（085400）电子信息学科 2020 级非全日制工程博士生培养方案(自动化系)

2020 Part-time PhD Program for Electronic Information

一、基本信息 Basic Information

院系名称 School	(032)电子信息与电气工程学院(自动化系) School of Electronic Information & Electrical Engineering			**适用年级** Grade	2020 级 Class
适用专业 Major	电子信息 Electronic Information			**标准学制** Duration	4 年 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	0	**最低 GPA** Min GPA	0

二、学科简介 Introduction

本学科由我国自动化学科的创始人之一张钟俊院士亲手创建,是我国最早设立博士点和博士后流动站、开展自动化学科建设的单位之一,是我国自动化科学与技术研究和开发的重要基地、培养自动化领域各层次高级专门人才的摇篮。本学科的“控制理论与控制工程”和“模式识别与智能系统”两个二级学科在 1987 年和 2001 年两度被评为国家重点学科，一级学科“控制科学与工程”2007 年被评为首批国家一级重点学科，并在历次一级学科评估中位居全国前列。自动化系现有教职工 84 人，其中，专职教师 70 人，教授/研究员 30 人，副教授/副研究员/高级工程师 37 人。现有教师中，25 名教师已获得国家和上海市人才计划支持，其中包括中科院外籍院士 1 人、长江学者 2 人、IEEE Fellow 4 人、国家杰出青年基金获得者 4 人、新世纪百千万人才工程国家级人选 2 人、国家优秀青年基金获者 4 人、国家青年千人计划 3 人、青年长江学者 1 人、教育部跨世纪/新世纪优秀人才支持计划获得者 9 人、上海市优秀学科带头人 3 人。自动化系广泛开展国际交流与合作，着力

培养具有国际视野和国际竞争力的人才。2012 年以来，承办 IEEE ICRA 2011、IFAC LSS 2013、IEEE RCAR 2016 等国际会议与双边会议 10 个，邀请海外学者来访并做学术报告 320 场，同时鼓励系师生参加国际会议，到国外进修学习、合作科研或讲学。与德国柏林工业大学、法国国家信息与自动化研究所、瑞士苏黎世大学等多所世界知名高校建立了合作关系。未来几年，本学科将继续在学校“上水平、创一流”的办学思想指导下，以培养人才为根本任务，追求科学研究与科技创新水平的不断提高。毕业学生主要取向是继续在国内外大学和研究机构进一步深造与工作，或者在相关领域中领先企业就职。

The Control Science and Engineering Discipline (CSE) was established by one of our country's old generation of academic leaders in the control field, academician Zhang Zhongjun. It was among the first earliest units to grant Doctorate Degrees and to establish the post-doctoral fellowship for carrying out automation discipline construction. The CSE Discipline has become an important basis for the science and engineering research, advanced technology research and development, high-level personnel training for senior professionals at all levels of automation.

The two sub-disciplines namely "Control Theory and Control Engineering" and "Pattern Recognition and Intelligent System" were twice rated as national key disciplines in 1987 and 2001, and the discipline "Control Science and Engineering" was rated as the first batch of national key disciplines and ranked among the top in the country in the first-degree discipline evaluation.

The Department of Automation has 84 faculties, (70 of them are full-time) including 30 professors/researchers, and 37 associate professors/deputy researchers/senior engineers. Among them, 25 faculties have received support from the national and Shanghai talent programs, including 1 foreign academician of the Chinese Academy of Sciences, 2 Changjiang Scholars, 4 IEEE Fellow, 4 National Distinguished Youth Fund winners, 2 national talent candidates for the new century, 3 National Outstanding Youth Fund winner, 3 scholars in national “1000-talent” plan, 1 Changjiang Young Scholar, 9 winners of the Cross-Century/New Century Excellent Talent Support Program of the Ministry of Education, and 3 Shanghai Excellent Academic Leaders.

The Department of Automation has extensive international exchanges and cooperation, and put forth effort to cultivate talents with international vision and competitiveness. Since 2012, there have hosted 10 international conferences and bilateral meetings such as IEEEICRA 2011, IFAC LSS 2013, and IEEE RCAR 2016, as well as 320 academic reports from overseas visitors. At the same time, a great number of teachers/students have engaged in international conferences, studying abroad, cooperating in scientific research or giving academic lectures. Furthermore, it has established cooperative relationships with many world-renowned universities such as the Technical University of Berlin, The French Institute for Research in Computer Science and Automation, the Technical University of Berlin, the University of Zurich in Switzerland.

In the next few years, under the ideology guidance of the school that "Pursuing world class levels in all aspects of teaching, research, personnel training, academic environments and others", the discipline will continue to improve the level of scientific research and technological innovation with the fundamental task of cultivating talents.

The main orientation of graduate students is to continue to further study and work in universities and research institutions at home and abroad, or to take the lead in related fields in top enterprise.

三、培养目标 Program Objective

掌握控制科学与工程学科的坚实基础理论和系统的专门知识；具有合理的知识结构；掌握本学科的科研方法和技能，并能够做出创新性成果；洞悉本学科发展的现状和了解趋势；具有独立从事科学研究或担负专门技术工作的能力；熟练掌握一门外国语，能熟练地阅读本学科的外文资料，以及具有较好的外语写作与交流沟通能力。

To master the solid basic theory and systematic expertise in controlling science and engineering disciplines; to have a reasonable knowledge structure; to master the scientific research methods and skills of the discipline, and to be able to make innovative results; to gain insight into the current state of development of the discipline and to understand trends; to master the ability to independently engage in scientific research or to undertake specialized technical work; to be proficient in a foreign language, to be proficient in reading foreign language materials of the subject, and to have good foreign language writing and communication skills.

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

本项目采用非全日制学习、导师制培养模式；学习年限 4 年，经批准可适当缩短或延长，最短不少于 3 年，最长（含休学）不超过 7 年。

The project is part time study, and tutor training mode. The study period is 4 years. It can be appropriately shortened or extended, with a minimum of not less than 3 years and a maximum (including suspension of study) of no more than 7 years.

五、课程学习要求 Course Requirement

课程学习由“公共课”、“专业课”、“实践课”组成，学生应根据培养方案的要求，结合知识结构、行业背景和研究项目需求选修课程，课程总学分应至少达到 16 个学分，课程学习原则上要求 1 年内完成。

第一部分：公共课（⩾6 学分）

（1）中国马克思主义与当代，2 学分；工程数学专题，2 学分；工程科技前沿专题，1 学分；学术写作、规范与伦理，必修，1 学分

（2）公共课为必修课程。采取集中授课的模式。由学校研究生院统一安排，一般安排在周六、周日授课。

第二部分：专业课（≥10 学分）

（1）创新工程实践，必修，2 学分

（2）其它专业课程，至少 8 学分

《创新工程实践》的要求：

1) 参与相关专业硕士实践类课程的教学或辅导，不少于 16 学时；或作重要工程前沿讲座至少 8 次（每次计 2 个学时）;

2) 在读期间协助校内导师指导至少 1 名专业学位硕士，工作量不少于 16 课时;

3) 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，获得本课程学分。

各类课程具体要求如下：

课程类别 **Course Type**	**学分要求** **Min Credits**	**门数要求** **Min Courses**	**GPA 学分要求** **Min GPA Credit**	**备注** **Note**
公共基础课 General Courses	6	4		
专业基础课 Program Core Courses				
专业前沿课 Program Frontier Courses				
专业选修课 Program Elective Courses				
任意选修课 Elective Courses				非必需

六、培养过程要求 Training Requirement

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

The opening work of doctoral dissertation should be completed by the end of the second academic year after passing the qualification examination.

七、学术成果要求 Requirement on Academic Achievements

工程博士生在读期间应做出创造性成果，成果应与学位论文密切相关，且以上海交通大学博士研究生身份署名，成果形式包括科技奖励、行业标准、发明专利、学术论文等，至少满足以下具体要求之一:

1. 获省部级以上科技成果奖 1 项，省部级科技成果一等奖需排名前 5 位、二等奖需排名前 3 位;

2. 以本人贡献为主的研究成果形成行业标准 1 项;

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;

4. 发表学术论文达到本学院的规定。

以上规定是对博士研究生研究工作的底线要求，导师根据博士研究生的研究内容不同，相应提出博士论文答辩的具体要求。

具体按照有关文件执行，详细参见电子信息与电气工程学院研究生教务办网站上发布信息: http://yjwb.seiee.sjtu.edu.cn/yjwb/info/15539.htm

During the period of study, students should make creative achievements closely related to the dissertation and signed by the student as the doctoral candidate of Shanghai Jiao Tong University. The result can be in the form of scientific and technological awards, industry standards, invention patents, academic papers or others. At least one of the following requirements should be met:

1) One award at ministerial and provincial level or above, ranked in the top 5 in the first prize winners or top 3 in the second prize winners.

2) One industry standard based on the result contributed mainly by the student.

3) At least two authorized invention patents or software copyrights are worked out by the student as the first inventor or first author.

4) The academic papers published meet the requirement of the college.

The above regulations are the bottom-line requirements for the research work of doctoral students. According to the research content of doctoral students, the tutors correspondingly put forward the specific requirements for the defense of doctoral thesis.

Execute in accordance with the relevant documents, and please refer to the website of the Academic Affairs Office of the School of Electronic Information and Electrical Engineering for details:

http://yjwb.seiee.sjtu.edu.cn/yjwb/info/15539.htm

八、学位论文 Thesis/dissertation work

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开展研究。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。博士学位论文具体要求详见:

上海交通大学关于申请授予博士学位的规定

上海交通大学博士、硕士学位论文撰写指南

http://www.gs.sjtu.edu.cn/info/1140/2566.htm
http://www.gs.sjtu.edu.cn/info/1143/2545.htm

PhD students should choose research topics in the frontier areas of the discipline or on issues of importance to scientific and technological progress, economic construction and social development. The doctoral thesis can show that the author has the ability to work independently in scientific research, reflecting that the author has mastered a solid and broad basic theory and systematic and in-depth professional knowledge in this subject. The specific requirements of the doctoral thesis are detailed in:

Shanghai Jiao Tong University's regulations on applying for PhD degree

Shanghai Jiao Tong University Ph.D., Master's Thesis Writing Guide

https://www.gs.sjtu.edu.cn/info/1140/5779.htm
https://www.gs.sjtu.edu.cn/info/1143/5801.htm

九、课程设置 Courses

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	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 Courses	GE9002	工程科技前沿专题	Selected topics in Engineering Frontiers	2	中文 in Chinese	秋季 Fall	否 No	否 No	必修 Compulsory
	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
专业基础课 Program Core Courses	AU7017	智能信息处理理论及应用	The theory and application of intelligent information processing	2	中文 in Chinese	秋季 Fall	否 No	否 No	
	AU7005	计算机视觉	Computer Vision	3	中文 in Chinese	春季 Spring	否 No	否 No	
	AU6004	高级过程控制	Advanced Process Control	2	中文 in Chinese	春季 Spring	否 No	否 No	
	AU7015	预测控制	Predictive Control	2	中文 in Chinese	春季 Spring	否 No	否 No	
	AU7006	鲁棒控制	Robust Control	2	中文 in Chinese	春季 Spring	否 No	否 No	
	AU7003	高级机器人技术	Advanced Robotics	2	中文 in Chinese	秋季 Fall	否 No	否 No	
	AU7014	信息融合	Information Fusion	2	中文 in Chinese	春季 Spring	否 No	否 No	
	AU7002	动态大系统方法	Introduction to Large Scale Dynamic Systems	2	中文 in Chinese	春季 Spring	否 No	否 No	
	AU7018H	自适应控制	Adaptive Control	2	英文 in English	秋季 Fall	否 No	否 No	
	AU7013H	线性系统理论	Linear System Theory	3	英文 in English	秋季 Fall	否 No	否 No	
	MATH6012	应用泛函分析	Functional Analysis with Application	3	中英文并行开班 in both Chinese & English	春季 Spring	否 No	否 No	

	AU7021	学习与控制中的优化	Optimization in Learning and Control	3	中文 in Chinese	秋季 Fall	否 No	否 No	
专业前沿课 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
专业选修课 Program Elective Courses	AU7012	先进工程控制导论	Introduction to Advanced Engineering Control	2	中文 in Chinese	春秋季 Spring&Fall	否 No	否 No	
任意选修课 Elective Courses									