

能源与动力工程专业培养方案

Undergraduate program of Energy and Power Engineering

I.专业介绍 Introduction

能源与动力工程专业（车辆新能源动力方向）始建于1974年，当年招收第一届学生，1982年开始招收研究生，1986年获内燃机硕士学位授予权。本专业立足于交通装备行业，面向整个机械工程领域，以“特色、高质量、创新发展”为办学思路，以培养“行业翘楚”的卓越能源与动力工程高级专门人才为主体目标，兼顾“学术大师”拔尖人才及“管理精英”复合型人才的培养，保持本专业所培养的人才在专业领域的领导地位。本专业迄今培养了一大批以翟婉明院士、周仲荣长江学者为杰出代表的国内外知名的专家学者、企业家和管理人才。教研室现有师资17人，其中：千人计划国家特聘专家1名，教授6人，副教授5人，高级实验师1人，讲师3人，工程师1人。能源与动力工程专业依托先进驱动节能技术教育部工程研究中心（2008）、车辆热能动力机械四川省高校重点实验室（2010）、四川省新能源汽车整车集成及智能化协同创新中心（2015）等平台，经过多年发展，已在新能源汽车关键技术（VCU，EMS，轻量化等）、车辆节能减排、新型驱动、动力电池管理、动力机械振动控制、车辆空气动力学分析及设计等领域积累了丰富的成果和经验，并与众多汽车骨干企业建立了长期稳定的合作关系，主持或参与完成诸多车型产品开发与技术攻关。

The major of energy and power engineering (the direction of new energy for vehicles) was founded in 1974, when the first students were enrolled. Graduate students were begun to recruit in 1982, and the school has been qualified to grant the Master's Degree in Internal Combustion Engine in 1986. Based on the transportation equipment industry and facing the whole field of mechanical engineering, this major takes "characteristics, high quality, innovative development" as its school-running idea, takes the training of outstanding energy and power engineering talents as its main objective, and takes into account the top-notch talents of "academic masters" and the compound talents of "management elites", to cultivate and maintain the leading position of the talents trained in this major in the professional field. This major has trained a large number of well-known experts, scholars, entrepreneurs and management personnel in the world, such as Academician Zhai Wanming, Yangtze River Scholar Zhou Zhongrong. There are 17 teachers in the teaching and research department, including 1 specialist, 6 professors, 5 associate professors, 1 senior experimenter, 3 lecturers and 1 engineer. The major of energy and power engineering relies on the platform of Engineering Research Center of the Ministry of Education of Advanced Drive Energy Saving Technology (2008), Key Laboratory of Universities in Sichuan Province of Vehicle Thermal Power Machinery (2010), Intelligent Cooperative Innovation Center of Sichuan New Energy Vehicle Integration and Intelligence (2015). After years of development, it has accumulated abundant achievements and experience in key technologies of new energy vehicles (VCU, EMS, lightweight, etc.), energy saving and emission reduction of vehicles, new drive, power battery management, vibration control of power machinery, aerodynamic analysis and design of vehicles, and has established a long-term relationship with many key automotive enterprises. Stable cooperative relationship, presiding over or participating in the completion of

many vehicle product development and technical research.

专业代码: 080501

Program Code: 080501

专业名称: 能源与动力工程

Program Name: Energy and Power Engineering

II. 培养目标 Objectives

本专业培养具备动力工程及工程热物理学科宽厚基础理论, 系统掌握能源高效洁净转化与利用、能源动力装备与系统、能源与环境系统工程等方面专业知识, 具有科学素养和人文情怀, 具有历史眼光和国际化视野、能够提出并解决带有挑战性的专业问题的, 职业操守与自我发展融合的, 德、智、体、美、劳全面发展的能源与动力工程高级复合型专门人才。

The training of this major has broad basic theory of power engineering and engineering thermophysics, professional knowledge of energy efficient and clean conversion and utilization, energy power equipment and systems, energy and environmental systems engineering is systematically mastered, with scientific literacy and humanistic feelings, with a historical and international vision, can propose and solve challenging professional problems, professional ethics and self-development integration, moral, intellectual, physical, aesthetic and labor comprehensive development of energy and power engineering senior compound talents.

毕业生经过五年左右全面的专业实践与深造, 获得完整的职业能力, 在专业知识、专业能力、沟通交流与管理能力、职业和专业素养、学习与发展能力等方面都取得卓越的成就, 职业与专业成就得到领域专家的普遍认同。毕业生成为研发设计与制造领域、运用维修与技术管理领域的优秀工程师, 特别优秀的毕业生具备成为本领域学术精英、技术专家与技术领军人才的能力。具体包括:

After five years or so of comprehensive professional practice and further study, graduates have acquired complete professional competence. They have made outstanding achievements in professional knowledge, professional competence, communication and management ability, professional and professional accomplishment, learning and development ability, and their professional and professional achievements are generally recognized by experts in the field. Graduates become excellent engineers in R&D, design and manufacturing, application, maintenance and technology management. Particularly outstanding graduates have the ability to become academic elites, technical experts and technical leaders in this field.

培养目标 1: 具备独立提出工程领域复杂工程问题合理解决方案、并运用现代设计分析工具实施方案设计与分析的能力, 能够出色地完成工程师岗位的专业技术工作。

Training objective 1: Have the ability to independently propose reasonable solutions to complex engineering problems in the field of engineering, and use modern design and analysis tools to implement the design and analysis of the project, and be able to accomplish the professional and technical work of the Engineer post.

培养目标 2: 具备针对能源与动力工程领域技术发展趋势提出创新研究方案的能力, 能够实施科学与实验研究。

Training objective 2: Ability to propose innovative research programs for the development trend of technology in the field of energy and power engineering, and to carry out scientific and

experimental research.

培养目标 3: 具备深厚的科学素养和人文情怀, 具有历史眼光和国际化视野, 胜任国际国内的交流与合作。

Training objective 3: With profound scientific literacy and humanistic feelings, historical vision and internationalization vision, competent for international and domestic exchanges and cooperation.

培养目标 4: 具备全面的工程组织管理与团队合作能力, 胜任指导或领导小型团队解决工程领域复杂工程问题的工程工作。

Training objective 4: Have comprehensive engineering organization management and team cooperation ability, be competent to guide or lead small teams to solve complex engineering problems in the engineering field.

培养目标 5: 具备优良的职业操守, 并与自身发展相融合, 通过专业实践与深造不断提升自我。

Training objective 5: Have excellent professional ethics, and integrate with their own development, through professional practice and further study to constantly improve themselves.

III.. 专业毕业要求 Graduation Requirements

为了保证培养目标的达成, 本专业学生的毕业要求如下:

In order to achieve the training objectives, the graduation requirements of the students in this major are as follows

毕业要求 1—工程知识: 能够将数学、自然科学、工程基础和专业知识用于解决能源与动力工程领域复杂工程问题。

Graduation Requirements 1 - Engineering Knowledge: Ability to apply mathematics, natural science, engineering foundation and professional knowledge to solve complex engineering problems in the field of energy and power engineering.

毕业要求 2—问题分析: 能够应用数学、自然科学和工程科学的基本原理, 识别、表达、并通过文献研究分析能源与动力工程领域复杂工程问题, 以获得有效结论。

Graduation Requirements 2 - Problem Analysis: The basic principles of mathematics, natural science and engineering science can be applied to identify, express and analyze complex engineering problems in the field of energy and power engineering through literature research in order to obtain effective conclusions.

毕业要求 3—设计/开发解决方案: 能够设计针对能源与动力工程领域复杂工程问题的解决方案, 设计满足能源与动力工程领域需求的系统、单元(部件)或工艺流程, 并能够在设计环节中体现创新意识, 考虑社会、健康、安全、法律、文化以及环境等因素。

Graduation Requirements 3 - Design/Development Solutions: Ability to design solutions to complex engineering problems in the field of energy and power engineering, design systems, units (components) or process flow to meet the needs of energy and power engineering, and embody innovative consciousness in the design process, considering society, health, safety, etc. Legal, cultural and environmental factors.

毕业要求 4—研究: 能够基于科学原理并采用科学方法对能源与动力工程领域复杂工程问题进行研究, 包括设计实验、分析与解释数据、并通过信息综合得到合理有效的结论。

Graduation Requirement 4 - Research: Based on scientific principles and using scientific

methods to study complex engineering problems in the field of energy and power engineering, including designing experiments, analyzing and interpreting data, and obtaining reasonable and effective conclusions through information synthesis.

毕业要求 5—使用现代工具：能够针对能源与动力工程领域复杂工程问题，开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具，包括对能源与动力工程领域复杂工程问题的预测与模拟，并能够理解其局限性。

Graduation Requirements 5 - Use Modern Tools: Be able to develop, select and use appropriate technology, resources, modern engineering tools and information technology tools for complex engineering problems in energy and power engineering, including prediction and Simulation of complex engineering problems in energy and power engineering, and understand their limitations.

毕业要求 6—工程与社会：能够基于工程相关背景知识进行合理分析，评价能源与动力工程专业领域工程实践和能源与动力工程专业领域复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响，并理解应承担的责任。

Graduation Requirements 6 - Engineering and Society: Ability to conduct a reasonable analysis based on engineering-related background knowledge, evaluate the impact of engineering practice in the field of energy and power engineering and complex engineering problem solutions in the field of energy and power engineering on society, health, safety, law and culture, and understand the responsibilities to be undertaken.

毕业要求 7—环境和可持续发展：能够理解和评价针对能源与动力工程领域复杂工程问题的工程实践对环境、社会与可持续发展的影响。

Graduation Requirements 7 - Environment and Sustainable Development: Ability to understand and evaluate the impact of engineering practices on the environment, society and sustainable development of complex engineering problems in the field of energy and power engineering.

毕业要求 8—职业规范：具有人文社会科学素养、社会责任感，能够在能源与动力工程领域的工程实践中理解并遵守工程职业道德和规范，履行责任。

Graduation Requirements 8 - Professional Code: With humanities and Social Sciences literacy, social responsibility, can understand and abide by engineering professional ethics and norms in the field of energy and power engineering, and fulfill their responsibilities.

毕业要求 9—个人和团队：能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

Graduation Requirements 9 - Individuals and Teams: Be able to assume the roles of individuals, team members and leaders in a multidisciplinary team.

毕业要求 10—沟通：能够就能源与动力工程领域复杂工程问题与业界同行及社会公众进行有效沟通和交流，包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令。并具备一定的国际视野，能够在跨文化背景下进行沟通和交流。

Graduation Requirements 10 - Communication: Ability to effectively communicate and communicate with industry counterparts and the public on complex engineering issues in the field of energy and power engineering, including writing reports and designing manuscripts, presenting statements, clearly expressing or responding to instructions. It also has a certain international vision, and can communicate and communicate in cross-cultural context.

毕业要求 11—项目管理：理解并掌握能源与动力工程领域的工程管理原理与经济决策方法，并能在多学科环境中应用。

Graduation Requirements 11 - Project Management: Understand and master the principles of engineering management and economic decision-making methods in the field of energy and power engineering, and can be applied in a multidisciplinary environment.

毕业要求 12—终身学习：具有自主学习和终身学习的意识，有不断学习和适应发展的能力。

Graduation requirements 12 - Lifelong learning: self-learning and lifelong learning awareness, continuous learning and ability to adapt to development.

IV. 学制与学位 Duration and Degree

学制：4 年

Duration: 4 years

学位：工学学士

Degree: Bachelor of Engineering

V. 主干学科与主干课程 Main Subject and Main Course

主干学科：动力工程及工程热物理、机械工程

Main Subject : Power Engineering and Engineering Thermophysics, Mechanical Engineering

主干课程：理论力学、材料力学、工程热力学、传热学、流体力学、能量转换及利用、机械工程制图、机械设计基础、测试技术基础、工程材料、电工技术、电子技术、控制工程基础、发动机原理、电机与控制等。

Main Course: Theoretical mechanics, material mechanics, engineering thermodynamics, heat transfer, hydrodynamics, energy conversion and utilization, mechanical engineering drawing, mechanical design foundation, testing technology foundation, engineering materials, electrical technology, electronic technology, control engineering foundation, engine principle, motor and control, etc.

VI. 毕业学分基本要求 Basic Requirements of Credits for Graduation

课程体系 Curriculum System		学分要求 Credits Requirements						
		必修 Compulsory		限修 Distributional Electives		选修 Free Electives		小计
		理论 Theory	实践 Practice	理论 Theory	实践 Practice	理论 Theory	实践 Practice	Subtotal
公共基础课程 Public Basic Courses	思想政治类 Ideological Politics Courses	15	2					17
	军事类 Military Courses	2	2					4
	外语类 Foreign Language Courses	6		2				8
	体育类 Physical Education Courses		4					4

通识教育课程 General Education Courses	核心通识课 Core General Education Courses			4				4
	新生研讨课 Freshman Seminar			2				2
学科与专业基础课程（含实验） Discipline and Specialty Foundational Courses (Including Experiments)	数学与自然科学基础课 Foundational Courses on Mathematics and Natural Science	23.5	2.5					26
	专业基础课 Professional Foundational Courses	48	11					59
专业课程（含实验） Specialized Courses (Including Experiments)	专业核心课程 Specialized Core Course	5	3					8
	专业限修课程 Specialized Restricted Courses			7.5	2.5			10
实习实践教学 Practice Courses	基本技能训练、实习实训、综合课程设计、社会与文化素质实践、毕业实习与毕业设计 Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design		13					13
多元化课程 Diversified Courses	跨学科课程、美育专业类课程、学科竞赛类课程、其它个性化选修课程等 Interdisciplinary Courses, Aesthetic Education Courses, Subject Competition Courses, other Personalized Elective Courses, etc			4				4
创新创业实践 Innovation and Entrepreneurship Practice	创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc				2			2
必修环节 A Compulsory Part	大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness							0
总 计 Total								161

VII.课程设置细化表 Course Programs Table

公共基础课程 Public Basic Courses 共 33 学分，其中必修 31 学分，限修 2 学分，选修 0 学分 A total credits of 33, including 31 for compulsory courses, 2 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class Practice Credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
思想政治类 Ideological Politics Courses	思想道德与法治 Ideological and Moral Education and the Rule of Law	必修 Compulsory	3	0.4	第 2 学期 2Nd Semester	马克思主义学院 School of Marxism	3、8	
	中国近现代史纲要 Conspectus of Chinese Modern History	必修 Compulsory	3	0.4	第 1 学期 1St Semester	马克思主义学院 School of Marxism	6、8	
	马克思主义基本原理 The Basic Principles of Marxism	必修 Compulsory	3	0.4	第 4 学期 4Th Semester	马克思主义学院 School of Marxism	8、12	
	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 Theoretical System of Socialism with Chinese Characteristics	必修 Compulsory	3	0.4	第 5 学期 5Th Semester	马克思主义学院 School of Marxism	7、8、12	
	习近平新时代中国特色社会主义思想概论 Outline of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era	必修 Compulsory	3	0.4	第 6 学期 6Th Semester	马克思主义学院 School of Marxism	7、8、12	
	形势与政策 I Situation and Policy I	必修 Compulsory	0	0	第 1 学期 1St Semester	马克思主义学院 School of Marxism	3、6	
	形势与政策 II Situation and Policy II	必修 Compulsory	0	0	第 2 学期 2Nd Semester	马克思主义学院 School of Marxism	3、6	
	形势与政策 III Situation and Policy III	必修 Compulsory	0	0	第 3 学期 3Rd Semester	马克思主义学院 School of Marxism	3、6	
	形势与政策 IV Situation and Policy IV	必修 Compulsory	0	0	第 4 学期 4Th Semester	马克思主义学院 School of Marxism	3、6	
	形势与政策 V Situation and Policy V	必修 Compulsory	0	0	第 5 学期 5Th Semester	马克思主义学院 School of Marxism	3、6	

思想政治类 Ideological Politics Courses	形势与政策VI Situation and Policy VI	必修 Compulsory	0	0	第 6 学期 6Th Semester	马克思主义学 院 School of Marxism	3、6	
	形势与政策VII Situation and Policy VII	必修 Compulsory	0	0	第 7 学期 7Th Semester	马克思主义学 院 School of Marxism	3、6	
	形势与政策VIII Situation and Policy VIII	必修 Compulsory	2	0	第 8 学期 8Th Semester	马克思主义学 院 School of Marxism	3、6	
军事类 Military Courses	军事理论 Military Theories	必修 Compulsory	2	0	第 1 学期 1St Semester	武装部 Security Office	8、9	
	军事技能 Military Skills	必修 Compulsory	2	2	短 1 学期 Short Semester 1	武装部 Security Office	9	
外语类 Foreign Language Courses	英语 I College English I	必修 Compulsory	2	0	第 1 学期 1St Semester	外国语学院 School of Foreign languages	10	
外语类 Foreign Language Courses	英语 II College English II	必修 Compulsory	2	0	第 2 学期 2Nd Semester	外国语学院 School of Foreign languages	10	
	通用学术英语 English for General Academic Purposes	必修 Compulsory	2	0	第 3 学期 3Rd Semester	外国语学院 School of Foreign languages	10、12	
	职场英语 Workplace English	限修 Distributional Elective	2	0	第 4 学期 4Th Semester	外国语学院 School of Foreign languages	10、12	
	交际与文化视听说 Viewing, Listening & Speaking in English --Communication & Culture							
	语言、文化与翻译 Language, Culture and Translation							
	英语公共演讲 Public Speaking in English							
体育类 Physical Education Courses	体育 I Physical Education I	必修 Compulsory	1	1	第 1 学期 1St Semester	体育部 Dept. of Physical Education	8、9	
	体育 II Physical Education II	必修 Compulsory	1	1	第 2 学期 2Nd Semester	体育部 Dept. of Physical Education	8、9	
	体育 III Physical Education III	必修 Compulsory	0.5	0.5	第 3 学期 3Rd Semester	体育部 Dept. of Physical Education	8、9	
	体育 IV Physical Education IV	必修 Compulsory	0.5	0.5	第 4 学期 4Th Semester	体育部 Dept. of Physical Education	8、9	
	体育健康课程 I Diversified Physical Education Courses I	必修 Compulsory	0.5	0.5	第 5 学期 5Th Semester	体育部 Dept. of Physical Education	8、9	
	体育健康课程 II Diversified Physical Education Courses II	必修 Compulsory	0.5	0.5	第 6 学期 6Th Semester	体育部 Dept. of Physical Education	8、9	

通识教育课程 General Education Courses 共 6 学分，其中必修 0 学分，限修 6 学分，选修 0 学分 A total credits of 6, including 0 for compulsory courses, 6 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
核心通识课 Core General Education	“交通天下”通识课程 General Studies on Transportation	限修 Distributional Elective	4		第 2-7 学期 2-7 Semester	全校 The whole school	6、8、11、12	限选 2 门，4 学分 Limited to 2 courses, 4 credits
新生研讨课 Freshman Seminar	从化石能源到新能源 From Fossil Energy to New Energy	限修 Distributional Elective	2		第 2 学期 2Nd Semester	机械工程学院 Sch. of Mech. Eng.	9、10、11、12	限选 1 门，2 学分 Limited to one course, 2 credits
	发动机的前世今生 The Past and Present of The Engine		2					
	建筑环境与能源技术 Building Environment and Energy Technology		2	0.5				
	暖通空调节能技术 Energy Efficient Technology of HVAC		2	0.5				
学科与专业基础课程（含实验） Discipline and Specialty foundational Courses (Including Experiments) 共 85 学分，其中必修 85 学分，限修 0 学分，选修 0 学分 A total credits of 85, including 85 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
数学与自然科学基础课 Foundational Courses on Mathematics and Natural Science	高等数学 I Advanced Mathematics I	必修 Compulsory	5		第 1 学期 1St Semester	数学学院 School of Mathematics	1、2	
	高等数学 II Advanced Mathematics II	必修 Compulsory	5		第 2 学期 2Nd Semester	数学学院 School of Mathematics	1、2	
	线性代数 B Linear Algebra B	必修 Compulsory	3		第 2 学期 2Nd Semester	数学学院 School of Mathematics	1	
	概率论与数理统计 Probability Theory and Mathematical Statistics	必修 Compulsory	3		第 3 学期 3Rd Semester	数学学院 School of Mathematics	1、2	
	大学物理 BI University Physics BI	必修 Compulsory	3		第 2 学期 2Nd Semester	物理科学与技术学院 School of Physical Science and Technology	1、2	
	大学物理 BII University Physics BII	必修 Compulsory	3		第 3 学期 3Rd Semester	物理科学与技术学院 School of Physical Science and Technology	1、2	

数学与自然科学基础课 Foundational Courses on Mathematics and Natural Science	大学物理实验 I University Physics Experiment I	必修 Compulsory	1	1	第 2 学期 2Nd Semester	物理科学与技术学院 School of Physical Science and Technology	1、4	
	大学物理实验 II University Physics Experiment II	必修 Compulsory	1	1	第 3 学期 3Rd Semester	物理科学与技术学院 School of Physical Science and Technology	1、4	
	工程化学 C Engineering Chemistry C	必修 Compulsory	2	0.5	第 1 学期 1St Semester	生命科学与工程学院 School of Life Science and Engineering	4、6、7	
专业基础课 Professional Foundational Courses	机械工程概论 Introduction to Mechanical Engineering	必修 Compulsory	1	0.5	第 1 学期 1St Semester	机械工程学院 Sch. of Mech. Eng.	5、6、7、10	前 8 周
	轨道交通概论 Introduction to Rail Transit	必修 Compulsory	1	0.5	第 1 学期 1St Semester	机械工程学院 Sch. of Mech. Eng.	5、6、7、10	后 8 周
	计算机程序设计基础 Fundamentals of Computer Programming	必修 Compulsory	3	1	第 1 学期 1St Semester	计算机与人工智能学院 School of Computing and Artificial Intelligence	5	
	机械制图 I Mechanical Engineering Drawing I	必修 Compulsory	2		第 1 学期 1St Semester	机械工程学院 Sch. of Mech. Eng.	1、3	
	机械制图 II Mechanical Engineering Drawing II	必修 Compulsory	3	1	第 2 学期 2Nd Semester	机械工程学院 Sch. of Mech. Eng.	1、3、5	
	有限元分析 Finite Element Analysis	必修 Compulsory	2	1	第 5 学期 5Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、3、5	
	工程材料 Engineering materials	必修 Compulsory	2		第 3 学期 3Rd Semester	材料科学与工程学院 School of Materials Science and Engineering	1、3、7	
	电工技术 A Electrical Technology A	必修 Compulsory	4	1	第 3 学期 3Rd Semester	电气工程学院 School of Electrical Engineering	1、3	
	电子技术 A Electronic Technology A	必修 Compulsory	4	1	第 4 学期 4Th Semester	电气工程学院 School of Electrical Engineering	1、	
	理论力学 C Theoretical Mechanics C	必修 Compulsory	3		第 3 学期 3Rd Semester	力学与工程学院 School of Mechanics and Engineering	1、4	
	材料力学 C Mechanics of Materials C	必修 Compulsory	3		第 4 学期 4Th Semester	力学与工程学院 School of Mechanics and Engineering	1、3	
	流体力学 A Fluid Mechanics A	必修 Compulsory	4	0.5	第 4 学期 4Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2	
	工程热力学 A Engineering Thermodynamics A	必修 Compulsory	4		第 3 学期 3Rd Semester	机械工程学院 Sch. of Mech. Eng.	1、2、4	

专业基础课 Professional Foundational Courses	传热学 A Heat Transfer A	必修 Compulsory	4	0.5	第 4 学期 4Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2	
	机械设计基础 B Mechanical Design Foundation B	必修 Compulsory	4	0.5	第 4 学期 4Th Semester	机械工程学院 Sch. of Mech. Eng.	1、3、4	
	测试技术基础 Testing Technology Foundation	必修 Compulsory	3	1	第 6 学期 6Th Semester	机械工程学院 Sch. of Mech. Eng.	1、5	
	控制工程基础 Control Engineering Foundation	必修 Compulsory	3	1	第 5 学期 5Th Semester	机械工程学院 Sch. of Mech. Eng.	1、3	
	单片机原理与应用 Principle and Application of Single Chip Microcomputer	必修 Compulsory	2	1	第 5 学期 5Th Semester	机械工程学院 Sch. of Mech. Eng.	1、5	
	机械精度设计与检测 基础 Mechanical Accuracy Design and Testing Foundation	必修 Compulsory	2	0.5	第 5 学期 5Th Semester	机械工程学院 Sch. of Mech. Eng.	3	
	制造技术 B Manufacturing Technology B	必修 Compulsory	3	0.5	第 6 学期 6Th Semester	机械工程学院 Sch. of Mech. Eng.	1、3、11	
	三维设计与制图 Three-dimensional Design and Drawing	必修 Compulsory	2	0.5	第 3 学期 3Rd Semester	机械工程学院 Sch. of Mech. Eng.	1、2、3、5	
学科与专业基础课程（含实验） Discipline and Specialty foundational Courses (Including Experiments) 共 18 学分，其中必修 8 学分，限修 10 学分，选修 0 学分 A total credits of 85, including 85 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
专业核心课程 Specialized Core Course	能量转换及利用 Energy Conversion and Utilization	必修 Compulsory	2	1	第 5 学期 5Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、6、10	
	电机与控制 Motor and Control	必修 Compulsory	2	1	第 6 学期 6Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、4、5、7	
	发动机原理 Engine Principle	必修 Compulsory	2	1	第 6 学期 6Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、4、5、 12	
	工程经济与项目管理 Engineering Economy and Project Management	必修 Compulsory	2		第 6 学期 6Th Semester	机械工程学院 Sch. of Mech. Eng.	6、8、11	
专业限修课程 Specialized Restricted Courses	发动机设计 Engine Design	限修 10 学分 Distributional Electives 10 Credits	2	0.5	第 7 学期 7Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、3、4	
	燃料电池系统原理 Principle of Fuel Cell System		2	0.5	第 7 学期 7Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、7、12	
	新能源混合动力系统 设计 Design of New Energy Hybrid Power System		2	0.5	第 7 学期 7Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、4、6	

专业限修课程 Specialized Restricted Courses	动力机械测试技术 Power Machinery Testing Technology	限修 10 学分 Distributional Electives 10 Credits	2	0.5	第 7 学期 7Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、4、5、6	
	动力机械振动与噪声 控制 Vibration and Noise Control of Power Machinery		2	0.5	第 7 学期 7Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、3、4、7	
	动力机械制造工艺 Manufacturing Technology of Power Machinery		2	0.5	第 7 学期 7Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、5、8	
实习实践教学 Practice Course 共 13 学分，其中必修 13 学分，限修 0 学分，选修 0 学分 A total credits of 13, including 13 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
基本技能训练、实 习实训、综合课程 设计、社会与文化 素质实践、毕业实 习与毕业设计 Basic Skills Training, Practical Training, Integrated Curriculum Design, Social and Cultural Quality Practice, Graduation Internship and Graduation Design	工程训练 A Engineering Training A	必修 Compulsory	2	2	第 2 学期 2Nd Semester	工程中心 Engineering Training Center	1、4、5、7、9、 10	
	机械课程设计 Mechanical Course Design	必修 Compulsory	1	1	短 2 Short Semester 2	机械工程学院 Sch. of Mech. Eng.	2、3、10	
	机电设备综合设计实 践 Practice of Electromechanical Equipment Integrated Design	必修 Compulsory	1	1	第 6 学期 6Th Semester	机械工程学院 Sch. of Mech. Eng.	2、4、5、11	
	专业认识实习 Professional Cognition Practice	必修 Compulsory	1	1	短 3 Short Semester 3	机械工程学院 Sch. of Mech. Eng.	1、2、6、7、 10	
	毕业设计（论文） Graduation Design (Thesis)	必修 Compulsory	8	8	第 8 学期 8Th Semester	机械工程学院 Sch. of Mech. Eng.	2、4、5、7、 10	
多元化课程 Diversified course 共 4 学分，其中必修 0 学分，限修 4 学分，选修 0 学分 A total credits of 4, including 0 for compulsory courses, 4 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
跨学科课程 Interdisciplinary Course	全校跨学科课程 Interdisciplinary Course of University	限修 4 学分 Free Electives 4 Credits	2		第 7 学期 7Th Semester	全校 The whole school	1、3、6、11	按照《西南交 通大学多元 化课程修读 指导手册》执 行。 Follow the 《Instruction manual of diversified courses of southwest Jiaotong
美育专业类课程 Aesthetic Education Specialty Courses	全校美育专业类课程 Aesthetic Education Specialty Courses of University		2				1、3、6、11	
学科竞赛类课程 Subject Competition Courses	全校学科竞赛类课程 Subject Competition Courses of University		2				1、3、6、11	

个性化选修课程 Personalized Elective Courses	全校个性化选修课程 Personalized Elective Courses of University		2				1、3、6、11	University》
创新创业实践 Innovation and Entrepreneurship Practice 共 2 学分，其中必修 0 学分，限修 2 学分，选修 0 学分 A total credits of 2, including 0 for compulsory courses, 2 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
创新创业训练计划项目、个性化实验、学科竞赛、创新讲座等 Innovation and Entrepreneurship Training Program, Personalized Experiments, Subject Competition, Innovation Lectures, etc	创新创业训练计划项目 Innovative Entrepreneurship Training Program	限修 Distributional Elective	2	2	2-7 学期 2Nd-7Th Semester	机械工程学院 Sch. of Mech. Eng.	1、2、9、10、12	限选 1 门，2 学分 Limited to 1 course, 2 credits 主持或参与结题至少 1 项 Leading or participation at least one project conclusion
	个性化实验项目 Individualized Experiment Project		2	2	2-7 学期 2Nd-7Th Semester	机械工程学院 Sch. of Mech. Eng.		
	学科竞赛 Discipline Competition		2	2	2-7 学期 2Nd-7Th Semester	机械工程学院 Sch. of Mech. Eng.		
	工程实践 Engineering Practice		2	2	2-7 学期 2Nd-7Th Semester	机械工程学院 Sch. of Mech. Eng.		
	S RTP		2	2	2-7 学期 2Nd-7Th Semester	机械工程学院 Sch. of Mech. Eng.		
必修环节 A compulsory part 共 0 学分，其中必修 0 学分，限修 0 学分，选修 0 学分 A total credits of 0, including 0 for compulsory courses, 0 for distributional electives and 0 for free electives								
课程类型 Course Type	课程名称 Course Name	课程性质 Nature of Course	总学分 Credits	课内实 践学分 In-class practice credits	开课学期 Semester	开课学院 School	支撑毕业要求 指标点 Indicators which Support Graduation Requirements	备注 Notes
大学生综合素质提升、学生体质达标测评 Comprehensive Quality Improvement Courses for College Students, Assessment of Students' Physical Fitness	大学生综合素质提升（第二、第三课堂） Comprehensive Quality Improvement Courses for College Students（The Second and Third Classroom）	必修 Compulsory	0	0	1-8 学期 1St-8Th Semester	校团委 Communist Youth League Committee	8、12	
	学生体质达标测评 Assessment of Students' Physical Fitness	必修 Compulsory	0	0	秋季学期 fall Semester	体育部 Dept. of Physical Education	8	
学分总计 Total Credits			161					