

附件 4:

## 电气工程国际硕士研究生培养方案

授予学位类别:

一级学科 (专业类别) 代码名称:

0808 电气工程

二级学科 (专业领域) 代码名称:

080800 电气工程

080801 电机与电器

080802 电力系统及其自动化

080803 高电压与绝缘技术

080804 电力电子与电力传动

080805 电工理论与新技术

制订单位: 自动化学院 (牵头) (参与)

培养方案版本号: 2020 版

### 一、学科概况

The electrical engineering discipline of Central South University has a solid foundation and distinctive railway electrical characteristics. Its origins can be traced back to the Department of Mechanical and Electrical Engineering of the Central South Institute of Mining and Metallurgy in 1958 and

the Department of Electronic Engineering of the Changsha Railway Institute in 1976. In 2000, it acquired the Right of Degree-conferring for power electronics and power drives. Then, it acquired the Right of Degree-conferring for the first-class discipline of electrical engineering in 2005, and began recruiting full-time graduate students major in electrical engineering in 2011. There are 26 full-time faculty members, including 9 professors, 13 associate professors, one chief expert of the National 863 Major Project Overall Project Team, one receiving the National Natural Science Fund for Excellent Young Scholars, one receiving Distinguished Young Scholars of Hunan Province, and one New Century Excellent Talent of the Ministry of Education. It owns Hunan Provincial Key Laboratory of Power Electronics Equipment and Grid, Power Electronic Control and Optimization Engineering Laboratory of Hunan Province, and Electromagnetic Compatibility (EMC) Testing Laboratory. Over the recent years, it has undertaken more than 30 national projects, including National “863” Program Projects, National Science and Technology Support Program Projects, and National Natural Science Foundation projects. It has also won 1 item of the National Science and Technology

Progress Award and 20 items of the provincial and ministerial level scientific and technological progress award. In addition, this discipline has published more than 200 academic journal papers in SCI/EI database, authorized more than 80 national/international invention patents and software copyrights. This discipline aims at the leading edge of electrical engineering and the vital demand of national science and technology development. Over the past years, it has cultivated a large number of excellent graduate students, including a number of well-known scholars and entrepreneurs. In recent years, it has made great progress in industrial applications of metallurgy and mechanical processing, electric power, transportation etc., and also has formed the following main stable research areas: modern power electronic technology and its application, power quality analysis and control, control technology of power system, and electric traction and drive control.

## 二、研究方向

- (1) Power electronic equipment and control
- (2) Smart grid
- (3) Power quality control technology
- (4)

## Electric traction and drive control

### 三、培养目标

This discipline is geared to the international cutting-edge technology development trends, and committed to cultivating talents with full development of morality, wisdom, physique, aesthetics and labor, which enables them to have excellent innovative thinking and academic literacy, and to be engaged in related works in the field of electrical engineering, such as scientific research, teaching, management, technology development etc. The details are as follows: (1) The students should have good scientific research style, excellent scientific morality and strong sense of team spirit, and should be good in conduct and physical and mental health. (2) The students need to build a solid foundation of basic theoretical knowledge in the field of electrical engineering, and systematically master the advanced expertise of the research field. Meanwhile, the students should be familiar with the forefront and development trend of the discipline, and have the ability of independently conducting the scientific research, technology development and efficient

organization and management in the field of the discipline. (3) The students should master the experimental methods in the discipline of both Information Technology and Electrical Engineering, and be familiar with methods and tools of common object modeling, theoretical analysis, data processing. Also, the students should have other related professional knowledge in scientific research works, which includes sociology, management, law etc.

#### 四、学制和学习年限

According to the policy of registration administration from Central South University for graduate students, the minimum length and the longest length of study for master students are 3 years and 5 years respectively, including 1-year of course study. The deadline for calculating the longest study period is August 31 of the current year. Graduates with excellent comprehensive quality can apply for graduation six months in advance. The detail requirement and process should be implemented in accordance with “Regulations on the Graduate Student Status Management of Central South University” and the “Regulations of the School of Automation of

Central South University on Application for Advance Graduation of Doctoral and Graduate Students” .

## 五、培养方式

(1) A supervision group for graduate students should be set up, and the master supervisor is in charge of the group. The master supervisor and other group members cooperate together to train the student, and the other group members should assist the supervisor to control the quality of each training progress.(2) The supervisor guides graduate students to formulate personal training plans, select courses, consult literature, participate in academic exchanges and social practices, determine research topics, conduct scientific research etc.(3) The guidance from the supervisor is an organic combination of professional knowledge education, ideological education and academic atmosphere education. It aims to build good mental morality and academic ethics, and hence comprehensively cultivate and improve the comprehensive quality of postgraduates.(4) The discipline has established an elimination mechanism for the training process. Through strict assessment of the training process, the students who fail the assessment shall be re-evaluated or eliminated. The specifics are implemented according to “Regulations on the Graduate Student Status Management of Central South University” and “Regulations on works for Postgraduate training links of Central South

University” .

## 六、课程设置与学分要求

课程类别	学分要求	课程类别	学分要求
公共学位课	5	学科基础课	11
专业课	4	选修课	4
学术交流与研讨	2	培养环节	3
补修课	0		
总学分	29		
学分说明	The course credits should be no less than 24. The academic exchange and discussion as well as training courses credits should be no less than 5.		

类别	课程编号	课程（环节）名称	学时	学分	开课学期	说明
选修课	46081102B01	线性系统理论	32	2	秋季	No less than 2 or choose courses in other disciplines
选修课	46081103C02	多智能体系统与应用	32	2	秋季	No less than 2 or choose courses in other disciplines
学术交流与研讨	99000003F03	学术交流与研讨（学术学位硕士生）		2	春秋季	Compulsory
学科基础	21070103A0	数值分析	48	3	秋季	Compulsory

课	4					
学科基础课	46080802B01	电气传动基础	32	2	春季	Compulsory
学科基础课	46080802B03	现代电力电子技术	32	2	秋季	Compulsory
学科基础课	46080804B01	电力电子系统建模与控制（英语）	32	2	秋季	Compulsory
学科基础课	46081103B02	论文写作与学术规范.	32	2	春秋季	Compulsory
公共学位课	10000003A01	中国概况	32	2	春秋季	Compulsory
公共学位课	11000003A01	汉语	64	3	秋季	Compulsory
专业课	46080802D03	可再生能源与智能电网集成控制技术	32	2	春秋季	Compulsory
专业课	46081102B04	人工智能与模式识别	32	2	秋季	Compulsory
培养环节	02	开题报告		1		
培养环节	99000003F08	社会实践		1		
培养环节	99000003F09	科研训练		1		

## 七、学术研讨与学术交流

Academic exchanges and discussions are the compulsory part for all master students, and 2 credits are required. It is aimed to create a strong academic and cultural atmosphere, lead the advanced technology, stimulate interest and broaden academic



vision. The forms of these activities should be multi-carrier, multi-form and pluralistic. An academic annual conference will be held each year for research discussion and cooperation between foreign graduate students and Chinese graduate students. Each foreign graduate student must submit a full paper to this seminar for getting a certain credit, which is a summary of the research work done. The seminar is open to all the graduate students of the whole departments. Several advisors will be invited to attend the seminar for giving direct tutoring. For the "Academic Exchange and Discussion", the specific requirements are as follows: (1) 1 credit will be given to those master students, who attend academic reports 20 times. (2) Each master student must submit a paper to the Academic Annual Conference organized by School of Automation. The accepted papers will be counted as 1 credit. Another 1 credit will be given to those master students, who are recommended to be excellent candidates in the conference. (3) 2 credits will be given to those master students, who attend an international academic conference and do presentation. (4) 1 credit will be given to those master students, who attend conference organized in China and do presentation. (5) 1 credit

will be given to those master students, who submit a qualified report according to the academic reports. (6)  
1 credit will be given to those master students, who attend summer school, organized by domestic or international universities, and obtain course certificate or other verified documents.

## 八、博士生资格考试

无

## 九、学位论文开题报告

During the first year, master students under the guidance of their supervisors should determine the direction of thesis research. More than 60 literatures should be reviewed for the thesis topics and each student should write the public report on the direction of thesis research which should have certain academic significance or application value, or have some practical merits on the national economy, education, cultural and social developments. The proposal should be finished before the end of the third semester. If the first proposal is not approved, the students have to restart it again according to

the thesis proposal procedure, and the interval between the two proposals should be no less than 6 months. The reports on thesis topics are held openly with faculties. The student should fill “the thesis proposal towards Master’s Thesis at Central South University” in the “Graduate Education Management Information System” online. If the report has been adopted, the Graduate School of Management Office will keep it on file. If not, the student should redo it within the next 6 months.

## 十、中期考核

无

## 十一、科研训练、专业实践和社会实践

Research Training is a required course for master students. Each master student should participate in at least one research project. The purpose of this training is to enforce international master students to obtain the right research method, develop their capability to conduct research or special technique. The credit will be given to students once their supervisors approve that they have met the

requirement. Social Practice is also necessary for the master students. The school encourages graduate students to use their professional knowledge and skills to carry out social practices in science, technology, management, law, etc. This will help them to solve technical or management problems in social economic development, so as to continuously improve their innovative and practical capabilities.

## 十二、学年总结与考核

Before the summer holiday, the school will organize the summary and assessment for master students in the aspects of examination result, class performance, academic achievement and other factors. The assessment results will be used as the basis for adjusting the level of scholarships for students. If the student cannot pass the assessment, sanctions will be imposed on the student according to the corresponding rules.

## 十三、学位论文工作

(1) Requirements on Academic Achievement The requirements on academic achievement must be in

accordance with the Degree Awarding Standard of the Electrical Engineering, Central South University and other relevant documents.&nbsp;(2) Requirements on degree thesisThe degree thesis is written in English or Chinese according to the requirements of the school. And it is completed independently by the graduate students under the guidance of the supervisor.The degree thesis is carefully written according to the requirements of the unified format of the school&#39;s degree thesis. The content of the degree thesis should reflect that the graduate student can apply basic theory and professional knowledge to solve practical engineering problems. Besides, the degree thesis reflects that the graduate student has reached the requirements of the training goals.(3) Dissertation Assessment, Dissertation Defense and Degree ConfermentThe basic requirements of degree dissertation are implemented in accordance with the “Regulations on Degree Awarding of Central South University”. After the dissertation is written as required, a pre-defense for the dissertation is required. The dissertation from those who pass the preliminary defense will be assessed by two experts, who are master student supervisors or the experts with senior professional and technical positions in

this discipline or major. If the dissertation assessment is passed, the student can apply for dissertation defense with the approval from both its supervisor and school office. The dissertation must be correct in viewpoint, clear-cut, reliable in argument, well-proven, rigorous, logical, and well-written, indicating that graduate students have reached the requirements of training objectives. Postgraduates who have passed the dissertation defense submit a degree application to the Degree Evaluation Sub-Committee of the second-level training unit. The Degree Evaluation Sub-Committee will review the application and submit it to the Degree Evaluation Committee of Central South University. With the approval from Degree Evaluation Committee of the university, the degree will be awarded and a degree certificate will be issued.

#### 十四、毕业论文工作

(1) Requirements on Academic Achievement The requirements on academic achievement must be in accordance with the Degree Awarding Standard of the Electrical Engineering, Central South University and other relevant documents. (2) Requirements on

degree thesis The degree thesis is written in English or Chinese according to the requirements of the school. And it is completed independently by the graduate students under the guidance of the supervisor. The degree thesis is carefully written according to the requirements of the unified format of the school's degree thesis. The content of the degree thesis should reflect that the graduate student can apply basic theory and professional knowledge to solve practical engineering problems. Besides, the degree thesis reflects that the graduate student has reached the requirements of the training goals.

(3) Dissertation Assessment, Dissertation Defense and Degree Conferment The basic requirements of degree dissertation are implemented in accordance with the "Regulations on Degree Awarding of Central South University". After the dissertation is written as required, a pre-defense for the dissertation is required. The dissertation from those who pass the preliminary defense will be assessed by two experts, who are master student supervisors or the experts with senior professional and technical positions in this discipline or major. If the dissertation assessment is passed, the student can apply for dissertation defense with the approval from both its

supervisor and school office. The dissertation must be correct in viewpoint, clear-cut, reliable in argument, well-proven, rigorous, logical, and well-written, indicating that graduate students have reached the requirements of training objectives. Postgraduates who have passed the dissertation defense submit a degree application to the Degree Evaluation Sub-Committee of the second-level training unit. The Degree Evaluation Sub-Committee will review the application and submit it to the Degree Evaluation Committee of Central South University. With the approval from Degree Evaluation Committee of the university, the degree will be awarded and a degree certificate will be issued.

附：修订专家名单

栗梅，王春生，危韧勇，孙尧，李志勇，刘永露，许国等。