

环境科学与工程 学术学位博士研究生培养方案 (2025 版)

一级学科名称 (代码): 环境科学与工程 (0830)

二级学科名称 (代码): 环境科学 (03001); 环境工程 (03002)

**Ph.D. Training Program for Academic Degree Programs in Environmental Science and Engineering
(2025 Edition)**

First-level Discipline (Code): Environmental Science and Engineering (0830)

Second-level Discipline (Code): Environmental Science (03001); Environmental Engineering (03002)

一、学科简介

本学科源自 1983 年建设部国家环保局投资建设的环境保护系, 2001 年获批环境工程硕士点, 2003 年获批环境科学与工程一级学科硕士点, 2024 年获批环境科学与工程学科博士点。已培养硕士研究生 1200 余人。

环境科学与工程学院现有专任教师 115 人, 其中教授 27 人, 副教授 43 人, 博士 82 人, 本学科拥有“杰青”、国家“万人计划”领军人才、教育部教学指导委员会委员等国内有知名度和影响力的学术带头人; 60%以上有海外工作或学习经历, 95.7%具有博士学位。拥有“水污染控制新技术与资源化”江苏省科技创新团队、江苏省“双创”团队、江苏省高校“青蓝工程”优秀教学团队等创新群体。拥有“城市生活污水资源化利用技术国家地方联合工程实验室”国家级平台, 以及江苏省“水处理技术与材料协同创新中心”、“江苏省低碳水处理技术与资源化重点实验室”等五个省级科研平台。承担科技部重大科技(水)专项、国家杰出青年基金项目、国家自然科学基金重点项目等国家级项目 60 多项, 获国家和省部级奖近 20 项, 环境/生态学跻身 ESI 全球前 1%。积极将经济发展和环境保护协同推进的成功经验推广至“一带一路”沿线和发展中国家, 自 1993 年以来, 受国家商务部委托, 累计培训节能环保、清洁饮用水等领域专业技术人才 2000 余名, 国际硕士研究生 200 多名。学院拥有较完善的教学与科研体系和先进分析测试平台, 可为学位博士研究生培养提供一流的教学科研条件。

I. Discipline Overview

The discipline originated from the Department of Environmental Protection established in 1983. It was authorized to confer the M.Eng. degree in Environmental Engineering in 2001, the M.Sc./M.Eng. degree under the first-level discipline of Environmental Science and Engineering in 2003, and the Ph.D. degree program in Environmental Science and Engineering in 2024. To date, it has trained over 1,200 master's graduates.

The School of Environmental Science and Engineering has 115 full-time faculty members (27 professors, 43 associate professors), with 95.7% holding doctoral degrees and over 60% having overseas study or work experience. It is supported by nationally recognized academic leaders and multiple provincial innovation teams. The discipline hosts a national-level platform (National-Local

Joint Engineering Laboratory for Technologies for Resource Recovery from Urban Domestic Wastewater) and several provincial research platforms, including the Jiangsu Key Laboratory of Low-Carbon Water Treatment Technologies and Resource Recovery. It has undertaken 60+ national projects and received nearly 20 national and provincial/ministerial awards, with Environment/Ecology ranked in the ESI top 1% globally.

Since 1993, commissioned by China's Ministry of Commerce, the School has trained over 2,000 professionals in energy conservation and environmental protection and enrolled 200+ international master's students. With advanced analytical facilities and a well-established education and research system, it provides strong support for doctoral training.

二、培养目标

(一) 具有坚定正确的政治方向, 热爱社会主义祖国, 拥护中国共产党的领导; 掌握马克思列宁主义、毛泽东思想、邓小平理论、“三个代表”重要思想、科学发展观和习近平新时代中国特色社会主义思想; 具有为人民服务 and 为祖国富强而艰苦奋斗的献身精神; 遵纪守法, 品德高尚。

(二) 系统深入地掌握环境科学与工程学科的相关基础理论和专门知识, 熟悉和了解本学科发展前沿和学术动态; 能够正确理解高质量发展与高水平保护间的协同关系, 具有独立从事学术研究工作的能力, 在学术研究上做出创新性成果。

(三) 熟练掌握一门外国语, 拥有宽广的国际视野, 并具有较强的外文写作能力和国际学术交流能力。

(四) 健康的身体和良好的心理素质。

II. Training Objectives

Uphold correct political orientation, love the socialist motherland, and support the leadership of the Communist Party of China; study and understand Marxism-Leninism, Mao Zedong Thought, Deng Xiaoping Theory, the Important Thought of the “Three Represents,” the Scientific Outlook on Development, and Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era; demonstrate dedication to serving the people and contributing to national prosperity; abide by laws and regulations and uphold high ethical standards.

Acquire a solid and systematic command of fundamental theories and specialized knowledge in Environmental Science and Engineering; keep abreast of disciplinary frontiers and academic developments; understand the synergy between high-quality development and high-level environmental protection; develop the ability to conduct independent academic research and produce innovative research outcomes.

Attain proficiency in a foreign language, with a broad international perspective, strong academic writing skills in that language, and the ability to engage effectively in international academic exchange.

Maintain good physical health and sound psychological well-being.

三、研究方向

01 废水处理与资源化

聚焦城市生活污水及印染、化工等典型行业工业废水，针对其污染物特性与资源回收潜力，系统开展高效处理与资源化原理及关键技术研究。通过融合环境科学与材料学科的前沿成果，重点研发高性能吸附剂、催化膜及功能微生物等新材料与新工艺，以拓展污水深度处理与回用的技术路径。研究旨在构建节能低耗的协同处理体系，推动再生水在生态补给、工业循环等场景的工程化应用，全面提升水资源循环利用的技术水平与实践效能。

02 水质安全保障

针对我国地表水污染带来的环境危害问题，针对不同污染源，探讨污染的发生过程、机制和修复技术，研究废水低碳处理与资源化、河湖协同修复、生物质资源化与高值转化、高氨废水低碳脱氮等关键理论和技术相应的治理策略，推进城市水体质量提升、太湖生态保护等重大工程中实现技术转化与应用。

03 土壤污染与修复

针对长三角土壤地下水紧密联系的环境特征，开展土壤地下水污染状况调查与风险评估；污染物和营养元素在土壤-地下水-生物体等多界面迁移转化规律和生态环境效应，环境污染多界面过程与转化机制；土壤地下水中污染物修复/应急处置理论、技术及材料研发。

04 固体废物处理与资源化

聚焦典型有机固废，通过热解、气化等热化学过程与催化转化相耦合，定向制备高附加值化学品、材料单体及清洁燃料。重点揭示转化过程中的分子断键规律、反应路径与多尺度反应网络机理，实现产物分布的精准调控。旨在构建从基础理论、过程强化到系统集成完整的有机固废资源化理论技术体系，并形成具有示范推广价值的工程应用范例。

05 环境管理与健康

聚焦新污染物在多介质环境中的赋存形态、迁移转化过程及其生态毒理效应，系统揭示其环境归趋、生物累积规律与关键去除机制。同时，探讨高强度人为活动干扰下生态系统的结构、功能响应与内在演变机制，旨在构建面向产业特征的新污染物风险评估与管控技术体系，为区域生态安全与健康风险防控提供理论依据和决策支持。

06 生态保护与可持续发展

面向长三角城镇化进程中的生态风险与胁迫效应，构建多层次生态安全评价体系，探究生态系统保护修复理论与技术。开展区域与流域尺度的生态系统健康诊断、预警及调控研究，基于多学科交叉构建生态修复综合治理体系，发展面向低碳经济与生态城市的绿色规划及人地协调可持续调控机制。

07 催化理论与技术

聚焦催化过程的基础理论与技术应用，致力于揭示多相催化、酶催化等过程中的表界面反应机理与动力学规律。重点研究催化剂理性设计与构效关系，在原子/分子尺度探究活性位点作用机制及传质传荷过程，发展新型高效催化材料与反应体系。旨在推动催化理论创新，并为能源转化、绿色合成及环境治理等领域的关键催化过程提供技术基础和解决方案。

08 环境材料与应用

立足化学与环境学科深度融合，基于环境污染物的光、电、热催化降解界面调控体系，研发单原子催化剂等材料用于污染物高效资源化；开展环境污染物催化转化、降污协同制氢、二氧化碳转化、高端纯化膜材料技术及装备研究。紧跟环境分析领域学科前沿，重点进行基于纳米材料和光谱/色谱/质谱联用分析的污染物快速识别与原位监测技术及装备研发；以及基于各种新型“绿色溶剂”的微萃取等前处理技术研发等。

III. Research Areas

01 Wastewater Treatment and Resource Recovery

Focusing on municipal wastewater and industrial effluents from textile dyeing, chemical

manufacturing, and other representative sectors, this area studies the principles and key technologies for high-efficiency treatment and resource recovery based on pollutant characteristics and recovery potential. By integrating advances in environmental science and materials science, it develops new materials and processes—such as high-performance adsorbents, catalytic membranes, and functional microorganisms—to expand pathways for advanced treatment, reuse, and recycling. The goal is to establish energy-saving, low-consumption integrated treatment systems and promote engineering applications of reclaimed water in ecological replenishment and industrial water reuse.

02 Water Quality Security

Addressing environmental risks arising from surface-water pollution in China, this area investigates pollution sources, formation processes, mechanisms, and remediation technologies. It develops strategies and key theories/technologies for low-carbon wastewater treatment and resource recovery, coordinated river–lake restoration, biomass valorization, and low-carbon nitrogen removal from high-ammonia wastewater, supporting technology transfer and application in major programs such as urban water quality improvement and Taihu Lake ecological protection.

03 Soil Pollution and Remediation

In view of the strong soil–groundwater linkage in the Yangtze River Delta, this area conducts investigations and risk assessments of soil and groundwater contamination; studies contaminant and nutrient transport/transformation across multiple interfaces (soil–groundwater–biota) and Associate eco-environmental effects; elucidates multi-interface processes and transformation mechanisms; and develops theories, technologies, and materials for remediation and emergency response in soil and groundwater systems.

04 Solid Waste Treatment and Resource Utilization

Targeting typical organic solid wastes, this area couples thermochemical processes (e.g., pyrolysis and gasification) with catalytic conversion to produce high value-added chemicals, material monomers, and clean fuels. It reveals molecular bond-breaking rules, reaction pathways, and multiscale reaction-network mechanisms to enable precise control of product distributions. The aim is to build a complete theoretical and technological system—from fundamentals and process intensification to system integration—and to develop demonstrative engineering applications with strong scalability.

05 Environmental Management and Health

This area focuses on the occurrence forms, transport and transformation, and ecotoxicological effects of emerging contaminants across multiple environmental media, clarifying their environmental fate, bioaccumulation patterns, and key removal mechanisms. It also examines ecosystem structural and functional responses under intensive human disturbances, aiming to establish industry-oriented risk assessment and management technologies for emerging contaminants and to provide scientific evidence and decision support for regional ecological security and health risk prevention.

06 Ecological Protection and Sustainable Development

Oriented to ecological risks and stressors during urbanization in the Yangtze River Delta, this area develops multi-level ecological security assessment frameworks and advances theories and technologies for ecosystem conservation and restoration. It conducts regional- and watershed-scale research on ecosystem health diagnosis, early warning, and regulation, builds integrated restoration and governance systems through interdisciplinary approaches, and develops green

planning and human–land coordination mechanisms supporting low-carbon economies and ecocities.

07 Catalysis Theory and Technology

This area advances fundamental theories and applications of catalysis, elucidating interfacial reaction mechanisms and kinetic laws in heterogeneous catalysis and enzyme catalysis. It emphasizes rational catalyst design and structure–activity relationships, investigates active-site mechanisms and mass/electron transfer at atomic and molecular scales, and develops new high-efficiency catalytic materials and reaction systems. The goal is to promote innovation in catalysis theory and provide technical foundations and solutions for key catalytic processes in energy conversion, green synthesis, and environmental Treatment.

08 Environmental Materials and Applications

Based on deep integration of chemistry and environmental science, this area develops materials (e.g., single-atom catalysts) and interfacial regulation systems for photo-/electro-/thermo-catalytic degradation and high-efficiency valorization of pollutants. It also studies catalytic transformation of pollutants, synergistic pollution control and hydrogen production, CO₂ conversion, and high-end membrane purification materials and equipment. In parallel, it targets frontiers in environmental analysis, developing rapid identification and in situ monitoring technologies/equipment using nanomaterials and hyphenated spectroscopic/chromatographic/mass spectrometric methods, as well as sample pretreatment technologies (e.g., microextraction) based on novel “green solvents.”

四、学习年限

学制 4 年，最长学习年限 7 年（含休学）。

IV. Duration of Study

The standard period of study is 4 years, with a maximum duration of 7 years (including leave of absence).

五、培养方式

博士生的培养方式实行导师负责制，注重课程学习与科学研究的有机结合。所有博士生须纳入相应的科研团队，保障博士生参与前沿性、高水平的科研工作。博士生的日常培养工作实行导师负责与导师组集体培养相结合，导师组由导师以及本学科或相关学科骨干教师组成。在博士生入学两周内，在导师（组）的指导下，按照本学科培养方案，结合个人实际情况，具体制订《博士生个人培养计划》。个人培养计划包括课程（环节）学习计划和学位论文工作计划，是导师指导博士生学习、开展研究工作的依据，也是对博士生进行毕业及学位授予审查的依据。博士生个人培养计划因特殊情况确需调整的，应在每学期期初由博士生提出申请，经导师和学院负责人同意后，报研究生院审核备案。

V. Training Model

Doctoral training follows a supervisor-responsibility system, emphasizing the integration of coursework and scientific research. All Ph.D. students are incorporated into relevant research teams to ensure participation in frontier and high-level research. Day-to-day training is carried out

through a combination of the supervisor's guidance and collective mentoring by a supervisory committee composed of the supervisor and key faculty members from this or related disciplines.

Within two weeks of enrollment, each Ph.D. student, under the guidance of the supervisor (and committee), shall develop an Individual Ph.D. Training Plan in accordance with the program requirements and the student's specific circumstances. The plan includes a coursework (and required components) schedule and a dissertation research plan, and serves as the basis for supervision as well as for graduation and degree-awarding review. If adjustments are necessary due to special circumstances, the student should apply at the beginning of the semester; upon approval by the supervisor and the School, the revised plan shall be submitted to the Graduate School for record.

六、学分要求

博士课程总学分不少于 14 学分。课程主要分为学位课程、非学位课程和补修课程。学位课程包括公共基础课、学科基础课和专业基础课三部分组成，是博士生必须修读的课程。非学位课程包含专业选修课和必修环节。必修环节包括学术活动和实践活动。补修课程是以同等学历身份或跨一级学科报考录取的博士生，入学后在进行正常的博士课程学习外，在导师指导下补修的硕士阶段的主干课程。

VI. Credit Requirements

A minimum of 14 credits is required for Ph.D. coursework. Courses are generally classified as degree courses, non-degree courses, and remedial courses. Degree courses—mandatory for all Ph.D. students—include public foundational courses, disciplinary foundation courses, and specialized foundation courses. Non-degree courses include professional Optional Courses and required components, with required components consisting of academic activities and practical activities. Remedial courses are for students admitted on an equivalent-education basis or across first-level disciplines; in addition to regular Ph.D. coursework, they must complete core master's-level courses under the supervisor's guidance.

七、课程设置与要求

VII. Curriculum and Requirements

(一) 课程设置

(1) Curriculum Structure

课程设置表 Curriculum Table

类别 Category		课程编号 Course Code	课程名称 Course Title	学时 Hours	学分 Credits	开课学期 Semester		考核 方式 Asses sment	备注 Remarks
						1	2		
学 位 课	公 共 课 General Courses	B10332001	中国马克思主义与当代 Chinese Marxism and Contemporary China	32	2	√		考试 Exam	公共课 4 学分 General

Degree Courses		B10332002	博士外语 Chinese Language	32	2	√		考试 Exam	courses:4 credits
	学科基础课 Discipline Foundation	B08301001	高等环境化学 Advanced Environmental Chemistry	32	2	√		考试 Exam	学科基础课 2 学分 Discipline foundation : 2 credits
	专业基础课 Specialized Foundation	B08302001	环境科学与工程学科前沿 Frontiers in Environmental Science and Engineering	32	2	√		考试 Exam	专业基础课 4 学分 Specialized foundation : 4 credits
B08302002		高等环境微生物学 Advanced Environmental Microbiology	32	2	√		考试 Exam		
Non-degree Courses	选修课 Optional Courses	B08303001	低碳水处理技术与资源化 (01 方向必选) Low-Carbon Water Treatment Technology and Resource Recovery (Required for Track 01)	16	1	√		考查 Assessment	专业选修课 不少于 2 学分 Professional Optional Courses: ≥ 2 credits
		B08303002	固体废物处理与资源化技术 (02 方向必选) Solid Waste Treatment and Resource Utilization Technology (Required for Track 02)	16	1	√		考查 Assessment	
		B08303003	环境毒理与健康风险 (03 方向必选) Environmental Toxicology and Health Risk (Required for Track 03)	16	1	√		考查 Assessment	
		B08303004	纳米材料结构与性质 (04 方向必选) Structure and Properties of Nanomaterials (Required for Track 04)	16	1	√		考查 Assessment	
		B08303005	现代环境分析与检测技术 Modern Environmental Analysis and Detection Technologies	16	1	√		考查 Assessment	
		B08303006	城市水体系综合规划理论与技术 Theory and Technology of Integrated Urban Water System Planning	16	1	√		考查 Assessment	

		B08303007	土壤与地下水污染防治技术及应用 Technologies and Applications for Soil and Groundwater Pollution Prevention and Control	16	1	√		考查 Asses sment	
		B08303008	生态保护与修复 Ecological Protection and Restoration	16	1	√		考查 Asses sment	
		B08303009	环境低碳材料科学技术前沿 Frontiers in Low-Carbon Environmental Materials Science and Technology	16	1	√		考查 Asses sment	
		B08303010	碳中和政策与技术 Carbon Neutrality Policies and Technologies	16	1	√		考查 Asses sment	
		B08303011	区域污染控制与规划 Regional Pollution Control and Planning	16	1	√		考查 Asses sment	
		B08303012	前沿环境大数据与人工智能 Frontier Environmental Big Data and Artificial Intelligence	16	1	√		考查 Asses sment	
	必修环节 Required Components	10332012	学术活动 Academic Activities		1			考查 Asses sment	2 学分 2 credits
		10332013	实践活动 Practical Activities		1			考查 Asses sment	

(二) 课程要求

1.课程学习

博士生必须完成课程设置中各类课程和学分要求。博士生课程除必修环节外，原则上在前两个学期完成，补修课程原则上在前四个学期完成。

以同等学力身份或跨一级学科报考录取的博士生，入学后除进行正常的博士课程学习外，还须在导师指导下补修的硕士阶段的主干课程，补修课程列入个人培养计划，成绩合格者，只计成绩，不计学分。

经考核合格后，方可取得相应学分。博士生根据个人培养计划，结合自己入学前的课程学习，可申请第一外国语免修，申请者在入学后两周内提出免修申请，报研究生院批准后方可通过，具体要求按照《苏州科技大学研究生课程管理规定》执行。

2.学术活动

学术活动为博士培养期间的必修环节。博士研究生应参加国内外学术会议、学术论坛、学术报告、国际交流等学术活动，具体要求参照《苏州科技大学研究生学术活动管理规定(修订)》执行，并及时向所在院系研究生教学办公室提交有关论文报告证明材料。

3.实践活动

实践活动为博士培养期间的必修环节，具体要求按照《苏州科技大学研究生实践活动管理规定（修订）》执行。实践活动结束后，博士生应填写和提交《苏州科技大学研究生实践活动报告表》至学院审核。实践活动由导师综合评定成绩，考试等第分为合格、不合格，成绩合格后取得规定学分。

(2) Course Requirements

1. Coursework

Ph.D. students must complete all required courses and meet the credit requirements specified in the curriculum. Except for required components, coursework should in principle be completed within the first two semesters; remedial courses should in principle be completed within the first four semesters.

For students admitted on an equivalent-education basis or across first-level disciplines, in addition to regular Ph.D. coursework, core master's-level courses must be taken under the supervisor's guidance. Remedial courses shall be included in the Individual Training Plan; passing results are recorded, but no credits are awarded.

Credits are granted only after passing the relevant assessments. Based on the Individual Training Plan and prior coursework, students may apply for exemption from the first foreign language course. Applications must be submitted within two weeks after enrollment and are subject to approval by the Graduate School. Specific requirements shall follow the Regulations on Graduate Course Management of Suzhou University of Science and Technology.

2. Academic Activities

Academic activities are a required component of doctoral training. Ph.D. students should participate in academic conferences (domestic and international), forums, seminars/lectures, and international exchanges. Requirements shall follow the Regulations on Graduate Academic Activities of Suzhou University of Science and Technology (Revised). Relevant proof materials (e.g., papers and reports) should be submitted in a timely manner to the graduate teaching office of the student's school/department.

3. Practical Activities

Practical activities are also a required component of doctoral training and shall follow the Regulations on Graduate Practical Activities of Suzhou University of Science and Technology (Revised). After completing the practical activities, Ph.D. students must fill out and submit the Graduate Practical Activity Report Form of Suzhou University of Science and Technology for school-level review. The supervisor provides an overall evaluation; the result is graded as Pass/Fail, and the corresponding credits are awarded upon passing.

(三) 教学安排

博士生理论课程学习原则上在第一学年内完成。

(3) Teaching Arrangement

In principle, Ph.D. students should complete their theoretical coursework within the first academic year.

八、中期考核

博士生取得个人培养计划上所有课程学分后方可参加中期考核,一般在入学后的第三学期完成。

中期考核由学院统一组织考核,须成立中期考核组,考核组由院系党政领导、本学科或相关学科具有博士生导师资格或正高级职称的5名专家组成,并确定考核组组长。导师可参加中期考核组,但不得担任考核组负责人。

考核方式一般采用面试。主要考核博士生思想品德、学科基础理论和专门知识掌握情况,以及发现、分析和解决问题的能力。通过中期考核是博士生进行开题报告的前提条件。中期考核具体要求参照《苏州科技大学研究生中期考核管理办法》执行。

博士生中期考核结果分为合格与不合格两个等级。对于中期考核发现问题的博士生,导师要对其进行专门指导,针对存在的问题进行改正,课程不合格的进行重修,确有必要的应对个人培养计划做出调整。每位博士生在学期间至多允许进行两次中期考核,两次考核时间间隔不得少于6个月,两次考核均不合格者进行分流。

VIII. Mid-term Assessment

Ph.D. students may participate in the mid-term assessment only after completing all course credits specified in their Individual Training Plan. It is normally conducted in the third semester after enrollment.

The School organizes the assessment and establishes a mid-term assessment panel consisting of five experts, including School/department Party and administrative leaders and senior scholars from this or related disciplines who are qualified as Ph.D. supervisors or hold senior professional titles. A panel chair shall be appointed. The supervisor may attend the assessment but shall not serve as the panel chair.

The assessment is generally conducted through an interview, evaluating the student's ethics and conduct, mastery of disciplinary fundamentals and specialized knowledge, and ability to identify, analyze, and solve problems. Passing the mid-term assessment is a prerequisite for proceeding to the dissertation proposal. Specific requirements shall follow the Measures for the Administration of Graduate Mid-term Assessment of Suzhou University of Science and Technology.

Results are graded as Pass or Fail. For students with issues identified during the assessment, the supervisor shall provide targeted guidance and require corrective actions; failed courses must be retaken, and the Individual Training Plan may be adjusted when necessary. Each Ph.D. student may undertake the mid-term assessment at most twice during the program, with an interval of no less than six months between the two attempts. Students who fail twice will be subject to diversion arrangements.

九、学术成果要求

1. 在 Nature、Science、Cell、PNAS、Nature 子刊以及 Science 子刊等期刊发表学术论文 1 篇，博士生作者任意，导师为通讯作者且第一单位为苏州科技大学；

2. 以第一作者（发明人）且第一署名为苏州科技大学，发表与本专业相关的论文或取得高水平成果，满足以下条件之一：

(1) 在 Nature index 收录期刊发表 1 篇，且在《苏州科技大学核心期刊目录》（自然科学类）一类核心期刊发表学术论文 1 篇；

(2) 在《苏州科技大学核心期刊目录》（自然科学类）一类权威核心期刊发表学术论文 2 篇；

(3) 在《苏州科技大学核心期刊目录》（自然科学类）一类权威核心期刊发表学术论文 1 篇，且在《苏州科技大学核心期刊目录》（自然科学类）一类核心期刊发表学术论文 2 篇；

(4) 在《苏州科技大学核心期刊目录》（自然科学类）一类权威核心期刊发表学术论文 1 篇，且在《苏州科技大学核心期刊目录》（自然科学类）一类核心期刊发表学术论文 1 篇，且获国家级科技成果奖（排名不限）或省部级三等奖及以上科技奖励（限排名前五）或国家一级学会/行业协会科学技术二等奖及以上科技奖励（限排名前五），或获学校认定的 I 级甲等学科竞赛全国一等奖及以上（限排名第一），或获发达国家发明专利授权 1 项。

注：

(1) 导师为第一作者（发明人）申请人为第二作者（发明人）的视同申请人第一作者（发明人）；但申请人必须有至少一篇权威期刊以上第一作者的成果，共同第一作者须排名第一。

(2) 导师应为作者（发明人）之一。

(3) 学术论文正式发表或提前在线发表为准，录用证明无效；发明专利以正式授权为准。

IX. Requirements for Academic Outputs

Publish one academic paper in Nature, Science, Cell, PNAS, or Nature/Science family journals. The Ph.D. student may be listed as any author; the supervisor must be the corresponding author, and Suzhou University of Science and Technology must be the first affiliated institution.

With the Ph.D. student as first author (or first inventor) and Suzhou University of Science and Technology as the first affiliated institution, publish discipline-related papers or obtain high-level outputs, meeting one of the following:

(1) Publish one paper in a Nature Index journal and one paper in a Category I core journal listed in the Core Journal List of Suzhou University of Science and Technology (Natural Sciences).

(2) Publish two papers in Category I authoritative core journals listed in the Core Journal List of Suzhou University of Science and Technology (Natural Sciences).

(3) Publish one paper in a Category I authoritative core journal and two papers in Category I core journals listed in the Core Journal List of Suzhou University of Science and Technology (Natural Sciences).

(4) Publish one paper in a Category I authoritative core journal, one paper in a Category I core journal, and additionally meet one of the following:

- Win a national-level science and technology achievement award (no ranking requirement); or
- Win a provincial/ministerial-level science and technology award at Third Prize or above (ranked within the top five); or
- Win a science and technology award at Second Prize or above from a national first-tier academic society/industry association (ranked within the top five); or
- Win a national first prize or above in a school-recognized Category I, Grade A discipline

competition (ranked first); or

- Obtain one authorized invention patent from a developed country.

Notes:

- (1) If the supervisor is the first author/inventor and the applicant is the second author/inventor, it shall be regarded as the applicant's first-author/first-inventor output; however, the applicant must have at least one first-author output in an authoritative journal or above, and where there are co-first authors, the applicant must be listed first among them.
- (2) The supervisor must be listed as one of the authors/inventors.
- (3) Papers must be formally published or published online ahead of print; acceptance letters are not valid. Invention patents must be officially granted/authorized.

十、学位论文要求

学位论文是博士生培养的关键环节，是培养博士生创新能力的重要手段。学位论文要求博士生对所研究的课题在科学或专门技术上做出创新性成果，并在理论或应用方面具有重要意义。学位论文应体现博士生掌握了本学科专业坚实宽广的基础理论和系统深入的专门知识，具有独立从事科学研究工作的能力。鼓励博士生选择具有重要创新性和代表科学技术前沿的课题，或对国家经济建设、科技进步和社会发展具有重要意义的课题。

博士学位论文工作应包括论文开题、中期检查、预答辩、论文评阅与答辩等环节。

(一) 学位论文开题

博士生入学后应当在导师指导下查阅文献资料，了解本学科或领域的发展前沿与国内外研究现状，结合自己的专长确定课题研究方向，完成学位论文开题。博士学位论文选题应以社会发展及科学技术发展中的重要理论问题、高新技术或重大工程问题为背景，进行具有较大理论意义和现实价值、前沿性和创新性的研究。

博士生开题报告包含选题背景与选题依据、国内外的研究动态、主要研究内容、拟采用的研究方案和技术路线及可行性分析、工作难点、预期成果及可能的创新点、学位论文工作计划等。

开题报告一般应在入学第三学期结束前完成，采用公开答辩方式，由学院统一组织开展。学院成立开题报告考核组，考核组由不少于 5 人的单数组成，成员应从教授或具有相当专业技术职务的本领域专家中选聘，博士生导师数应不少于成员人数的 2/3。考核组必须有校外专家，校外专家不少于成员人数的 1/3。报告人的导师不得担任考核组组长。

开题报告会应在本学科或与论文选题相关的学科范围内公开进行，考核组根据研究生汇报情况及所提交的材料提出具体的意见和建议，并作出是否通过的决定，经与会专家三分之二以上同意，即为“通过”；否则为“不通过”。开题报告不通过的博士生，经导师同意，对开题报告进行不少于 3 个月的修改，经本人申请，导师同意后，允许按照程序申请重新开题。重新开题不通过者，需随下一年级进行开题。开题报告具体要求按照《苏州科技大学研究生学位论文选题、开题报告的相关规定》执行。

开题报告通过时间计为学位论文工作起始时间。开题报告通过到预答辩时间原则上不少于 2 年。

(二) 学位论文中期检查

中期检查是在博士生开展学位论文工作一定时间后对博士生学习和研究工作进行全面检查，着重考核博士生业务表现、工作态度和精力投入、学位论文工作进展情况等，对于不适合继续攻读博士学位的研究生及时进行分流。中期检查考核博士生学位论文工作进展情

况，审核开题报告与学位论文内容一致性，是否按照学位论文工作计划开展相关工作等。

博士生在开题报告通过 12 个月后方可申请参加中期检查。中期检查由学院负责统一组织开展。学院组织专家成立考核组，并确定组长和秘书。考核组由不少于 5 人的单数成员组成，成员应从具有教授或具有相当专业技术职务的本领域专家中选聘，博士生导师数不应少于成员人数的三分之二。报告人的导师不得担任考核组组长。

中期检查须以公开答辩的形式进行。考核组对博士生学位论文工作进展进行评定。评定结果为通过和不通过，考核组须在一周内将评议结果告知研究生，中期检查结束后，学院应及时将考核结果报研究生院备案。

中期检查通过的博士生，可继续开展学位论文研究工作；中期检查不通过的研究生，应依据考核组给出的整改意见修改论文，3 个月后方可再次申请参加学位论文中期检查。连续两次未通过中期检查者，经学院审议和研究生院复议，不再进入博士生后续培养阶段。中期检查具体要求按照《苏州科技大学研究生学位论文中期检查管理规定》执行。

（三）学位论文预答辩

学位论文预答辩是切实检查博士生学位论文工作，保障学位论文质量的重要环节。博士生完成个人培养计划的所有内容并取得一定的创新成果，完成学位论文撰写后、申请学位论文评阅前，须进行预答辩。

学院成立预答辩委员会组织开展预答辩工作。并确定主席和秘书。学位论文应在预答辩前 3 天送预答辩委员会专家审阅。预答辩委员会由不少于 5 人的单数组成，成员应从具有教授或具有相当专业技术职务的本领域专家中选聘，博士生导师数不应少于成员人数的三分之二。预答辩委员会必须有校外专家，校外专家不少于成员人数的三分之一。报告人的导师不得担任预答辩委员会主席。预答辩委员会重点审查学位论文的学术水平或创新性，对论文的研究过程、数据材料真实性、结果与结论、论文写作与规范等进行全面严格把关，并对论文中存在的不足和问题，提出具体修改意见，确保学位论文质量。

博士学位论文的预答辩采用公开答辩方式，由学院负责统一组织开展，采取末位复评制，加强质量监控。学位论文预答辩结果分为通过和不通过。学位论文预答辩按照《苏州科技大学研究生学位论文预答辩管理规定》执行。预答辩通过者，应根据预答辩委员会提出的意见，对学位论文进行修改，经导师同意后，可进入学位论文或实践成果评阅阶段；预答辩不通过者，应根据预答辩委员会提出的意见，对学位论文进行不少于六个月的修改，经导师同意方可重新申请预答辩。

（四）学位论文评阅和答辩

博士生学位论文预答辩通过后，经导师同意后进行学位论文评阅环节。博士学位论文评阅程序、答辩组织和答辩程序、学位申请和学位授予按照《苏州科技大学博士、硕士学位授予工作实施细则》等有关规定执行。

（五）提前答辩和延期答辩

在学制内提前完成培养计划的优秀博士生，课程学习取得优异成绩，学位论文研究工作取得丰硕成果，且符合以下条件者可申请提前答辩。

- （1）博士生入学后的注册时间应不少于三学年；
- （2）完成个人培养计划中规定的课程和必修环节修读并取得相应学分；
- （3）开题报告通过之日起至学位论文答辩的时间原则上不少于十八个月。

申请学位论文提前答辩的博士生，由本人提出申请、导师同意、学院学位评定分委员会批准后，学院报研究生院审批备案。

超过规定学制未能按时答辩者，需经过审批方可申请学位论文延期答辩。延期答辩的基本要求、申请及审批流程按照学校相关管理规定执行。

X. Dissertation Requirements

The doctoral dissertation is a key component of Ph.D. training and an important means of cultivating innovation capacity. The dissertation should produce innovative achievements in science or specialized technology and have significant theoretical and/or practical value. It should demonstrate the candidate's solid and broad foundation in disciplinary theories, systematic and in-depth specialized knowledge, and the ability to conduct independent research. Students are encouraged to select topics with strong originality and frontier significance, or topics of major importance to national economic development, scientific and technological progress, and social development.

The dissertation process includes the proposal, mid-term review, pre-defense, external review, and final defense.

(1) Dissertation Proposal

After enrollment, students should review relevant literature under the supervisor's guidance, understand research frontiers and the status of domestic and international research, determine a research direction aligned with their strengths, and complete the dissertation proposal. Topics should be grounded in important theoretical issues, high technologies, or major engineering challenges, and should be frontier-oriented, innovative, and of substantial academic and practical value.

The proposal report generally includes: background and rationale, research progress at home and abroad, main research content, proposed research plan/technical route and feasibility analysis, key challenges, expected outcomes and potential innovations, and a work plan for the dissertation.

The proposal is normally completed before the end of the third semester and is conducted through a public defense organized by the School. A proposal assessment panel is established with an odd number of members (no fewer than five), selected from professors or experts with equivalent professional titles in the relevant field. Ph.D. supervisors should account for no less than two-thirds of the panel members. External experts are required and must account for no less than one-third of the panel. The candidate's supervisor shall not serve as the panel chair.

The proposal defense is open within the discipline or related fields. The panel provides comments and decides Pass/Fail. A proposal is deemed Pass with approval from at least two-thirds of attending experts; otherwise it is Fail. If failed, the student may revise the proposal for no less than three months (with supervisor approval) and then apply for re-proposal. A second failure requires the student to re-propose with the next cohort. Specific requirements shall follow the university regulations on dissertation topic selection and proposal.

The date of passing the proposal is regarded as the start date of dissertation work. In principle, the period from passing the proposal to the pre-defense should be no less than two years.

(2) Mid-term Review of the Dissertation

The mid-term review is a comprehensive examination conducted after a period of dissertation work, focusing on academic performance, work attitude and commitment, and dissertation progress. It also serves to divert students who are deemed unsuitable to continue doctoral studies in a timely manner. The review evaluates dissertation progress, consistency between the proposal and dissertation content, and whether work is being carried out according to the dissertation plan.

Students may apply for the mid-term review 12 months after passing the proposal. The School organizes the review and forms an assessment panel (odd number of members, no fewer than five), selected from professors or experts with equivalent professional titles. Ph.D. supervisors should account for no less than two-thirds of the panel. The supervisor shall not serve as the panel chair.

The mid-term review is conducted through a public defense. Results are Pass/Fail, and the panel must notify the student of the decision within one week. The School shall report the results to the Graduate School for record.

Students who pass may continue dissertation work. Those who fail must revise according to the panel's recommendations and may re-apply after three months. Students who fail twice consecutively, upon School review and Graduate School reconsideration, will not proceed to the subsequent doctoral training stage. Specific requirements shall follow the university's mid-term dissertation review regulations.

(3) Pre-defense

The pre-defense is an important quality-control step to ensure dissertation quality. After completing the Individual Training Plan and achieving certain innovative results, and after completing the dissertation draft but before applying for external review, the student must undergo a pre-defense.

The School establishes a pre-defense committee and appoints a chair and secretary. The dissertation must be submitted to committee members for review at least three days before the pre-defense. The committee consists of an odd number of members (no fewer than five), selected from professors or experts with equivalent professional titles. Ph.D. supervisors should account for no less than two-thirds of the committee. External experts are required and must account for no less than one-third of the committee. The candidate's supervisor shall not serve as the committee chair.

The committee focuses on the dissertation's academic quality and originality, and conducts a rigorous review of the research process, authenticity of data/materials, results and conclusions, and writing and formatting standards, providing specific revision suggestions to ensure dissertation quality.

The pre-defense is conducted as a public defense organized by the School, and quality monitoring is strengthened through a bottom-ranking re-evaluation mechanism. Results are Pass/Fail in accordance with the university's pre-defense regulations. Students who pass should revise the dissertation based on the committee's comments; upon supervisor approval, they may

proceed to the external review stage. Students who fail must revise the dissertation for no less than six months and may re-apply for a pre-defense with supervisor approval.

(4) External Review and Final Defense

After passing the pre-defense and obtaining supervisor approval, the dissertation enters the external review stage. Procedures for external review and defense, and for degree application and conferral, shall follow relevant university regulations, including the Implementation Rules for the Conferral of Doctoral and Master's Degrees of Suzhou University of Science and Technology.

(5) Early Defense and Deferred Defense

Outstanding Ph.D. students who complete the training plan early within the standard duration, achieve excellent coursework results, and make substantial research progress may apply for an early defense if they meet the following conditions:

- (1) The registration period after enrollment is no less than three academic years;
- (2) All required courses and components in the Individual Training Plan have been completed and corresponding credits obtained;
- (3) The period from passing the proposal to the dissertation defense is, in principle, no less than 18 months.

Applications for early defense must be submitted by the student, approved by the supervisor, and endorsed by the School Sub-committee for Degree Evaluation, then submitted by the School to the Graduate School for approval and record.

Students who exceed the standard duration and cannot defend on time may apply for a deferred defense upon approval. Requirements, application, and approval procedures shall follow relevant university regulations.