

Master Degree Program in Mechanics

力学学科留学硕士研究生培养方案

Discipline code 一级学科代码: 0801

一、培养目标 Training Objectives

掌握本学科坚实宽广的基础理论和系统深入的专门知识，具备较高的学术素养、较强的原创精神、扎实的科研能力，具有独立从事科学研究工作的能力，在科学或专门技术上做出创造性成果。 To ensure that students grasp the solid and broad basic theories and systematic and in-depth specialized knowledge of their discipline. They should possess high academic attainments, strong original creativity, solid research capabilities, and the ability to independently engage in scientific research work, making creative contributions in science or specialized technology.

二、学科概况与研究方向 Discipline overview and research directions

1. 学科概况:

Discipline overview:

江苏大学力学学科是江苏大学(原镇江农机学院)起源较早并逐渐发展完善的学科之一。1981年固体力学获国家首批硕士学位授权点；1996年流体力学获批硕士学位授权点；2003年固体力学获批博士学位授权点；2005年力学获批一级学科硕士学位授权点；2012年获批力学博士后流动站；2015年工程力学本科专业恢复招生；2018年获批力学一级学科博士学位授权点。固体力学是省“十一五”重点学科，力学学科是省“十二五”一级重点学科（培育）建设点、省“十三五”一级重点学科。

The discipline of Mechanics in Jiangsu University is one of the disciplines which originated earlier and developed gradually in Jiangsu University (formerly Zhenjiang Agricultural Machinery College). In 1981, one of the first national master's degree programs was awarded for Solid Mechanics. In 1996, Fluid Mechanics was granted master's degree authorization. In 2003, Solid Mechanics was granted doctoral degree authorization. In 2005, Mechanics was approved as a master's degree authorization center of first-class discipline. In 2012, it was approved as a post-doctoral mobile station. In 2015, the undergraduate program of Engineering Mechanics resumed enrollment. In 2018, it was approved as a doctoral degree authorization center in the first-class discipline of mechanics. Solid Mechanics is a key discipline in the 11th five-year plan of Jiangsu province. Mechanics is the first-class discipline construction site in the 12th five-year plan of Jiangsu province, and the first-class discipline in the 13th five-year plan of Jiangsu province.

近年来,学科获批了国家级“高端装备关键结构健康管理”国际联合研究中心、机械工业“机械结构损伤检测评估技术”重点实验室、江苏省机械及工程结构损伤诊断与管理工程技术研究中心、江苏省振动与噪声技术工程实验室、江苏省工程力学实验教学示范中心等国家、省部级机构,拥有开展高水平科学研究所需的各种软件和硬件设备。

Recently, the discipline of Mechanics has been approved several national and provincial institutions, such as the national "high-end equipment key structural health management" international joint research center, mechanical industry "mechanical structural damage detection evaluation technology" key laboratory, Jiangsu machinery and engineering structural damage diagnosis and management of engineering technology research center, Jiangsu provincial technical engineering laboratory of vibration and noise, Jiangsu provincial teaching demonstration center of engineering mechanics experiment, etc. There are a variety of software and hardware equipment necessary for high level scientific research.

学科师资力量雄厚,现有 77 名专业技术人员,其中博导 20 人,教授 25 人,副教授 36 人,具有博士学位的占 86%,具有海外留学经历的占 60%。拥有机械工业科技创新领军人才及江苏省首届创新争先奖状获得者 1 人、江苏省“双创人才”2 人、江苏特聘教授 1 人、江苏省“333 高层次人才培养工程”3 人、江苏省“青蓝工程”学术带头人及优秀青年学术骨干 6 人,江苏省“六大人才高峰”培养对象 7 人,江苏省“双创博士”12 人,江苏大学校创新团队 1 个。

The discipline of Mechanics boasts robust faculty support. Currently, there are 65 specialized professionals, which include 20 doctoral advisors, 30 full professors, and 18 associate professors. A total of 86% possess doctoral qualifications, and 60% have had international academic experiences. One faculty member has been honored with the titles of "machinery industry science and technology innovation talents" and "the first innovation awards of Jiangsu province". Two faculty members have received the "talents for entrepreneurship and innovation in Jiangsu province" accolade. One faculty member holds the prestigious position of a distinguished professor of Jiangsu province. Three faculty members are part of the "333 high-level personnel training project". Six faculty members have been recognized as academic leaders and outstanding young academic backbones in the "qinglan project". Seven faculty members have undergone training in the "six big talent peak" project of Jiangsu province. Twelve faculty members have been designated as "innovation and entrepreneurial doctors of Jiangsu province". One research team has been bestowed with the title of "innovation team of Jiangsu University".

近年来,学科主持承担国家自然科学基金、国防预研、省部级等政府项目近 70 项,横向项

目 2000 余项。发表学术期刊论文 220 篇，其中 SCI 检索 164 余篇，出版专著和教材 3 部。授权发明专利 84 项，获国家级、省部级科技奖励 14 项。学科在人才培养、科学研究和社会服务方面成果丰富，经济效益和社会效益显著，在国内力学领域享有较高的声誉。

For the past few years, the discipline has undertaken nearly 70 government projects, including the national natural science foundation of China, national defense pre-research, and various of provincial and ministerial projects. Besides, more than 2,000 horizontal projects have been proceeded. Over 220 academic journal papers and 3 monographs and textbooks have been published, of which 164 have been indexed by SCI. 84 authorized invention patents and 14 national and provincial science and technology awards have been won. The discipline has made rich achievements in talent cultivation, scientific research and social services, and enjoys a high reputation in the field of mechanics in China for its remarkable economic and social benefits.

2. 研究方向:

1. 动力学与控制
2. 力与多物理场耦合理论及跨尺度力学
3. 工程中的多相流与复杂流动
4. 工程结构中的关键力学问题

Research direction:

1. Dynamics and control
2. Coupling theory of force and multiple physical fields as well as cross-scale mechanics
3. Multi-phase flow and complex flow in engineering
4. Key mechanical problems in engineering structure

三、学习年限 Duration of Study

全日制学术型力学硕士研究生的学习年限一般为三年，不允许提前毕业。在职学术型力学硕士研究生的学习年限一般为四年。如确有必要可申请延长，最长不超过五年，详见《江苏大学来华留学研究生学籍管理办法》江大校〔2021〕300 号）。

The normal program length for full-time Master degree is 3 years, and it is not allowed to graduate in advance. In general, the length of study of in-service academic master of mechanics is four years. If necessary, the extension can be applied for up to 5 years. For detailed information, please refer to the "Regulations on the Academic Status Management of International Graduate Students at Jiangsu University" (Jiangda Xiao [2021] No. 300).

四、课程要求 Course Requirements

1. 学分要求 Credit Requirements

(1) 研究生课程学习实行学分制，每门课程 1~3 学分，每个学分为 16-20 学时。The graduate

student curriculum operates on a credit system, with each course carrying 1 to 3 credits, and each credit equivalent to 16-20 class hours.

(2) 课程总学分不低于 26 学分，其中学位课不少于 14 学分，选修课不少于 12 学分（专业选修课不低 10 学分，公共选修课不低于 1 门）。The total course credits should not be less than 26 credits, with degree course credits not less than 14 credits and elective course credits not less than 12 credits (no less than 10 credits for professional elective courses and no less than 1 public elective course) .

2. 课程设置 Curriculum Design

课程类别 Course types		课程名称 Course name	学分 credits	学期 semester Spring/ Autumn	开课单位 school	课程性质 Type	备注 Mandatory/optional
学位课 Degree course	公共学位课 Public degree course	中国概况 Overview of China	3	Spring/Autumn	海外教育学院 OEC		必修 Mandatory
		汉语 I	1	Spring/Autumn	语言文化中心 Language &		
		汉语 II	1.5	Spring/Autumn	语言文化中心 Language &		
		汉语 III	1.5	Spring/Autumn	语言文化中心 Language &		
	基础理论课 Basic Theory Course	Mathematical Physics Equations 数学物理方程	2	Autumn 秋学期	School of Mathematical Sciences	English taught course	任选 Optional
		Numerical Analysis 数值分析	2	Autumn 秋学期	School of Mathematical Sciences	English taught course	
		Mathematical Statistics 数理统计	2	Autumn 秋学期	School of Finance &Economics	bilingual course 双语课程	
		The Theory of Matrices 矩阵论	2	Autumn 秋学期	School of Mathematical Sciences 数学科学学院	English taught course 全英文课	

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课程类别 Course types		课程名称 Course name	学分 credits	学期 semester Spring/ Autumn	开课单位 school	课程性质 Type	备注 Mandatory/optional
		Viscous Fluid Mechanics 粘性流体力学	2	Autumn 秋学期	School of Energy and Power Engineering	English taught course 全英文课	
	核心专业学位课 Core Specialized Degree	Fundamentals of professional mechanics 专业力学基础	3	Autumn 秋学期	Faculty of Civil Engineering and Mechanics 土木与力学学院	bilingual course 双语课程 Experimental Course	必修 Mandatory
非学位课 Non-degree course	专业选修课 Major optional courses	Computational Mechanics 计算力学	2	Spring 春学期	Faculty of Civil Engineering and Mechanics 土木与力学学院	bilingual course 双语课程	任选 Optional
		Fundamentals of Micro/nanomechanics 微纳米力学基础	2	Spring 春学期	Faculty of Civil Engineering and Mechanics 土木与力学学院	bilingual course 双语课程	
		Smart Material and Structure System 智能材料结构系统	2	Spring 春学期	Faculty of Civil Engineering and Mechanics 土木与力学学院	bilingual course 双语课程	
		Non-destructive Examination Technique of Civil Building Structures 工程结构无损检测	2	Spring 春学期	Faculty of Civil Engineering and Mechanics 土木与力学学院	bilingual course 双语课程	

课程类别 Course types		课程名称 Course name	学分 credits	学期 semester Spring/ Autumn	开课单位 school	课程性 质 Type	备注 Mandatory/optional
		Vibration theory 振动理论	2	Spring 春学期	Faculty of Civil Engineering and Mechanics 土木与力学学 院	English taught course 全英文课 程	
		Mechanics of compos ite materials 复合材料力学	2	Spring 春学期	Faculty of Civil Engineering and Mechanics 土木与力学学 院	English taught course 全英文课 程	
	公共选修课 Public optional courses	全校所有学科的全部硕士研究生课程，主要为哲学、文学、计算机应用、实验操作与技能、实验安全、知识产权、科学道德、论文写作、信息检索、科技文化、心理健康等工具类和宽口径课程 All master level programs in university , including philosophy, literature, computer applications, experimental operations and skills, experimental safety, intellectual property rights, scientific ethics, essay writing, information retrieval, science and technology, culture, mental health, and other general courses.					任选 Optional

五、实践要求 Practical Requirements

1. 学术活动 Academic Activities

硕士研究生须参加学校组织的国内外知名专家学者的专题讲座、学术报告、研究生论坛等学术活动，参加学术活动后必须形成完整的学术报告。在学期间，硕士生应参加学术活动不少于 15 次。

Master students must participate in academic activities organized by the university, such as special lectures, academic reports, and graduate forums featuring renowned experts and scholars from home and abroad. After attending these activities, students must produce comprehensive academic reports. During their academic period, master students should participate in no fewer than 15 academic activities.

2. 文献阅读 Literature Review

各学科应制定出本学科经典名著的阅读指南并对研究生明确一定数量的文献阅读要求，培养研究生钻研学术文献的能力和自我获取知识的能力。

Each discipline should develop a reading guide for classic works in the field and set clear requirements for graduate students to read a certain number of academic publications, thereby cultivating their ability to delve into academic literature and acquire knowledge independently.

3. 专题研讨 Seminars

研究生在学期间必须在学科范围内公开进行文献研读交流、学术研究进展汇报和专题研讨汇报，硕士生不得少于 4 次，鼓励研究生跨学科研讨。专题研讨由导师审核认定。

Graduate students must publicly conduct literature review exchanges, research progress reports, and special topic discussion reports within their discipline during their academic period. Master's students must participate in no fewer than four such activities. Interdisciplinary discussions are encouraged. Special topic discussions are reviewed and approved by the supervisor.

4. 专业实践 Professional Practice

学硕在校期间必须进行不少于 1 个月时间的实践环节（一般包括教学实践、生产实践和社会调查等）。各学科应根据学科特点在培养方案中对实践环节做出明确的规定，并制定相应的考核办法。

Academic master's students must complete a practical training period of no less than one month during their school years (typically including teaching practice, production practice, and social surveys). Each discipline should specify the practical training component in its training program based on discipline characteristics and formulate corresponding assessment methods.

六、学位论文与学位授予 Dissertation and Degree Awarding

1. 论文开题 Dissertation Proposal

开题是研究生培养过程中开展学位论文工作的首要环节，研究生学位论文实行集体开题，由学科方向统一组织，论文开题必须经导师审核同意方可进行。硕士生学位论文开题报告审核通过 8 个月后方可申请送审答辩，具体要求详见《江苏大学研究生学位论文选题与开题的要求及考核办法》。The dissertation proposal is the first crucial step in the process of writing a dissertation for graduate students. The dissertation proposal is presented collectively and organized by the discipline. It must be reviewed and approved by the supervisor before proceeding. Master's students can apply for submission and defense eight months after their dissertation proposal has

been approved. Detailed requirements are outlined in the "Requirements and Assessment Methods for Dissertation Topic Selection and Proposal at Jiangsu University."

2. 科研训练与科研成果 Research Training and Achievements

研究生在学期间须参与科研训练，并获得一定的科研训练成果积分，具体要求详见《江苏大学关于研究生在读期间完成科研训练积分的规定》和各单位学位评定分委员会提出的高于学校标准的相关要求。Graduate students must participate in research training during their academic period and obtain a certain number of research training points. Detailed requirements are outlined in the "Regulations on Completing Research Training Points for Graduate Students at Jiangsu University" and relevant requirements proposed by the Degree Evaluation Subcommittees of each unit that exceed the school's standards.

3. 中期汇报 Mid-term Report

研究生在学位论文工作中中期应作中期汇报。具体办法为：由所在学院指定负责人组织不少于3名副高及以上职称的专家组成考核小组（包括主导师），举行公开报告会，由研究生对论文工作情况进行全面介绍，考核小组成员指出存在的问题，并提出改进意见。报告会需做好详细记录，考核小组针对研究生中期研究工作的情况给出评语和成绩，填写考核表，经考核小组负责人签字后交学院主管院长审核。中期汇报不通过者应明确论文工作延长时间，并再次组织中期汇报，直至通过。Graduate students should present a mid-term report during the middle stage of their dissertation work. The specific method is as follows: The college where the student is enrolled will appoint a responsible person to organize an assessment panel consisting of no fewer than three experts with associate senior or higher titles (including the primary supervisor) to hold a public report meeting. The graduate student will comprehensively introduce the progress of their dissertation work, and the assessment panel members will point out existing problems and suggest improvements. Detailed records of the report meeting should be kept. The assessment panel will provide comments and grades based on the student's mid-term research work, fill out the assessment form, and submit it to the dean in charge of the college for review after being signed by the panel leader. Students who fail the mid-term report should be given an extended period to complete their dissertation work and be required to present another mid-term report until they pass.

4. 论文撰写 Dissertation Writing

学位论文必须在导师指导下由研究生本人独立完成，论文格式参见《江苏大学研究生学位论文撰写要求》。The dissertation must be independently completed by the graduate student under the guidance of their supervisor. The format of the dissertation is detailed in the "Dissertation Writing Requirements for Graduate Students at Jiangsu University."

5.论文评阅与答辩 Dissertation Review and Defense

研究生的课程学习、培养环节、论文开题和中期汇报等均满足要求后方可进入学位论文送审、答辩（含预答辩）环节。学位论文送审、答辩等要求详见《江苏大学学位授予工作实施细则》和《江苏大学研究生学位论文送审工作办法》等相关规定。Graduate students can enter the stages of dissertation submission and defense (including pre-defense) only after their course studies, training sessions, dissertation proposal, and mid-term report have met all requirements. Detailed requirements for dissertation submission and defense are outlined in the "Detailed Rules for Degree Awarding at Jiangsu University" and the "Regulations on Dissertation Submission for Graduate Students at Jiangsu University," among other relevant provisions.

七、其他要求 Other Requirements

详见《江苏大学2020年度研究生培养方案修(制)订工作的指导意见》及学校相关规定。

For details, please refer to the "Guidelines for 2020 Graduate Training Program Revision (Formulation) of Jiangsu University" and to the relevant school regulations.