

(080200)机械工程学科 2020 级全日制学术博士研究生培养方案

2020 Full-time Academic Doctoral Program for Mechanical Engineering

一、基本信息 Basic Information

院系名称 School	机械与动力工程学院 School of Mechanical Engineering	适用年级 Grade	2020 级 2020 Class		
适用专业 Major	机械工程 Mechanical Engineering	标准学制 Duration	4 年 4 Years		
学习形式 Study Mode	全日制 Full time				
项目类型 Program Type	学术型 Academic				
培养层次 Program Level	普博生 Regular Doctoral Students				
最低学分 Min Credit	16	最低 GPA 学分 Min GPA Credit	NA	最低 GPA Min GPA	NA

二、学科简介 Introduction

本学科始建于交通大学 1913 年创立的电气机械科，1921 年建立机械科，自 1956 年开始招收研究生，是首批有权授予硕士和博士学位的学科，1998 年获得我国首批一级学科博士学位授予权，并拥有博士后流动站。在教育部 2008 和 2012 年学科评估中均排名第一，2015 年入选上海市 I 类高峰学科支持计划，2017 年教育部学科评估列为 A+ 学科，并入选国家“双一流”建设学科。

Mechanical Engineering of SJTU can be dated back to the initiation of the electromechanics branch by Jiao Tong University in 1913, which was later reorganized as the mechanical branch in 1921 and started to enroll graduate students in 1956 as one of the first disciplines entitled to have master and PhD programs. The discipline was amongst the first batch of universities in 1998 authorized to confer doctoral degree as well as postdoctoral fellows. The discipline ranked first in the discipline assessments by Ministry of Education in 2008 and 2012. In 2015, it was selected into “Shanghai Class I Peak Discipline Support Plan”. In 2017, it was ranked A+ in the discipline assessment and was selected as the national “Double First Class” academic discipline.

本学科覆盖了机械制造及自动化、机械设计及理论、机械电子工程和车辆工程等 4 个。本学科设有制造技术与装备自动化、智能制造与信息工程、机器人、重大装备设计与控制工程、生物医学制造与生命质量工程、机电控制与物流装备、机电设计与知识工程、振动冲击噪声、薄板结构制造、智能汽车 10 个研究所。拥有机械系统与振动国家重点实验室、汽车电子控制技术国家工程实验室、振动冲击噪声国防重点学科实验室，以及复杂薄板结构数字化制造、网络制造与企业信息化两个上海市重点实验室。已形成 175 人的专职教师队伍，包括院士 2 人、973 首席科学家 5 人、国家特聘专家 3 人、长江特聘教授 8 人、杰青 7 人、优青 8 人。学科中青年学术队伍积极服务国家先进制造领域发展战略，在国内外产生了重要影响。

Department of mechanical engineering covers 4 subdisciplines: mechanical manufacturing and automation, mechanical design and theory, mechatronic engineering, and vehicle engineering. There are 10 research institutes in the department, including Manufacturing Technology and Equipment Automation, Intelligent Manufacturing and Information Engineering, Robotics, Design and Control

Engineering for Heavy Equipment, Biomedical Manufacturing and Life Quality Engineering, Mechatronics & Logistics Equipment, Mechatronics Design and Knowledge-based Engineering, Vibration, Shock & Noise, Manufacture for Thin-walled Structures, and Intelligent Vehicles. The main research laboratories in the department include the State Key Laboratory of Mechanical System and Vibration, the National Engineering Laboratory for Automotive Electronic Control Technology, the National Defense Key Discipline Laboratory of Vibration Shock & Noise, Shanghai Key Laboratory of Digital Manufacture for Thin-walled Structures, and Shanghai Key Laboratory of Networked Manufacturing and Enterprise Information. So far, there are 175 full-time faculty members, including 2 academicians, 5 Chief Scientists of National 973 Program, 3 National Distinguished Professors, 8 Cheung Kong Distinguished Professors, 7 Distinguished Young Scholars and 8 Outstanding Young Scholars.

本学科致力于培养具有“开阔的国际视野、强烈的创新意识、系统的知识结构、综合的实践能力、团队合作的精神、自信的沟通能力”的机械工程学科高层次科学技术研究及管理人才。一百多年来，服务国家创新发展战略和国家需求，培养了两弹一星功臣钱学森、全国人大副委员长严隽琪等一大批技术专家和治国英才，其中两院院士 21 人，大批培养学生在制造、动力、能源、航空航天等重点领域行业担任重要职务或技术骨干。

This department aims to cultivate outstanding talents in R&D as well as management in mechanical engineering, featured with "broad international vision, strong innovation consciousness, professional knowledge structure, comprehensive practical ability, team spirit and confident communication ability". In the past over 100 years, nearly 30,000 students have graduated from the department to serve the nation with innovation, research and development, including Tsien Hsue-shen, Yan Junqi, and 21 academicians. Many alumni have played important roles in key industries such as manufacturing, power, energy, and aerospace, etc.

三、培养目标 Program Objective

围绕学校研究生人才培养的总体目标，培养数理基础坚实、知识结构宽广，专业领域知识精通，创新能力强、具备社会责任感、具有国际视野和国际竞争力的机械工程前沿领域专业人才，能胜任高等教育专业教学、科学研究、技术研发和科技管理等工作。The postgraduate education objective is focused on nurturing the talents with solid mathematical foundation, broad knowledge structure, high proficiency in a professional field, strong innovation ability, good sense of social responsibility, and global vision and competitiveness in the frontier of mechanical engineering. The postgraduates will be qualified for conducting teaching, research and management in universities, research institutions and industries.

学生毕业时应达到：

1、具有坚实的数理基础理论知识，宽广的机械工程及相关专业基础知识，深入了解学科的进展、动向和最新发展前沿；

2、具有敏锐的洞察力，具备对工程科学与技术问题的深入理解和综合分析能力；

3、具有独立从事科学研究的能力，并在本学科领域的某一方面理论或实践上取得创造性研究成果；

4、至少精通一门外国语，能熟练地阅读本专业外文资料，具有较强的写作能力和国际学术交流的能力；

5、具备优秀的学术素养、职业道德和社会责任感。

After graduation, you will:

1. Have the solid mathematical foundation and broad knowledge in mechanical engineering and related areas with deep understanding of the progress, trends and latest development of the discipline;

2. Have the keen insight, and be equipped with the comprehensive analytical skills for solving the engineering scientific and technical problems;

3. Be able to engage in scientific research independently and get creative achievements in a specific aspect of theory or practice in the discipline;

4. Show proficiency in at least one foreign language, read foreign language literature of your major fluently, and have good skills in writing and international academic communicating;

5. Have excellent academic accomplishment, professional ethics and social responsibility.

四、培养方式及学习年限 Training Mode and Study Duration

全日制学术博士生采用全日制学习、导师负责制培养模式。

学制为四年。未能按时完成学业者，经申请批准后其学习年限可适当延长，最长可以延期至六年，在职委培博士生延期至七年。

Full-time academic doctoral students are tutored full-time by supervisors.

The length of full-time academic doctoral degree program is 4 years. Students who fail to complete the program within 4 years could apply for extension, with a maximum length of 6 years upon approval. Part-time doctoral students could apply the program extension to 7 years.

五、课程学习要求 Course Requirement

全日制学术博士生，课程总学分≥16 学分

Full-time Academic Doctoral Degree Program. Minimum credits: 16 credits.

1、公共基础课程 5 学分

General Courses, 5 credits

a) MARX7001 中国马克思主义与当代，2 学分，必修

MARX7001 Marxism in China, 2 credits, compulsory

b) FL6001 学术英语，2 学分，必修

FL6001 English for Academic Purposes, 2 credits, compulsory

c) GE6001 学术写作、规范与伦理，1 学分，必修，院系开课

GE6001 Academic Writing, Norms and Ethics, 1 credit, compulsory, offered by ME

2、专业前沿课：GE6011 学术报告会，1 学分，必修

Frontier Course.

GE6011, Academic Seminar, 1 credit, compulsory

3、专业基础课、专业选修课：≥10 学分

Core Courses and Elective Courses. Minimum credits: 10 credits.

4、统计如下：

Summarized as below.

课程类别 Course Type	学分要求 Required Credits	门数要求 Required Courses	GPA 学分要求 Min GPA	备注 Note
公共基础课 General Courses	5	3	NA	
专业基础课 Core Courses、专业选修课 Elective Courses	≥10	NA	NA	跨学科选课不超过 2 门，且仅作为非 GPA

专业前沿课 Frontier Courses	1	1	NA	统计源课程 No more than 2 interdisciplinary courses can be selected, which are counted as non-GPA course.
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六、培养过程要求 Training Requirement

资格考试：在第三学期结束前进行，最迟第四学期。资格考试两次不通过者经学院审议、研究生院复议，按退学处理。

Ph.D. Qualification Examination: The examination will be held before the end of 3rd semester, no later than the 4th semester. Anyone who fail the examination twice will apply for quitting school after school's deliberation and the reconsideration of graduate school.

普博生的资格考试由学院组织，考试形式为：闭卷、笔试，与直博生、硕博连读生一起进行。

The qualification examination for regular doctoral students shall be organized by school (close-book written examination). The examination is conducted with doctoral after bachelor's students and the combined master and doctor degree students.

考试内容：选取3门专业基础课进行考试

Examination content: Choose three major fundamental courses for the examination.

开题报告：在第四学期进行。开题报告要求就学位论文选题的科学根据、目的意义、研究内容、预期目标、研究方法和课题条件等做出论证。开题报告的文献阅读量应不少于50~100篇。

Thesis proposal: Thesis proposal will start in the 4th semester, which requires an argument on the scientific basis, purpose and significance, research content, expected goals, research methods, and project conditions of intended dissertation topic. Students should read no less than 50 to 100 journal papers of related topic during preparation.

普博生的论文开题由学院按学科统一组织。首次开题不通过者，可申请二次开题；两次开题均不通过者，经学院审议后进入分流淘汰程序。

Dissertation proposal defense is organized by school. Anyone who fail the defense twice will enter the shunt elimination program after school's deliberation.

年度报告：博士生在完成学位论文开题报告后，按自然年度进行年度考核。博士生需以书面的形式递交年度进展报告给所属学科，在报告中须详细阐述论文研究工作的进展情况及所取得的阶段性成果。

Annual report: After completion of thesis proposal, annual progress reports evaluation will be held every year. The annual report must be submitted to the relevant discipline in written form. In the report, the student should elaborate the progress of the dissertation research and results achieved.

学科组织由导师或指导小组负责人参加的至少3人的年度报告考核小组，对本学科的博士生年度进展报告进行评估，其形式可结合研究生的学术讨论或专题研究报告会进行。导师应对年度进展报告做出综合评估，督促研究生顺利开展课题研究和学位论文撰写。经年度报告考核小组评估，如认为该生不符合博士生培养条件，将停止作为博士生继续培养。

An annual report assessment committee of at least three members, including supervisor or chair of dissertation committee, should be organized to evaluate the annual reports. This can be done in the form of academic discussion or symposium on selected topics. Supervisors should evaluate the annual report comprehensively, guiding the doctoral students to carry out the dissertation work as scheduled. Anyone who fails the annual report assessment should quit doctoral degree program.

论文预答辩：在第六学期以后、正式答辩前三个月进行。预答辩由学科组织，同时必须由二名学位委员会成员参加。

Dissertation pre-defense: After the 6th semester and three months before dissertation defense. The pre-defense is organized by discipline and at least 2 members should be from the Degree Evaluation Committee of ME School.

论文答辩：在第八学期前完成，未完成者最多可延期至十二学期。答辩由学科组织，答辩前将由学院督导进行形式审查，对发表小论文不合格、盲审成绩过低等情况将不予审核通过。

Dissertation Defense: Students are required to pass the dissertation defense before the end of the 8th semester. Students could apply for extension and should complete the dissertation defense before the end of the 12th semester. The dissertation defense is organized by discipline. Before the defense, a routine review will be conducted by the school. Anyone who does not meet the graduation requirements or fails the blind review shall not be approved for dissertation defense.

详见一览表：

See the list for details

	全日制学术博士生 Full-time Academic Doctoral Program
资格考试 Qualification Test	√
开题报告 Dissertation Proposal	√
年度报告 Annual Report	√
预答辩 Pre-defense	√
答辩 Defense	√
实践实习环节 Engineering Practice	—

七、学术成果要求 Requirement on Academic Requirement

对于博士研究生在学期间发表论文的要求如下：

Paper Publication Requirements for doctoral students:

1、每位博士生在其申请学位论文答辩之前，必须在核心及核心以上期刊或者国际会议上发表至少三篇论文（期刊论文二篇以上、会议论文一篇以上）。其中：至少一篇论文（一作）要用英文在国际 SCI 源刊物上发表或录用、至少一篇论文为国际会议论文。

It is required that the doctoral students should have at least 3 papers published in core journals or international academic conferences (at least 2 journal papers, 1 international academic conference paper) before applying for the dissertation defense. Among these papers, at least 1 paper should be published or accepted by SCI Journal, at least 1 paper published in international academic conference.

2、发表学术论文的第一作者单位必须是上海交大。

The affiliation of the first author should be Shanghai Jiao Tong University (SJTU).

具体详见《上海交大机械与动力工程学院关于研究生在学期间发表学术论文要求规定（2012 版）》，对达不到发表论文要求的博士生，将无法进入正式答辩。

See details in “Paper Publication Requirement of ME School, SJTU”. Anyone who cannot meet related requirements is not allowed to apply for the dissertation defense.

八、学位论文 Thesis/dissertation work

1、学位论文基本要求 Basic Requirements

博士研究生应选择学科前沿领域或对科技进步、经济建设和社会发展有重要意义的课题作为博士学位论文的选题，博士学位论文能够表明作者具有独立从事科学研究工作的能力，反映作者在本门学科上掌握了坚实宽广的基础理论和系统深入的专业知识。

The doctoral students should choose topics related to the frontier field of the discipline or that of great significance to the progress of science and technology or economic and social development as

their dissertation theme. The doctoral dissertation should demonstrate that the author is capable of undertaking scientific research independently and has a good grasp of the basic theories as well as a systematic and in-depth knowledge of the field of study.

博士学位论文的选题应具有科学性、学术性、创新性、先进性和可行性。论文选题鼓励与国家自然科学基金项目、省部级以上的重点科研项目等相结合。

The doctoral students shall choose scientific, academic, innovative, advanced and feasible topics as their doctoral dissertation work. They are encouraged to combine their dissertation work with the National Natural Science Foundation of China and/or provincial- and ministerial-level key research projects.

学位论文必须是一篇系统的、完整的学术论文，是学位申请者本人在导师的指导下独立完成的研究成果，论文不得抄袭和剽窃他人成果。学位论文的学术观点必须明确，且立论正确，推理严谨，数据可靠，层次分明，文字通畅。博士学位论文字数一般为8~10万。学位论文中使用的术语、符号、代号必须全文统一并符合规范化要求。计量单位一律采用国务院发布的《中华人民共和国法定计量单位》。

A graduate dissertation shall be a systematic and complete academic paper, and should be completed by the applicant under the instruction of his/her supervisor. No cheating or plagiarizing is allowed. The graduate theses shall demonstrate clear academic insights, with accurate arguments, rigorous reasonings, reliable statistics, well-organized structures and fluent expressions. The terms, symbols and codes used in the dissertation must be unified and conform to the requirements of standardization. All units of measurement shall adopt the "Statutory Unit of the People's Republic of China" promulgated by the State Council.

2、学位论文的撰写格式 Format for Dissertation

根据国家标准《学位论文编写规则》(GB/T 7713.1)，对学位论文撰写提出以下要求：

The following requirements are put forward for the dissertation writing according to the national standard "Rules for the Preparation of Dissertation" (GB/T 7713.1).

学位论文应使用中文撰写。申请国际评审与答辩的论文可以用英文撰写论文,但必须列出详细的中文摘要。

The dissertation should be written in Chinese. Dissertation for International review and defense can be written in English with a detailed Chinese abstract.

学位论文一般包括以下12部分，依次为封面、题名页、扉页、摘要、目录、符号说明（非必须）、正文、参考文献、注释（非必须）、附录（非必须）、致谢、学术论文和科研成果目录。

The dissertation generally consists of the following 12 parts: cover, title page, flyleaf, abstracts, contents, List of Symbols (if necessary), main body, reference, annotation (if necessary), appendix (if necessary), acknowledgements, List of Publications and achievements.

3、学位论文的草稿，应至少在学习结束前三个月完成，并提交导师审阅通过，然后按学校和学院的规定组织论文预答辩、评审和答辩工作。

The draft of the dissertation should be completed at least three months before the end of the study, and submitted to the supervisor for review and approval, and then the pre-defense, review and defense of the dissertation should be organized according to the regulations of the school.

九、课程设置 Courses

详见下页 Please refer to the next page.

撰稿人签字:

日期:

校稿人签字:

日期:

审核人签字:

日期:

主管院长签字:

院系公章

日期:

说明:

1. 培养方案制定完成并经院系学位委员会审核通过后,全日制请将本表格电子版(word)发送至 SherryLi327@sjtu.edu.cn,非全日制请将本表格电子版(word)发送至 jshen@sjtu.edu.cn;
2. 请在新研究生教育管理信息系统完成新培养方案的申请,并在审核通过后将本表格的纸质版(签字盖章)送交研究生院存档。

课程类别	课程代码	课程名称 Course Name		学分	授课语言	开课学期	可以计算 GPA	必须计算 GPA	备注 Note
Category	Course Code	中文 Chinese	English 英文	Credit	Language*	Semester			
公共基础课 General Courses	FL6001	学术英语	English for Academic Purposes	2	英文 in English	秋季 Fall	是 Yes	是 Yes	必修 Compulsory
	MARX7001	中国马克思主义与当代	Marxism in China	2	中文 in Chinese	春季 Spring	否 No	否 No	必修 Compulsory
	GE6001	学术写作、规范与伦理	Scientific Writing, Integrity and Ethics	1	中文 in Chinese	春秋季 Spring/Fall	否 No	否 No	必修 Compulsory
专业基础课 Program Core Courses	ME6100H	高等机构学	Advanced Mechanism and Machine Science	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	
	ME6102	机械设计可靠性分析	Reliability Analysis of Mechanical Design	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	
	ME6104	摩擦学与润滑理论	Tribology & Lubrication Theory	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	二选一
	ME6105	工程摩擦学导论	Introduction to Engineering Tribology	3	英文 in English	春季 Spring	是 Yes	是 Yes	
	ME6120	高等机械动力学	Mechanical System Dynamics	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	是 Yes	
	ME6122	应用固体力学	Applied Mechanics of Solids	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	二选一
	ME6123	固体力学	Mechanics of Solids	3	英文 in English	春季 Spring	是 Yes	是 Yes	
	ME6124	弹塑性力学	Elastic & Plastic Mechanics	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	是 Yes	二选一
	ME6125	金属塑性加工力学	Plastic Mechanics in Metal Processing	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
	ME6140	高等振动理论	Theory of Advanced Vibrations	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	
	ME6142	声学原理及计算方法	Theories and Computation of Acoustics	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	
	ME6145	结构声学	Structural Acoustics	3	英文 in English	春季 Spring	否 No	否 No	
	ME6146	转子动力学	Rotor Dynamics	3	中文 in Chinese	春季 Spring	否 No	否 No	
	ME6160	机器人性能仿真与控制原理	Performance Simulation and Control of Robot	3	中文 in Chinese	春季 Spring	否 No	否 No	
	ME6180	计算机图形学	Computer Graphics	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	二选一

ME6181	高等计算机图形学	Advanced Computer Graphics	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
ME6182	现代机械设计学	Modern Mechanical Design	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME6220	软件工程 II	Software Engineering II for Manufacturing	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	
ME6320	机器视觉与应用	Machine Vision and Its Applications	3	中文 in Chinese	春季 Spring	否 No	否 No	二选一
ME6321	计算视觉及其智能化应用	Computational Imaging and Intelligent Application	3	英文 in English	春季 Spring	否 No	否 No	
ME6340	机械电子学	Mechatronics	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME6401	汽车系统动力学	Software Engineering for Automotive Electronic Control System	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
ME6500	塑性变形理论与数值模拟	Plastic Deformation Theory and Numerical Simulation	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	
ME6520	数字信号处理	Digital Signal Processing	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	二选一
ME6521H	数字信号处理与应用	Digital Signal Processing and Application	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
ME6522	测试原理、传感器与系统	Basic Principle of Sensors and Systems for Mechanical Measurement	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	是 Yes	二选一
ME6523	先进测试技术与仪器	Advanced Measurement and Instrumentation	3	英文 in English	春季 Spring	是 Yes	是 Yes	
ME6524	误差分析与测试数据处理	Error Analysis and Data Processing in Measurement	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	
ME6540H	现代控制理论	Modern Control Theory	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	是 Yes	
ME6542	智能控制技术	Intelligent Control Technology	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	
PE6100	高等燃烧学	Advanced Combustion Theory	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	是 Yes	二选一
PE6101	高等燃烧理论	Advanced Combustion Theory	3	英文 in English	春季 Spring	是 Yes	是 Yes	
PE6103	燃烧化学动力学	Combustion Chemical Kinetics	3	英文 in English	春季 Spring	是 Yes	是 Yes	
PE6120	高等工程流体力学	Advanced Fluid Dynamics in Engineering	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	二选一

	PE6121	高等流体力学	Advanced Fluid Mechanics	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
	PE6122	计算流体力学	Computational Fluid Dynamics	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	二选一
	PE6123	计算流体力学与应用	Computational Fluid Dynamics & Applications	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
	PE7124	多相流理论与计算	Multiphase Flow Theory and Simulation	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	
	PE7126	湍流与传输理论	Turbulent Flow and Transportation Theory	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	
	PE6200	高等传热传质学	Advanced Heat and Mass Transfer	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	二选一
	PE6201H	高等传热学	Advanced Heat Transfer	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
	PE6202	热辐射传热	Thermal Radiation Heat Transfer	3	中文 in Chinese	春季 Spring	是 Yes	是 Yes	
	PE6205	微尺度流动与传热	Microfluidic Flow and Heat Transfer	3	英文 in English	春季 Spring	是 Yes	是 Yes	
	PE6220	高等工程热力学	Advance Engineering Thermodynamics	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	是 Yes	二选一
	PE6221H	高等热力学	Advanced Thermodynamics	3	英文 in English	春秋季 Spring/Fall	是 Yes	是 Yes	
	PE6222	统计热力学	Statistical Thermodynamics	3	中文 in Chinese	秋季 Fall	是 Yes	是 Yes	
专业前沿课	GE6011	学术报告会	Academic Reports	1	中文 in Chinese	春秋季 Spring/Fall	否 No	否 No	必修 Compulsory
Program Frontier Courses									
专业选修课	ME6106	计算几何学	Computational Geometry	3	中文 in Chinese	春季 Spring	否 No	否 No	
Program Elective Courses	ME6126	高等结构动力学	Advanced Structural Dynamics	3	中文 in Chinese	秋季 Fall	否 No	否 No	
	ME6149	气动声学	Aeroacoustics	3	英文 in English	秋季 Fall	否 No	否 No	

ME6151	先进噪声控制技术	Advanced Noise Control Techniques	3	英文 in English	秋季 Fall	否 No	否 No	
ME7162	步行机器人机构学	Walking Robotic Mechanisms	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME7184	多学科综合设计	Multidisciplinary Design	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME6200	弹塑性加工理论	Solid Mechanics in Machining	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME6202	微细制造	Micro Manufacturing	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME6204	薄板成形理论及技术	Sheet Metal Forming Theory and Technology	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME6207	超精密智能制造技术	Ultra-precision Smart Manufacturing	3	英文 in English	春季 Spring	否 No	否 No	
ME6209	先进复合材料及其加工技术	Advanced Composites and Their Manufacturing Techniques	3	英文 in English	春季 Spring	否 No	否 No	
ME6222	软件技术基础	Foundation of Software Technology	3	中文 in Chinese	秋季 Fall	否 No	否 No	
ME6301	可穿戴式系统	Wearable Systems	3	英文 in English	秋季 Fall	否 No	否 No	
ME6343	工业智能维护与预知诊断	Intelligent Maintenance and Prognostics for Industrial Systems	3	英文 in English	春季 Spring	否 No	否 No	
ME6420	汽车多能源管理与优化	Vehicle Multi-energy Management and Optimization	3	中文 in Chinese	秋季 Fall	否 No	否 No	
ME6423	现代汽车动力总成技术	Advanced Powertrain Technologies	3	英文 in English	春季 Spring	否 No	否 No	
ME6424	汽车电子控制软件工程	Software Engineering for Automotive Electronic Control System	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME6426	智能网联汽车技术	Intelligent and Connected Vehicle Technology	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME7429	汽车控制工程	Modern Vehicle Control Engineering	3	英文 in English	春季 Spring	否 No	否 No	
ME6503	先进工程应用中的高温材料	High Temperature Materials for Advanced Engineering Applications	3	英文 in English	春季 Spring	否 No	否 No	
ME6527	先进激光诊断原理与技术	Advanced Laser Diagnostic Technology	3	英文 in English	春季 Spring	否 No	否 No	
ME7528	高等测试技术	Advanced Techniques in Measurement	3	中文 in Chinese	春季 Spring	否 No	否 No	
ME7544	动态规划与最优控制	Dynamic Programming & Optimal Control	3	中文 in Chinese	秋季 Fall	否 No	否 No	

ME6560	研究实验技能	Experimental Skill for Research	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6105	先进排放控制技术	Advanced Emission Control Technologies	3	英文 in English	春季 Spring	否 No	否 No	
PE7106	计算燃烧学	Computational Combustion	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6140	叶轮机械气动力学	Turbomachinery Aerodynamics	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6143	叶轮机械试验方法与设计	Turbomachinery Experimental Design	3	英文 in English	春季 Spring	否 No	否 No	
PE6207	计算材料热物理	Computational Materials Thermophysics	3	英文 in English	秋季 Fall	否 No	否 No	
PE6208	强化传热理论与技术	Theory and Technology on Enhanced Heat Transfer	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6300	湍流两相流动的模化与数值仿真	Modeling and Numerical Simulation of Turbulent Two-phase Flow	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6302	煤粉燃烧与气化理论	Theory of Coal Combustion and Gasification	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6304	微细颗粒动力学	Fine Particle Dynamics	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6307	循环流化床燃烧技术	Circulating Fluidized Bed Combustion	3	英文 in English	秋季 Fall	否 No	否 No	
PE6400	热泵系统及应用	Heat Pump Systems and Applications	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6402	现代人工环境技术	Modern Artificial Environment Technology	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6404	制冷低温系统的设计与实践	Design and Practice of Refrigeration and Cryogenic Systems	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6406	制冷空调系统的仿真优化与控制	Simulation, Optimization and Control of Refrigeration and HVAC Systems	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6420	能源清洁与梯级利用	Energy Clean and Cascade Utilization	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6422	热力系统建模与仿真	Analysis of Energy Utilization Systems	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6424	先进动力循环分析	Analysis of Advanced Thermal Power Cycles	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE7426	高等传输理论与化学反应工程	Advanced Transmission Theory and Chemical Reaction Engineering	3	中文 in Chinese	春季 Spring	否 No	否 No	

PE6441	新能源系统	New Energy Systems	3	英文 in English	秋季 Fall	是 Yes	是 Yes	
PE6442	建筑节能与太阳能利用	Building Energy Saving and Solar Energy Utilization	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6500	内燃机电控技术	Electronic Control Technology in Internal Combustion Engine	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6502	内燃机燃烧与排放控制	Combustion and Emission Control in Internal Combustion Engine	3	中文 in Chinese	秋季 Fall	否 No	否 No	
PE6504	内燃机性能仿真与优化	Simulation and Optimization of Internal Combustion Engine Performance	3	中文 in Chinese	春季 Spring	否 No	否 No	
PE6521	航空发动机系统工程	Aviation Propulsion System from Genetic Engineering to System Integration	3	英文 in English	秋季 Fall	否 No	否 No	
PE6523	先进空气动力学测量技术基础与实践	Analysis of Advanced Thermal Power Cycles	3	英文 in English	秋季 Fall	否 No	否 No	
PE7540	先进能源材料导论	Introduction on Advanced Energy Materials	3	中文 in Chinese	春季 Spring	否 No	否 No	