

环境科学与工程（0830）

Environmental Science and Engineering

学科门类：工学（08） 一级学科：环境科学与工程（0830）

Discipline Category: Engineering (08)

First-Class Discipline: Environmental Science and Engineering (0830)

一、学科简介

学院环境科学与工程学科是首批国家“双一流”建设学科，在第四轮学科评估中评估为A类，全国排名第8，并入选江苏高校优势学科建设项目；环境工程为国家重点（培育）学科和江苏省重点学科。本学科形成以“流域水环境保护与生态修复”的总体学科特色并达到国际先进水平。学院现有教职工106人，专任教师77人，其中教授（包括青年教授）41人，副教授（包括青年副教授）25人。在所有专任教师中，现有中国工程院院士1名、国家“万人计划”教学名师1名、第二届全国创新争先奖1人、长江学者特聘教授2名、国家自然科学基金杰青1名、国家“万人计划”科技创新领军人才3名、国家“万人计划”青年拔尖人才1名、国家自然科学基金优青4名、科技部“中青年科技创新领军人才”3名、宝钢教育“优秀教师特等奖提名奖”1人，宝钢教育“优秀教师奖”3人、江苏省特聘教授3名。现有国家自然科学基金创新群体1个，教育部、江苏省创新团队5个。专任教师中具有博士学位比例100%。

近五年来获国家及部省级科技进步奖20余项，出版专著及教材20余部，获国家专利400余项，发表三大检索学术论文800余篇。本学科围绕国民经济建设和社会发展所遇到的水环境问题，紧密结合国家经济发展和学科发展方向，在水资源保护理论及技术、环境生态保护、流域水污染控制和水环境质量改善、固体废弃物处置与资源化技术、污水处理及废水回用技术等方面开展了深入研究，获得了大量的科技成果，取得了显著的社会、经济和环境效益。学生毕业后可在相关学科领域继续深造，或在政府部门、规划部门、经济管理部门、环保部门、设计单位、工矿企业、科研单位、高等院校等

从事规划、设计、施工、管理、教育和研究开发等工作。

I. Discipline Overview

The discipline of Environmental Science and Engineering in Hohai University is one of the first national "Double First-class" disciplines in China. It is evaluated as "class A" in the fourth round of discipline evaluation, ranking 8th in all of the discipline of Environmental Science and Engineering in China. And the discipline of Environmental Science and Engineering in Hohai University is also selected as the Superior Discipline Construction Project in all of the Universities in Jiangsu province. Environmental engineering is a national key discipline and a key discipline of Jiangsu Province. The discipline is characterized by "watershed water environment protection and ecological restoration" and has reached the advanced international level. Presently, there are 106 faculty and staff members in the Environmental college, including 77 full-time faculty members: 41 professors (including young professors) and 25 associate professors (including young associate professors). Among the 77 full-time faculty members, there is one academician of Chinese Academy of Engineering, one is the national "Ten Thousand Program" outstanding Teacher, one teacher acquires the second National Innovation Award, two teachers are the distinguished professors of Changjiang Scholars program, one teacher acquires The second National Innovation Prize; one teacher acquires The National Science Fund for Distinguished Young Scholars, four teachers have National Natural Science Foundation--Outstanding Youth Foundation, three teachers are Youth Science and technology innovation leader; one teacher acquires the Baosteel Education outstanding Teacher Special Prize nomination award, three teachers acquire Baosteel Education Outstanding Teacher Award and three teachers are the distinguished professors in Jiangsu Province. There are one innovation group of National Natural Science Foundation of China and five innovation groups of Ministry of Education and Jiangsu Province. The ratio of the teachers with PhD degree is 100 %.

Over the past five years, this discipline of Environmental Science and Engineering has obtained more than 20 National and Provincial Science and Technology Progress Awards, published more than 20

monographs and course book, acquired 400 national patents and published over 800 academic papers. This discipline focuses on the water environment problems that are encountered in the national economic construction and social development, as well as closely combines with the development directions of the national economic and the discipline. So far, the Environmental Science and Engineering at Hohai University has make deep research in the following fields: water resources protection theory and technology, environmental and ecological protection, river basin water pollution control, water environment quality improvement, solid waste disposal and resource recovery technology, sewage treatment and wastewater reuse technology, etc, and have obtained a large number of achievements as well as significant social, economic, environmental benefits. After graduation, students may continue their studies in relevant disciplines, or engage in planning, design, construction, management, education, research in government departments, planning departments, economic management departments, environmental protection departments, design units, industrial and mining enterprises, scientific research institutions, colleges and universities, etc.

二、培养目标

1. 河海大学博士层次外国留学生应当在环境科学与工程领域中具有宽阔的国际视野，能够在世界范围内创新运用和发展环境科学与工程的理论、技能和方法，在国际事务中具有竞争优势。
2. 以英语为专业教学语言的学科中，外国留学生毕业时，博士研究生的中文能力应当至少达到《国际汉语能力标准》三级水平。
3. 环境科学与工程学科博士留学生教育旨在培养环境科学与工程方面的高级专业技术人才，具有坚实的数学、化学、生物、材料学、力学、计算机应用等方面的基础理论知识，熟悉中国的环境学科发展和全球环境问题，同时具有全球视野，积极参与国际交流，能够在多个国家的实际环境中运用和发展本学科的知识、技能和方法，并具备参与国际事务和国际竞争的能力。能熟练阅读环境科学与工程相关的中文和外文资料，并可用英语撰写科技论文和进行技术交流，能掌握中国和全球环境学科的发展趋势，并针对我国和全球环境领域存在的主要问题，熟练应用现代基础理论和先进的计算、实

验技术手段独立开展研究，能够胜任高等教育、科学研究、技术开发、环境管理与工程应用等领域的工作。

II. Training Objectives

1. International PhD graduates of Hohai University are expected to have broad international view in the relevant academic fields; to creatively apply and develop the theories, skills, and methodologies of the relevant disciplines in the world, and to obtain competitive advantage in the international academic affairs.

2. International PhD graduates must meet the requirement of Level 3 in Chinese Language Proficiency Scales upon graduation if they conduct their coursework in English.

3. The purpose of foreign PhD education in the Environmental Science and Engineering major is to cultivate the students with the senior professional and technical talents in environmental science and engineering. They should have solid basic theoretical knowledge in mathematics, chemistry, biology, mechanics, computer application and are familiar with the development of Chinese environment discipline, the global environmental issues. They can actively participate in international communication, apply the environmental knowledge to solve the environmental issues of many countries and have the ability to take part in the international environmental issues. They can read the literatures in environment science and engineering field that are from Chinese and other countries, can write scientific papers in English, carry out technical communication in English. They should be able to grasp the development trend of environmental science in China and the world, and to solve the main problems existing in the field of Environmental Science and Engineering in China and the world via these modern basic theories, advanced computing and experimental techniques. They should be qualified for these positions in higher education, scientific research, technological development, environmental management and engineering application.

三、主要研究方向

1. 水资源保护与生态修复

2. 环境系统规划与综合评价
3. 水污染控制与水处理工程

III. Research Directions

1. Water Resource Protection and Ecological Restoration
2. Environmental System Planning and Comprehensive Assessment
3. Water Pollution Control and Water Treatment Engineering

四、学制和学习年限

学术学位全英文博士留学研究生的标准学制为 4 年。实行弹性学制，学习年限最短不少于 3 年，最长不超过 6 年。

IV. Number of Years Requirement

The PhD program typically requires 4 years to complete. However, the completing time may vary to 3 years as the minimum and 6 years as the maximum.

五、学分要求和课程设置

1. 学术学位全英文博士留学研究生课程总学分为 15 学分，其中学位课程为 10 学分，非学位课程为 5 学分。另设教学环节。所有课程学习一般应在入学后 1 年内完成。
2. 汉语课每学分为 24 学时，中国概况课每学分为 18 学时，其他课程每学分为 16 学时。
3. 中国国情教育（水韵课堂）为系列专题讲座，要求学生按照要求完成规定的学习任务。
4. 对于汉语水平已达到毕业要求的学生，可申请免修汉语，具体要求详见留学生课程免修有关规定。

具体课程设置如下：

V. Credit Requirements and Curriculum

1. International academic PhD students will complete 15 credits, 10 of which are from degree courses,

and 5 of which are from non-degree courses. Students will also complete academic activities. Coursework will be completed in one year after registration.

2. Each credit of Chinese language course is 24 credit hours. Each credit of Introduction to China is 18 credit hours. For other courses, each credit is 16 credit hours.

3. “Water Harmony Lectures” is a series of seminars, which require students to complete the specified learning tasks.

4. For students who have met the Chinese language requirement for the PhD degree, Chinese language courses can be exempted, of which the details can be referred to in relevant regulations.

The specific curriculum is as follows:

环境科学与工程全英文学术型留学博士研究生课程设置

Curriculum for English Taught International Academic PhD Students in Environmental Science and Engineering

课程类别 Category		课程代码 Course Code	课程名称 Course Name	学分 Credit	学时 Hours	开课学期 Term	备注 Remarks
学位课程 Degree Course 10 学分	公共课程 General Course	2022LD000001	汉语 I Chinese Language I	2	48	秋 Autumn	必修 Compulsory
		2022LD000003	中国概况 Introduction to China	2	36	秋 Autumn	
		2022LD110001	论文写作指导 Guide of Thesis Writing	2	32	秋、春 Autumn /Spring	
	基础课程 Basic Course	2022LD880001	应用数学 Applied Mathematics	4	64	秋 Autumn	选修 2 学分 Optional 2 credits at least
		2022LD050105	水环境规划与管理 Water environment planning and management	2	32	春 Autumn	
		2022LD990501	水污染控制工程 Water Pollution Control Engineering	2	32	秋 Spring	
	专业课程 Major Course	2022LD050102	生态工程学 Ecological Engineering	2	32	春 Spring	选修 2 学分 Optional 2 credits at least
		2022LD050103	环境科学与工程前沿专题讲座 Lectures on the frontiers of environmental science and engineering	1	16	春 Spring	
非学位课程 Non-degree Course 5 学分	2022LD110002	中国国情教育（水韵课堂） Water Harmony Lectures	1	16	秋、春 Autumn /Spring	必修 Compulsory	
	2022LD000002	汉语 II Chinese Language II	2	48	春 Spring		
	2022LD050104	纳米科技在环境领域的应用及原理 Application and principles of nanotechnology in the field of environment	2	32	春 Spring	选修 2 学分 Optional 2 credits at least	
	选修博士课程 Optional courses for PhD						
教学环节 Academic Activity	学术活动（含博导讲座） Seminar and Conferences (including seminars by PhD advisors)					必修 Compulsory	
	实践活动 Practice Activity						
	科学研究 Scientific Research						

六、教学环节

1. 个人培养计划

学术学位博士研究生入学后，应在导师指导下，在规定时间内按照培养方案和学位论文工作有关规定，结合研究方向和本人实际情况制定个人培养计划，其中学习计划在入学 2 个月内提交。

2. 学术活动

学术学位博士研究生学术活动包括参加国内外学术会议、专家学术讲座、博士生导师讲座，以及研究生学术研讨活动等。申请学位论文答辩前必须参加 20 次以上的学术交流活动，其中博士生导师讲座至少 8 次，由本人做的公开的学术报告 1 次（开题报告、中期检查、预答辩、答辩不计入）。本人做的学术报告由指导教师负责对其学术报告效果进行考核。研究生参加学术活动必须填写相关学术活动登记本。

3. 实践活动

为培养劳动实践能力和责任意识，学术学位博士研究生必须参加实践活动，实践活动形式包括助教、助管、助研、生产实践、社会实践等。由导师对学生实践环节的时长和效果进行考核和评价。

4. 科学研究

学术学位博士研究生应积极参加科学研究课题，并应具有在导师指导下独立负责某专题或子课题的研究工作经历。课题完成后由导师提出综合评审意见。

VI. Academic Activities

1. Study Proposal

The PhD students must prepare a study proposal on how they will complete the PhD degree by considering their research interests, advice from their research advisors, and other requirements mentioned in this document. The proposal must be submitted in two months after official registration.

2. Seminars and Presentations

PhD students must participate in academic conferences, seminars by experts and PhD advisors, and discussion panels. Before their dissertation defense, PhD students must participate in seminars and

conferences over 20 times, including at least 8 seminars by PhD advisors, and deliver at least 1 academic presentation (the activities concerning with their dissertation are not counted). The presentations delivered by the PhD students will be evaluated by their own research advisors. All the seminars and presentations should be recorded in relevant record book.

3. Practice Activities

PhD students are required to participate in practice activities to prepare professional development. Practice activities include teaching assistantship, research assistantship, management assistantship, and industry engagement etc., which are to be assessed by the advisors.

4. Scientific Research

International academic PhD students should vigorously participate in scientific research projects, and shall be capable of conducting independent research on a particular topic or sub-topic under the guidance of their advisors. Their performance will be evaluated by their research advisors.

七、论文工作

学术学位博士学位论文研究工作必须经过文献阅读、论文选题、论文计划及开题报告、论文中期检查、科研成果产出、学位论文预审、学位论文评阅、学位论文答辩等环节。具体按照《河海大学博士学位论文工作管理办法》和学院相关文件执行。留学博士研究生可使用英文撰写论文。

VII. Dissertation

The dissertations of academic PhD students are required to complete the stages of literature review, topic selection, dissertation plan and dissertation proposal, mid-term examination, output of scientific research achievements, pre-examination, review and assessment, and dissertation defense. Detailed requirements can be referred to in “Hohai University PhD. Dissertation Management Measures” and relevant documents in College of Environment. Dissertations in English is acceptable.

八、本学科推荐阅读的重要书目、专著和学术期刊

VIII. Recommended Bibliographies, Monographs, and Academic Journals of the Discipline

1. 刘百仓 (译著). 水处理原理与设计. 华东理工大学出版社, 2016
2. John C. Crittenden, R. Rhodes Trussell, David W. Hand, Kerry J. Howe, George Tchobanoglous. Water Treatment: Principles and Design (Third Edition). Wiley & Sons, Inc, 2012
3. C. K. Davis and E. Rosenblum. Sustainable industrial water use: Perspectives, incentives and tools. IWA Publishing 2021
4. 李轶, 王龙飞. Water Pollution Control Engineering. 河海大学出版社, 2018
5. Academic Journal: Energy & Environmental Science <https://www.rsc.org/journals-books-databases/about-journals/energy-environmental-science/>
6. Academic Journal: Nature Sustainability https://www.nature.com/natsustain/?utm_medium=display&utm_source=letpub&utm_content=text_link&utm_term=null&utm_campaign=MPSR_41893_AWA1_CN_CNPL_letpb_mp
7. Academic Journal: Advanced Materials <https://onlinelibrary.wiley.com/journal/15214095>
8. Academic Journal: Water Research <https://www.journals.elsevier.com/water-research>
9. Academic Journal: Environmental Science & Technology <https://pubs.acs.org/journal/esthag>
10. Academic Journal: Chemical Engineering Journal <https://www.journals.elsevier.com/chemical-engineering-journal>
11. Academic Journal: Journal of Hazardous Materials <https://www.journals.elsevier.com/journal-of-hazardous-materials/news/journal-of-hazardous-materials-is-now-part-of-elseviers>