

085800 能源动力 (085800) 全日制工程博士硕博连读培养方案

Energy and Power Engineering

一、基本信息 Basic Information

院系名称 School	(031)电子信息与电气工程学院(电气系) School of Electronic Information & Electrical Engineering		适用年级 Grade	2020级 Class	
适用专业 Major	085800 能源动力 (085800) Energy and Power Engineering				
项目类型 Program Type	全日制博士				
最低学分 Min Credit	7	最低GPA学分 Min GPA Credit	0	最低GPA Min GPA	0

二、学科简介 Introduction

本学科始建于1908年，是上海交通大学历史最悠久的学科之一。1962年起下属五个二级学科陆续获得硕士学位授予权，在全国相应学科中均为首批有权授予硕士学位的学科。1999年设立电气工程学科博士后流动站。2000年电气工程获得一级学科博士学位授予权，培养电气工程学科的工学博士。本一级学科下属的电力系统及其自动化，电机与电器，高电压及绝缘技术，电力电子与电力传动和电工理论与新技术五个二级学科均开设了博士研究生课程，实行在一级学科范围内选课。

本学科研究与科技创新水平不断提高，拥有一系列重点科研与教育基地，包括“国家能源智能电网(上海)研发中心”，“国家能源海上风电技术装备研发中心”，“电力传输与功率变换控制教育部重点实验室”，“电气绝缘与热老化上海市重点实验室”，“国家工科基础课程电工电子教学基地”，“上海交通大学风力发电研究中心”和“上海交通大学泛在电力物联网智能感知实验室”等。

本学科与美国佐治亚理工、欧盟的意大利都灵理工大学和德国达姆施塔特技术大学开展了联合培养研究生的项目。毕业生主要分布在电力工程设计、电力电网、电气设备设计及制造、新能源等领域。

This discipline was founded in 1908, and is one of the oldest disciplines in Shanghai Jiao Tong University. Since 1962, 5 level-2 disciplines have successively had the right to confer a master's degree, and have been listed into the first group of disciplines with the right to confer a master's degree among national disciplines. A mobile post-doctoral station for electrical engineering was established in 1999. The electrical engineering discipline had the right to confer a doctoral level for level-1 discipline for the purpose of cultivating doctors majoring in electrical engineering in 2000. 5 level-2 disciplines classified into level-1 disciplines (including Power System and Automation, Electric Machines and Electric Apparatus, High Voltage and Insulation Technology, Power Electronics and Electrical Drives, and Theory and New Technology of Electrical Engineering) have opened doctoral student courses, and are selected within the scope of level-1 disciplines.

It also has research centers and labs such as “State Energy Smart Grid R&D Center”, “State Energy Offshore Wind Technology and Equipment R&D Center”, “Power Transmission Conversion and Control Key Lab of MOE”, “Electric Insulation and Thermal Aging Key Laboratory of Shanghai”, “Electric and Electronic Teaching Base of National Basic Science Courses”, “Wind Power Research Center” and “Ubiquitous Power IoT Intelligent Perception Lab”.

This discipline is now carrying out a joint program for training postgraduates with Georgia Institute of Technology of America, Turin Polytechnic University in EU, and Darmstadt Technical University of Germany. The postgraduates of this discipline are mainly distributed to the fields such as electric power engineering design, electric power and electric network, design and manufacture of electrical equipment, and new energy resources.

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三、培养目标 Program Objective

博士学位获得者应能系统性地掌握电气学科坚实宽广的基础理论知识，深入了解学科的进展、动向和最新发展前沿。具有独立从事科学研究的能力，并在本学科领域取得理论或实践上的创造性研究成果。能熟练阅读本专业的英文资料，具有一定的写作能力和进行国际学术交流的能力。能胜任高等院校教学、科学研究、工程技术或科技管理等工作。

The doctoral degree holders can systematically master firm and broad basic theoretical knowledge of the electrical discipline and deeply know the progress, trends and latest development of this discipline. They have the ability to undertake scientific research and obtain creative research results in theory and practice. They can skillfully read foreign language materials of this major, and possess certain writing ability and international academic communication skills. They can be qualified for teaching in the colleges and universities, scientific research, engineering technology or technology management and other work.

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

硕博连读博士阶段学习年限一般为3~4年，经批准可适当缩短或延长，最长（含休学）不超过6年。

Combined master and doctoral students' study period is generally 3-4 years, and may be appropriately shortened or prolonged upon approval, but not longer than 6 years (including suspension of schooling) at most.

五、课程学习要求 Course Requirement

课程类别 Course Type	学分要求 Min Credits	GPA 学分要求 Min GPA Credit	备注 Note
公共基础课 General Fundamental Courses	3		
专业基础课 Program Core Courses	3		
专业前沿课 Program Advanced Courses	2		
专业选修课 Program Elective Courses	0		

六、培养过程要求 Training Requirement

1、硕博连读生进入博士生阶段后，应在完成硕士培养计划的基础上，补充普博生培养环节。博士生的课程学习原则上要求在第一年内完成。硕博阶段修读课程总学分不低于**35**，其中博士专业基础课不低于**3**学分，专业前沿课不低于**2**学分，博士阶段必修《学术写作、规范与伦理》。

电气工程研究生学术报告会和讨论会要求：

(1) 学术报告会或讨论会，在个人培养计划中选中在第二学期，全年都可以参加，入学第一年内完成。

(2) 参会后需提交由电气系举办的学术报告会记录表，博士研究生要求提交**8**场学术报告会的记录表，每场总结不少于**800**字。电院相关学科的学术报告会也可参加，但不能超过总数的三分之一。

(3) 所有选课学生于每年夏季学期第一周周三前以班级为单位，班长按二级学科方向分好收齐后将学术报告电子版反馈到教学秘书邮箱。每位学生的文件电子版反馈命名为：二级学科方向名称+姓名+学号，电气工程系五个二级学科方向为：电力系统、电力电子、电机、高压、电工中心。

电院报告会通知见网站<http://www.seiee.sjtu.edu.cn/seiee/list/683-1-20.htm>

电气系学术动态见网站https://eei.sjtu.edu.cn/news.aspx?info_lb=498&flag=498/

2、硕博连读博士的资格考试原则上应在入学后第二学年第一学期内完成；硕士学位申请等其它事项具体参考：<http://yjwb.seiee.sjtu.edu.cn/yjwb/info/13602.htm>

3、博士生学位论文开题工作应该在通过资格考试后，硕博连读生一般应该在第二学年结束前完成。

4、全日制工程博士要求在读期间在合作单位业界导师指导下从事科研工作**1**年以上，完成后递交《上海交通大学工程博士实践活动总结报告》，由校内外导师、学院审核通过后，视为实践环节通过。

1、 After entering the Ph.D. stage, the postgraduates should complement the doctoral program based on master program. The doctoral courses should be completed within the first academic year. The total credits of master and doctor are no less than 35, with doctoral basic courses no less than 3 credits and professional frontier courses no less than 2 credits.

Academic speech and seminar requirements:

(1) Academic speech and seminar should be selected in the 2nd semester and can be participated in the whole year. They should be completed within the first academic year.

(2) Postgraduate should submit at least 8 record forms after attending the academic speeches organized by the Department of Electrical Engineering. Each record form should include more than 800 words. The relevant subjects academic speeches organized by the Institute can also be participated, but they cannot exceed 1/3 of the total.

(3) All the postgraduates should submit the e-edition record form to their class leader before 1st Wednesday of the summer semester. Class leaders should classify the forms according to level-2 disciplines and send them to the teaching secretary.

Record form naming rules: level-2 disciplines name + postgraduates name + postgraduates ID

Level-2 disciplines names: Power System and Automation, Electric Machines and Electric Apparatus, High Voltage and Insulation Technology, Power Electronics and Electrical Drives, and Theory and New Technology of Electrical Engineering

Institute academic trends: <http://www.seiee.sjtu.edu.cn/seiee/list/683-1-20.htm>

Department academic trends: https://eei.sjtu.edu.cn/news.aspx?info_lb=498&flag=498

2、 Combined master and doctoral students should finish the qualification exam in 3rd semester. SEIEE master students degree application progress: <http://yjwb.seiee.sjtu.edu.cn/yjwb/info/13602.htm>

3、 Combined master and doctoral's dissertation proposal should be started after passing the qualification exam and finish before the end of the 2nd academic year.

4、 Engineering doctor is required to engage in scientific research work for more than one year under guided by instructors in the industry of the cooperative units during study period, and submit the summary report on the practical activities of the Doctor of Engineering of Shanghai Jiao Tong University after completion, which will be examined and approved by the instructors inside and outside the university and the college as a practical link.

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七、学术成果要求 Requirement on Academic Achievements

工程博士研究生申请学位论文答辩之前，须提交其在读期间获得的创造性成果的评价材料，与学位论文相关的研究成果应以上海交通大学博士研究生身份署名，可以是以下五种形式之一：

- 1、获得国家级科技成果奖（一等奖排名前9名、二等奖排名前7名）、或省部级科技成果一等奖（排名前3位）、或省部级科技成果二等奖（排名前2位）；
- 2、以本人贡献为主的研究成果形成编写国际、国家标准（前3名）及行业标准（第1名）1项（正式出版或报）；
- 3、以第一发明人或第一著作人获得重要发明专利授权或软件著作权至少2项，其授权专利技术或软件著作权被应用于工程实践，能提供相关的实施应用证明材料；
- 4、撰写并正式出版学术专著（排名第一）；
- 5、发表学术论文达到电气工程系的学术型博士论文发表要求。

Before applying for the thesis defense, engineering doctoral graduates must submit evaluation materials of the creative achievements obtained during study period. The research results related to the thesis should be signed as a doctoral student of SJTU, which can be one of the following five forms:

1. Be awarded of science and technology prize of national level (rank top 9 of first prize, rank top 7 of second prize), first prize of provincial level (rank top 3), or second prize of provincial level (rank top 2)
2. Compile 1 international or national standard (rank top 3) and 1 industry standard (rank top 1) (formally published or submitted for approval) base on doctoral graduates' research result;
3. Obtain at least 2 important invention patent authorizations or software copyrights with the first inventor or first author. The patent or software copyrights are applied to engineering practice and can provide relevant implementation application certification materials;
4. Write and officially publish academic books (rank 1);
5. Public academic papers meet the requirements of the Department of Electrical Engineering.

八、学位论文 **Thesis/dissertation work**

1、选题与综述的要求；

博士学位论文应对所研究的课题在基本理论、计算方法、测试技术、工艺制造等某一方面有新的见解，在学术上有重要的理论意义或现实意义。

2、规范性要求；

在学位论文进行中，博士研究生应按计划每年1~2次在研究所组织的学术会议上做学术报告，汇报论文进展情况。学位论文的内容，除理论分析外，还应包括实验验证或计算机软件开发，并有可靠的创造性学术成果，能经得起检验。论文推理严密，材料翔实，数据可靠，表达准确，层次分明，图表规范。学位论文的草稿，应在学习结束前三个月完成，并提交导师审阅通过，然后按《上海交通大学研究生学位论文答辩及学位申请工作细则》的规定组织评审和答辩。

3、成果创新性要求

在科学理论、专门技术或研究方法上有创新，并取得新的进展，达到电气工程学科国内领先或国际先进水平。

1. Topic selection and summarization requirements;

A doctor paper shall present new insights on basic theories, calculation methods, test technology, crafting and others of the topic, and academically have significant theoretical or realistic significance.

2. Normative requirements;

A doctoral student shall present an academic report and report the progress of the paper on 1-2 academic conference(s) organized by the Research Institute every year as scheduled in preparing an academic paper. The academic paper shall include experimental verification or computer software development in addition to theoretical analysis, along with reliable and amenable creative academic results. A paper is characterized by exact reasoning, detailed materials, reliable data, accurate expression, clear structure and standard charts. The doctor shall finish the draft of the academic paper 3 months before the study, submit his/her instructor for review, and then organize the review and defense according to the Detailed Rules for Academic Paper Defense and Degree Application of Postgraduates of Shanghai Jiao Tong University.

3. Innovation requirements

A doctor shall make innovations in scientific theories, expertise or research methods, make new progress and reach domestic or international advanced level of the discipline of electrical 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：

课程类别 Category	课程代码 Course Code	课程名称 Course Name		学分 Credit	授课语言 Language	开课学期 Semester	是否必修 Compusory	可以计算 GPA	必须计算 GPA	备注 Note
		中文Chinese	English 英文							
公共基础课 General Fundamenta l Courses	MARX7001	中国马克思主义与当代	Marxism in China	2	中文	秋季	是	否	否	
	GE6001	学术写作、规范与伦理	Scientific Writing, Integrity and Ethics	1	中文	春秋季	是	否	否	优先选择031电气系开设的教学班
专业基础课 Program Core Courses	EE7001	博士生电气技术试验	Electrical Lab for Doctoral Students	1	中文	秋季	否	否	否	
	EE7003H	非线性控制理论及应用	Nonlinear Control Theory and Applications	2	中文	秋季	否	否	否	必修 Compulsory 致远荣誉课程
	EE7004H	高等电力电子学	Advanced Power Electronics	3	中文	秋季	否	否	否	
	EE7002	电力系统动态计算与建模	Power System Dynamics- Computing and Modelling	3	英文	春季	否	否	否	
专业前沿课 Program Advanced Courses	EE8007	电力系统分析专题	Selected Topics on Power System Analysis	3	中文	秋季	否	否	否	
	EE8008	高电压前沿技术专题	Topics on Cutting-Edge Technology of High-Voltage	3	中文	春季	否	否	否	
	EE8009	现代电力电子变换技术专题	Special Topics on Modern Power Electronic Conversion Technologies	2	英文	春季	否	否	否	