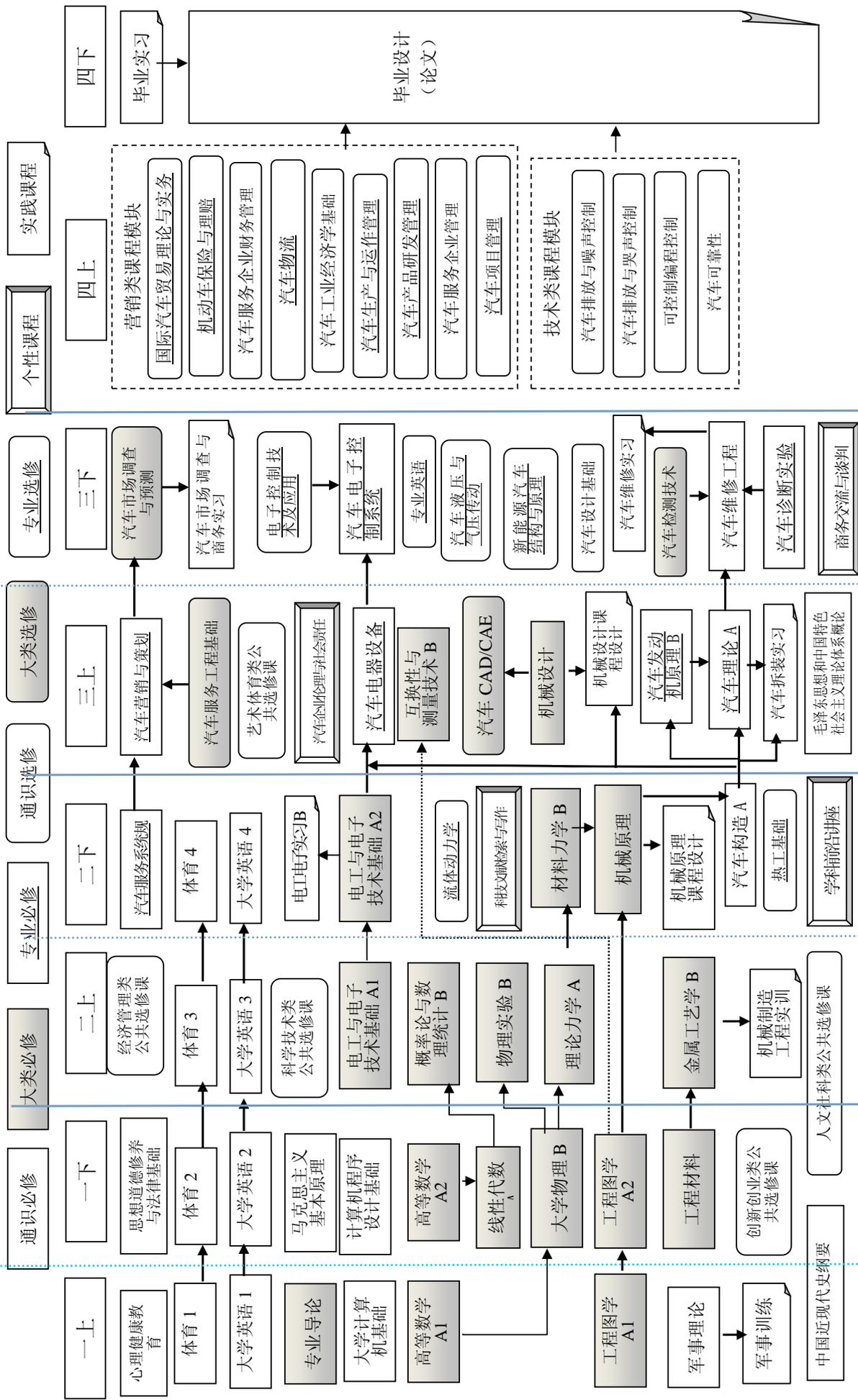
专业 核心 课程	专业 特色 课程	课程名称	汽车服务工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		金属工艺学 B				√										
		互换性与测量技术 B				√					√					
		理论力学 A					√									
		材料力学 C				√										
		机械原理						√								
		机械设计				√		√								
√		汽车构造 A				√										
		发动机原理 B						√								
√		汽车理论 A			√											
	√	汽车服务系统规划									√					
	√	汽车营销与策划											√			
√		汽车电器设备				√										
√		汽车电子控制系统									√					
	√	汽车维修工程						√								
		汽车诊断实验				√										
		流体动力学基础 B				√										
		热工基础				√										
		新能源汽车结构与原理				√										
		电子控制技术及应用									√					
		汽车液压与气压传动				√										
		汽车设计基础						√								
		汽车可靠性						√								
		汽车排放与噪声控制										√				
		汽车与发动机制造工艺学				√										
		可编程控制系统					√									
		专业英语								√						
		国际汽车贸易理论与实务(双语)											√			
		机动车保险与理赔											√			

专业 核心 课程	专业 特色 课程	课程名称	汽车服务工程专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		汽车服务企业财务管理											√			
		汽车物流											√			
		汽车工业经济学基础											√			
		汽车产品研发管理											√			
		汽车服务企业管								√			√			
		汽车项目管理											√			
		汽车生产与运作管理											√			
		汽车服务工程基础			√	√	√									
		汽车 CAD/CAE			√							√				
		汽车市场调查与预测								√			√			
		汽车检测技术		√			√									
		军事训练	√	√						√					√	√
		机械制造工程实训 B				√										
		机械原理课程设计			√		√		√							
		电工电子实习 B				√	√									
		汽车拆装实习					√	√								
		机械设计课程设计					√		√		√	√				
		汽车维修实习				√		√								
		汽车市场调查与商务实习											√			
		毕业实习							√							
		毕业论文(设计)							√							

### 三、课程教学进程图

#### III Teaching Process Map

课程教学进程图（汽车服务工程）



#### 四、理论教学建议进程表

#### IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
通 识 课 程  Public Basic Courses	必 修 课 程  Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6			
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6			
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96				32		1-6		
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48				8		1-6		
		1060003130	军事理论 Military Theory	1	32				16		1-4		
		4210001110	体育 1 Physical Education I	1	32						1		
		4210002110	体育 2 Physical Education II	1	32						2	体育 1	
		4210003110	体育 3 Physical Education III	1	32						3	体育 2	
		4210004110	体育 4 Physical Education IV	1	32						4	体育 3	
		1050001130	心理健康教育 Mental Health Education	1	16						1-2		
		4030002110	大学英语 A1 College English A I	3	64					16	1		
		4030003110	大学英语 A2 College English A II	3	64					16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A III	3	64					16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A IV	3	64					16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32			12			1		
		程序设计语言课程组(三选一, 3 学分) Courses of Computer Program Design (select one out of three, Credits: 3)											
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C)	3	48			12			2		
4120024110	计算机程序设计基础(FORTRAN 语言) Fundamentals of Computer Program Design(FORTRAN)	3	48			12			2				
4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design(VB)	3	48			12			2				
小 计 Subtotal				35	736			24	64	64			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			<p>全校学生要求至少取得 9 个学分，且必须选修艺术体育类课程中的艺术类相关课程，取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程，其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>								
	人文社科类 Arts and Social Science Courses											
	经济管理类 Economy and Management Courses											
	科学技术类 Science and Technology Courses											
	艺术体育类 Art and Physical Education Courses											
学 科 大 类 课 程 Basic Disciplinary Courses	必修 Required Courses	4090070110	专业导论 Introduction to Automotive Engineering	1	14			2		1		
		4050063110	高等数学 A 上 Advanced Mathematics A I	5	80					1		*
		4050064110	高等数学 A 下 Advanced Mathematics A II	5	80					2	高等数学 A 上	
		4080039110	工程图学 A1 Engineering Graphics A I	3.5	56					1		*
		4080040110	工程图学 A2 Engineering Graphics A II	2.5	40					2	工程图学 A1	
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4080034110	工程材料 Engineering Materials	2.5	40	4				2		
		4050463130	大学物理 B Physics B	5	80					2		*
		4050224110	物理实验 B Physics Lab. B	1	32	32				3		
		4050058110	概率论与数理统计 B Probability and Mathematics Statistic B	3	48					3		*
		4080078110	金属工艺学 B Metallurgical Technology B	2.5	40	4				3		
		4050129110	理论力学 A Theoretical Mechanics A	4.5	72					3		
		4100009110	电工与电子技术基础 A1 Fundamentals of Electrical and Electronic Technology A I	3.5	56	10				3		*
		4100010110	电工与电子技术基础 A2 Fundamentals of Electrical and Electronic Technology A II	3.5	56	10				4	电工与电子技术基础 A1	
		4050018110	材料力学 C Mechanics of Materials C	4	64	4				4		
		4080062110	机械原理 Mechanism and Machine Theory	3.5	56	4				4		
		4080054110	互换性与测量技术 B Interchangeability and Measurement B	2	32	4				5		
4080060110	机械设计 Mechanical Design	4	64	6				5				

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		小 计 Subtotal		58.5	950	78		2				
	选修课 Elective Courses	4090034110	汽车服务工程基础 Vehicle Support Engineering Foundation	2	32	2				5		
		4090024110	汽车 CAD/CAE Computer Aided Design and Engineering of Automobile and Engine	2	32		10			5		
		4090048110	汽车市场调查与预测 Vehicle Marketing Research and Forecast	2	32					6		
		4090039110	汽车检测技术 Vehicle Inspection Technology	2	32	2				6		
		小 计 Subtotal		8	128	4	10					
	修读说明：要求至少选修 4 学分。 NOTE: Minimum subtotal credits:4.											
专业 Specialized Courses	必修课 Required Courses	4090037110	汽车构造 A Construction of Automobile A	4	64			4		4		
		4090036110	汽车服务系统规划 Vehicle Support System Programming	3	48					4		
		4090009110	发动机原理 B Engine Principle B	2	32	4				5		
		4090042110	汽车理论 A The Theory of Automobile A	3.5	56	6				5		
		4090055110	汽车营销与策划 Vehicle Marketing and Planning	3	48					5		
		4090027110	汽车电器设备 Vehicle Electric Equipment	2	32	4				5		
		4090030110	汽车电子控制系统 Vehicle Electronic Control System	3	48	6				6		
		4090050110	汽车维修工程 Vehicle Maintenance and Repair Engineering	2.5	40					6		
		4090059110	汽车诊断实验 Vehicle Diagnosis Experiment	1	32	32				6		
		小 计 Subtotal		24	400	52			4			
		选修课 Elective Courses	技术类课程模块（要求至少选修 4 学分） Technique-related course module (Minimum subtotal 4 credits)									
		4090020110	流体力学基础 B Fluid Mechanics Elements B	2	32	2				4		
		4090064110	热工基础 Elements of Thermodynamics	2	32	2				4		
		4090069110	新能源汽车结构与原理 Structures and Theory of Electric Vehicle	2	32			2		6		
		4090004110	电子控制技术及应用 Technology and Applications of Electronic Control	3	48	8				6		
		4090054110	汽车液压与气压传动 Hydraulic and Air Pressure Transmission of Automobile	2	32					6		
		4090047110	汽车设计基础 Automobile Design Foundation	2	32					6		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		4090041110	汽车可靠性 Automobile Reliability	2	32					7		
		4090044110	汽车排放与噪声控制 Vehicle Emission and Noise Control	2	32					7		
		4090057110	汽车与发动机制造工艺学 Manufacturing Technology for Automobile and Engine	2.5	40					7		
		4090099120	可编程控制系统 Programmable Control System	2	32		10			7		
营销类课程模块（要求至少选修 4 学分） Marketing-related course module (Minimum subtotal 4 credits)												
		4090163130	专业英语 English for Automotive Support Engineering	2	32					6		
		4090015110	国际汽车贸易理论与实务 Theory and Practice of Vehicle International Trade(bilingual)	3	48					7		
		4090016110	机动车保险与理赔 Vehicle Insurance and Compensation	2	32					7		
		4090035110	汽车服务企业财务管理 Financial Management for Automotive Operation Enterprise	2	32					7		
		4090147130	汽车物流 Logistics of Automobile	2	32					7		
		4090108120	汽车工业经济学基础 Foundation for Automobile Industry Economic	2	32					7		
		4090103120	汽车产品研发管理 Management of Automotive Product R&D	2	32					7		
		4090107120	汽车服务企业运营 Management for Automotive Operation Enterprise	2	32					7		
		4090148130	汽车项目管理 Management for Automotive Project	2	32					7		
		4090146130	汽车生产与运作管理 Production and Operation Management for Automotive	2	32					7		
		小 计 Subtotal		42.5	680	12	10					
修读说明：要求至少选修 12.5 学分。 NOTE: Minimum subtotal credits: 12.5												
个性化课程 Personalized Course	选修课 Elective Courses	4090164130	科技文献检索与写作 Technical Document Retrieval and Writing	1	16					4		
		4090165130	汽车企业伦理与社会责任 Automotive Business Ethics and Social Responsibility	1	16					5		
		4090166130	学科前沿讲座 Frontiers of Science	2	32					6		
		4090167130	商务交流与谈判 Business Communication and Negotiation	2	32					7		
		小 计 Subtotal		6	96							
修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE: Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.												

## 五、集中性实践教学环节

### V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4080150110	机械制造工程实训 B Practice of Technology of Metals B	4	4	3	
4080149110	机械原理课程设计 Mechanical Principles Course Design	1.5	1.5	4	
4100069110	电工电子实习 B electrical practice B	1	1	4	
4090084110	汽车拆装实习 Automobile Construction Practice	2	1	5	
4080147110	机械设计课程设计 Mechanical Design Course Design	3	3	6	
4090089110	汽车维修实习 Vehicle Maintenance Practice	2	2	6	
4090088110	汽车市场调查与商务实习 Vehicle Market Investigation and Business Practice	1	1	7	
4090079110	毕业实习 Practice for Graduation	2	2	8	
4090130120	毕业设计 (论文) Graduation Thesis(Design)	15	10	8	
小 计 Subtotal		34.5	27		

## 六、修读指导

### VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7<sup>th</sup> term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：张国方  
专业培养方案责任人：郝玉凯

# 【车辆工程专业（卓越工程师班）】

## 2015 版本本科培养方案

### Undergraduate Education Plan for Specialty in Automotive Engineering (Excellent Engineer Class) (2015)

专业名称	车辆工程（卓越工程师班）	主干学科	机械工程、车辆工程
Major	Automotive Engineering(Excellent Engineer Class)	Major Disciplines	Mechanical engineering, Vehicle Engineering
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineer
所属大类	机械类（车辆）	大类培养年限	1年
Disciplinary	Machinery	Duration	1years

#### 最低毕业学分规定

#### Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	61	30	\	31	\	190
选修课 Elective Courses	9	4	10	\	\	10	

#### 一、培养目标与毕业要求

##### I Educational Objectives & Requirement

##### (一) 培养目标 Educational Objectives

通过卓越工程师训练计划的实施，培养基础知识和专业理论扎实，工程能力突出，敬业精神强、团队精神强、创新精神强，受国内外汽车及零部件企业欢迎，适应国家汽车科技和汽车产业发展要求，能够胜任汽车科学研究和汽车整车及零部件产品设计开发、试验、制造等领域工作的高级创新型工程技术人才。

With the help of the training program, this major aims at cultivating the senior innovative engineering and technical talents who have strong specialty basic theory and specialized knowledge, outstanding engineering capability, excellent professionalism, strong team spirit and good pioneering spirit. They also are welcomed by domestic and foreign automobiles and parts enterprises and can meet the national automotive technology and automotive industry requirements. They also are capable of scientific research and automobiles and parts products design, development, testing, manufacturing and other fields.

- (1) 身心健康，具有较高的文化素质，较高的科学素养、社会责任感和良好的职业道德。
- (2) 具有扎实的工程科学基础，较系统地掌握本专业领域的基础理论知识。
- (3) 具有本专业必需的工程制图、设计、计算、试验测试、计算机应用、文献检索和基本工艺操作等技能。
- (4) 具有从事汽车产品的设计、制造、试验、运用等工作所必需的专业知识和解决实际

工程问题的能力，了解现代汽车技术的发展动态，在车辆工程的某个专业领域，掌握较扎实的专业技能。

- (5) 具有一定的艺术和人文社科基础及正确运用本国语言、文字的能力，基本掌握一门外语。
- (6) 具有较强的创新精神，具备获取新知识、资料收集与信息处理、团结协作和社会活动的的能力。
- (7) 具有较好的科学研究、技术开发及其组织管理能力。
- (1) Students should have physical and mental health, having high cultural quality, high scientific literacy, social responsibility and good occupation moral.
- (2) They should have solid foundation of engineering science and systematically master the basic theoretical knowledge in this field.
- (3) They are required to have the essential skills in engineering drawing, design, calculation, experiment test, computer application, references retrieval and basic craft manipulation.
- (4) They should possess the essential specialty knowledge and work to solve practical engineering problems, which is applied in automotive product design and manufacturing, experiments and application. They should understand the development trend of modern automobile technology, master solid professional skills in a professional field of vehicle engineering.
- (5) They should have the firm natural science foundation, good humanities, arts and social science basis. They also should make use of their native language with accuracy, and grasp a foreign language.
- (6) They should have creative and cooperating consciousness, ability to obtain new knowledge, data collection and information processing, solidarity and social activity ability.
- (7) Students are capable of better scientific research, technological development and organizational management capabilities.

## (二) 毕业要求 Educational Requirement

- (1) 身心健康，具备良好的敬业精神、社会责任感和职业道德。
- (2) 关注当代科技和社会问题，具有较强的产品质量意识、市场竞争意识、安全生产意识和环境保护意识。
- (3) 具有从事机械和车辆工程领域科学研究、工程设计和技术服务等工作所需的数理知识和及其相关的自然科学知识，并能将这些知识运用于解决实际工程问题。
- (4) 掌握工程力学、机械原理、机械设计、电工电子技术、计算机应用技术、试验测试技术等机械工程基本理论和知识。
- (5) 具有工程制图、制造工艺等机械制造工程领域的知识，熟悉汽车制造工艺流程和制造方法。
- (6) 掌握汽车构造、理论、设计、测试、电子控制等专业知识，具备从事汽车产品开发工作的能力。
- (7) 具有较多的工程实践经历和较强的创新精神，具有较好的车辆工程相关领域科学研究、科技开发、组织管理能力。
- (8) 掌握一门外语，能进行交流沟通和熟练地阅读专业文献资料。
- (9) 了解车辆工程领域的技术标准、产业政策和法律法规。
- (10) 了解机械工程和车辆工程学科的前沿技术、发展动态和产业需求。

- (11) 掌握一定的经济、管理知识，具有一定的技术经济分析、经济效益及社会效益分析能力。
- (12) 具有一定的自然科学、人文社会科学和工业美学的基础知识，具有良好的综合素质。
- (13) 具有较好的国际视野，具有良好的口头和书面表达及交流沟通能力、良好的团队意识和合作精神。
- (14) 具有终身教育的意识和继续学习的能力。
- (1) Students should have physical and mental health, having good professional spirit, the sense of social responsibility and occupation moral.
- (2) They should pay attention to contemporary science and technology problems and social issues, and has strong consciousness of product quality, market competition, safety production and environmental protection.
- (3) They should have the mathematical knowledge and other related knowledge of natural science needed in the mechanical and vehicle engineering fields of scientific research, engineering design and technical service work, and solve engineering problems with this knowledge.
- (4) They should master the basic theory and basic knowledge of mechanical engineering, including engineering mechanics, mechanical principle, mechanical design, electrical and electronic technology, computer application technology, testing technology etc.
- (5) They should have the engineering drawing, manufacturing process and other machinery manufacturing knowledge, familiar with the automobile manufacturing process and manufacturing method.
- (6) They should grasp the automobile structure, theory, design, testing, electronic control and other professional knowledge, and have the ability to engage in automobile product development work.
- (7) They should have experiences of more project practices and a strong spirit of innovation. They should have better ability of scientific research, technology development and organization management in vehicle engineering related field.
- (8) They should master a foreign language and can communication and reading professional literature with the foreign language.
- (9) They should understand the technical standards, industry related policies, laws and regulations of the field in vehicle engineering.
- (10) They should understand of advanced technology, development trends and industry demand of mechanical engineering and vehicle engineering.
- (11) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (12) They should have certain basic knowledge of natural science, humanities and social sciences and industrial aesthetics, with good comprehensive quality.
- (13) They should have better international vision, good oral and written expression and communication skills, sense of team spirit and cooperation.
- (14) They should have the consciousness of lifelong education and the ability to keep on learning.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5	培养目标 6	培养目标 7
毕业要求 1	√						
毕业要求 2	√						
毕业要求 3		√	√				
毕业要求 4		√	√				
毕业要求 5		√	√	√			
毕业要求 6		√	√	√			
毕业要求 7				√		√	√
毕业要求 8					√		
毕业要求 9		√		√			
毕业要求 10		√		√			
毕业要求 11		√			√		√
毕业要求 12	√				√		
毕业要求 13						√	
毕业要求 14						√	

## 二、专业核心课程与专业特色课程

### II Core Courses and Characteristic Courses

#### (一) 专业核心课程:

理论力学、材料力学、电工与电子技术基础、计算机程序设计基础、机械原理、机械设计、汽车构造、汽车理论、汽车设计、汽车试验学、汽车与发动机制造工艺学、汽车性能实验。

Theoretical Mechanics, Mechanics of Materials, Electrical Engineering, Fundamentals of Computer Technology, Mechanism and Machine Theory, Mechanical Design, Construction of Automobile, The Theory of Automobile, Automobile Design, Test Technology of Vehicle, Manufacturing Technology of Automobile and Engine, Auto Performance Test etc.

#### (二) 专业特色课程:

汽车设计、汽车与发动机制造工艺学、汽车自动变速技术、汽车新技术概论、汽车创新设计、企业工程实践。

Automobile Design, Manufacturing Technology of Automobile and Engine, Technology of Automobile Automatic Transmission, Automobile New Technology Introduction, Automotive Innovation Design, Enterprise Engineering Practice.

附：毕业要求实现矩阵：

专业核心课程	专业特色课程	课程名称	车辆工程（卓越工程师班）专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		思想道德修养与法律基础	√	√						√				√	√	
		中国近现代史纲要	√											√		
		毛泽东思想和中国特色社会主义理论体系概论	√											√	√	
		马克思主义基本原理	√								√			√	√	

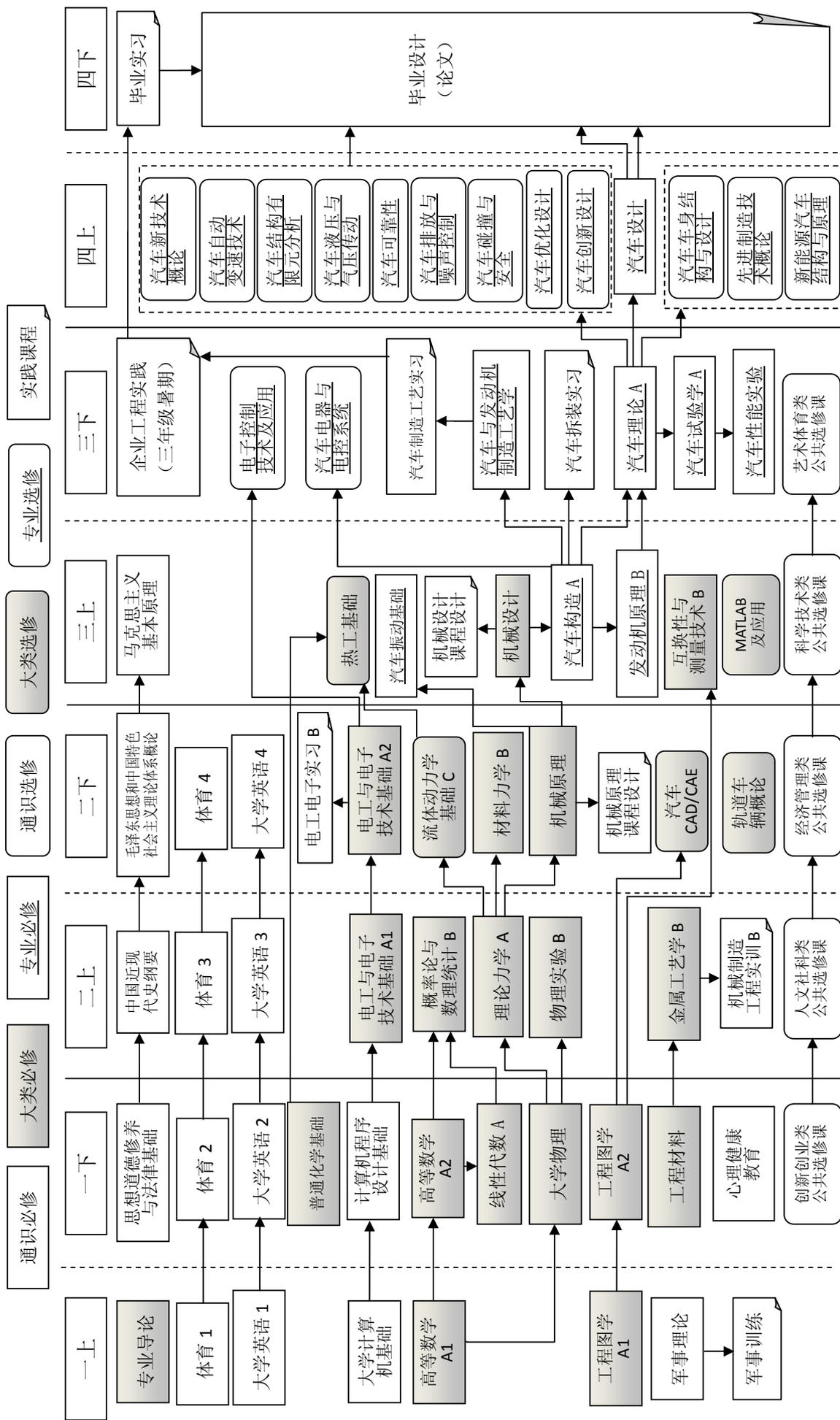
专业 核心 课程	专业 特色 课程	课程名称	车辆工程（卓越工程师班）专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		军事理论	√	√							√				√	√
		心理健康教育	√												√	
		体育	√												√	√
		大学英语	√										√		√	√
		大学计算机基础	√	√											√	√
√		计算机程序设计基础	√	√										√	√	√
		创新创业类公选课	√													
		人文社科类公选课								√					√	√
		经济管理类公选课				√										√
		科学技术类公选课				√										
		艺术体育类公选课	√											√	√	√
		专业导论		√		√		√				√				
		高等数学 A			√									√		
		工程图学 A				√	√									
		线性代数 A			√									√		
		概率论与数理统计 B			√									√		
		大学物理			√									√		
		物理实验 B			√									√		
		普通化学基础			√									√		
√		电工与电子技术基础 A				√										
		工程材料				√										
		金属工艺学 B				√	√									
		互换性与测量技术 B				√	√				√					
		汽车 CAD/CAE														
		流体动力学基础 C				√										

专业 核心 课程	专业 特色 课程	课程名称	车辆工程（卓越工程师班）专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		轨道车辆概论						√								
		热工基础				√										
		MATLAB 及应用			√		√									
		自动控制原理 C						√								
√		理论力学 A				√										
√		材料力学 C				√										
√		机械原理				√										
√		机械设计				√	√		√		√					
√		汽车构造 A						√								
		发动机原理 B							√							
√		汽车理论 A							√		√					
√		汽车试验学 A						√	√		√					
√	√	汽车与发动机制造工艺学						√	√							
√		汽车性能实验						√	√	√		√			√	√
√	√	汽车设计						√	√	√						
		电子控制技术及应用							√							
		汽车电器与电控系统							√							
	√	汽车自动变速技术							√							
		汽车优化设计							√	√						
		汽车车身结构与设计							√					√		
		新能源汽车结构与原理							√							
		汽车可靠性							√							

专业 核心 课程	专业 特色 课程	课程名称	车辆工程（卓越工程师班）专业毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		汽车排放与噪声控制						√								
		汽车碰撞与安全						√			√					
		汽车结构有限元分析						√								
		汽车液压与气压传动						√								
		汽车振动基础			√	√	√	√								
	√	汽车新技术概论						√				√			√	
	√	汽车创新设计						√	√					√	√	
		先进制造技术概论						√							√	
		军事训练	√	√						√					√	√
		机械制造工程实训 B				√	√		√						√	√
		电工电子实习 B				√			√						√	√
		机械原理课程设计				√			√							√
		机械设计课程设计				√	√		√							√
		汽车拆装实习					√	√	√						√	√
		汽车制造工艺实习					√	√	√				√		√	√
	√	企业工程实践	√	√	√	√	√	√	√	√	√	√	√	√	√	√
		毕业实习				√	√	√	√				√	√	√	√
		毕业设计(论文)		√		√	√	√	√				√		√	√
		形势与政策	√	√							√	√			√	

### 三、课程教学进程图

#### III Teaching Process Map



#### 四、理论教学建议进程表

#### IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major		
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur					
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6				
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6				
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6				
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6				
		1060003130	军事理论 Military Theory	1	32			16		1-4				
		1050001130	心理健康教育 Mental Health Education	1	16					1-2				
		4210001110	体育 1 Physical Education I	1	32					1				
		4210002110	体育 2 Physical Education II	1	32					2				
		4210003110	体育 3 Physical Education III	1	32					3				
		4210004110	体育 4 Physical Education IV	1	32					4				
		4030002110	大学英语 A1 College English A I	3	64				16	1				
		4030003110	大学英语 A2 College English A II	3	64				16	2	大学英语 A1			
		4030004110	大学英语 A3 College English A III	3	64				16	3	大学英语 A2			
		4030005110	大学英语 A4 College English A IV	3	64				16	4	大学英语 A3			
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1				
		程序设计语言课程组(二选一, 3 学分) Courses of Computer Program Design (select one out of two, Credits: 3)												
				4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C)	3	48		12			2		
				4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design(VB language)	3	48		12			2		
				小计 Subtotal		35	736		24	64	64			
		选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses	<p>全校学生要求至少取得 9 个学分, 且必须选修艺术体育类课程中的艺术类相关课程, 取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程, 其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>										
人文社科类 Arts and Social Science Courses														
经济管理类 Economy and Management Courses														
科学技术类 Science and Technology Courses														



课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
选修课 Elective Courses		4090024110	汽车 CAD/CAE Computer Aided Design and Engineering of Automobile and Engine	2	32		10			4		
		4090021110	流体力学基础 C Fluid Mechanics Elements C	2	32	2				4		
		4090075110	轨道车辆概论 Introduction to Railway Vehicle	2	32					4		
		4090064110	热工基础 Elements of Thermodynamics	2	32	2				5		
		4090178140	MATLAB 及应用 MATLAB and Application	2	32		6			5		
		4100065110	自动控制原理 C Automatic Control Principle C	2.5	40	8				5		
			小计 Subtotal		12.5	200	12	16				
修读说明：要求至少选修 4 学分。 NOTE: Minimum subtotal credits: 4.												
专业课程 Specialized Courses	必修课 Required Courses	4090037110	汽车构造 A Construction of Automobile A	4	64			4		5	机械原理	
		4090010110	发动机原理 B Engine Principle B	2	32					5	汽车构造 A	
		4090060110	汽车振动基础 Fundamentals of Vehicle Vibration	2	32					5	机械原理	
		4090042110	汽车理论 A The Theory of Automobile A	3.5	56					6	汽车构造 A	
		4090004110	电子控制技术及应用 Technology and Applications of Electronic Control	3	48	8				6	计算机程序设计基础	
		4090028110	汽车电器与电控系统 Automobile Electric Equipment and Control System	3	48	6				6	汽车构造 A	
		4090049110	汽车试验学 A Test Technology of Vehicle A	3	48					6	汽车构造 A	
		4090194150	汽车与发动机制造工艺学 Manufacturing Technology of Automobile	3.5	56			16		6	汽车构造 A	
		4090053110	汽车性能实验 Auto Performance Test	1	32	32				6	汽车理论 A	
		4090112120	汽车设计 Automobile Design	5.0	80			32		7	汽车理论 A	
			小计 Subtotal		30	496	46		52			
	选修课 Elective Courses	4090061110	汽车自动变速技术 Technology of Automobile Automatic Transmission	2	32	4		2		7		
4090056110		汽车优化设计 Optimization Design of Automobile	2	32		12			7			
4090025110		汽车车身结构与设计 Construction and Design of Automobile Body	2	32					7			
4090069110		新能源汽车结构与原理 Structures and Theory of Electric Vehicle	2	32			2		7			
4090041110		汽车可靠性 Automobile Reliability	2	32					7			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		4090044110	汽车排放与噪声控制 Automobile Emission and Noise Control	2	32					7		
		4090045110	汽车碰撞与安全 Collision and Safety of Vehicle	2	32					7		
		4090040110	汽车结构有限元分析 Finite Element Method Analyze of Automotive	2	32		14			7		
		4090054110	汽车液压与气压传动 Hydraulic and Air Pressure Transmission of Automobile	2	32			2		7		
		4090155130	汽车新技术概论 Automobile New Technology Introduction	2	32					7		
		4090156130	汽车创新设计 Automotive Innovation Design	2	32			16		7		
		4090067110	先进制造技术概论 Introduction to Advanced Manufacturing Technology	2	32					7		
		小计 Subtotal		24	384	4	26	22				
修读说明：要求至少选修 10 学分。 NOTE: Minimum subtotal credits: 10.												

## 五、集中性实践教学环节

### V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4080150110	机械制造工程实训 B Metal Techniques Practice B	4	4	3	
4100069110	电工电子实习 B Electrical practice B	1	1	4	
4080149110	机械原理课程设计 Mechanical Principles Course Design	1.5	1.5	4	
4080147110	机械设计课程设计 Mechanical Design Course Design	3	3	5	
4090084110	汽车拆装实习 Automobile Construction Practice	2	2	6(分散)	
4090133120	汽车制造工艺实习 Automobile Manufacturing Technology Practice	1	1	6	
4090158130	企业工程实践 Enterprise Engineering Practice	5	5	6(暑期)	
4090081110	毕业实习 Graduation Practice	2	2	8	
4090077110	毕业设计(论文) Graduation Design(Graduation Thesis)	15	10	8	
小计 Subtotal		37.5	31		

## 六、修读指导

### VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7<sup>th</sup> term . The course will be arranged by the University Students' Affairs' Department in each school.

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# 【能源与动力工程专业（卓越工程师班）】

## 2015 版本本科培养方案

### Undergraduate Education Plan for Specialty in Energy and Power (Excellent Engineer Class) (2015)

专业名称	能源与动力工程（卓越工程师班）	主干学科	机械工程、动力工程与工程热物理
Major	Energy and Power Engineering(Excellent Engineer Class)	Major Disciplines	Mechanical engineering, Power Engineering and Engineering Thermal Physics
计划学制	四年	授予学位	工学学士
Duration	4 Years	Degree Granted	Bachelor of Engineer
所属大类	机械类（车辆）	大类培养年限	1年
Disciplinary	Machinery	Duration	1 years

#### 最低毕业学分规定

##### Graduation Credit Criteria

课程类 Course Classification 课程性质 Course Nature	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	58.5	27.5	\	30	\	190
选修课 Elective Courses	9	4	16	\	\	10	

#### 一、培养目标与毕业要求

##### I Educational Objectives & Requirement

###### (一) 培养目标 Educational Objectives

本专业培养具备能源与动力工程方面基础知识和应用能力，能从事动力机械与动力工程的设计、制造、试验研究、开发、管理等方面工作，具有创新精神与实践能力的高级工程技术人才。

This program aims at cultivating the senior engineering and technical talents who have the basic acknowledge and application ability in energy and power engineering, are capable of designing, manufacturing, experimental study, developing, managing etc in power machinery and engineering, and possess the spirit of innovation and practical ability.

- (1) 身心健康，具有一定的文化素质，较高的科学素养、社会责任感和良好的职业道德。
- (2) 具有较扎实的工程科学基础，较系统地掌握本专业领域的基础理论知识。
- (3) 具有本专业必需的工程制图、设计、计算、试验测试、计算机应用、文献检索和基本工艺操作等基本技能；
- (4) 具有动力机械产品的设计制造、试验、运用等所必需的专业知识和解决实际问题的能力，了解现代汽车技术的发展趋势；
- (5) 具有一定的艺术和人文社科基础及正确运用本国语言、文字的能力，基本掌握一门外语；
- (6) 具有较强的创新精神和获取新知识的能力、收集处理信息的能力、团结协作和社会

活动的能力。

- (7) 具有初步的科学研究、科技开发及组织管理能力。
- (1) Students should have physical and mental health, having a certain cultural quality, high scientific literacy, social responsibility and good occupation moral.
- (2) They should systematically grasp the comprehensive basic knowledge in this realm, which include: Engineering Mechanics, mechanics, electrotechnics, materialogy, vehicle system analysis and design, fundamentals of vehicle manufacturing, experiment, information process and enterprise management, etc.
- (3) They are required to have the essential skills in design, calculation, experiment test, computer application, references retrieval and basic craft manipulation.
- (4) They should possess the essential specialty knowledge, which is applied in power machinery product design and manufacturing, experiments and application.
- (5) They should have the firm natural science foundation, good humanities, arts and social science basis. They also should make use of their native language with accuracy, and grasp a foreign language (e.g. English or French).
- (6) They should have creative and cooperating consciousness, ability of acquiring knowledge and ability of collecting and analyzing information.
- (7) Students are capable of primary science research, exploitation in science and technology and organization and management.

## (二) 毕业要求 Educational Requirement

- (1) 身心健康, 具备良好的敬业精神、社会责任感和职业道德。
- (2) 关注当代科技和社会问题, 具有较强的产品质量意识、市场竞争意识、安全生产意识和环境保护意识。
- (3) 具有从事机械和能源与动力工程领域科学研究、工程设计和技术服务等工作所需的数理知识和其它相关自然科学知识, 并能将这些知识运用于解决实际工程问题。
- (4) 掌握工程力学、机械原理、机械设计、电工电子技术、计算机应用技术、试验测试技术等机械工程基本理论和知识。
- (5) 具有工程制图、制造工艺等机械制造工程领域的知识, 熟悉汽车制造工艺流程和制造方法。
- (6) 掌握汽车构造、理论、设计、测试、电子控制等专业知识, 具备从事汽车产品开发工作的能力。
- (7) 具有一定的工程实践经历和较强的创新精神, 具有一定的机械和能源与动力工程相关领域科学研究、科技开发、组织管理能力。
- (8) 基本掌握一门外语, 能进行交流沟通和熟练地阅读专业文献资料。
- (9) 了解能源与动力工程领域的技术标准、产业政策和法律法规。
- (10) 了解机械工程和能源与动力工程学科的前沿技术、发展动态和产业需求。
- (11) 掌握一定的经济、管理知识, 具有一定的技术经济分析、经济效益及社会效益分析能力。
- (12) 具有一定的自然科学、人文社会科学和工业美学的基础知识, 具有良好的综合素质。
- (13) 具有一定的国际视野, 具有良好的口头和书面表达及交流沟通能力、良好的团队意识和合作精神。
- (14) 具有终身教育的意识和继续学习的能力。

- (1) Students should have physical and mental health, having good professional spirit, the sense of social responsibility and occupation moral.
- (2) They should pay attention to contemporary science and technology problems and social issues, and has strong consciousness of product quality, market competition, safety production and environmental protection.
- (3) They should have the mathematical knowledge and other related knowledge of natural science needed in the mechanical and energy and power engineering fields of scientific research, engineering design and technical service work, and solve engineering problems with this knowledge
- (4) They should master the basic theory and basic knowledge of mechanical engineering, including engineering mechanics, mechanical principle, mechanical design, electrical and electronic technology, computer application technology, testing technology etc.
- (5) They should have the engineering drawing, manufacturing process and other machinery manufacturing knowledge, familiar with the automobile manufacturing process and manufacturing method.
- (6) They should grasp the automobile structure, theory, design, testing, electronic control and other professional knowledge, and have the ability to engage in automobile product development work.
- (7) They should have experiences of some project practices and a strong spirit of innovation. They should have certain ability of scientific research, technology development and organization management in energy and power engineering related field.
- (8) They should basically master a foreign language and can communication and reading professional literature with the foreign language.
- (9) They should understand the technical standards, industry related policies, laws and regulations of the field in energy and power engineering.
- (10) They should understand of advanced technology, development trends and industry demand of mechanical engineering and energy and power engineering.
- (11) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (12) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (13) They should have certain international vision, good oral and written expression and communication skills, sense of team spirit and cooperation.
- (14) They should have the consciousness of lifelong education and the ability to keep on learning.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5	培养目标 6	培养目标 7
毕业要求 1	√						
毕业要求 2	√						
毕业要求 3		√	√				
毕业要求 4		√					
毕业要求 5		√	√				
毕业要求 6		√		√			
毕业要求 7		√		√			
毕业要求 8		√		√			
毕业要求 9		√		√			
毕业要求 10	√				√		
毕业要求 11					√		
毕业要求 12						√	
毕业要求 13						√	
毕业要求 14							√

## 二、专业核心课程与专业特色课程

### II Core Courses and Characteristic Courses

#### (一) 专业核心课程：

传热学、发动机原理、汽车发动机设计、热能与动力机械测试技术、汽车与发动机制造工艺学

Core Courses: Heat Transfer, Fundamentals of Internal Combustion Engine, Automobile Engine Design, Measurement Technology in Thermal Energy and Power Machinery, Manufacturing Technology of Automobile.

#### (二) 专业特色课程：

热能与动力机械测试技术、汽车构造。

Characteristic Courses: Measurement Technology in Thermal Energy and Power Machinery, Automobile Construction.

附：毕业要求实现矩阵：

专业核 心课程	专业特 色课程	课程名称	能源与动力工程专业（卓越工程师班）毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		思想道德修养与法律基础	√	√						√				√	√	
		中国近现代史纲要	√											√		
		毛泽东思想和中国特色社会主义理论体系概论	√											√	√	
		马克思主义基本原理	√								√			√	√	
		军事理论	√	√										√	√	

专业核 心课程	专业特 色课程	课程名称	能源与动力工程专业（卓越工程师班）毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		心理健康教育	√	√								√		√	√	
		体育	√													
		大学英语											√	√	√	
		大学计算机基础				√	√								√	
		计算机程序设计基础				√	√								√	
		创新创业类公选课	√									√		√	√	√
		人文社科类公选课	√									√		√	√	√
		经济管理类公选课	√	√							√	√		√	√	√
		科学技术类公选课				√										
		艺术体育类公选课	√									√		√	√	
		专业导论		√		√		√	√							
		高等数学 A			√		√					√				
		工程图学 A				√	√									
		线性代数 A			√		√					√				
		概率论与数理统计 B			√		√					√				
		大学物理			√							√				
		物理实验 B			√		√					√				
		电工与电子技术基础 A				√										
		工程材料				√										
		金属工艺学 B				√										
		互换性与测量技术 B				√				√						
		理论力学 A				√										
		材料力学 C				√										
		机械原理				√										
		机械设计				√				√						√

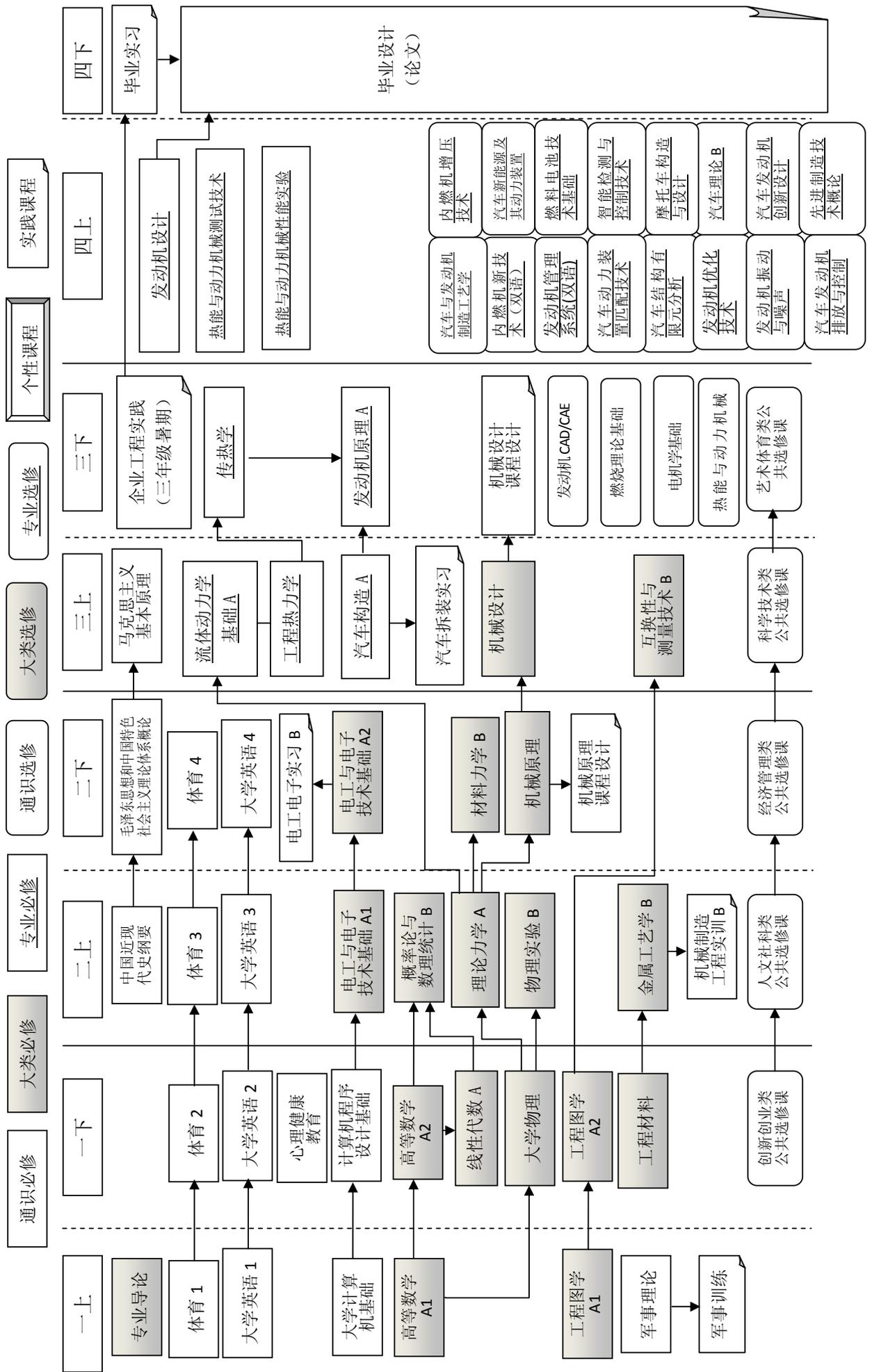
专业核 心课程	专业特 色课程	课程名称	能源与动力工程专业（卓越工程师班）毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		发动机 CAD/CAE					√									
		燃烧理论基础				√		√								
		电机学基础						√								
		热能与动力机械基础				√		√								
		流体动力学基础 A				√										
		工程热力学				√										
√		传热学				√										
	√	汽车构造 A						√								
√		发动机原理 A						√								
√	√	热能与动力机械测试技术						√		√						
√		汽车发动机设计						√								√
		热能与动力机械性能实验					√	√		√				√	√	√
√		汽车与发动机制造工艺学						√								
		内燃机新技术（双语）						√	√							
		发动机管理系统(双语)						√	√							
		汽车动力装置匹配技术						√								
		汽车结构有限元分析					√	√								
		发动机优化技术					√	√								
		发动机振动与噪声						√								
		汽车发动机排放与控制						√								
		内燃机增压技术						√								
		汽车新能源及其动力装置						√								
		燃料电池技术基础						√								
		摩托车构造与设计						√								
		新能源汽车结构与原理						√	√							

专业核 心课程	专业特 色课程	课程名称	能源与动力工程专业（卓越工程师班）毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		汽车理论 B						√								
		汽车发动机新技术						√	√							
		汽车发动机创新设计						√	√							
		先进制造技术概论						√	√					√		
		军事训练	√	√										√	√	√
		机械制造工程实训 B				√								√	√	√
		电工电子实习 B				√								√	√	√
		机械原理课程设计				√									√	√
		机械设计课程设计				√									√	√
		汽车拆装实习						√						√	√	√
		毕业实习				√		√			√	√		√	√	√
		毕业设计(论文)		√		√		√			√			√	√	√
		形势与政策	√	√					√	√				√		

### 三、课程教学进程图

#### III Teaching Process Map

课程教学进程图



### 三、理论教学建议进程表

#### III Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major		
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur					
通 识 课 程  Public Basic Courses	必 修 课 程  Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6				
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6				
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96				32		1-6			
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48				8		1-6			
		1060003130	军事理论 Military Theory	1	32				16		1-4			
		1050001130	心理健康教育 Mental Health Education	1	16						1-2			
		4210001110	体育 1 Physical Education I	1	32						1			
		4210002110	体育 2 Physical Education II	1	32						2	体育 1		
		4210003110	体育 3 Physical Education III	1	32						3	体育 2		
		4210004110	体育 4 Physical Education IV	1	32						4	体育 3		
		4030002110	大学英语 A1 College English A I	3	64					16	1			
		4030003110	大学英语 A2 College English A II	3	64					16	2	大学英语 A1		
		4030004110	大学英语 A3 College English A III	3	64					16	3	大学英语 A2		
		4030005110	大学英语 A4 College English A IV	3	64					16	4	大学英语 A3		
		4120017110	大学计算机基础 Foundation of Computer	2	32			12			1			
		程序设计语言课程组(三选一, 3 学分)												
				4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design (C Language)	3	48			12		2		
				4120024110	计算机程序设计基础(FORTRAN 语言) Fundamentals of Computer Program Design (FORTRAN Language)	3	48			12		2		
				4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design (VB Language)	3	48			12		2		
			小 计 Subtotal	35	736			24	64	64				

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			<p>全校学生要求至少取得 9 个学分,且必须选修艺术体育类课程中的艺术类相关课程,取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程,其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>								
	人文社科类 Arts and Social Science Courses											
	经济管理类 Economy and Management Courses											
	科学技术类 Science and Technology Courses											
	艺术体育类 Art and Physical Education Courses											
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4090091110	专业导论 Introduction to Materials Physics	1	16			2		1		
		4050063110	高等数学 A1 Advanced Mathematics A I	5	80					1		
		4050064110	高等数学 A2 Advanced Mathematics A II	5	80					2	高等数学 A1	
		4080039110	工程图学 A1 Engineering Graphics A I	3.5	56					1		
		4080040110	工程图学 A2 Engineering Graphics A II	2.5	40					2	工程图学 A1	
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050024110	大学物理 C Physics B	5	80					2		
		4050224110	物理实验 B Physics Lab. B	1	32	32				3		
		4050058110	概率论与数理统计 B Probability and Mathematics Statistic B	3	48					3		
		4080034110	工程材料 Engineering Materials	2.5	40	4				3		
		4050129110	理论力学 A Theoretical Mechanics A	4.5	72					3		
		4100009110	电工与电子技术基础 A1 Fundamentals of Electrical and Electronic Technology A I	3.5	56	10				3		
		4100010110	电工与电子技术基础 A2 Fundamentals of Electrical and Electronic Technology A II	3.5	56	10				4	电工与电子技术基础 A1	
		4080062110	机械原理 Mechanism and Machine Theory	3.5	56	4				4		
		4080078110	金属工艺学 B Metallurgical Technology B	2.5	40	4				4		
		4050018110	材料力学 C Mechanics of Materials C	4	64	4				4		
4080060110	机械设计 Mechanical Design	4	64	6				5				
4080054110	互换性与测量技术 B Interchangeability and Measurement B	2	32	4				5				

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		小 计 Subtotal		58.5	936	78		2				
	选修课 Elective Courses	4090005110	发动机 CAD/CAE Engine Computer Aided Design/Computer	2	32		10			6		
		4090063110	燃烧理论基础 Fundamentals of Combustion Theory	2	32					6		
		4090003110	电机学基础 Fundamentals of Electrical Machinery	2	32	2				6		
		4090125120	热能与动力机械基础 basic thermal and power equipment	2	32					6		
		小 计 Subtotal		8	128	2	10					
修读说明：要求至少选修 4 学分。 NOTE: Minimum subtotal credits: 4.												
专 业 课 Required Courses	必修课 Required Courses	4090019110	流体力学基础 A Fluid Mechanics in Thermal and Power	3.5	56	4				5		
		4090150130	工程热力学 Engineering Thermodynamics	3.5	56	4				5		
		4090037110	汽车构造 A Automobile Construction A	4	64			4		5		
		4090002110	传热学 Heat Transfer	3.5	56	4				6	工程热力学	
		4090008110	发动机原理 A Fundamentals of Internal Combustion	3.5	56	4				6	汽车构造 A	
		4090065110	热能与动力机械测试技术 Measurement Technology in Thermal and	3	48	4				7		
		4090033110	汽车发动机设计 Automobile Engine Design	5.5	88			48		7		
		4090066110	热能与动力机械性能实验 Performance Experiment in Thermal Energy and Power Machinery	1	32	32				7	热能与动力机械测试技术	
		小 计 Subtotal		27.5	456	52		52				
	专 业 课 Specialized Courses	选修课 Elective Courses	4090159130	汽车与发动机制造工艺学 Manufacturing Technology of Automobile	4.5	48			32		6	汽车构造 A
4090074110			内燃机新技术（双语） Advanced Engine Technology	1	16					7		
4090006110			发动机管理系统(双语) Engine Management System	3	48	4				7	发动机原理 A	
4090031110			汽车动力装置匹配技术 Automobile Power Device Matching Technology	2	32					7		
选修课 Elective Courses		4090040110	汽车结构有限元分析 Automobile Finite Element Analysis	2	32		14			7		
		4090007110	发动机优化技术 Engine Optimal Technology Control	2	32					7		
		4090073110	发动机振动与噪声 Vibration and Noise of Engine	2	32					7		
		4090032110	汽车发动机排放与控制 Automobile Engine Exhaust Emission and Control	2	32					7		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		4090022110	内燃机增压技术 Internal Combustion Engine Turbocharged	2	32					7		
		4090052110	汽车新能源及其动力装置 Automotive New Energy and Power Unit	2	32					7		
		4090062110	燃料电池技术基础 Fundamentals of Fuel Cell Technology	2	32					7		
		4090129120	智能检测与控制技术 Intelligent Measurement and Control Technology	2	32					7(企业)		
		4090072110	摩托车构造与设计 Motorcycle Construction and Design	2	32					7		
		4090043110	汽车理论 B Theory of Vehicle B	2	32					7		
		4090161130	汽车发动机创新设计 Innovative Design of Automobile Engine	2	32		16			7		
		4090067110	先进制造技术概论 Introduction of Advanced Manufacturing	2	32					7(企业)		
		小 计 Subtotal		32	512	4	30	32				
修读说明：要求至少选修 16 学分。 NOTE: Minimum subtotal credits: 16.												

#### 四、集中性实践教学环节

##### V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4080150110	机械制造工程实训 B Practice of Technology of Metals B	4	4	3	
4100069110	电工电子实习 B Practice of Electrical Engineering & Electronics B	1	1	4	
4080149110	机械原理课程设计 Mechanical Principles Course Design	1.5	1.5	4	
4090084110	汽车拆装实习 Automobile Construction Practice	2	2	5(分散)	
4090180140	企业工程实践 Enterprise Engineering Practice	5	5	6(暑期)	
4080147110	机械设计课程设计 Mechanical Design Course Design	3	3	6	
4090080110	毕业实习 Practice for Graduation	2	2	8	
4090078110	毕业论文(设计) Graduation Thesis	15	10	8	
小 计 Subtotal		31.5	30		

## 五、修读指导

### VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7<sup>th</sup> term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：张国方  
专业培养方案责任人：徐 阳

# 【汽车服务工程（卓越工程师）专业】2015 版本本科培养方案

## Undergraduate Education Plan for Specialty in Automotive Support Engineering(2015)

	专业名称 汽车服务工程		主干学科 机械工程、管理工程
	Major Automotive Support Engineering	Major Disciplines	Mechanical engineering, Managing Engineering
	计划学制 四年		授予学位 工学学士
	Duration 4 Years	Degree Granted	Bachelor of Engineer
	所属大类 机械类（车辆）		大类培养年限 1年
	Disciplinary Machinery	Duration	1 years

### 最低毕业学分规定

#### Graduation Credit Criteria

课程类别 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	58.5	28	\	32	\	190
选修课 Elective Courses	9	4	13.5	\	\	10	

### 一、培养目标与毕业要求

#### I Educational Objectives & Requirement

##### (一) 培养目标 Educational Objectives

- (1) 热爱祖国，身心健康，具有一定的文化素质，较高的科学素养、社会责任感和良好的职业道德。
- (2) 具有较扎实的工程科学基础，较系统地掌握本专业领域的基础理论知识。
- (3) 具有本专业必需的工程制图、设计、计算、试验测试、计算机应用、文献检索和基本工艺操作等技能。
- (4) 掌握实用的专业技能，具有从事汽车技术支持、汽车营销及相关服务、汽车服务运作与规划等相关领域工作所必需的专业知识和解决实际问题的能力；了解现代汽车技术的发展动态，在车辆工程的某个专业领域，掌握较扎实的专业技能。
- (5) 具有一定的艺术和人文社科基础及正确运用本国语言、文字的能力，基本掌握一门外语。
- (6) 具有较强的创新精神，具备获取新知识、资料收集与信息处理、团结协作和社会活动的的能力。
- (7) 具有初步的科学研究、技术开发及其组织管理能力。

- (1) Students should love the homeland; have physical and mental health, having a certain cultural quality, high scientific literacy, social responsibility and good occupation moral.
- (2) Students should systematically grasp the specially basic knowledge in Automobile Service Engineering with Mechanical (Automobile) Engineering Theory and Scientific Theory of Management, which including Engineering Mechanics, Mechanics, Electrical and Electronics, Engineering Materials, Automobile Structure and Property, Marketing Management, Service Operations Management etc.
- (3) They are required to have the essential skills in engineering drawing, design, calculation, experiment

test, computer application, references retrieval and basic craft manipulation.

- (4) They should possess practical abilities of professional skill in field of automotive engineering support, automotive marketing and service; they should understand the development trend of modern automobile technology, master solid professional skills in a professional field of Automotive Support Engineering.
- (5) They should have the firm natural science foundation, good humanities, arts and social science basis. They also should make use of their native language with accuracy, and grasp a foreign language.
- (6) They should have creative and cooperating consciousness, ability to obtain new knowledge, data collection and information processing, solidarity and social activity ability.
- (7) Students are capable of primary scientific research, technological development and organizational management capabilities.

## (二) 毕业要求 Educational Requirement

- (1) 热爱祖国，身心健康，具备良好的敬业精神、社会责任感和职业道德。
  - (2) 关注当代科技和社会问题，具有较强的产品质量意识、市场竞争意识、安全生产意识和环境保护意识。
  - (3) 具有从事机械和汽车服务工程领域科学研究、工程设计和技术服务等工作所需的数理知识和及其相关的自然科学知识，并能将这些知识运用于解决实际服务工程问题。
  - (4) 掌握工程力学、机械学、电工电子学、工程材料、汽车结构与性能、营销管理、服务运作管理等机械和管理科学的基本理论和知识。
  - (5) 具有工程制图、制造工艺等机械制造工程领域的知识，熟悉汽车制造工艺流程和制造方法。
  - (6) 掌握汽车现代汽车技术支持、汽车营销管理与决策、汽车服务运作与规划等专业知识，具备从事汽车技术支持、汽车营销、产品规划、服务系统设计与管理工作能力。
  - (7) 具有一定的工程实践经历和较强的创新精神，具有一定的汽车服务工程相关领域科学研究、科技开发、组织管理能力。
  - (8) 基本掌握一门外语，能进行交流沟通和熟练地阅读专业文献资料。
  - (9) 了解车辆工程领域的技术标准、产业政策和法律法规。
  - (10) 了解机械工程和车辆工程学科的前沿技术、发展动态和产业需求。
  - (11) 掌握一定的经济、管理知识，具有一定的技术经济分析、经济效益及社会效益分析能力。
  - (12) 具有一定的自然科学、人文社会科学和工业美学的基础知识，具有良好的综合素质。
  - (13) 具有一定的国际视野，具有良好的口头和书面表达及交流沟通能力、良好的团队意识和合作精神。
  - (14) 具有终身教育的意识和继续学习的能力。
- (1) Students should love the homeland, have physical and mental health, having good professional spirit, the sense of social responsibility and occupation moral.
  - (2) They should pay attention to contemporary science and technology problems and social issues, and has strong consciousness of product quality, market competition, safety production and environmental protection.
  - (3) They should have the mathematical knowledge and other related knowledge of natural science needed in the mechanical and vehicle engineering fields of scientific research, engineering design and technical service work, and solve support engineering problems with this knowledge.
  - (4) They should master the basic theory and basic knowledge of Engineering Mechanics, Mechanics, Electrical and Electronics, Engineering Materials, Automobile Structure and Property, Marketing Management, Service Operations Management etc.
  - (5) They should have the engineering drawing, manufacturing process and other machinery

manufacturing knowledge, familiar with the automobile manufacturing process and manufacturing method.

- (6) They should have the basic capacity with modern automotive technology support, management and decision-making of automotive marketing and operation and planning of automotive support, and have the practical ability in field of automotive technology support, automotive marketing, product planning and design and management of support system.
- (7) They should have experiences of some project practices and a strong spirit of innovation. They should have certain ability of scientific research, technology development and organization management in Automotive Support Engineering related field.
- (8) They should basically master a foreign language and can communication and reading professional literature with the foreign language.
- (9) They should understand the technical standards, industry related policies, laws and regulations of the field in Automotive Support Engineering.
- (10) They should understand of advanced technology, development trends and industry demand of mechanical engineering and Automotive Support Engineering.
- (11) They should master a few of knowledge for economy and management and have certain ability of technical and economic analysis and economic benefit and social benefit analysis.
- (12) They should have certain basic knowledge of natural science, humanities and social sciences and industrial aesthetics, with good comprehensive quality.
- (13) They should have certain international vision, good oral and written expression and communication skills, sense of team spirit and cooperation.
- (14) They should have the consciousness of lifelong education and the ability to keep on learning.

附：培养目标实现矩阵

	培养目标 1	培养目标 2	培养目标 3	培养目标 4	培养目标 5	培养目标 6	培养目标 7
毕业要求 1	√						
毕业要求 2	√						
毕业要求 3		√	√				
毕业要求 4		√	√				
毕业要求 5		√	√	√			
毕业要求 6		√	√	√			
毕业要求 7				√		√	√
毕业要求 8					√		
毕业要求 9		√		√			
毕业要求 10		√		√			
毕业要求 11		√			√		√
毕业要求 12	√				√		
毕业要求 13						√	
毕业要求 14						√	

## 二、专业核心课程与专业特色课程

### II Core Courses and Characteristic Courses

#### (一) 专业核心课程：

专业核心课程：汽车构造、汽车理论、汽车电子控制系统、汽车电器设备

Core Courses: Construction of Automobile, the Theory of Automobile, Vehicle Electronic Control System,

## Vehicle Electric Equipment

### (二) 专业特色课程:

专业特色课程: 汽车服务系统规划、汽车营销与策划、汽车维修工程

Characteristic Courses: Vehicle Support System Programming, Vehicle Marketing and Planning, Vehicle Maintenance and Repair Engineering

附: 毕业要求实现矩阵:

专业 核心 课程	专业 特色 课程	课程名称	汽车服务工程专业(卓越工程师班)毕业要求															
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)		
		思想道德修养与法律基础	√	√								√				√	√	
		中国近现代史纲要	√													√		
		毛泽东思想和中国特色社会主义理论体系概论	√													√	√	
		马克思主义基本原理	√										√			√	√	
		军事理论	√	√												√	√	
		心理健康教育	√	√											√	√	√	
		体育	√															
		大学英语									√					√	√	
		大学计算机基础					√	√									√	
		计算机程序设计基础					√	√									√	
		创新创业类公选课	√							√						√	√	√
		人文社科类公选课	√							√						√	√	√
		经济管理类公选课	√	√						√				√	√	√	√	
		科学技术类公选课					√			√								
		艺术体育类公选课	√													√	√	√
		专业导论		√			√		√				√					
		高等数学 A				√		√								√		
		工程图学 A					√	√										
		线性代数 A				√		√								√		
		概率论与数理统计 B				√		√								√		
		大学物理 B				√										√		
		物理实验 B				√		√								√		

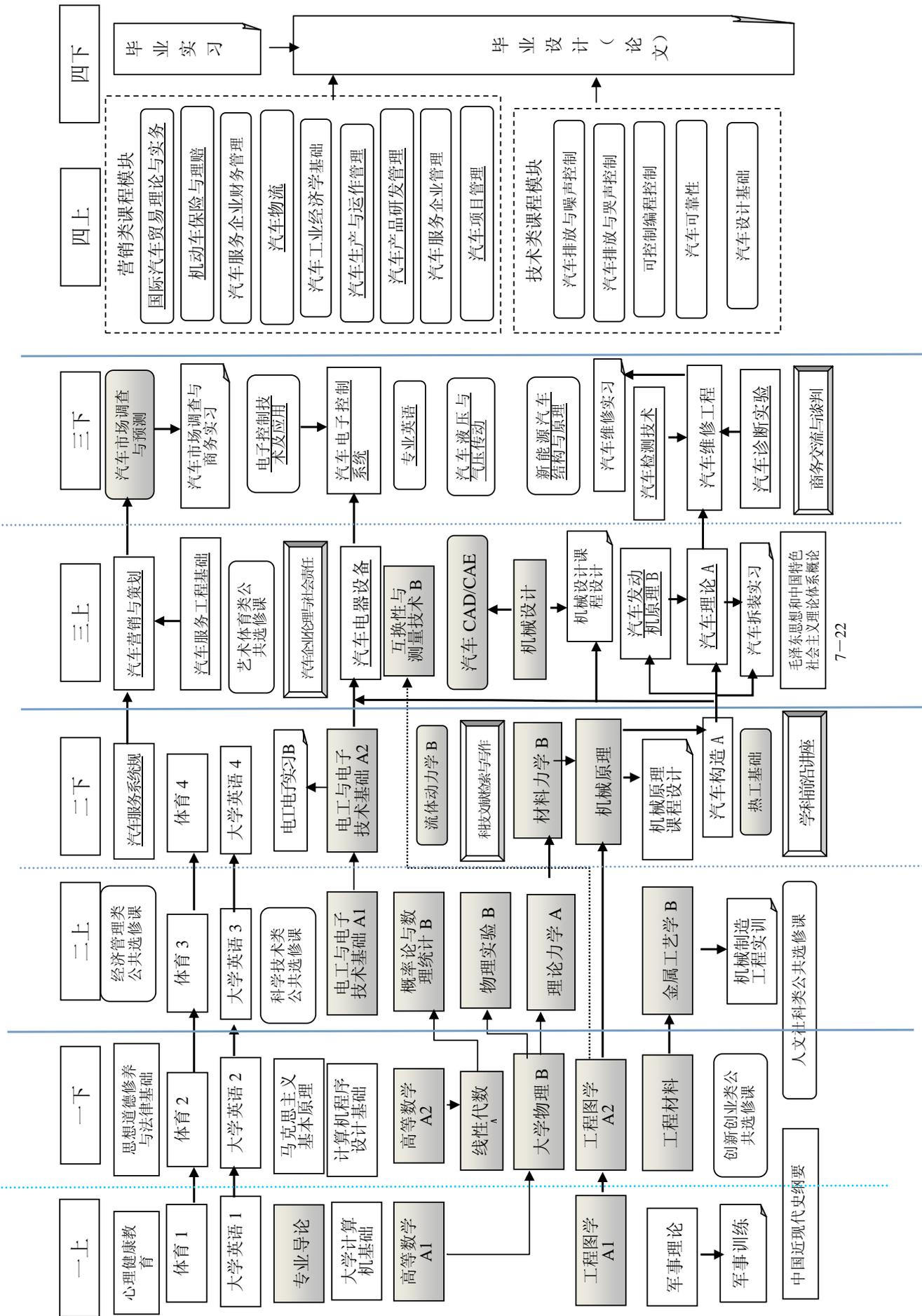
专业 核心 课程	专业 特色 课程	课程名称	汽车服务工程专业（卓越工程师班）毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		电工与电子技术基础 A				√										
		工程材料				√										
		金属工艺学 B				√										
		互换性与测量技术 B				√					√					
		理论力学 A					√									
		材料力学 C				√										
		机械原理							√							
		机械设计				√			√							
√		汽车构造 A				√										
		发动机原理 B							√							
√		汽车理论 A			√											
	√	汽车服务系统规划									√					
	√	汽车营销与策划											√			
√		汽车电器设备				√										
√		汽车电子控制系统									√					
	√	汽车维修工程							√							
		汽车诊断实验				√										
		流体动力学基础 B				√										
		热工基础				√										
		新能源汽车结构与原理				√										
		电子控制技术及应用									√					
		汽车液压与气压传动				√										
		汽车设计基础							√							
		汽车可靠性							√							
		汽车排放与噪声控制										√				
		汽车与发动机制造工艺学				√										
		可编程控制系统						√								
		专业英语									√					

专业 核心 课程	专业 特色 课程	课程名称	汽车服务工程专业（卓越工程师班）毕业要求													
			(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
		国际汽车贸易理论与实务(双语)											√			
		机动车保险与理赔											√			
		汽车服务企业财务管理											√			
		汽车物流											√			
		汽车工业经济学基础											√			
		汽车产品研发管理											√			
		汽车服务企业理管理							√				√			
		汽车项目管理											√			
		汽车生产与运作管理											√			
		汽车服务工程基础			√	√	√									
		汽车 CAD/CAE			√							√				
		汽车市场调查与预测							√				√			
		汽车检测技术		√			√									
		军事训练	√	√					√						√	√
		机械制造工程实训 B				√										
		机械原理课程设计			√		√		√							
		电工电子实习 B				√	√									
		汽车拆装实习					√	√								
		机械设计课程设计					√		√		√	√				
		汽车维修实习				√		√								
		汽车市场调查与商务实习											√			
		毕业实习							√							
		毕业论文(设计)							√							

### 三、课程教学进程图

#### III Teaching Process Map

课程教学进程图（汽车服务工程）



#### 四、理论教学建议进程表

#### IV Theory Course Schedule

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
通 识 课 程  Public Basic Courses	必 修 课 程  Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6			
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6			
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6			
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6			
		1060003130	军事理论 Military Theory	1	32			16		1-4			
		4210001110	体育 1 Physical Education I	1	32					1			
		4210002110	体育 2 Physical Education II	1	32					2	体育 1		
		4210003110	体育 3 Physical Education III	1	32					3	体育 2		
		4210004110	体育 4 Physical Education IV	1	32					4	体育 3		
		1050001130	心理健康教育 Mental Health Education	1	16					1-2			
		4030002110	大学英语 A1 College English A I	3	64				16	1			
		4030003110	大学英语 A2 College English A II	3	64				16	2	大学英语 A1		
		4030004110	大学英语 A3 College English A III	3	64				16	3	大学英语 A2		
		4030005110	大学英语 A4 College English A IV	3	64				16	4	大学英语 A3		
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1			
		程序设计语言课程组(三选一, 3 学分) Courses of Computer Program Design (select one out of three, Credits: 3)											
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C)	3	48		12				2		
		4120024110	计算机程序设计基础(FORTRAN 语言) Fundamentals of Computer Program Design(FORTRAN)	3	48		12				2		
		4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design(VB)	3	48		12				2		
		小 计 Subtotal				35	736		24	64	64		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
课程类别	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses			<p>全校学生要求至少取得 9 个学分，且必须选修艺术体育类课程中的艺术类相关课程，取得至少 2 个学分。理工科专业学生至少选修一门人文社科类或经济管理类课程，其他专业学生至少选修一门科学技术类课程。</p> <p>All students are required to obtain at least 9 credits, and must select art courses from <i>Art and Physical Education Courses</i> to obtain at least 2 credits. Science and engineering students should select at least one course from <i>Arts and Social Science Courses</i> or <i>Economy and Management Courses</i>, and other students should select at least one course from <i>Science and Technology Courses</i>.</p>							
		人文社科类 Arts and Social Science Courses										
		经济管理类 Economy and Management Courses										
		科学技术类 Science and Technology Courses										
		艺术体育类 Art and Physical Education Courses										
学 科 大 类 课 程 Basic Disciplinary Courses	必修课 Required Courses	4090070110	专业导论 Introduction to Automotive Engineering	1	14			2		1		
		4050063110	高等数学 A 上 Advanced Mathematics A I	5	80					1		*
		4080039110	工程图学 A1 Engineering Graphics A I	3.5	56					1		*
		4050064110	高等数学 A 下 Advanced Mathematics A II	5	80					2	高等数学 A 上	
		4080040110	工程图学 A2 Engineering Graphics A II	2.5	40					2	工程图学 A1	
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050463130	大学物理 B Physics B	5	80					2		*
		4050058110	概率论与数理统计 B Probability and Mathematics Statistic B	3	48					3		*
		4050224110	物理实验 B Physics Lab. B	1	32	32				3		
		4080078110	金属工艺学 B Metallurgical Technology B	2.5	40	4				3		
		4100009110	电工与电子技术基础 A1 Fundamentals of Electrical and Electronic Technology A I	3.5	56	10				3		*
		4100010110	电工与电子技术基础 A2 Fundamentals of Electrical and Electronic Technology A II	3.5	56	10				4	电工与电子技术基础 A1	
		4080054110	互换性与测量技术 B Interchangeability and Measurement B	2	32	4				5		
		4080034110	工程材料 Engineering Materials	2.5	40	4				2		
		4050129110	理论力学 A Theoretical Mechanics A	4.5	72					3		
		4050018110	材料力学 C Mechanics of Materials C	4	64	4				4		
		4080062110	机械原理 Mechanism and Machine Theory	3.5	56	4				4		
		4080060110	机械设计 Mechanical Design	4	64	6				5		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major	
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur				
		小 计 Subtotal		58.5	950	78		2					
		4090020110	流体动力学基础 B Fluid Mechanics Elements B	2	32	2				4			
		4090064110	热工基础 Elements of Thermodynamics	2	32	2				4			
		4090024110	汽车 CAD/CAE Computer Aided Design and Engineering of Automobile and Engine	2	32		10			5			
		4090034110	汽车服务工程基础 Vehicle Support Engineering Foundation	2	32	2				5			
		小 计 Subtotal		8	128	6	10						
		修读说明：要求至少选修 4 学分。 NOTE: Minimum subtotal credits: 4.											
专 业 课 程 Specialized Courses	必 修 课 Required Courses	4090037110	汽车构造 A Construction of Automobile A	4	64			4		4			
		4090036110	汽车服务系统规划 Vehicle Support System Programming	3	48					4			
		4090042110	汽车理论 A The Theory of Automobile A	3.5	56	6				5			
		4090009110	发动机原理 B Engine Principle B	2	32	4				5			
		4090055110	汽车营销与策划 Vehicle Marketing and Planning	3	48					5			
		4090027110	汽车电器设备 Vehicle Electric Equipment	2	32	4				5			
		4090030110	汽车电子控制系统 Vehicle Electronic Control System	3	48	6				6			
		4090050110	汽车维修工程 Vehicle Maintenance and Repair Engineering	2.5	40					6			
		4090059110	汽车诊断实验 Vehicle Diagnosis Experiment	1	32	32				6			
		4090048110	汽车市场调查与预测 Vehicle Marketing Research and Forecast	2	32					6			
		4090039110	汽车检测技术 Vehicle Inspection Technology	2	32					6			
				小 计 Subtotal		28	464	52	28	4			
				技术类课程模块（要求至少选修 6 学分） Technique-related course module (Minimum subtotal 4 credits)									
		4090069110	新能源汽车结构与原理 Structures and Theory of Electric Vehicle	2	32			2		6			
		4090004110	电子控制技术及应用 Technology and Applications of Electronic	3	48	8				6			
		4090054110	汽车液压与气压传动 Hydraulic and Air Pressure Transmission of Automobile	2	32					6			
		4090047110	汽车设计基础 Automobile Design Foundation	2	32					7			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crts	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur			
		4090041110	汽车可靠性 Automobile Reliability	2	32					7		
		4090044110	汽车排放与噪声控制 Vehicle Emission and Noise Control	2	32					7		
		4090057110	汽车与发动机制造工艺学 The Manufacturing Technology for Automobile and Engine	2.5	40					7		
		4090099120	可编程控制系统 Programmable Control System	2	32		10			7		
营销类课程模块（要求至少选修 6 学分） Marketing-related course module (Minimum subtotal 4 credits)												
		4090163130	专业英语 English for Automotive Support Engineering	2	32					6		
		4090015110	国际汽车贸易理论与实务 Theory and Practice of Vehicle International Trade(bilingual)	3	48					7		
		4090016110	机动车保险与理赔 Vehicle Insurance and Compensation	2	32					7		
		4090035110	汽车服务企业财务管理 Financial Management for Automotive Operation Enterprise	2	32					7		
		4090147130	汽车物流 Logistics of Automobile	2	32					7		
		4090108120	汽车工业经济学基础 Foundation for Automobile Industry Economic	2	32					7		
		4090103120	汽车产品研发管理 Management of Automotive Product R&D	2	32					7		
		4090107120	汽车服务企业运营 Management for Automotive Operation Enterprise	2	32					7		
		4090148130	汽车项目管理 Management for Automotive Project	2	32					7		
		4090146130	汽车生产与运作管理 Production and Operation Management for Automotive	2	32					7		
小 计 Subtotal				38.5	616	8	10					
修读说明：要求至少选修 13.5 学分。 NOTE: Minimum subtotal credits: 13.5.												

## 五、集中性实践教学环节

### V Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
1060002110	军事训练 Military Training	3	1.5	1	
4080150110	机械制造工程实训 B Practice of Technology of Metals B	4	4	3	
4080149110	机械原理课程设计 Mechanical Principles Course Design	1.5	1.5	4	

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crts	建议修读学期 Suggested Term	第二专业 Second Major
4100069110	电工电子实习 B electrical practice B	1	1	4	
4090084110	汽车拆装实习 Automobile Construction Practice	2	1	5	
4080147110	机械设计课程设计 Mechanical Design Course Design	3	3	6	
4090089110	汽车维修实习 Vehicle Maintenance Practice	2	2	6	
4090179140	企业工程实践 Enterprise Engineering Practice	5	5	6 (暑期)	
4090088110	汽车市场调查与商务实习 Vehicle Market Investigation and Business Practice	1	1	7	
4090079110	毕业实习 Practice for Graduation	2	2	8	
4090130120	毕业设计 (论文) Graduation Thesis(Design)	15	10	8	
小 计 Subtotal		39.5	32		

## 六、修读指导

### VI Recommendations on Course Studies

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7<sup>th</sup> term . The course will be arranged by the University Students' Affairs' Department in each school.

学院教学责任人：张国方  
专业培养方案责任人：郝玉凯