

机械设计及理论学科(一级学科代码: 0802)学术型 硕士研究生培养方案(留学生) (Mechanical Design and Theory)

一 . 学科简介(Introduction)

上海大学机械设计及理论学科, 致力于为“一带一路”地区及全世界培养适应智能制造产业发展需要的、具有国际视野的、复合型创新人才;

Dedicated to cultivate innovative talents for "The Belt and Road" region and the world in the field of Intelligent Manufacturing with an international perspective to the development of industry.

二 . 学位标准(Degree for Require)

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。

Work of Application for the respondent of the master thesis, reviewing and defense should be strictly in accordance with the requirements of the "Interim Implementation Measures of the Regulations Concerning Academic Degrees of the People's Republic of China", as well as adopted by the Academic Degrees Committee of the degree-granting work rules and other related documents and regulations.

三 . 培养目标(Objectives)

了解中国文化; 在本门学科上掌握坚实的基础理论和系统的专门知识; 具有从事科学研究工作或独立担负专门技术工作的能力。

Understanding Chinese culture, grasp solid foundation theory and systematic expertise in this discipline, with the capable of undertaking scientific research or independently undertaking special technical work.

四 . 修业年限(Duration)

本专业修业年限2.5年, 最长年限不超过6年。

Two and half years normal and the maximum period no more than six years.

五 . 培养方向(Research Areas)

研究方向: 机械制造工艺与装备、创意展示技术与装备、数控机床及自动化装备、先进机器人技术与应用工程、光机电检测与传感技术、机电产品数字设计和分析仿真、机电产品网络化设计与制造技术、机械产品数字检测与质量控制、机电产品设计与制造过程管理、制造企业信息化及管理、包装工程技术、工业设计技术与应用、3D打印与快速模具技术、三维重构和造型技术、生物3D打印装备技术、微系统集成、先进制造工艺与刀具、人工智能+机器人技术、制造系统中的人工智能技术、人工智能+切削大数据、人工智能+精准医疗诊断、现代工业工程、润滑技术与表面工程、生物摩擦与生态润滑、电子封装与微系统集成技术、半导体光电设计、制造及装备技术、机械故障智能诊断技术、人工智能+轴承性能分析、无人系统的设计、控制, 以及应用研究、智能车辆行驶环境感知技术、人工智能+车辆控制与决策技术。

The Master Degree Program in Mechanical Design and theory focuses on:

- 1.Mechanical manufacturing technology and equipment;
- 2.Creative display technology and equipment;
- 3.Robotics-Robotic for Minimally Invasive Surgery, Serve Robot
- 4.Multi-body dynamics, manufacturing automation;
- 5.Information and management for enterprise manufacturing;
- 6.Technology and application of industrial design;
- 7.Biological 3D printing equipment technology;

8. Intelligent diagnosis technology of mechanical failure;
 9. Autonomous Mobile System;
 10. Robot Control and Modeling;
 11. Human-machine hybrid intelligent system;
 12. Rehabilitation robotics and Mechatronics and rehabilitation engineering;
 13. Safety fracture failure analysis, finite element analysis and application;
 14. Vision metrology, big Tooling data management and driverless technology;
 15. 3D optical metrology, robotic vision, and computational imaging;
 16. Intelligent sensing, environment modeling and autonomous control for unmanned mobile systems;
 17. Performance analysis of bearing;
 18. Design and control for unmanned system;
 19. Port machinery, Ocean work platform
- And so on

六 . 语言要求(Language Requirements)

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。

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 Ohter Languages before graduating.

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

研究生入学后，在导师的指导下，完成培养计划的制定，并报学院（学科）学位分委员会批准，在入学后一个月内报研究生院培养管理处。研究生的学习实行学分制，根据课程设置，应修满不少于45学分，公共课7学分，专业基础课8学分，专业选修课不少于24学分，学术研讨课2学分，创新创业课2学分，学术规范与写作课2学分。

The graduate students for Mechanical Design and Theory major should finish the required course credits that must be at least a total of 45 credits, and the credits for Disciplinary Optional Courses should be more than 24. The completion of these courses is usually within 1 to 2 years, while the additional 1.5 to 2.5 years is used to complete the dissertation research and thesis oral defense. Moreover, every student is also required to commit several presentations/lectures that are closely relevant to his/her research project, attend academic conferences/workshops for at least 20 times, which will be counted for 2 credits of this academic seminar course. Innovation and Entrepreneurship Courses need at least 2 credits. In addition, the required course credits can be added beyond the total required course credits if that is necessary in terms of your knowledge background and the research project in which you will involve.

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. Courses included in the training program must be qualified before thesis defense.

九 . 必修环节 (Compulsory courses)

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。

Graduate students are required to participate in the professional teaching practice, including the guidance of undergraduate experiment, marking the lab reports and homework to complete at least 60-70 hours of work. The practice process will be reviewed by the teachers in charge of teaching or supervisor. The graduate students are also required to attend related seminars and experts forum, and if possible, to participate in social investigation and research or technology promotion. At least one research paper published indexed by Science cited.

根据学校、学院的相关规定，对研究生的培养过程，对培养质量不达标学生实行分流淘汰管理制度。具体措施为：研究生在正式进入学位论文工作前必须要进行中期考核，中期考核一般在第二学年冬季学期前结束。中期考核实行分流淘汰制，考核的排名结果提交研究生院备案。具体按照《上海大学研究生中期考核及分流淘汰管理办法（试行）》予以执行。

According to the relevant regulations of schools and colleges, the training process for postgraduates will be implemented, and the students who fail to meet the quality standards will be subject to a shunt and elimination management system. The specific measures are: the graduate students must conduct the mid-term assessment before they officially enter the dissertation work, and the mid-term assessment generally ends before the winter semester of the second academic year. The mid-term assessment implements a shunt and elimination procedure, and the ranking results of the assessment are submitted to the graduate school for record. It will be implemented in accordance with the “Administrative Measures for the Mid-term Assessment and Distributary Elimination of Shanghai University (Trial)” .

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

本专业毕业生达到《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》者，将获得工学硕士学位证书。

Graduates who meet the requirements for innovative achievements of graduate students in school of Mechatronic Engineering and Automation, Shanghai University, will receive the degree (Master of Engineering) from Shanghai University.

十一 . 培养方式 (Training Methods)

培养方式 (Training Methods) 全日制

附表. 课程与必修环节

机械设计及理论学科攻读硕士学位研究生课程与必修环节

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	03	必修
	0LY000002	综合汉语B(Comprehensive Chinese B)	60	3.0	02	必修
	4CS000001	创业与创新(Entrepreneurship and Innovation)	20	2.0	02	必修, 创新创业课3选1
专业基础课	3XSL09107	高等工程数学(Advanced engineering mathematics)	40	4.0	03	必修
	3XSL09112	先进机械设计(Advanced Mechanical Design)	40	4.0	01	必修
专业选修课	3XS091053	先进移动机器人(Advanced in Mobile Robot)	40	4.0	01	
	3XSL09102	多体动力学(Multi-body dynamics)	40	4.0	01	
	3XSL09103	智能材料与应用(Smart material and application)	40	4.0	01	
	3XSL09104	机器人学(Robotics)	40	4.0	01	
	3XSL09105	摩擦学(TRIBOLOGY)	40	4.0	01	
	3XSL09106	现代设计过程(Modern design process)	40	4.0	01	
	3XSL09108	现代控制理论及其在机器人中的应用(Modern control theory and its application in robotics)	40	4.0	02	
	3XSL09109	微纳加工技术导论(Introduction to Micro-Nanofabrication Technology)	40	4.0	01	
	3XSL09110	先进测量科学与技术(Advanced measurement science and technology)	40	4.0	02	
	3XSL09111	几何积坐标测量(Geometric Product Coordinate Measurement)	40	4.0	02	
	3XSL09113	随机过程及可靠性工程(Stochastic process and reliability engineering)	40	4.0	02	
	3XSL09114	车辆系统动力学及其控制(Vehicle System Dynamics and Control)	40	4.0	01	
	3XSL09115	弹性力学与有限元法(Elastic Mechanics and Finite Element Method)	40	4.0	02	
	3XSL09116	机械动力学与信号处理(Mechanical dynamics and signal processing)	40	4.0	02	
学术规范与写作课	2XSL09204	学术写作(Scientific Writing)	20	2.0	01	必修
创新创业课	4XS091001	创新方法学(Innovation Methodology?)	20	2.0	01	必修, 创新创业课3选1
	4XS091003	智能制造及机器人创业指导(Entrepreneurship and innovation for Intelligent Manufacture and Robot)	20	2.0	03	必修, 创新创业课3选1

学术 研讨课	6XSL00001	学术研讨课(Academic Seminars)	20	2.0	01	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				03	须通过考核 后方可进入 下一环节
	学位论文开题				05	
	中期考核				05	
	学位论文预答辩				10	

学位委员会主席签字：

学院盖章：