环境科学与工程 学科硕士研究生培养方案

Master's degree program in Environmental Science and Engineering

一级学科代码 ：0830

Discipline code:0830

一、学科概况与研究方向

Discipline overview and research direction

1. 学科概况

我校环境科学与工程学科 2011 年获批一级学科博士点，2012 年获批环境科学与工程一级学科博士后科研流动站，也是一级学科硕士点。本学科走科学与工程相结合、理论与应用相结合、科学研究与成果转化相结合的科研之路，积极将环境科学、环境工程、化学化工、生命科学（生态学、毒理学、植物学、微生物学、生物技术）、工程科学（生物工程、机械工程、农业工程），资源可再生利用等学科领域交叉融合，开展了一系列的科学基础理论与应用技术研究，取得了快速发展。本学科目前有博士生导师 49 人，硕士生导师 74 人，江苏省科技创新团队 2 个，形成了一支学术水平较高、层次合理的以中青年为主的师资队伍。

The Environmental Science and Engineering has been approved as the first-level doctoral program in 2011 and the first-level post-doctoral research center as well as the first-level master program in 2012. This discipline takes the road that scientific research combining science with engineering, combining theory with application, combining scientific research with achievement transformation, thus integrating multiple interdisciplinary subjects such as environmental science, environmental engineering, chemical engineering, life science (ecology, toxicology, botany, Microbiology, biotechnology), engineering sciences (bioengineering, mechanical engineering, agricultural engineering), resource recyclability and other disciplines together as a whole, finally a series of scientific basic theory and applied technology research have been carried out and achieved rapid development. Until now there are 49 doctoral tutors, 74 master tutors, and 2 Jiangsu Science &Technology Innovation Teams in this discipline, forming a high academic level and reasonable young middle-aged teaching team.

2. 研究方向

（1）水污染控制技术 Water pollution control technology

（2）大气污染控制技术 Air pollution control technology

（3）环境生态修复技术 Environmental ecological restoration technology

（4）农业环境保护工程 Agricultural Environmental Protection Engineering

（5）污染控制工程及设备 Pollution control engineering and equipment

（6）生物质资源及废弃物利用 Biomass resources and waste utilization

（7）环境污染与健康 Environmental pollution and health

（8）环境分析检测技术 Environmental analysis and detection technology

二、培养目标

Training objectives

1. 遵纪守法，品行端正，学风严谨，团结协作，具有较强的事业心和开拓进取精神。具备包容、认知和适应文化多样性的意识、知识、态度和技能，能够在不同民族、社会和国家之间的相互尊重、理解和团结中发挥作用。

Students should abide by discipline and law, and have good conduct as well as rigorous academic style, and can cooperate well with other people with a strong sense of enterprise and pioneering spirit. Meanwhile, students should have awareness, knowledge, attitudes and skills for tolerance, recognition and adaptation to cultural diversity, which could play important roles in mutual respect, understanding and solidarity among different peoples, societies and countries.

2. 具有坚实的环境科学与工程方面的基础理论和系统的专门知识，特别是环境化学、环境生物学、环境生态学、污染物处理技术、生态修复技术、污染控制工程及设备等专业和方向的基础理论和实验技能；具有一定从事科学研究或独立担负专门技术工作的能力，在科学或专门技术上有新见解。掌握一门外国语，具有一定的国际视野和应用外语开展学术研究和学术交流的能力。

Students should possess solid basic theory and systematic expertise as well as experimental skills of environmental science and engineering, especially in the fields of environmental chemistry, environmental biology, environmental ecology, pollution reatment technology, ecological restoration technology, pollution control engineering and equipment etc; has the ability to engage

in scientific research or undertake specialized technical work independently or has new ideas on science or the specific technology. Meanwhile, students should master a kind of foreign language and have a certain international vision to use foreign language to carry out academic research or academic communication.

3. 身心健康，能完成学习任务和胜任所担负的工作。

Students with both physical and mental health could complete the task of learning and your own research work.

三、培养方式及学习年限

Training modes and the duration of study

1. 学习年限 The length of study

学术型留学硕士研究生的学习年限一般为三年，如确有必要可申请延长，延长期一般不超过一年。原则上不允许提前毕业。学术型留学硕士研究生二年半提前毕业，应达到较高的学术成就，在满足学校关于正常学制发表学术论文与获得科研成果的基本要求上，须增加一篇第一作者 SCI 或 EI 收录论文。

The length of study for academic-based overseas graduate students is generally three years. If necessary, you can apply for an extension, which is generally no more than one year. In principle, early graduation is not allowed.Academic-based overseas graduate students should achieve higher academic achievement to graduate in two and a half years. A paper by the first author SCI or EI must be added based on the basic requirements for publishing academic papers and obtaining scientific research results of normal study duration.

2. 培养方式

研究生培养实行导师负责制，鼓励实行导师领导下的指导小组负责制，指导研究生培养的全过程。导师（指导小组）不仅负责制订研究生培养计划，指导科学研究、专业实践和学位论文等工作，而且对研究生的思想品德、学术道德有引导、示范和监督的责任。

Graduate students training implements the tutor responsibility system and encourages the implementation of the guidance group responsibility system to guide the entire process of graduate training. The tutor (guidance group) is not only responsible for formulating the graduate training plan, guiding scientific research, professional practice and dissertation, but also has the responsibility of guiding, demonstrating and supervising the ideological and moral qualities as well as academic ethics of graduate students.

四、课程学分

Course credits

1、学分要求

Credit requirements

课程总学分不低于 28 学分，其中学位课不少于 14 学分，选修课不少于 14 学分。

The total credits of the course shall be no less than 28 credits, including no less than 14 credits for degree courses and no less than 14 credits for elective courses.

2、课程设置

Curriculum

Course Category 课程类别		**Course Name 课程名称**	**Credit 学分**	**Term 学期 (Spring/ Autumn)**	**School by which Courses opened 开课学院**	**type of the course 课程性质**	**Remark 备注**
Degree courses 学位课	**Public degree course 公共学位课**	Integrated Chinese Ⅰ 综合汉语Ⅰ	1.5	Autumn 秋学期	Language & Culture Center 语言文化中心		Compulsory 必修
		Integrated Chinese Ⅱ 综合汉语Ⅱ	2.5	Spring 春学期	Language & Culture Center 语言文化中心		
		Overview of China 中国文化概论	3	Autumn 秋学期	OEC 海外教育学院		
	Basic Theory Course 基础理论课	Mathematical Statistics 数理统计	2	Autumn 秋学期	School of Finance & Economics 财经学院		At least 2 credits 至少 2 学分
		Numerical Analysis 数值分析	2	Autumn 秋学期	School of Mathematical Sciences 数学科学学院		
		The Theory of Matrices 矩阵论	2	Autumn 秋学期	School of Mathematical Sciences 数学科学学院		
		Advanced Environmental Chemistry 高等环境化学	2	Autumn 秋学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	At least 2 credits 至少 2 学分

		Advanced Environmental Biology 高等环境生物学	2	Autumn 秋学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
	Core Specialized Degree Courses 核心专业学位课	Introduction of modern environmental engineering 现代环境工程概论	3	Autumn 秋学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	At least 3 credits 至少 3 学分
Non-degree course 非学位课	**Specialized Elective Courses 专业选修课**	Frontiers of environmental science & engineering 环境科学与工程学科前沿讲座	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course/ cutting-edge lecture 全英文/前沿讲座	Optional 任选 At least 12 credits 至少 12 学分
		Experiments of environmental safety testing and analysis 环境安全检测与分析实验	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course/ experiment platform 全英文/实验平台	
		Environmental Ecology 环境生态学	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	

		Molecular Environmental Biology 环境分子生物学	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
		Advance in environmental pollution control 环境污染控制进展	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
		Environmental Biotechnology 环境生物技术	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
		Ecological Restoration Technology 生态修复技术	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
		Advanced Enzymology 高级酶学	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
		Environmental toxicology 环境毒理学	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
		Environmental ethics 环境伦理学	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	

		Academic Proposal and Presentation 论文开题与报告	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
		Development and Utilization of Energy Plants 能源植物开发与利用	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
	Public Elective Courses 公共选修课	All graduate programs in all disciplines throughout the school 全校所有学科的全部研究生课程					Optional 任选 At least 1 credits 至少 1 学分

Note: Please specify the type of the course { English taught course, bilingual course, cutting-edge lecture or experimental course} 课程性质中请明确是全英文课程、双语课程、前沿讲座或实验平台课程等

五、拓展学分要求

Extended credit requirements

无要求。

No.

六、实践学分要求

Practice credit requirements

研究生在学期间必须参与的学术活动和必修环节同样采取学分制，统称为实践学分。实践学分和课程学分不得通用，研究生的课程学分和实践学分均满足要求后方可进入学位论文送审答辩环节。学术型硕士研究生总实践学分应至少达到 8 学分。

Graduate students must participate the academic activities and compulsory parts during the course, also adopt the credit system, which is collectively known as practical credits. Practical credits and course credits are not generic, thus both course credits and practical credits of

graduate student should meet the requirements before entering the thesis defense. The total practical credits for academic graduate students should reach at least 8 credits.

1. 学术活动（2 学分）Academic activities (2 credits)

研究生必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、研究生论坛等学术研讨活动，参加学术研讨活动后必须形成完整的学术报告。硕士研究生在读期间应参加 10 次以上学术报告活动。学术活动由学科或导师负责考核。

Graduate students must participate in academic seminars organized by the school, include special lectures, academic reports, graduate forums attended by domestic and foreign well-known experts and scholars. After participating in academic seminars, a complete academic report must be formed. Graduate students should participate in more than 10 academic report activities during their study period. Academic activities are assessed by disciplines or tutors.

同时，为拓宽研究生的学术视野，学校鼓励研究生在学期间参加国际会议或全国性高层次学术会议并在大会上进行学术论文墙报展示或口头报告。研究生在国际会议或全国性高层次学术会议上进行学术论文墙报展示或口头报告者可视同其学术活动环节合格。

At the same time, in order to broaden the academic horizons of graduate students, school encourages graduate students to participate in international conferences or national high-level academic conferences during the school period and display academic papers or oral reports at the conference. Graduate students display academic thesis posters or oral presentations at international conferences or national high-level academic conferences can be regarded as qualified for their academic activities.

2. 文献阅读（2 学分）Literature reading (2 credits)

硕士研究生必须阅读一定数量的中外文文献，以培养研究生钻研学术文献的能力和自我获取知识的能力。硕士研究生要求必须翻译二万汉字以上的专业外文资料或论著。文献阅读在学位论文开题前由导师考核并记录成绩，不合格者不得进入学位论文开题环节。

Graduate students must read a certain amount of chinese and foreign language literature in order to cultivate the ability of studying academic literature and acquiring knowledge by themselves. Graduate students must translate professional foreign-language materials or works of more than

20,000 chinese characters. Literature reading will be evaluated and recorded by the tutor before the dissertation begins, and unqualified students are not allowed to enter the thesis opening session of the degree thesis.

3. 专题研讨（1 学分/次）Seminar (1 credit/time)

硕士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，不得少于 2 次，鼓励硕士研究生跨学科研讨。专题研讨由导师审核认定。

During the period of school, graduate students must conduct literature, academic research progress reports and special seminar reports publicly, no less than 2 times, and interdisciplinary research discussions are encouraged. Special seminars are evaluated and determined by the tutor.

4. 实践环节（1学分）Practice session (1 credit)

学术型硕士研究生（在职人员除外）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）。鼓励研究生协助导师指导本科生毕业设计（论文）或担任本科生教学助理，原则上每位硕士生在学期间协助导师指导1名本科生或担任本科生一门课程的教学助理。实践环节由导师负责考核。

Academic-type graduate students (except for in-service staff) must carry out practical parts which not less than 1 month (usually including teaching practice, production practice and social survey, etc.). Graduate students are encouraged to assist tutors with guiding undergraduates' graduation design (thesis) or as undergraduate teaching assistants. In principle, each graduate student assists the tutor with guiding one undergraduate student or serving as a teaching assistant in a course for undergraduates. The tutor is responsible for the assessment of practice.

七、学位论文与学位授予

Dissertation and degree requirements

1. 论文开题 The opening session of thesis

开题是硕士研究生培养过程中开展学位论文工作的首要环节。硕士研究生在撰写学位论文之前，必须经过认真的调查研究，查阅大量的文献资料尤其是外文文献，了解本人主攻研究方向的历史和现状，在此基础上确定学位论文研究题目，并作论文开题报告。开题报告应论述学位论文选题依据、研究方案、预期目标与科研成果、工作计划等关键问题。

The opening session of thesis is the first step in the process of cultivating graduate students and their degree thesis work. Before writing degree thesis, graduate students must go through a serious investigation and research, check a large amount of literature, especially foreign language literature, understand the history and current status of their main research direction, and on this basis determine the research topic of the degree thesis and make a thesis opening report. The opening report should discuss the key issues such as the basis of thesis selection, the plan of research, expected goals , scientific research results and work plan.

硕士研究生学位论文开题报告审核通过一年（至少 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（暂行）》（江大研字（2018）09 号）。

Only the graduation thesis in which the thesis opening report already passing one year (at least 8 months) is allowed to apply for thesis defense. For specific requirements, please refer to Requirements and Assessment Methods for the Topic Selection and Opening of Postgraduate Dissertation of Jiangsu University (Provisional).

2. 完成完整的科研训练与获得相应的科研成果 Accomplish complete scientific research training and obtain corresponding scientific research achievements

硕士研究生在学期间必须参与完整的科研训练全过程，获取一定的科研成果，具体要求详见《江苏大学关于研究生在学期间必须完成完整的科研训练与获得相应科研成果的规定》。

Graduate students must participate in the entire process of scientific research training and obtain certain scientific research results. For specific requirements, please refer to the Regulations on Scientific Research Achievements of Postgraduates in Jiangsu University.

3. 论文撰写 Ddissertation 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格式要求》。

The dissertation must be completed independently by the graduate student under the guidance of the tutor. For the format of the dissertation, please refer to Requirements for Writing Format of Graduate Thesis of Jiangsu University.

4. 论文评阅与答辩Ddissertation review and defense

硕士研究生的课程学分、拓展学分和实践学分均满足要求后方可进入学位论文送审、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“盲审”工作办法》等相关规定。

The course credits, expansion credits and practical credits of graduate students must achieve the requirements before entering the dissertation review and defense. The requirements for the submission and defense of degree thesis are detailed in the Rules for the Implementation of Degree Awarding in Jiangsu University and The Work Method of Blind Examination for postgraduate Thesis of Jiangsu University.

八、其他要求

Other Requirements

环境科学与工程留学硕士研究生应具有终身学习的能力，具体要求详见《江苏大学2020年度研究生培养方案修(制)订工作的指导意见（暂行）》。

The graduate students which studying in environmental science and engineering should have the ability of lifelong learning. For specific requirements, please refer to the Guidance on the Preparation of 2020 Postgraduate Training Program of Jiangsu University (Provisional).

附、需阅读的主要经典著作和专业学术期刊目录

Appendix: Catalogue of professional journals to be read

1．Environmental Science & Technology

2．Energy & Environmental Science

3．Ecology Letters

4．Frontiers in Ecology and the Environment

5．Environmental Health Perspectives

6．Advances in Ecological Research

7．Environmental Microbiology

8．Journal of Ecology

9．Environment International

10．Renewable & Sustainable Energy Reviews

11．Water Research

12．Journal of Toxicology and Environmental Health-Part B-Critical Reviews

13．Annual Review of Environment and Resources

14．Environmental Research Letters

15．Environmental Research

16. Environmental Pollution
17. Reviews of Environmental Contamination and Toxicology
18. Water Resources Research
19. Science of the Total Environment
20. Journal of Environmental Management
21. Environmental Chemistry
22. Environmental Toxicology and Chemistry
23. Environmental Science and Pollution Research
24. Environmental Health
25. Environmental Toxicology
26. Ecotoxicology and Environmental Safety
27. International Journal of Environmental Science and Technology
28. Applied and Environmental Microbiology
29. Critical Reviews in Environmental Science and Technology
30. Ecology
31. Frontiers in Ecology and the Environment
32. Archives of Toxicology
33. Analytical Chemistry
34. Microbial Ecology
35. Biotechnology for Biofuels
36. Journal of Materials Chemistry C
37. Journal of Environmental Sciences-China
38. Environmental Science & Technology Letters
39. Journal of Membrane Science
40. Bioresource Technology
41. Journal of Hazardous Materials
42. Soil Biology & Biochemistry
43. Biosensors and Bioelectronics
44. Resources Conservation & Recycling
45. Ecological Engineering
46. Environmental Sciences and Ecotechnology