

环境科学与工程(083000)全日制博士培养方案

Environmental Science and Engineering

一、基本信息 Basic Information

院 系 名 称 School	(160) 环境科学与工程学院 School of Environmental Science & Engineering			适 用 年 级 Grade	2025
适 用 专 业 Major	环境科学与工程(083000) Environmental Science and Engineering				
项 目 类 型 Program Type	全日制博士				
最 低 学 分 Min Credit	37.5	最低GPA学分 Min GPA Credit	16	最低GPA Min GPA	3.0

二、学科简介 Introduction

1984年获准化学硕士点,开始培养环境领域硕士生, 1998年调整为环境工程硕士点,同年又获准环境化学硕士点, 2000年获准环境工程一级学科博士点, 2003年获准环境科学与工程一级学科博士点,同年设立环境科学与工程博士后流动站

在流域污染控制、区域大气污染控制、废弃物资源化、环境功能材料、土壤-地下水污染修复、环境化学与毒理学、环境管理、海洋环境等方向,具有鲜明的特色与厚重的积累。学院拥有完善的教学与科研体系和先进分析测试平台,承担着大量的国家级、省部级、国际合作以及企业委托的科研项目。

As early as the 1984 we began to cultivate the master's students in environmental field. It was adjusted to the master degree of environmental engineering in 1998. The environmental science master station was established at the same year. In 2000, a second-rate discipline of environmental engineering for doctor-degree program was established. The first-rate discipline of environmental science and engineering for doctor-degree program was established in 2003. The school was approved to have post-doctoral mobile center of first class discipline of Environmental Science and Engineering in 2003. The major research fields are regional water pollution control, regional air pollution control, solid waste treatment and disposal, environment function materials, soil and groundwater remediation, environmental chemistry and toxicology, environmental management, marine environment, etc. The school has advanced teaching and research system, and the public service platform, the center laboratory, guarantees the advanced analysis and test. The school also undertakes many national, international and industrial scientific research projects.

三、培养目标 Program Objective

总体目标是培养具有坚定的科学信念、坚韧不拔的科学意志、敏锐的科学触角、广阔的国际视野并且具有卓越学术水平的一流人才。 本学科致远荣誉计划以培养本学科学术领军人才为宗旨,通过海外联合培养的模式,培养全面掌握环境科学与工程学科基础理论和系统专门知识的创新型高层次人才,了解本学科现状、发展动态和国际学术研究前沿,能独立开展水体、大气、土壤、生态、功能材料及环境管理等领域的创新研究,具备化学-生物-材料-能源-环境等多学科交叉和创新的能力,在某一研究领域取得突破性成果。

The overall goal is to cultivate first-class talents with firm scientific beliefs, tenacious scientific will, sharp scientific tentacles, broad international perspectives, and outstanding academic level. The Zhiyuan Honor Program of this discipline aims to cultivate leading academic talents in this field. Through overseas joint training, it aims to cultivate innovative high-level talents who comprehensively grasp the basic theories and systematic specialized knowledge of environmental science and engineering, understand the current situation, development trends, and international academic research frontiers of this discipline, be able to independently carry out innovative research in the fields of water, atmosphere, soil, ecology, functional materials, and environmental management, and have the ability to cross and innovate multiple disciplines such as chemistry biology materials energy environment, and achieve breakthrough results in a certain research field.

四、培养方式及学习年限 Training Mode and Study Duration

“致远荣誉计划”博士生学习年限为5年,博士生最长可延长2年。一名校内导师和一名校外导师(国际学术界知名教授)组成导师联合指导。需经资格审查通过后,导师组建由位专家组成的论文指导委员会(包括2名导师、一名海外或行业专家、两位校内专家),论文指导委员会对学位论文进行全过程的指导和评价。论文选题需紧密围绕科学与技术的前沿,学位论文将采用国际评审与公开答辩的方式。国际联培型荣誉计划博士生的学位论文应采取“国际评审”的方式,评审通过后须公开进行“国际答辩”。

荣誉计划博士生应按要求参加规定,参加导师组考核考试、开题报告及年度考核等培养过程评估,经考核未达到荣誉计划培养要求者,分流至普通荣誉计划; 荣誉计划博士生在通过资格考核后,须到校外导师所在机构进行联合培养;荣誉计划博士生须参加至少2次国际学术会议,并作口头报告或海报;在期间赴海外参与学位论文相关的高水平国际学术会议2次及以上,并作口头报告或海报不少于2次(其中口头报告至少1次、同一会议按报告1次计)的,可视为满足海外联培要求。

The “ Zhiyuan Honor Program ” doctoral student has a five-year study period. For those unable to graduate on time, upon approval of the application, the maximum period of study can be extended by two years. The student will be supervised by an on-campus tutor and an off-campus tutor (a well-known overseas professor in the international academic community or a domestic industry leader) as a joint tutor group. The doctoral thesis of the International Joint Training Honors Program should be reviewed internationally, and after passing the review, it must be publicly defended.

五、课程学习要求 Course Requirement

课程类别 Course Type	学分要求 Min Credits	GPA 学分要求 Min GPA Credit	备注 Note
公共基础课 General Fundamental Courses	15.5	10	
专业基础课 Program Core Courses	10	6	
专业前沿课 Program Frontier Courses	8		
专业选修课 Program Elective Courses	4		

六、培养过程要求 Training Requirement

平均GPA要求在3.0以上。荣誉计划博士生应按照学校相关规定，参加培养过程中的资格考试、开题报告及年度考核等培养过程评价，考核不通过者，应退出荣誉计划。

一、课程学习

完成时间：普通生原则上第3学期结束前完成，不能晚于第4学期；直博生原则上第3学期结束前完成，不能晚于第4学期。

二、资格考试

完成时间：普通生原则上第3学期结束前完成，不能晚于第4学期；直博生原则上第3学期结束前完成，不能晚于第4学期。

前置要求：参加资格考试时，学生应已按培养计划进度完成专业基础课学习。未完成专业基础课学习者，因故休学者或有其它特殊原因者，可申请推迟参加资格考试。参加国际联培的博士生原则上应在入学前通过资格考试。

评审组织：资格考试分为笔试/面试/答辩，由培养处组织。

归档要求：学生在交我办(myjuedu.cn)发起申请并完成在线归档，附件须完备。

三、开题报告

完成时间：资格考试通过后一年内完成，一般在10月底前完成（因故休学者或有其它特殊原因者，可申请推迟博士论文开题；参加国际联培的博士生若出国前未进行开题报告，可在合作高校举行论文开题工作）。

评审组织：论文开题报告会由课题组或导师具体组织实施，专家组应由5名具有博士生导师资格的教授组成。

归档要求：学生在交我办(myjuedu.cn)发起申请并完成在线归档，附件须完备。

四、年度考核

完成时间：一般在10月底前完成，通过资格考试者须参与年度考核。

评审组织：年度报告会由课题组或导师具体组织实施，专家组应由5名具有博士生指导资格的教授组成。

归档要求：学生在交我办(myjuedu.cn)发起申请并完成在线归档，附件须完备。

五、学术交流

完成时间：就学期间（正式答辩前）须在高水平国际学术会议上作学术交流至少1次。

交流形式：交流形式包括口头报告、海报展示，或第1轮论文摘要被会议录用等，交流内容与博士学位论文研究工作密切相关。

Course learning is in principle required to complete within 2 years with average GPA ≥ 3.0.

1. Course Learning

Time of completion: In principle, for normal doctoral candidates, it should be completed before the end of the second semester, and not later than the fourth semester; as for doctoral candidates after bachelor's degree, it should be completed before the end of the third semester, and not later than the fifth semester.

2. Qualification Examination

Time of completion: In principle, for normal doctoral candidates, it should be completed before the end of the third semester, not later than the fifth semester; as for doctoral candidates after bachelor's degree, it should be completed before the end of the fourth semester, and not later than the sixth semester.

Prerequisites: When taking the qualification exam, students should have completed courses learning. Doctoral students of international joint cultivation program should, in principle, pass

qualification test before attending the foreign university.
Review Organizing: Organized by the school collectively.
Filing: Students should apply and file on my.sjtu.edu.cn with complete reports and reviewing procedure.

3. Thesis Proposals
Time of completion: In principle, it should be completed within one year after passing the qualification exam, usually held in **October**, (doctoral students of international joint cultivation program can hold it in the foreign university).
Exception: The thesis proposals representation is held simultaneously with qualification examination for Class of 2019 and before.
Review Organizing: Held by the supervisor, and the review committee consists of 3 or 5 professors with the qualification of doctoral tutor.
Filing: Students should apply and file on my.sjtu.edu.cn with complete reports and reviewing procedure.

4. Annual Progress Reports
Time of completion: Generally in **October**, students who have passed the qualification examination should participate.
Review Organizing: Held by the supervisor, and the review committee consists of 3 or 5 professors with the qualification of doctoral tutor.
Filing: Students should apply and file on my.sjtu.edu.cn with complete reports and reviewing procedure.

5. Academic Exchange
Time of completion: During the study period (before the formal thesis defense), students must participate at least once at a high-level international academic conference with the following forms of achievements.
Manners of achievements: The forms of achievements include oral reports, poster presentations, or the abstracts of the submitted papers are accepted by the conference, etc. The content of the communication should be closely related to the research work of the doctoral dissertations.

七、学术成果要求 Requirement on Academic Achievements

要求获得学术成果必须明显高于同年级普通博士生的平均水平（参照《环境科学与工程领域博士学位（学术型）授予标准》及相关规定），鼓励荣誉计划博士生发表高水平学术论文、申请专利。具体由学院荣誉计划遴选委员会负责认定。

按照《上海交通大学关于申请授予博士学位的规定》中学术论文发表要求，及学院《申请授予博士、硕士学位学术论文发表规定》执行。

1.以第一作者（共同第一作者须排序第一）发表高水平学术论文。论文内容应与学位论文研究工作相关，第一作者单位和第一通讯单位应为上海交通大学环境科学与工程学院（中英低碳学院的本科博士生第一作者单位和第一通讯单位标注为上海交通大学中英低碳学院，鼓励将环境科学与工程部列为并列单位），导师为作者之一，学术期刊可参照《上海交通大学环境科学与工程学院代表性期刊分类目录》。

2.与以上成果水平相当的其他创新性成果。例如以第一发明人身份获得国际专利授权，或国内专利授权且转化产生较大规模的经济效益（第一权利人应为上海交通大学，导师为发明人之一）；以及其他研发的创新性成果且通过学院学位评定委员会认定。

3.潜心从事基础性、原创性或尖端性研究，力争经过长期攻关取得突破性、颠覆性科研成果的博士生，若答辩前无成果发表的，经导师推荐，可申请由学院学位评定委员会审核认定其学位论文成果的突破性和创造性，认定通过后授予博士学位答辩申请。

It is required that the academic achievements obtained must be significantly higher than the average level of ordinary doctoral students of the same grade (refer to the "College of Environmental Science and Engineering Doctoral Degree (Academic) Awarding Standards" and related regulations), and honorary program doctoral students are encouraged to publish high-level academic papers, apply for patent. The specific determination is made by the Zhiyuan Honors Program Subcommittee of the College.

1. Publishing high-level academic papers as the first author (or ranked first in co-author). The content of the thesis should be related to the research work of the dissertation. The first author unit and the first communication unit should be the School of Environmental Science and Engineering of Shanghai Jiao Tong University, the supervisor is one of the authors, academic journals can refer to the "Classified Catalogue of Representative Journals of School of Environmental Science and Engineering of Shanghai Jiao Tong University".

2. Other innovative achievements comparable to the above achievements. For example, obtaining an international patent authorization as the first inventor, or a domestic patent authorization and transforming to produce large-scale economic benefits (the first right holder should be Shanghai Jiao Tong University, and the tutor is one of the inventors); and other forms of innovation Achievements and approved by the school's Degree Evaluation Committee.

3. Doctoral students who are devoted to basic, original or cutting-edge research and strive to achieve breakthrough and subversive scientific research results after long-term research, if their results have been published before the thesis defense, they can apply for review by the school's degree evaluation committee after being recommended by their supervisor. The breakthrough and creativity of their dissertation results are recognized, and PhD defense and application can be conducted after the recognition is passed.

八、学位论文 Thesis/dissertation work

学位论文是授予学位评定的主要依据，应能反映出作者在本学科上已掌握坚实宽广的基础理论、系统深入的专门知识、规范严谨的研究方法。

1 选题与综述

博士学位论文的选题应在本学科及相关领域具有开拓性、前沿性和创新性，应对经济建设和社会发展具有较大的理论意义或应用价值。文献综述应在全面搜集、阅读大量有关研究文献的基础上，经过归纳整理、分析鉴别，对所研究的问题在一定时期内已经取得的科研成果、存在问题以及新的发展趋势等进行系统、全面、客观的叙述和评论，为论文题目的确立提供支撑和论证。

识。

博士学位论文的学术观点必须明确，立场正确，推理严谨，数据真实，图表规范，层次分明，语言准确，且文字通畅。

博士学位论文字数一般为 8 ~1 0 万，论文中使用的外语、符号、代号必须全文统一并符合规范化要求。计量单位一律采用国务院发布的《中华人民共和国法定计量单位》。根据国家标准《学位论文编写规则》（GB/T 7713.1），学位论文应使用中文撰写。国际留学生或申请国际评审与答辩的论文可以用英文撰写论文，但必须列出详细的中文摘要。学位论文撰写格式应符合《上海交通大学博士、硕士学位论文撰写指南》要求。

3 成果创新性要求

博士学位论文相关创新成果应在本学科领域体现一流水平、具有创造性；成果应为学位申请人攻读博士学位期间独立完成，并以学位论文的形式完整呈现。

成果创新性是评价学位论文水平的重要参考，可通过高水平的学术期刊论文、学术会议论文、专著、专利、作品、研究报告等多种研究呈现。

The dissertation is the main basis for degree evaluation, and it should reflect that the author has mastered a solid and broad basic theory, systematic and in-depth expertise and standardized scientific research methods in the subject.

1. Topic selection and summary

The topic selection of a doctoral dissertation should be pioneering, cutting-edge and innovative in this discipline and related fields, and have greater theoretical significance or application value in response to economic construction and social development. The literature review should be based on a comprehensive collection and reading of a large number of relevant research literature, through induction, sorting, analysis and identification, and a systematic and comprehensive analysis of the research results, existing problems, and new development trends that have been achieved within a certain period of time. , Objective narratives and comments provide support and demonstration for the establishment of the thesis topic.

2. Normative requirements

The doctoral dissertation must be a systematic and complete academic thesis. It is the research result independently completed by the applicant under the guidance of the supervisor. It is not allowed to plagiarize or plagiarize the results of others. It can show that the author has the ability to independently engage in scientific research and is in this He has mastered solid a broad basic theories and systematic and in-depth professional knowledge in the subject.

The academic point of view of the doctoral dissertation must be clear, correct, rigorous in reasoning, truthful in data, standardized in diagrams, clear in layers, accurate in language, and unobstructed in text.

The number of words in a doctoral dissertation is generally 80,000 to 100,000. The terms, symbols, and codes used in the dissertation must be unified in the full text and meet the standardization requirements. All units of measurement shall be the "Statutory Units of Measurement of the People's Republic of China" issued by the State Council. According to the national standard "Rules for Writing Dissertations" (GB/T 7713.1), dissertations should be written in Chinese. International students or essays applying for international review and defense can write essays in English, but a detailed Chinese abstract must be listed. The format of dissertation writing should meet the requirements of "Guidelines for Writing Doctoral and Master Thesis of Shanghai Jiaotong University".

3. Innovative requirements for results

The innovative achievements related to the doctoral dissertation should reflect the first-class level and creativity in the subject field; the achievements should be completed independently by the degree applicant during the period of studying for the doctoral degree, and be fully presented in the form of a dissertation.

The innovation of the results is an important reference for evaluating the level of the dissertation, which can be presented in various forms such as high-level academic journal papers, academic conference papers, monographs, patents, works, and research reports.

九、课程设置 Courses

详见下页 Please refer to the next page.

撰稿人签字:	日 期:	
校稿人签字:	日 期:	
审核人签字:	日 期:	
主管院长签字:	院系公章	日期:

课程类别 Category	课程代码 Course Code	课程名称 Course Name		学分 Credit	授课语言 Language	开课学期 Semester	是否必修 Compusory	可以计算 GPA	必须计算GPA	备注 Note	多选组 Course Group
		中文Chinese	English 英文								
任意选修课 Elective Courses	GE6007	大学生心理健康	Mental Health for College Students	2	中文	春秋季	是	否	否	“好大学在线”慕课学习	
公共基础课 General Fundamental Courses	MATH6005H	矩阵理论	Matrix Theory	3	中英并行开班	秋季	是	是	是		最少2门、最低6分
	MATH6015H	最优化方法	Optimization Methods	3	中英并行开班	秋季	是	是	是		最少2门、最低6分
	MATH6004H	计算方法	Numerical Analysis	3	中英并行开班	春季	是	是	是		最少2门、最低6分
	STAT6001H	基础数理统计	Basic Mathematical Statistics	3	中英并行开班	春季	是	是	是		最少2门、最低6分
	BIO8007	生命科学前沿：合成生物学	Frontier of Life Science: Synthetic Biology	1	中文	春季	是	否	否		最少1门、最低1分
	CHEM9102	化学前沿专题：化学生物学	Frontier Topics in Chemistry: Chemical Biology	1	中文	春季	是	否	否		最少1门、最低1分
	CHEM9104	化学前沿专题：新能源化学	Frontier Topics in Chemistry: New Energy Chemistry	1	中文	春季	是	否	否		最少1门、最低1分
	CHEM9105	化学前沿专题：材料化学	Frontier Topics in Chemistry: Materials Chemistry	1	中文	春季	是	否	否		最少1门、最低1分
	MATH8004	现代数学专题-计算类：最优化	Special Topics in Modern Mathematics-Computational Mathematics: Optimization	0.5	中文	春季	是	否	否		最少1门、最低1分
	STAT8003	现代数学专题-随机类：现代统计	Special Topics in Modern Mathematics-Stochastic: Modern Statistics	0.5	中文	春季	是	否	否		最少1门、最低1分
	GE7001	科技英语写作与交流	Scientific English Writing and Presentation	2	英文	秋季	是	是	是	本院学生选择环境学院开课	
	GE6001	学术写作、规范与伦理	Scientific Writing, Integrity and Ethics	1	中英并行开班	春秋季	是	否	否	秋季学期中文；春季学期英文	
	GE6003	实验室安全教育	Laboratory Safety Education	0.5	中文	春秋季	是	否	否	“好大学在线”慕课学习	
	GE6011	学术报告会	Academic Lectures	1	中文	春秋季	是	否	否		
	MARX6003H	自然辩证法概论	Introduction to Dialectics of Nature	2	中文	春秋季	是	是	是		
	MARX7001	中国马克思主义与当代	Marxism in China	2	中文	春秋季	是	否	否		
专业基础课 Program Core Courses	ENVR7101H	高等环境化学	Advanced Environmental Chemistry	3	英文	秋季	是	是	否		最少3门、最低6分
	ENVR7110	环境能源技术	Environmental Energy Technology	2	英文	秋季	是	是	否		最少3门、最低6分
	ENVR7004H	水污染控制理论与技术	Theory and Technology for Water Pollution Control	3	中文	春季	是	是	否		最少3门、最低6分
	ENVR7102H	环境管理	Environmental Management	2	英文	春季	是	是	否		最少3门、最低6分
	ENVR7001	分子生物学与环境生物工程	Molecular Biology and Environmental Bioengineering	2	中文	秋季	否	是	否		
	ENVR7005	大气污染控制理论与技术	Theories and Technology of Air Pollution Control	2	中文	秋季	否	是	否		
	ENVR7002	环境生态工程	Environmental Ecological Engineering	2	中文	春季	否	是	否		
	ENVR7003	现代环境分析技术	Modern Environmental Analytical Technology	2	中文	春季	否	是	否		
	ENVR7006	废弃物的处理与资源化	Solid Waste Disposal And Recvcling	2	中文	春季	否	是	否		
	ENVR7020	环境学科人工智能应用实践	Artificial Intelligence in Environmental Science	2	中文	春季	否	是	否	AI+	

专业前沿课 Program Frontier Courses	ENVR6101	土壤—地下水污染修复	Soil and Groundwater Pollution Remediation	2	中文	秋季	否	否	否		
	ENVR7016	铁环境化学与污染控制技术	Iron Environmental Chemistry and Pollution Control Technology	2	中文	秋季	否	否	否		
	ENVR7019	饮用水深度处理	Advanced Treatment of Drinking Water	2	中文	秋季	否	否	否		
	ENVR7103	产业生态学	Industrial Ecology	2	英文	秋季	否	否	否		
	ENVR9001	环境科学与工程学科前沿 进展	Frontiers of Priority of Environmental Engineering	3	中文	秋季	是	否	否		
	ENVR7105	可持续能源技术	Technologies for Sustainable Energy	2	英文	春季	否	否	否		
	ENVR9002	碳中和与气候变化研究前 沿	Research Frontiers of Carbon Neutrality and Climate Change	2	中文	春季	否	否	否		
专业选修课 Program Elective Courses	ENVR6013	城市矿产资源循环技术与 实践	Technology and Practice of Urban Mines Recvcling	2	中文	秋季	否	否	否		
	ENVR6015	环境传感技术及原理	Environmental Sensing Technology and Principles	2	中文	秋季	否	否	否	AI+	
	ENVR6017	全球化学品管理	Global Chemical Management	2	中文	秋季	否	否	否		
	ENVR7007	环境污染与控制化学	Chemistry of Environmental Pollution and Control	2	中文	秋季	否	否	否		
	ENVR7008	环境催化与环境功能材料 专题	Environmental Catalysis and Functional Materials	2	中文	秋季	否	否	否		
	ENVR7009	高等环境毒理学	Advanced Enviromental Toxicity	2	中文	秋季	否	否	否		
	ENVR7010	高级氧化技术	Advanced Oxidation Process	2	中文	秋季	否	否	否		
	ENVR7013	水体富营养化	Water Eutrophication	2	中文	秋季	否	否	否		
	ENVR7014	环境电化学	Environmental Electrochemistrv	2	中文	秋季	否	否	否		
	ENVR7015	大气化学	Atmospheric Chemistry	2	中文	秋季	否	否	否		
	ENVR7018	环境地球化学	Environmental Geochemistry	2	中文	秋季	否	否	否		
	ENVR7104	环境经济学	Environmental Economics	2	中英并行开班	秋季	否	否	否		
	ENVR7106	环境微生物技术与应用	Environmental microbiology: technology and application	2	中文	秋季	否	否	否		
	ENVR6012	气溶胶物理与化学	Aerosol Physics and Chemistrv	2	中文	春季	否	否	否		
	ENVR7011	现代环境化工技术	Modern Technology of Environmental Chemical Engineering	2	中文	春季	否	否	否		
	ENVR7111	环境催化原理与应用	The Principles and Application of Environmental Catalysis	2	英文	春季	否	否	否		