

环境科学与工程 学科博士研究生培养方案

Ph.D. 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 directions

1. 学科概况

Discipline overview

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。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, 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。

Environmental Science and Engineering was approved as a doctoral program of first-class discipline in 2011, a center for post-doctoral studies of first-class discipline in 2012. The discipline takes the road of scientific research that combines science and engineering, theory and application, scientific research and achievement transformation. Environmental science, environmental engineering, chemistry and chemical engineering, life science (ecology, toxicology, botany, microbiology and biotechnology), engineering science (biological engineering, mechanical engineering, agricultural engineering), renewable resources and other disciplines are actively integrated. A series of scientific basic theory and applied technology research have been carried out and made rapid development. At present, the discipline has 49 doctoral supervisors and 2 science and technology innovation teams of Jiangsu Province, forming a teaching team with a high academic level and a reasonable level, mainly composed of young and middle-aged teachers.

2. 研究方向

Research directions

- (1) 环境污染与健康
- (2) 环境治理工程及装备
- (3) 环境生态与农业环境保护
- (4) 污染控制理论与技术
- (5) 生物环保与农业资源利用
- (6) 环保新材料及其应用

- (1)Environmental Pollution and Health
- (2)Environmental control engineering and equipment
- (3)Environmental ecology and agricultural environmental protection
- (4)Theory and technology of pollution control
- (5)Biological environmental protection and utilization of agricultural resources
- (6)Environmental protection new material and its application

二、培养目标

Training objectives

1. 具有严谨求实的科学态度、工作作风和高尚的职业道德，德、智、体全面发展；
1. With a rigorous and realistic scientific attitude and style of work, a strong professional ethics and an all-round development of moral, intellectual and physical level;
2. 具有坚实宽广的环境科学、环境工程的理论基础和系统深入的专业知识；深入了解学科的发展方向及国际学术前沿，具有独立从事科学研究的能力，有严谨求实的科学态度和作风，在环境科学与工程中的某一理论或实践方面取得有创造性的研究成果。至少熟练掌握一门外语，具有较广的国际视野和熟练进行国际学术交流的能力。
2. With solid and broad theoretical foundation of environmental science and environmental engineering and systematic in-depth professional knowledge; To have an in-depth understanding of the development direction of the discipline and the international academic frontier; To have the ability to independently engage in scientific research, rigorous and realistic scientific attitude and style; To get creative research results in theoretical or practical aspects of environmental science and engineering; To be proficient in at least one foreign language with a broad international perspective and the ability to be proficient in international academic exchanges.
3. 身心健康，能完成学习任务和胜任所担负的工作。
3. To be physically and mentally healthy and can complete the task of learning and research work.

三、培养方式及学习年限

Training mode and the duration of study

1. 学习年限

Duration of study

全日制博士研究生学习年限一般为四年，最长不超过六年。原则上不允许提前毕业。博士研究生三年或三年半毕业，应达到较高的学术成就，在满足学校正常学制发表学术论文与获得科研成果的基本要求上，须增加一篇影响因子大于等于 1.5 的 SCI 收录论文。

The length of study for full-time doctoral students is generally four years, and the longest is no more than six years. In principle, early graduation is not allowed. Doctoral candidates should achieve higher academic achievement to graduate in three or three and a half years. One SCI paper with an impact factor of 1.5 or

greater 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

Training mode

博士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。

The tutor responsibility system is implemented in the training of doctoral students. The guidance group responsibility system under the leadership of the tutor is encouraged. The tutor or guidance group instructs the whole process of postgraduate training. The tutor (guidance group) is not only responsible for formulating postgraduate training plan, guiding scientific research, professional practice and academic thesis, but also has the responsibility of guiding, demonstrating and supervising the ideology and morality, academic ethics of graduate students.

四、课程学分

Course credits

1. 学分要求

Credit requirements

博士研究生课程总学分不低于 15 学分，其中学位课不少于 10 学分。

The total credits of the course shall be no less than 15 credits, including no less than 10 credits for degree 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	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	Spring 春学期	Language & Culture Center 语言文化中心		
		Overview of China 中国文化概论	2	Autumn 秋学期	OEC 海外教育学院		

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
Basic Theory Course 基础理论课	Theory and Application of Functional Analysis 泛函分析理论及应用	2	Autumn 秋学期	School of Mathematical Sciences 数学科学学院		At least 2 credits 至少 2 学分
	Mathematical models and applications 数学模型及应用	2	Autumn 秋学期	School of Mathematical Sciences 数学科学学院		
	Theory of random processes 随机过程理论	2	Autumn 秋学期	School of Mathematical Sciences 数学科学学院		
	Modern environmental Microbiology 现代环境微生物学	3	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	Modern environmental chemistry and analysis techniques 现代环境化学与分析技术	3	Autumn 秋学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	Compulsory 必修
Non-degree course 非学位课	Lectures on environmental Science and Engineering 环境科学与工程前沿讲座	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	Compulsory 必修
	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	

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
	Higher environmental ecology 高等环境生态学	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	Optional 任选
	Progress in pollution control technology 污染控制技术进展	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
	Progress in biological resources and Bioengineering 生物资源与生物工程进展	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	
	Modern instrumental analysis experiments 现代仪器分析实验	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 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	
	Advanced biotechnology 高级生物技术	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	
	Environmental remediation technology 环境修复技术	2	Spring 春学期	School of the Environment and Safety Engineering 环安学院	English taught course 全英文	

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
		Advanced oxidation technology 高级氧化技术	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	
	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					

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、实践学分要求

Practice credit requirements

博士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，博士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。博士生总实践学分至少应达到 10 学分。

The academic activities and required courses that doctoral students must take part in during their study period adopt the credit system, which is collectively referred to as practice credits. Practice credits and course credits shall not be used universally, and postgraduates can only enter the stage of dissertation submission for examination and defense if their course credits and practice credits meet the requirements. The practice credits must complete at least 10 credits.

1、学术活动（2 学分）

博士生必须参加学校组织的“学术道德规范讲座”和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。博士研究生在学期间应参加 15 次以上学术报告活动，学术活动由学科或导师负责考核。

为拓宽博士研究生的学术视野，鼓励博士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宣读本人的学术论文和交流发言。研究生在国际会议或全国性高层次学术会议上宣读学术论文者可视同其学术活动环节合格。

1. Academic activities (2 credits)

During the period of study, doctoral students must attend more than 15 academic seminars organized by the university, such as "lectures on academic ethics" and special lectures, academic reports and graduate student forums by well-known experts and scholars at home and abroad, and complete academic reports must be formed after participating in the academic seminars. Academic activities are assessed by discipline or tutors.

Postgraduate students are encouraged to participate in international conferences or national high-level academic conferences during their studies, read out academic papers and exchange speeches. Doctoral students who read out academic papers and exchange speeches at international conferences or national high-level academic conferences shall be regarded as qualified in academic activities.

2、文献阅读（2 学分）

博士研究生必须阅读一定数量的文献，以培养其钻研学术文献的能力和自我获取知识的能力。博士研究生须阅读不少于 20 篇有关文献，并撰写一篇文献综述。文献阅读于学位论文开题前由学科组织专家小组统一考核并记录成绩，不合格者不得进入学位论文开题环节。

2. Literature reading (2 credits)

Doctoral students must read a certain amount of literature in order to develop their ability to delve into academic literature and acquire knowledge on their own. Doctoral candidates are required to read at least 20 literatures and write a literature review. Before thesis proposal, the discipline will organize an expert group to assess literature reading and record the results. Those who fail are not allowed to enter the dissertation opening stage.

3、专题研讨（4 学分）

博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 4 次，鼓励博士研究生跨学科研讨。专题研讨由导师审核认定。

3. Seminar (4 credits)

During the period of study, the doctoral students must conduct open literature study, academic research progress report and special topic discussion report within the discipline, and no less than 4 times. Doctoral students are encouraged to have interdisciplinary discussions. The seminar is approved by the tutor.

4、博士生学科综合考核（2 学分）

学科综合考核是博士生进入学位论文阶段前的一次综合性考核，主要评估博士生的学术道德、理论基础知识和科研能力等。

学科综合考核在博士生学习的第二学期结束前进行，原则上每位博士研究生必须如期参加，允许推迟半年进行（需提前申请备案）。暂缓通过的比例不得少于实际考核人数的 15%，招生人数少的学科至少实行考核末位淘汰制度。具体详见《江苏大学博士研究生学科综合考核实施细则（暂行）》（江大研字（2018）08 号）。

4、Comprehensive discipline assessment for doctoral students (2 credits)

The subject comprehensive examination is a comprehensive examination for doctoral students before they enter the dissertation stage, which mainly evaluates their academic ethics, basic theoretical knowledge and academic research ability.

Before the end of the second semester of doctoral study, the subject comprehensive assessment must be carried out. In principle, every doctoral student must attend the examination as scheduled. A delay of half a year is allowed (Need to apply for filing in advance). The proportion of suspended passing shall not be less than 15 percent of the actual number of participators. The final elimination principle is taken in the assessment in the discipline with low enrolment. See 《Detailed rules for the implementation of discipline comprehensive assessment for doctoral candidates in Jiangsu University (interim)》 ((2018)08).

六、学位论文与学位授予

Dissertation and degree requirements

1. 论文开题

开题是博士研究生培养过程中开展学位论文工作的首要环节。博士研究生在撰写学位论文之前，必须经过认真的调查研究，查阅大量文献资料，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。

博士研究生学位论文开题报告审核通过两年（至少 16 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）。

1. Thesis proposal

The thesis proposal is the first step in the process of carrying out the dissertation for doctoral students. Before writing a dissertation, a doctoral student must conduct careful investigation and research, consult a large number of literature materials, to understand the history and current situation of his/her major research direction, determine the dissertation research topic on this basis, and make the thesis opening report. The thesis proposal report should discuss the key issues such as the basis of dissertation topic selection, research plan, expected goals and research results, and work plan.

After the dissertation proposal report has been approved for two years (at least 16 months), the dissertation can be submitted for examination and defense. For specific requirements, please refer to 《The requirements and examination methods of the topic selection and opening topic of the postgraduate dissertation of Jiangsu University (interim)》 ((2018)09)

2. 完成完整的科研训练与获得相应的科研成果

博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》，提前毕业的须增加一篇影响因子大于等于 1.5 的 SCI 收录论文。

2. Complete complete scientific research training and obtain corresponding scientific research achievements

During the period of study, postgraduates must participate in the whole process of complete scientific research training and obtain certain scientific research achievements. For specific requirements, please refer to 《Regulations of jiangsu university on the need for postgraduates to complete complete scientific research training and obtain corresponding scientific research achievements》. Doctoral students who graduate early will be required to add one SCI paper with an impact factor of 1.5 or greater.

3. 论文撰写

博士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》。

3. Thesis writing

The dissertation must be completed independently by the doctoral candidate under the guidance of his/her supervisor. For thesis format, please refer to 《Requirements on the writing format of postgraduate thesis in Jiangsu University》.

4. 论文评阅与答辩

博士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，在学位论文送审前还必须通过论文预审和预答辩环节。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“盲审”工作办法》等相关规定。

4. Paper review and defense

Doctoral students can enter the link of dissertation submission and defense only when their course credits and practice credits meet the requirements. Before the dissertation is submitted for examination, the dissertation must also pass the pre-examination and pre-defense. For the requirements of dissertation evaluation and defense, please refer to 《The detailed rules for the implementation of degree conferment in jiangsu university》 and 《The work measures of "blind review" for postgraduate dissertation of jiangsu university》.

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》等相关规定。For details, please refer to "jiangsu university 2020 annual postgraduate training program revision (preparation) work guidance" and other relevant provisions.

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
- 47、 《Environmental Science: A global concern》, Cunningham W P, Saigo B W
- 48、 《Silent Spring》, Rachel Carson