

(085800-1)能源动力—动力学科 2021 级非全日制工程博士研究生培养方案

2021 Part-time Professional Doctoral Program for Energy and Power Engineering-Power 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	2021 级 2021 Class
适用专业 Major	动力工程及工程热物理 Power Engineering and Engineering Thermophysics			标准学制 Duration	4 年 4 Years
学习形式 Study Mode	非全日制 Part time				
项目类型 Program Type	专业型 Professional				
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

上海交通大学动力工程及工程热物理学科始建于 1913 年，1953 年招收我国解放后第一批研究生，是国家首批一级重点学科，首批一级学科博士点。2011 年所依托的机械与动力工程学院入选国家高等教育改革试点学院。在百年发展的历史上，培养了“两弹一星”科学家钱学森、王希季等一大批杰出人才。2016 年 5 月入选全球 ESI 工程学万分之一学科。本学科设有“动力工程与工程热物理”一级学科博士点并设有“动力工程及工程热物理”博士后流动站。

学科拥有汽车电子控制技术国家工程实验室、燃煤污染物减排国家工程实验室（上海）、船舶与海洋工程动力系统国家工程实验室（上海交大）等 3 个国家级基地，动力机械与工程教育部重点实验室、太阳能发电及制冷教育部工程研究中心、燃气轮机与民用航空发动机教育部工程研究中心等省部级基地，下设叶轮机械、新能源动力、热能工程、制冷与低温、工程热物理和燃料电池等研究所。本学科师资力量雄厚，有工程院院士 3 人，中科院院士 1 人，国家创先争优奖 1 人，国家级教学名师 1 人，国家特聘专家 3 人，长江特聘（讲座）教授 3 人，国家杰青基金获得者 7 人，优青 4 人，青年长江 1 人，“百千万人才工程”国家级人选 4 人。拥有国家自然科学基金创新群体、教育部创新团队和科技部创新人才推进计划重点领域创新团队等先进群体。本学科科研成果丰硕，近年来主持承担国家自然科学基金重大项目、重点项目、国家重点研发专项等 20 余项，2005 年以来获国家自然科学奖 3 项，国家技术发明奖 2 项，国家科技进步二等奖 2 项。

动力工程与工程热物理博士点为我国能源与动力领域累计培养博士数千名，包括工程院院士黄震教授等，大批博士毕业生成为科学家、技术权威和行业领袖，为我国能源动力学科和行业发展做出了积极贡献。非全日制工程博士主要面向行业在职技术骨干，培养过程注重工程实践，以解决重大工程中的关键问题为导向，希望毕业生成为大型工程的总师、重大项目的技术带头人和行业领军人才。

The discipline of Power Engineering and Engineering Thermophysics (PEET) in Shanghai Jiao Tong University was established in 1913. In 1953, it was selected as the first batch of state key discipline as well as one of the first disciplines in China that offered Doctoral degree program in Power and Energy Engineering. Affiliated to the School of Mechanical Engineering, it was selected as one of the national pilot schools by Ministry of Education (MOE) in 2011. Over the past century, the discipline has nurtured tens of thousands of graduates, contributing significantly to scientific and technological developments as well as economic growth at the national and international levels. Notable alumni include Xuesen Qian (co-founder of Jet Propulsion Laboratory) and Xiji Wang, whom were awarded the highest national honor – the Two Bombs and One Satellite Meritorious Award. Engineering discipline including PEET was rated as one of the top 0.01% ESI disciplines in May 2016. Aiming to develop an internationally renowned and cutting-edge research in PEET, there has been rapid progress, engagement with world-class scientists, grooming of national talents, and scientific research in the recent decades.

Cutting-edge research activities currently conducted in PEET are rooted in several national and key regional laboratories, which include National Engineering Laboratory for Automotive Electronic Control Technology, National Engineering Laboratory for Reducing Emissions from Coal Combustion (Shanghai), National Engineering Laboratory for Marine and Ocean Engineering Power System (SJTU), Key Laboratory for Power Machinery and Engineering of MOE, Engineering Research Center of Chinese Ministry of Education (MOE) for Solar Power and Refrigeration, Gas Turbine and Civil Aero-engine. The full spectrum of research directions include Turbomachinery, Advanced Energy and Powertrain Technology, Thermal Energy, Refrigeration and Cryogenics, Engineering Thermophysics and Full Cell. The faculty includes one member of Chinese Academy of Sciences, three members of Chinese Academy of Engineering, one National Excellence Awardee, one National Renowned Teacher, three National Distinguished Professors, and three Chair Professors of Changjiang Scholars Program. In addition, seven faculty members were awarded The National Science Fund for Distinguished Young Scholars, four faculty members were awarded The National Science Fund for Excellent Young Scholars, one faculty member were awarded the Young Changjiang Scholars Program. Our pursuit of research innovation and global excellence has been recognized worldwide. The research were mainly granted by National High Technology Research Development Program China, National Natural Science Foundation of China, and National Basic Research Program of China. Research outcomes have led to 3 National Natural Science Awards, 2 National Technology Invention Awards and 2 Second-grade State Science and Technology Progress Award.

As a key institute of doctoral degree education in China, PEET is dedicated to nurturing academically inclined, all-rounded, and innovation-orientated students with global perspectives, who can become top engineers or renowned scholars in the global community. There have been thousands of Ph.D. degree students thus far, most of the alumni have grown to scientists, technology experts and industry leaders, such as Professor Zhen Huang, the member of Chinese Academy of Engineering and Professor Ruzhu Wang, an international renowned refrigeration expert. Par-ttime Professional Doctoral Program mainly focus the training of industry technical backbone, attaches importance on engineering practice and is oriented to solve key problems in major projects. It is expected that graduates will become chief engineers, technology leaders of major engineering projects in power and energy industry.

三、培养目标 Program Objective

- 1、拓宽能源与动力工程领域的基础理论和专门知识;

Expanding the basic theories as well as professional knowledge of power engineering and engineering thermophysics.

- 2、掌握能源与动力工程领域的先进工艺和技术;

Mastering advance technology and skills of energy and power engineering.

3、了解能源动力工程领域的技术进展；

Knowing technology progress in the filed of energy and power engineering.

4、具备解决复杂工程技术问题、进行工程创新、组织工程技术研究开发工作的能力；

Capable of solving complex engineering issues carrying out engineering innovation, and organizing engineering technology R&D.

5、能胜任大型企业、科研院所技术研发、工程应用或科技管理等工作。

Qualified for the technology R&D engineering application or scientific and technical management of large enterprise or research institutions.

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

非日制工程博士生采用非全日制学习、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，最长可以延期至七年。

Part-time Professional Doctoral Program students are are tutored full-time by supervisors.

The length of Part-time Professional Doctoral Program is 4 years. Students who fail to complete the program within 4 years could apply for extension, with a maximum length of 7 years upon approval.

五、课程学习要求 Course Requirement

非全日制工程博士生，课程总学分 ≥ 16 学分，总学分上限为 24 学分。

Part-time Professional Doctoral Program. **Minimum credits: 16 credits.**

1、公共基础课程 7 学分

General Courses. 7 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) 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.

c) MATH6002 工程数学，2 学分，必修

MATH6002 Mathematics in Engineering. 2 credits, compulsory.

d) GE9002 工程科技前沿专题，1 学分，必修

GE9002 Selected Topics in Engineering Frontiers, 1 credit, compulsory.

e) FL9001 实用学术英语，1 学分，必修

FL9001 Practical English for Academic Purposes, 1 credit, compulsory.

2、专业前沿课：

a) GE9001 创新工程实践，2 学分，必修

GE9001 Innovative Engineering Practice, 2 credits, compulsory.

3、专业基础课、专业选修课： ≥ 7 学分

Core Courses and Elective Courses. Minimum credits: 8 credits.

4、统计如下：

Summarized as below.

课程类别	学分要求	门数要求	GPA 学分要求	备注
Course Type	Required Credits	Required Courses	Min GPA	Note

公共基础课 General Courses	7	5	NA	
专业基础课 Core Courses、专业选修课 Elective Courses	≥7	NA	NA	跨学科选课不超过 2 门，且仅作为非 GPA 统计源课程。
专业前沿课 Frontier Courses	2	1	NA	No more than 2 interdisciplinary courses can be selected, which are counted as non-GPA course.

六、培养过程要求 Requirements for Training Process:

(一) 培养过程环节要求:

Requirements for Training Process:

1、资格考试: 应在入学后第四学期末之前完成。资格考试由学院组织考查小组 (3-5 人组成) 针对工程类博士专业学位研究生的课程学习、科研项目、论文进展以及工作态度、精力投入等综合素质和能力, 进行全方位的考查。通过者, 方可继续进行科研和论文工作。具体考试要求和形式由所在学科领域作相关规定。

PhD Qualification Examination: The examination will be held before the end of 4th semester. The qualification examination is organized by school's examination committee (composed of 3-5 people) to inspect the comprehensive qualities and abilities, research projects, thesis progress, work attitude and energy input. Only those who pass the examination will be allowed to continue research and thesis work. The specific examination requirements and forms are determined by each discipline.

2、开题报告: 应在入学后第五学期末之前完成。工程博士研究生入学后应在导师指导下, 查阅文献资料, 了解学科现状和动向, 尽早确定课题方向, 制订论文工作计划, 完成论文选题报告 (形式可多样)。

Dissertation proposal: Dissertation proposal should be finished before the end of 5th semester. The professional PhD should read the literatures under the guidance of their tutors, understand the current situation and trend of the subject after admission, determine the direction of the subject as soon as possible, formulate the work plan of the paper, and complete the report on the topic selection of the paper (in various forms).

3、年度考核: 在开题报告完成一年左右完成。博士生需以书面的形式递交年度进展报告给所属学科, 在年度进度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 progress report: Annual progress report shall be organized within one year after dissertation proposal is finished. 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.

4、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 of doctoral level 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.

5、论文答辩：在进第八学期前完成，未完成者最多可延至进入博士阶段的十四学期。答辩由学科组织，答辩前将由学院督导进行形式审查，对未满足科研成果要求、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 14th 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.

(二) 工程实践环节要求：

Requirements for engineering practice process:

1、通过在岗参与重大项目，完成工程实践要求。

2、结合重大项目中关键或难点技术环节，了解其发展历史、国内外现状，参加本领域前沿的业务研讨及交流活动，并在活动中做专门报告。

1. Complete the engineering practice requirements by participating in major projects.

2. Participate in cutting-edge business seminars and exchange activities in this field, and make professional keynote speech.

(三) 学术写作与交流要求：

Requirements for Academic Writing and Communication

1、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，须有以排序第一作者在国际重要学术期刊或高水平国内期刊上发表与博士学位论文研究工作密切相关的研究性学术论文的经历。国际重要学术期刊和高水平国内期刊的具体认定办法详见七“学术成果要求”。

Students should be proficient in at least one foreign language and be able to read foreign language materials in their major fluently. With strong writing ability, the student should have the experience of publishing research academic papers that are closely related to the research work of their doctoral dissertation in important international academic journals or high-level domestic journals as the first author. For specific identification methods of important international academic journals and high-level domestic journals, please refer to seventh "Requirements for Academic Achievements".

2、应具备国内外学术交流的能力，在读期间必须在高水平国内外学术会议上以口头报告形式开展学术交流至少1次。学术交流的内容须与博士学位论文研究工作密切相关。交流内容等具体要求详见《上海交通大学关于博士研究生参加学术交流的规定》。高水平国内外学术会议的具体认定办法详见七“学术成果要求”。

Students should have the ability of domestic and foreign academic communication. During the study period, students must have at least one academic communication in the form of oral presentation in high-level domestic and foreign academic conferences, and the content of academic communication must be closely related to the research work of doctoral dissertation. Please refer to the *Regulations of Shanghai Jiao Tong University on the Participation of Ph.D Students in Academic Exchange* for the detailed requirements on the form of exchange. The specific identification methods of high-level domestic and foreign academic conferences are detailed in the seventh "Requirements for Academic Achievements".

七、学术成果要求 Requirements for Academic Achievements

博士学位论文的创新成果是评价学位论文水平的重要参考，必须是以学位申请人为主在攻读博士学位期间取得，且与学位论文内容密切相关。

The innovative achievements of the doctoral dissertation are an important reference to evaluate the level of the dissertation, which must be obtained by the degree applicants during their doctoral study and closely related to the content of the dissertation.

用于申请博士学位的学位论文中必须包含不少于三项以申请人为主要完成人的创新性成

果。创新性成果的主要完成人一般应为成果第一完成人。如果第一完成人是申请人的博士生导师且申请人排序第二，则申请人也认定为主要完成人。创新性成果原则上应以上海交通大学为第一完成单位。非全日制博士学位申请人如有上海交通大学作为参加单位的重大创新性成果，可以由导师提出申请并认定。

The dissertation used for the doctoral degree application must include at least three innovative works with the applicant as the principal composer. The principal composer of the innovative achievement shall generally be the first author of the achievement. If the first composer is the doctoral supervisor of the applicant and the applicant ranks second, the applicant shall also be identified as the principal composer. Shanghai Jiao Tong University should be the first institution to complete the innovative achievements in principle. Applicants for part-time doctoral degrees who have major innovative achievements of Shanghai Jiao Tong University as the participating institution can be submitted by their supervisors for application and recognition.

博士学位论文的创新性成果应该具有重要的理论或工程应用价值，具体展现形式包括：

The innovative achievements of the doctoral dissertation should have important theoretical or engineering application value, and the specific manifestation forms include:

(1) 发表在国际重要学术期刊或高水平国内学术期刊上的研究性学术论文。其中，国际重要学术期刊指 SCI 刊源期刊，但不包含按《机械与动力工程学院不推荐 SCI 期刊认定办法》认定的不推荐期刊；高水平国内期刊是指《高质量科技期刊分级目录》相关领域 T1/T2 档核心期刊。国际重要学术期刊与高水平国内期刊均以论文发表或录用当年为准认定。

Research academic papers published in important international academic journals or high-level domestic academic journals. The important international academic journals refer to the SCI Journals, but do not include the non-recommended journals identified according to the *Measures for the Recognition of Non-recommended SCI Journals by the School of Mechanical Engineering*. High-level domestic academic journals refer to the related fields of T1/T2 core periodicals in the *Classification Catalogue of High-quality Sci-Tech Journals*. The accreditation of important international academic journals and high-level domestic journals shall be subject to the year when the paper was published or accepted.

(2) 发表在高水平国内外学术会议的会议论文或者口头报告且能提供相应证明材料。高水平国内外学术会议包括本学科公认的国内外学术组织主办的系列专业性学术会议或《上海交通大学资助研究生参加国际会议项目重要国际会议目录》中的会议。口头报告需提供会议录用摘要证明。如果学术会议论文或口头报告学术贡献与发表期刊论文相同，则认定为一项成果。

Conference papers or oral presentations presented at high-level domestic and foreign academic conferences with supporting materials. High-level domestic and foreign academic conferences include a series of professional academic conferences hosted by recognized domestic and foreign academic organizations within the discipline or conferences listed in the *International Conference Program Sponsored by Shanghai Jiao Tong University - List of Important International Conferences*. Oral presentation should provide proof of acceptance summary. If the academic conference paper or oral presentation has the same academic contribution as the published journal paper, they will be considered as the same achievement.

(3) 获得授权的重要发明专利且能提供相关实施应用证明材料。

The important invention patent that has been authorized and can provide relevant application proof materials.

(4) 由中国国家标准管理委员会正式发布国家标准，或由 ISO、IEEE、ASME 等国际组织发布的国际标准，及相关行业归口部门统一管理发布的行业标准。

National standards officially issued by the Standardization Administration Committee of China, or international standards issued by ISO, IEEE, ASME and other international organizations, as well as industrial standards uniformly managed and issued by relevant industry departments.

(5) 由学院学位评定委员会委员和同行专家组成的专家组，或有关权威组织机构认定的其他重大成果。

Other major achievements recognized by the expert group composed of members of the Academic Degree Assessment Committee and peer experts or by relevant authoritative organizations.

具体详见《上海交大机械与动力工程学院博士专业学位授予标准》，对达不到创新性成果要求的博士生，将无法进入正式答辩。

See details in *Paper Publication Requirement of ME School, SJTU(Awarding Criteria for Professional Doctor Degree from School of Mechanical Engineering, Shanghai Jiao Tong University?)*. Anyone who cannot meet the innovative requirements is not allowed to apply for the dissertation defense.

八、学位论文 Dissertation work

学位论文是进行学位评定的主要依据,应能反映出作者在本学科上已掌握坚实宽广的基础理论、系统深入的专门知识和规范科学的研究方法。

Dissertation is the main basis for degree evaluation, which should reflect the author's grasp of solid and broad basic theory, systematic and in-depth expertise and standardized scientific research methods in the subject.

1、选题与综述

Topic Selection and Review

博士学位论文的选题应围绕行业重大、重点工程项目或科技攻关项目开展,选题应具有重要的创新性、先进性、可行性和应用性。

The topic selection of the doctoral dissertation should focus on the major and key engineering projects of the industry or the key projects of science and technology. The topic should be innovative, advanced, feasible and applicable.

文献综述应在全面搜集、阅读大量有关研究文献的基础上,经过归纳整理、分析鉴别,对所研究的问题在一定时期内已经取得的研究成果、存在问题以及新的发展趋势等进行系统、全面、客观的叙述和评论,为论文课题的确立提供支持和论证。

Literature review is based on the comprehensive collection and reading of a large number of relevant research literature. After summarizing, analyzing and discriminating, the literature review systematically, comprehensively and objectively narrates and comments the research achievements, existing problems and new development trends of the issues studied in a certain period of time, providing support and demonstration for the establishment of the topic of the dissertation.

2、规范性要求

Normative requirements

博士学位论文必须是一篇系统、完整的学术论文,是学位申请者在攻读博士学位期间在导师指导下独立完成的研究成果,应严格遵守《上海交通大学研究生学术规范》和《机械与动力工程学院研究生学术道德规范》进行学位论文工作。

Ph.D dissertation must be a systematic and complete academic paper. Dissertation is the achievement of research completed independently by the applicant under the supervision of supervisor during doctoral study. Students should strictly abide by the *Academic Code for Graduate Students of Shanghai Jiao Tong University* and the *Academic Code of Ethics for Graduate Students of School of Mechanical Engineering* in their dissertation work.

博士学位论文的学术观点必须明确,立论正确,推理严谨,数据真实,图表规范,层次分明,语言准确,文字通畅。

The academic point of view of a Ph.D dissertation must be clear, correct in argument, rigorous in reasoning, true in data, standardized in chart, clear in hierarchy, accurate in language and smooth in text.

学位论文撰写必须遵循和符合《机械与动力工程学院学位论文撰写指南》的具体要求。

Dissertation writing must follow and conform to the specific requirements of *Dissertation Writing Guide of School of Mechanical Engineering*.

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	MARX7001	中国马克思主义与当代	Marxism in China	2	中文 in Chinese	秋季 Fall	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
	MATH6002	工程数学	Mathematics in Engineering	2	中文 in Chinese	秋季 Fall	否 No	否 No	必修 Compulsory
	GE9002	工程科技前沿专题	Selected Topics in Engineering Frontiers	1	中文 in Chinese	秋季 Fall	否 No	否 No	必修 Compulsory
	FL9001	实用学术英语	Practical English for Academic Purposes	1	英文 in English	秋季 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	否 No	
	ME6120	高等机械动力学	Mechanical System Dynamics	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	否 No	二选一
	ME6120H	高等机械动力学	Mechanical System Dynamics	3	中文 in Chinese	春季 Spring	是 Yes	否 No	
	ME6520	数字信号处理	Digital Signal Processing	3	中文 in Chinese	秋季 Fall	是 Yes	否 No	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	否 No	
	ME6540	现代控制理论	Modern Control Theory	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	否 No	二选一
	ME6540H	现代控制理论	Modern Control Theory	3	中文 in Chinese	秋季 Fall	是 Yes	否 No	
	PE6100	高等燃烧学	Advanced Combustion Theory	3	中文 in Chinese	秋季 Fall	是 Yes	否 No	二选一
	PE6101H	高等燃烧理论	Advanced Combustion Theory	3	英文 in English	春季 Spring	是 Yes	否 No	
	PE6200	高等传热传质学	Advanced Heat and Mass Transfer	3	中文 in Chinese	春季 Spring	是 Yes	否 No	三选一

PE6201	高等传热学	Advanced Heat Transfer	3	英文 in English	秋季 Fall	是 Yes	否 No	
PE6201H	高等传热学	Advanced Heat Transfer	3	英文 in English	秋季 Fall	是 Yes	否 No	
PE6220	高等工程热力学	Advance Engineering Thermodynamics	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	否 No	三选一
PE6221	高等热力学	Advanced Thermodynamics	3	英文 in English	秋季 Fall	是 Yes	否 No	
PE6221H	高等热力学	Advanced Thermodynamics	3	英文 in English	春季 Spring	是 Yes	否 No	
ME6104	摩擦学与润滑理论	Tribology & Lubrication Theory	3	中文 in Chinese	春季 Spring	是 Yes	否 No	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	否 No	
ME6122	应用固体力学	Applied Mechanics of Solids	3	中文 in Chinese	秋季 Fall	是 Yes	否 No	二选一
ME6123	固体力学	Mechanics of Solids	3	英文 in English	春季 Spring	是 Yes	否 No	
ME6124	弹塑性力学	Elastic & Plastic Mechanics	3	中文 in Chinese	春秋季 Spring/Fall	是 Yes	否 No	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	否 No	
ME6180	计算机图形学	Computer Graphics	3	中文 in Chinese	秋季 Fall	是 Yes	否 No	
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	
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	否 No	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	否 No	
PE6120	高等工程流体力学	Advanced Fluid Dynamics in Engineering	3	中文 in Chinese	秋季 Fall	是 Yes	否 No	二选一

PE6121	高等流体力学	Advanced Fluid Mechanics	3	英文 in English	秋季 Fall	是 Yes	否 No	
PE6122	计算流体力学	Computational Fluid Dynamics	3	中文 in Chinese	春季 Spring	是 Yes	否 No	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	否 No	
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	否 No	
ME6140	高等振动理论	Theory of Advanced Vibrations	3	中文 in Chinese	春季 Spring	是 Yes	否 No	
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	否 No	
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	
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	否 No	
ME6340	机械电子学	Mechatronics	3	中文 in Chinese	春季 Spring	否 No	否 No	
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	否 No	
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	否 No	
ME6542	智能控制技术	Intelligent Control Technology	3	中文 in Chinese	春季 Spring	是 Yes	否 No	
PE6103	燃烧化学动力学	Combustion Chemical Kinetics	3	英文 in English	春季 Spring	是 Yes	否 No	
PE7124	多相流理论与计算	Multiphase Flow Theory and Simulation	3	中文 in Chinese	春季 Spring	是 Yes	否 No	

	PE7126	湍流与传输理论	Turbulent Flow and Transportation Theory	3	中文 in Chinese	春季 Spring	是 Yes	否 No	
	PE6202	热辐射传热	Thermal Radiation Heat Transfer	3	中文 in Chinese	春季 Spring	是 Yes	否 No	
	PE6205	微尺度流动与传热	Microfluidic Flow and Heat Transfer	3	英文 in English	春季 Spring	是 Yes	否 No	
	ME7184	多学科综合设计	Multidisciplinary Design	3	中文 in Chinese	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	
	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	
	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	
	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	
	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	
	ME6420	汽车多能源管理与优化	Vehicle Multi-energy Management and Optimization	3	中文 in Chinese	春季 Spring	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	
	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	
专业前沿课								否 No	

Program Frontier Courses	GE9001	创新工程实践	Innovative Engineering Practice	2	中文 in Chinese	春秋季 Spring/Fall	否 No	否 No	必修 Compulsory
								否 No	
								否 No	
专业选修课 Program Elective Courses	ME6106	计算几何学	Computational Geometry	3	中文 in Chinese	春季 Spring	否 No	否 No	
	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	
	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	
	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	
	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	

ME7429	汽车控制工程	Modern Vehicle Control Engineering	3	英文 in English	秋季 Fall	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	
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	
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	
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	春季 Spring	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	
PE6441	新能源系统	New Energy Systems	3	英文 in English	秋季 Fall	是 Yes	否 No	
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	
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	
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	
ME7900	新产品开发与技术创新管理	New Product Development and Technology Innovation Management	2	中文 in Chinese	春季 Spring	否 No	否 No	周末上课 Weekend class
ME7902	智能制造技术基础与应用	Intelligent Manufacturing Technology Basis and Application	2	中文 in Chinese	春季 Spring	否 No	否 No	周末上课 Weekend class
ME7904	大数据分析	Big Data Analytics	2	中文 in Chinese	春季 Spring	否 No	否 No	周末上课 Weekend class
ME7906	创新驱动和服务升级概论	Introduction to Innovation Driven and Service Upgrades	2	中文 in Chinese	春季 Spring	否 No	否 No	周末上课 Weekend class
PE6542	能源电化学基础	Fundamentals of Electrochemistry for Energy Applications	3	中文 in Chinese	秋季 Fall	否 No	否 No	