

电气工程学科(一级学科代码: 0808)学术学位 硕士研究生培养方案(留学生) (Electrical engineering)

一. 学科简介(Introduction)

电气工程学科主要研究各类电磁现象与规律及其在人类生产和生活中的应用, 主要涉及工业、农业、交通运输、科技、教育、医学、国防等各个领域, 对国民经济的发展产生了广泛的影响。电气工程以电磁场、电网络和电磁测量等理论为基础, 是一个基础性、工程性和派生能力强的学科。本学科的二级学科或研究方向包括:

①电机与电器: 主要研究机电能量变换的理论和技术, 包括电机、电器以及其他电磁与机电装置的理论、设计、制造、运行及控制规律等。

②电力电子与电力传动: 主要研究新型电力电子器件与应用, 电力电子电路的拓扑、建模与控制, 电力传动与自动控制系统, 电力电子系统集成与应用等。

③电力系统及其自动化: 主要涉及电能的生产、存储、变换、输送、分配、控制的理论与技术, 包括电力系统的规划设计、运行管理、控制保护等理论、技术与应用。

④电工理论与新技术: 主要研究电网络、电磁场、电磁测量和基于信息科学与人工智能、新原理新材料等电工新技术的理论、方法及其应用。

在需求牵引、内涵发展和学科交叉的推动下, 电气工程学科正呈现出旺盛的发展态势, 主要趋势为: 电能生产、存储、转换、传输和应用向着高效、灵活、安全、可靠和环境友好、资源节约的方向发展; 电磁场与物质相互作用的新现象、新原理、新模型和新应用已成为高新技术和现代国防的重要基础和创新源头; 信息科学、人工智能、新材料和生物学等技术的发展促进了其与电气工程学科交叉, 并成为电气工程学科新的创新领域。

Electrical engineering mainly studies all kinds of electromagnetic phenomena and laws and their application in human production and life, mainly involving industry, agriculture, transportation, science and technology, education, medicine, national defense and other fields, which has a wide impact on the development of national economy. Electrical engineering is based on the theory of electromagnetic field, electric network and electromagnetic measurement. It is a discipline with strong foundation, engineering and derivative ability. The secondary disciplines or research directions of this discipline include:

① Electrical machines and apparatus: Mainly study the theory and technology of electromechanical energy conversion, including the theory, design, manufacturing, operation and control law of motor, electrical appliances and other electromagnetic and electromechanical devices.

② Power electronics and electric drives: Mainly research on new power electronic devices and applications, topology, modeling and control of power electronic circuits, electric drives and automatic control systems, power electronic system integration and application, etc.

③ Power system and its automation: Mainly related to the production, storage, transformation, transmission, distribution, control theory and technology, including power system planning and design, operation management, control and protection theory, technology and application.

④ Electrical theory and new technology: Mainly study the theory, method and application of electrical network, electromagnetic field, electromagnetic measurement and new electrical technology based on Information Science and artificial intelligence, new principles and new materials.

Driven by demand, connotation development and interdisciplinary development, electrical engineering discipline is showing a vigorous development trend. The main trends are as follows: the production, storage,

conversion, transmission and application of electric energy are developing towards the direction of high efficiency, flexibility, safety, reliability, environmental friendliness and resource saving. New phenomena, principles, models and applications of electromagnetic field and matter interaction have been developed. The development of information science, artificial intelligence, new materials, biology and other technologies has promoted the interdisciplinary of electrical engineering and become a new innovation field of electrical engineering.

二 .学位标准(Degree for Require)

获电气工程专业研究生学位基本要求:

(1)系统掌握电气工程学科的专业基础理论知识, 以及相关专业前沿的发展趋势, 具备学术素养和学术道德;

(2)能独立开展科学研究、实践、学术交流等, 具备创造性地从事科学研究工作的能力, 并在学位论文中做出理论结合实际的创新性成果;

(3)学位论文符合培养方案要求的规范和质量要求;

(4)满足上海大学电气工程学科专业要求的学位授予科研成果量化指标。

Basic requirements for graduate degree in electrical engineering:

(1) Graduates should systematically master the basic theoretical knowledge of electrical engineering, as well as the development trend of related professional frontiers, and have academic literacy and academic ethics.

(2) Graduates should be able to independently carry out scientific research, practice, academic exchanges, etc., and have the ability to engage in scientific research creatively, and make innovative achievements in the dissertation combining theory with practice.

(3) The dissertation meets the standard and quality requirements of the training program.

(4) The academic achievements should fulfill the quantitative indicators set up for Electrical Engineering major of Shanghai University.

三 .培养目标(Objectives)

1、国际研究生应当熟悉中国历史、地理、社会、经济等中国国情和文化基本知识, 了解中国政治制度和外交政策, 理解中国社会主流价值观和公共道德观念, 形成良好的法治观念和道德意识。

International graduate students should be familiar with China's national condition and Chinese culture including history, geography, society, economy etc; understand the mainstream values and public morality of Chinese society; establish a good concept of the rule of law and moral consciousness.

2、国际研究生应当具备包容、认知和适应文化多样性的意识、知识、态度和技能, 能够在不同民族、社会和国家之间的相互尊重、理解和团结中发挥作用。

International graduate students should have the awareness, knowledge, attitudes and skills to be inclusive, cognizant and adapt to cultural diversity, and play a positive role in mutual respect, understanding and solidarity among different peoples, societies and nations.

3、适应科技进步和社会发展的需要, 掌握本学科领域坚实宽广的基础理论和系统深入的专门知识, 深入了解本学科发展方向及国际学术研究前沿。

To meet the needs of scientific and technological progress and social development, we should master solid and broad basic theories and systematic and

in-depth expertise in this field, and have a deep understanding of the development direction of the discipline and the international academic research frontier.

4、掌握科学研究的先进方法，在本专业领域做出创造性的研究成果，成为具有较强的独立从事科学研究工作能力和解决实际问题能力的高级科技人才。

Master the advanced methods of scientific research, make creative research achievements in this field, and become senior scientific and technological talents with strong ability to independently engage in scientific research and solve practical problems.

5、硕士层次来华留学生应当在本学科领域中具有较好的国际视野，能够在多个国家的实际环境中运用和发展本学科的知识、技能和方法，并具备参与国际事务和国际竞争的能力。

International students at the master's level should have a good international perspective in the field of this discipline, be able to apply and develop the knowledge, skills and methods of this discipline in the actual environment of multiple countries, and have the ability to participate in international affairs and international competition.

6、身体健康、心理健康。

Physical and mental health.

四 . 修业年限(Duration)

本专业硕士学制为2.5年。在校学习年限最长不超过6年。

The master program is of two and a half years duration. The maximum length of study at school is no more than 6 years.

五 . 培养方向(Research Areas)

1. 电机与电器Electrical Machines and Apparatus
2. 电力电子与电力传动Power Electronics and Electric Drives
3. 电力系统及其自动化Electric Power System and Automation
4. 电工理论与新技术Electrical Theory and New Technology

六 . 语言要求(Language Requirements)

雅思(A)成绩6.0分以上(含)或托福成绩80分以上(含)。

本专业来华留学生应当能够顺利使用英语完成本学科、专业的学习和研究任务，并具备使用中文从事本专业相关工作的能力。毕业时应当至少达到《国际汉语能力标准》三级水平。

IELTS 6.0 or TOEFL IBT 80 or above received within the recent two years.

Students who come to China in this major should be able to successfully use English to complete the subject, study and research tasks, and have the ability to use Chinese to engage in the relevant work of this major. At least level 3 of Chinese Language Proficiency Scales For Speaking of Other Languages before graduating.

七 . 课程设置与学分要求(Curriculum and Credit Requirement)

本学科硕士生的学分最低为43学分，其中本专业的专业基础课不低于8学分、专业选修

课不低于20学分，学术规范与写作课不低于4学分，创新创业课不低于2学分，学术研讨课不低于2学分。详细设置请查看附表。

The minimum credits for master's degree students are 43 credits, of which the professional basic courses should not be less than 8 credits, and professional elective courses should not be less than 20 credits, and the course of innovation and entrepreneurship and academic seminar course are no less than 2 credits and no less than 4 credits for academic norms and writing. Please see the attached table for detailed settings.

八 . 培养计划制定 (Development of Training Plan)

攻读硕士学位的研究生入学后，应在导师指导下按照本学科当年度培养方案的要求制订培养计划，在入学后1个月内，登录研究生管理系统，输入培养计划，同时，打印的纸质版培养计划报学院（学科）学位评定分委员会审核批准后，由学院留存备案并统一递送至研究生院培养管理处。凡列入培养计划的课程必须修读合格方可进行答辩。

After enrolling in the master's degree, students should determine a training plan under the guidance of your supervisor in accordance with the requirements of the current year's training program. Within one month after enrollment, students should log in the postgraduate management system, input the training plan, print out and submit to Academic Degree Evaluation Subcommittee of the college for review and approval. The printed version will be kept by the college for record and submitted to Training and Management Office of Graduate School. Courses included in the training plan must be qualified before thesis defense.

九 . 必修环节 (Compulsory courses)

为不断提高研究生研究的科学性和有效性，发挥研究生培养过程中的筛选作用，研究生必须要进行课程考核、中期考核，在学位论文答辩前要进行预答辩。

In order to improve the scientificity and effectiveness of postgraduate research and play the screening role in the process of postgraduate training, graduate students must carry out course assessment, mid-term assessment, and pre defense before dissertation defense.

1. 课程考核

学习成绩低于60分为不及格，不及格的课程必须重修；课程考试及格但低于75分也可向所在培养单位申请重修。重修由研究生本人在每学期开学一周内申请。原成绩与重修成绩均如实记载在成绩单中，课程成绩按最后一次修读的成绩计。未在培养计划中出现的课程不计入总学分，平均成绩为计入总学分的课程成绩的平均分。

为保证硕士生论文工作质量，硕士生课程学习原则上要求在第一学年内结束，且应至少取得43个学分。

1. Course assessment

If the score is lower than 60, it will be regarded as failing, and the failed course must be taken again; if the course passes the examination but the score is lower than 75, you can apply to the training unit where you are. The application for retake should be made within one week of each semester. The original score and the reexamination result are recorded in the transcript, and the course score is calculated according to the score of the last study. Courses not included in the training plan are not included in the total credit, and the average score is the average score of the course score included in the total credit.

In order to ensure the quality of master's thesis work, master's course

learning is required to be completed within the first academic year in principle, and at least 43 credits should be obtained.

2. 学位论文开题报告与中期考核

1) 开题报告

硕士研究生的开题报告，一般应在课程学习结束，取得规定学分后进行，通常在第4学期（即第2学年第1学期）完成。为保证硕士生有1年的时间从事学位论文研究工作，硕士生的开题报告（审查通过）至论文答辩时间不少于1年。

(1) 在开题报告之前，硕士研究生应修满培养计划规定的学分，递交1篇文献阅读专题报告或学术讨论会小结报告；

(2) 论文选题：论文的选题应与本专业的前沿研究相关或来自与本专业有关的国民经济中的科学技术问题；

(3) 开题报告的要求：硕士研究生在第2学年第1学期末以前完成5000字以上的开题报告，内容包括文献综述、选题意义、研究内容、难点与特点、预期成果和可能的创新点等部分，引用文献不少于30篇；

(4) 开题报告的评审：硕士生开题报告必须以学术报告会形式公开进行，实施学位论文学科集中开题制度。本学科内研究生的学位论文集中开题工作由学科学位论文开题小组负责组织。学位论文开题小组成员一般不少于3人，要求副高级及以上职称，实行导师回避制度。开题报告评审小组听取开题报告并进行评审并对考核结果进行排序，评审通过后方可开题。开题报告为公开性报告，并在第2学年第1学期末完成。硕士学位论文开题报告及学位论文的内容应参照《上海大学硕士研究生论文工作的有关规定》执行，对于未通过者必须在2个月内重作开题报告。仍未通过者，则按《上海大学研究生培养过程质量监督与管理办法（上大研[2019]8号）》处理。

2. Dissertation opening report and mid-term assessment

1) Dissertation opening report

The opening report of master's degree students should be carried out at the end of the course and after obtaining the required credits. It is usually completed in the fourth semester (i.e. the first semester of the second academic year). In order to ensure that the postgraduates have one year to engage in dissertation research, the time from the opening report (examination and approval) to the thesis defense shall not be less than one year.

(1) Before the opening report, postgraduates should complete the credit required by the training plan and submit a special report on literature reading or summary report of academic seminar;

(2) Topic selection: the topic selection of the thesis should be related to the frontier research of the major or from the scientific and technological issues in the national economy related to the major;

(3) Requirements of the opening report: the master's students shall complete the opening report with more than 5000 words before the end of the first semester of the second academic year, including literature review, significance of topic selection, research content, difficulties and characteristics, expected results and possible innovation points, with no less than 30 references cited;

(4) Evaluation of opening report: the opening report of master's degree thesis must be carried out publicly in the form of academic conference, and the centralized topic opening system of dissertation discipline shall be implemented. The thesis opening group of the discipline is responsible for organizing the centralized proposal of Graduate Dissertations in this discipline. Generally, there are no less than 5 members in the dissertation assessment group, including no less than 2 experts outside the school. The title of deputy senior or above is required, and the tutor avoidance system is implemented. The opening report review group listens to the opening report and reviews it, and sorts the assessment results. The project can be opened only

after the evaluation is passed. The opening report is a public report and will be completed at the end of the first semester of the second academic year. The contents of the opening report and Dissertation of the master's degree thesis shall refer to the relevant provisions on the work of master's thesis of Shanghai University. For those who fail to pass the assessment, the opening report must be made again within 2 months. Those who fail to pass the assessment shall be dealt with in accordance with the measures for quality supervision and management of graduate training process of Shanghai University (SDY [2019] No. 8).

2) 学位论文中期检查

在第2学年第2学期末，对论文的进展情况阶段报告和中期考核，以保证按进度进行。评审不合格的，将给予警告，半年后再次进行中期检查，连续两次不合格的，将取消其撰写学位论文资格。

2) Mid-term examination of Dissertation

At the end of the second semester of the second academic year, the progress of the paper will be reported and mid-term assessment will be carried out to ensure the progress. Those who fail to pass the evaluation will be given a warning, and the mid-term assessment will be conducted again after half a year. Those who fail to pass the evaluation twice in a row will be disqualified from writing dissertation.

3. 学位论文预答辩

预答辩的必要条件是必须同时满足以下三点：(1)完成学位论文；(2)满足学位标准；(3)指导教师同意进行预答辩。

预答辩由本学科学位论文预答辩委员会组织并实施集中预答辩制度。学位论文预答辩委员会成员一般不少于3人，其中校外专家不少于1人，要求副高级及以上职称，同行评议专家不超过半数，答辩委员会主席一般由校外专家担任，实行导师回避制度。本学科对参加集中预答辩研究生的考核结果进行排序，对各环节考核未达到要求的研究生给予学业警告，延期、分流淘汰或淘汰。

3. Thesis pre-defense

The necessary conditions for the pre defense are as follows: (1) to complete the dissertation; (2) to meet the degree standards; (3) the tutor's agreement to the pre defense.

The pre defense is organized and implemented by the pre Defense Committee of the academic dissertation of the discipline. Generally, the members of the dissertation pre Defense Committee shall not be less than 3, including no less than 1 off campus expert, who shall have a deputy senior title or above, and no more than half of the peer review experts. The chairman of the defense committee shall generally be the off campus expert, and the tutor avoidance system shall be implemented. In this discipline, the assessment results of graduate students who participate in the centralized pre defense are sorted, and those who fail to meet the requirements in each link are given academic warning, postponed, diversion eliminated or eliminated.

十 . 科学研究与学位论文 (Research and Dissertation)

1. 学位论文选题

(1) 选题要具有先进性，课题工作量和难易程度要适当，尽量结合国家和省、市的科研任务，并根据科研条件和经费的实际情况，在一定期限内有可能取得结果；

(2) 硕士生要在导师指导下，根据硕士生过去的科研基础，充分发挥个人特长，积极开展课题研究；

(3) 硕士研究生在导师指导下，一般在第1学年末制定学位论文工作计划，开展科学

研究，做好文献专题报告、论文开题报告和论文阶段报告，并独立完成学位论文。

1. Thesis topic selection

(1) The topic should be advanced, and the workload and difficulty of the project should be appropriate. As far as possible, combined with the scientific research tasks of the state and province and city, and according to the actual conditions of scientific research and the actual situation of funds, it is possible to achieve results within a certain period.

(2) Under the guidance of the tutor, the postgraduates should give full play to their personal strengths and actively carry out research projects according to their past scientific research foundation.

(3) Under the guidance of tutors, postgraduates usually work out their dissertation work plan at the end of the first academic year, carry out scientific research, do well in literature special report, thesis opening report and thesis stage report, and complete their dissertation independently.

2. 开题报告

(1) 硕士生的开题报告，一般应在课程学习结束，取得规定学分后进行，通常在第4学期(2.5年学制)或第5学期(3年学制)内完成。为保证硕士生有1年的时间从事学位论文研究工作，硕士生的开题报告至论文答辩时间不少于1年；

(2) 硕士生开题报告必须以学术报告会形式公开进行，实施学位论文学科集中开题制度。本学科内研究生的学位论文集中开题工作由学科学位论文开题小组负责组织。学位论文开题小组成员一般不少于3人，要求副高级及以上职称，实行导师回避制度。开题报告评审小组听取开题报告并进行评审并对考核结果进行排序，评审通过后方可开题。对于未通过者必须在2个月内重作开题报告。仍未通过者，则按《上海大学研究生中期考核办法》处理；

(3) 硕士生开题报告须用A4纸打印，并填写《上海大学硕士学位研究生学位论文开题报告》一式二份。当硕士生开题报告会结束后，由导师写出综合评议意见，并按规定程序审批，通过审批者即可进入论文工作阶段（开题报告材料一份自存，待课题结束并且答辩通过以后归到档案馆科技档案处，另一份交学院存档，同时登录研究生院网站上的研究生信息管理系统进行信息提交）；

(4) 开题报告通过后，原则上不能随意改题。如有特殊原因需改题，由硕士生写书面报告，经指导教师签署意见，院（系、所）负责人审批后，报研究生院培养管理处备案，并应在1—2个月内重作开题报告。

(5) 开题报告的内容

学位论文开题报告，一般包括以下内容：①课题来源、选题目的和意义。说明选题的理论和实用价值，着重介绍国内外研究现状和本人选题的经过、目的。②课题研究的主要内容。着重分析技术路线、主要关键技术、实验方案、预期结果。③拟采用的研究方法和实验手段，需要的科研条件，阐述课题研究工作可能遇到的困难以及解决的方法和措施。④研究工作进度计划。⑤主要参考文献（要求不少于30篇）。

2. Opening report

(1) The opening report of master's students should be carried out at the end of the course and after obtaining the required credits. It is usually completed in the 4th semester (2.5-year schooling system) or the 5th semester (3-year schooling system). In order to ensure the master's degree thesis research for one year, the time from the opening report to the thesis defense shall not be less than one year;

(2) The opening report of postgraduates must be carried out in the form of academic conference, and the centralized topic opening system of dissertation disciplines should be implemented. The thesis opening group of the discipline is responsible for organizing the centralized assessment of Graduate Dissertations in this discipline. Generally, there are no less than 5 members in the dissertation proposal group, including no less than 2 experts outside

the school. The title of deputy senior or above is required, and the tutor avoidance system is implemented. The opening report review group listens to the opening report and reviews it, and sorts the assessment results. The project can be opened only after the evaluation is passed. For those who fail to pass the proposal, they must make the opening report again within 2 months. Those who fail to pass the examination shall be dealt with according to the interim assessment measures of Shanghai University;

(3) The opening report of master's degree should be printed on A4 paper, and the opening report of master's degree thesis of Shanghai University should be filled out in duplicate. After the completion of the opening report meeting, the tutor will write out the comprehensive comments and comments and approve them according to the prescribed procedures. The person who has passed the examination and approval can enter the work stage of the thesis (one copy of the opening report will be saved by itself, and it will be returned to the science and Technology Archives Office of the archives after the completion of the project and the defense is passed), and the other copy will be submitted to the college for filing. At the same time, the graduates should log in the postgraduate information management system on the website of the graduate school to submit information;

(4) After the opening report is passed, in principle, it is not allowed to change the topic at will. If there is any special reason to change the topic, the master student shall write a written report, which shall be signed by the instructor and approved by the person in charge of the school (department or institute). The report shall be submitted to the Training Management Office of the graduate school for record, and the opening report shall be made again within 1-2 months.

(5) Contents of the opening report

The thesis opening report generally includes the following contents:

① The source, purpose and significance of the topic. The opening report should explain the theoretical and practical value of the topic selection, and focus on introducing the research status at home and abroad and the process and purpose of the topic selection.

② The main content of the research. The technical route, key technologies, experimental scheme and expected results are analyzed.

③ The research methods and experimental means to be adopted, the necessary scientific research conditions, and the possible difficulties in the research work as well as the solutions and measures are described.

④ Research work schedule.

⑤ Main references (no less than 30 articles are required).

3. 文献专题报告

硕士生 在开题报告前和课题研究中，通过书面和口头两种形式，进行文献专题报告1至2次。专题报告会除导师外至少有两位本专业具有高级职称的教师参加，对研究生文献阅读情况以及专题报告做出评语。每次报告结束后，填写《上海大学研究生文献专题报告考核记录单》连同每篇文献的中外文摘，交学院备案和记载成绩（考核成绩为通过或不通过）。

3. Literature special report

Before the opening report and during the research, the postgraduates will give one or two special reports on literature in both written and oral forms. In addition to the tutor, at least two teachers with senior professional titles will participate in the special report meeting to comment on the postgraduate literature reading and the special report. At the end of each report, fill in the "Shanghai University Graduate literature special report assessment record

sheet" together with the Chinese and foreign abstracts of each document, and submit it to the college for record and record the results (the assessment results are pass or fail).

4. 硕士学位论文

- (1) 在指导教师的指导下，由研究生本人独立完成；
- (2) 应对所研究的课题有新见解或新成果，并在理论或实践上对本门学科发展具有一定的意义；
- (3) 表明作者在本学科上掌握了坚实宽广的理论基础和系统的专业知识，具有创新能力和从事科学研究工作或独立担负专业技术工作的能力；
- (4) 论文题目确定后，用于硕士学位论文工作的时间不得少于1年。

4. Master's thesis

- (1) Under the guidance of the instructor, it is completed by the graduate students themselves;
- (2) We should have new ideas or new achievements in the research subject, and have certain significance to the development of the discipline in theory or practice;
- (3) It shows that the author has mastered a solid and broad theoretical basis and systematic professional knowledge, and has the ability to innovate and engage in scientific research or independently undertake professional and technical work;
- (4) After the title of the thesis is determined, the time for the master's degree thesis shall not be less than one year.

5. 学位论文评阅和答辩

硕士生学位论文评阅和论文答辩可按《上海大学学位授予工作实施细则》的规定办理。

5. Thesis review and defense

The evaluation and defense of master's degree thesis can be handled according to the implementation rules of Shanghai University's degree awarding work.

6. 科研成果量化指标

见《上海大学机电工程与自动化学院研究生申请学位创新成果要求》。

6. Quantitative indicators of scientific research achievements

See requirements for innovative achievements of graduate students in school of Mechatronic Engineering and Automation, Shanghai University.

十一、毕业要求与学位授予 (Graduation Requirements and Degree Award)

研究生要求每周至少完成60-70学时的科研工作，具体考察形式由授课教师或者研究生导师安排。鼓励研究生同学参加相关的学术论坛和报告，以及有益的社会调查等工作。论文要求按照学校和学院的相关规定执行。

Postgraduates are required to complete at least 60-70 hours of scientific research per week, and the specific forms of investigation are arranged by the instructors or tutors. Graduate students are encouraged to participate in relevant academic forums and reports, as well as useful social surveys. Papers are required to be carried out in accordance with the relevant provisions of schools and colleges.

对硕士学位论文答辩申请工作，应严格按照我国学位授予实施办法、上海大学研究生

院相关管理与规定，经过校外评审和学校学位委员会审议通过。

The application for defense of master's degree thesis should be strictly in accordance with the implementation measures of degree award in China and the relevant management and regulations of Graduate School of Shanghai University, and be examined and approved by the off-campus evaluation and academic degree committee.

留学硕士研究生，可以用汉语或英语撰写学位论文和进行论文答辩。使用非汉语接受学历教育的留学硕士研究生，学位论文摘要应当用汉语撰写。留学硕士研究生的学位论文答辩必须在我校进行。

For Foreign postgraduates, they can write their dissertations and defend their dissertations in Chinese or English. For master's degree graduates who use non-Chinese to receive academic education, abstracts of dissertations should be written in Chinese. The dissertation defense of master's degree for foreign postgraduates must be carried out in our university.

本专业毕业生经考试合格达到上海大学硕士学位要求者，将获得工学硕士学位证书。

Graduates of this major who pass the examination and meet the requirements of Master's degree of Shanghai University will receive Master's Degree Certificate of Engineering.

十一 . 培养方式(Training Methods)

在校培养或联合培养

Training in school or joint training

附表. 课程设置与必修环节

课程设置与必修环节

类别	课程编号	课程名称 (Course Name)	学时	学分	开课学期	备注
公共平台课	公共平台课作为学校面向全校开设的公共课程, 学生可在导师指导下选择公共平台课程列入培养计划, 课程学分计入总学分					
公共课	0CS000027	公共体育(Public Physical Education)	20	1.0	01	必修
	0LY000001	中国概况(General Situation of China)	60	3.0	01	必修
	0LY000002	综合汉语B(Comprehensive Chinese B)	60	3.0	01	必修
	4CS000001	创业与创新(Entrepreneurship and Innovation)	20	2.0	03	创新创业课程二选一
专业基础课	2XSL09501	电能转换与利用(Electrical Energy Conversion and Utilization)	40	4.0	01	必修
	2XSL09502	数字信号处理(Digital signal processing)	40	4.0	02	必修
专业选修课	3XSL09206	离散事件与计算智能技术(Discrete Events and Computational Intelligence Techniques)	40	4.0	01	选修
	3XSL09208	互联网安全(Internet Infrastructure Security)	40	4.0	03	选修
	3XSL09210	现代测量测试与传感技术(Modern measurement, testing and sensing technology)	40	4.0	01	选修
	3XSL09502	交流电机控制理论与方法(Control theory and method of AC electrical machines)	40	4.0	02	电机与电器模块选修
	3XSL09503	新型电机的设计和优化(Design and optimization of novel electric machines)	40	4.0	03	电机与电器模块选修
	3XSL09504	智能电网技术(Smart Grid)	30	3.0	02	电力电子与电力传动模块选修
	3XSL09505	电力设备的在线监测和故障诊断(On-line monitoring and diagnosis for power equipment)	30	3.0	03	电力电子与电力传动模块选修
	3XSL09506	现代电力系统分析(Modern Power System Analysis)	40	4.0	01	电力系统及其自动化模块选修
	3XSL09507	复杂网络引论(Introduction to Complex Networks)	40	4.0	03	电力系统及其自动化模块选修
	3XSL09508	信息论和感测技术(Information theory and sensing technology)	40	4.0	02	电工理论与新技术模块选修
	3XSL09509	网络化控制系统(Networked control systems)	40	4.0	03	电工理论与新技术模块选修
学术规范与写作课	7XSL09501	科技英语写作与交流(Scientific English Writing and Communication)	40	4.0	03	必修

创新创业课	4XSL09501	汽车电动化介绍(Introduction to Vehicle Electrification)	20	2.0	03	创新创业课程二选一
学术研讨课	6XSL00001	学术研讨课(Academic Seminars)	20	2.0	03	必修
跨专业或学院选修课	学生可根据自身情况在导师指导下跨专业、学院选取非本专业课程列入培养计划，课程学分计入总学分。					
补修课	根据学生具体情况由导师指定选修本科生主干课2-3门（不计入总学分）					
必修环节	课程考核				05	须通过考核后方可进入下一环节
	论文开题				06	
	中期考核				06	
	论文预答辩				11	
	论文答辩				11	

学位委员会主席签字：

学院盖章：