

土木工程 (0814)

Civil Engineering

学科门类：工学 (08) 一级学科：土木工程 (0814)

Discipline Category: Engineering (08)

First-Class Discipline: Civil Engineering (0814)

一、学科简介

土木工程是一门关于基础建设的规划、建造和维护的学科。土木工程学科的特点是：以数学、力学、地质学和工程科学为基础，解决基础建设中的实际问题，强调科学素养和工程专业知识的综合运用。土木工程在大型基础设施建设如水利工程、城市建设、铁路公路、港口航道等工程领域具有广泛的应用。

河海大学土木工程学科是为江苏省一级重点学科，学科从属于土木与交通学院，前身可以追溯到1922年河海工程专门学校设立的“结构部”和“路工学部”。含岩土工程、结构工程、防灾减灾工程及防护工程、桥梁与隧道工程等四个二级学科。其中岩土工程学科于1988年被评为国家级重点学科（全国仅有两个）。以土木工程学科为依托，建立了岩土力学与堤坝工程教育部重点实验室、教育部国家外专局“堤坝工程安全与减灾学科创新引智基地”、江苏省岩土工程技术工程研究中心、江苏省建筑物裂缝控制工程技术研究中心、江苏省钢结构工程技术研究中心等平台。土木工程学科目前近百名教学科研人员，其中包括教授51名，副教授50名。近年来承担国家“973”、“863”计划课题、国家重点研发计划、国家科技支撑计划、国家自然科学基金重点与面上项目及重大工程科技项目等590多项，承接科研经费超过2.63亿元，获国家科技进步一等奖、二等奖、国家技术发明二等奖及省部级科学技术奖50多项。

I. Discipline Overview

Civil Engineering is a discipline of planning, designing, constructing and maintaining infrastructures.

Civil Engineering is based on Mathematics, Mechanics, Geology and other Engineering principles, and is devoted to solutions of problems arising in engineering practices on infrastructures. Civil Engineering highlights the combination of scientific qualities of engineers and comprehensive implementation of professional engineering knowledge. Civil Engineering is widely used in mega-infrastructures, such as hydraulic engineering, city construction, railway and highway engineering, harbor and waterway engineering, etc.

Civil Engineering in Hohai University is a key discipline of Jiangsu Province, and is accommodated in College of Civil and Transportation Engineering (CCTE). CCTE is developed from Department of Structural Engineering and Department of Highway Engineering in Hohai Polytechnic back to 1922. CCTE currently consists of Department of Geotechnical Engineering, Structural Engineering, Disaster Prevention and Mitigation Engineering, as well as Bridge and Tunneling Engineering, etc. Geotechnical Engineering in CCTE was awarded as national key discipline in 1988. Based on Civil Engineering discipline, CCTE has founded Key Laboratory of Geomechanics and Embankment Engineering under Ministry of Education, Research center of Geotechnical Engineering of Jiangsu Province, Research center of building crack control technology of Jiangsu Province, as well as Research center of steel structure engineering technology of Jiangsu Province, etc. Currently Civil Engineering discipline has around 100 research faculty and staff members, including 51 professors and 50 associate professors. Over the last few years, they have undertaken more than 590 research projects, including the topics funded by “973”, “863” programs and National Key RESEARCH and development Program, National key technology support program, and priority/general/major research projects funded by the National Natural Science Foundation of China (NSFC). The total research funding exceeds RMB 0.263 billion yuan. They have won more than 50 awards, including the first and second class prizes of National Science and Technology (S&T) Progress Awards, the second prizes of National Technological Invention Awards, and Provincial and Ministerial S&T Awards.

二、培养目标

1. 河海大学博士层次外国留学生应当在土木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土木工程的理论、技能和方法，具备参与国际交流与合作的能力。

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. 博士层次外国留学生应当在本学科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本学科的理论、技能和方法，在国际事务中具有竞争优势。

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. PhD graduates will be inspired to broaden their global view, learn and develop cutting-edge theories, skills and methods, and thereby possess competition advantages in global academic fields.

三、主要研究方向

1. 岩土工程
2. 结构工程
3. 防灾减灾工程及防护工程
4. 桥梁与隧道工程

III. Research Directions

1. Geotechnical Engineering
2. Structure Engineering

3. Disaster Prevention and Mitigation Engineering

4. Bridge and Tunnel 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:

土木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 Civil 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
		2022LD880003	随机微分方程 Stochastic Differential Equations	2	32	春 Spring	
		2022LD990401	岩石水力学 Rock Hydraulics	2	32	春 Spring	
	专业课程 Major Course	2022LD040105	土木工程学科前沿专题讲座 Special Topics on Civil Engineering	1	16	春 Spring	选修 2 学分 Optional 2 credits at least
		2022LD770001	高等计算力学 Advanced Computational Mechanics	2	32	春 Spring	
		2022LD040102	现代岩石力学 Modern rock mechanics	4	64	春 Spring	
		2022LD040101	高等土力学 II Advanced Soil Mechanics II	3	48	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		
	2022LD040106	岩土工程可靠性设计理论及风险分析 Geotechnical reliability-based design theory and risk analysis	2	32	春 Spring	选修 2 学分 Optional 2 credits at least	
	2022LD040104	现代土木工程数值方法 Numerical method in modern civil engineering	2	32	春 Spring		
	2022LD040103	基础工程分析 II Foundation Engineering Analysis II	2	32	春 Spring		
	选修博士课程 Optional courses for PhD						选修 Optional
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 Civil and Transportation Engineering. 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. 殷宗泽等. 土工原理[M]. 北京: 中国水利水电出版社, 2007.
2. 钱家欢. 土工原理与计算[M]. 北京: 中国水利水电出版社, 1995.
3. 郑颖人等. 岩土塑性力学原理[M]. 北京: 中国建筑工业出版社, 2002.
4. 钱家欢. 土工原理与计算[M]. 北京: 中国水利水电出版社, 1995.
5. 胡聿贤. 地震工程学[M]. 北京: 地震出版社, 2006.
6. 李杰, 李国强. 地震工程学导论[M]. 北京: 地震出版社, 1992.
7. 王保田. 土工测试技术[M]. 南京: 河海大学出版社, 2005.
8. 王思敬主编. 中国岩石力学与工程世纪成就[M]. 南京: 河海大学出版社, 2004.
9. 周维垣. 高等岩石力学[M]. 北京: 水利电力出版社, 1990.
10. 龚晓南. 地基处理手册(第三版)[M]. 北京: 中国建筑工业出版社, 2007.
11. 李广信. 高等土力学(第2版)[M]. 北京: 清华大学出版社, 2016.
12. 谢定义. 非饱和土土力学[M]. 北京: 高等教育出版社, 2015.
13. 土工试验方法标准 (GB/T50123-1999). 北京: 中国计划出版社, 1999.
14. 蔡美峰. 岩石力学与工程[M]. 北京: 科学出版社, 2004.
15. 关宝树. 隧道工程施工要点集[M]. 北京: 人民交通出版社, 2011.
16. 张有天. 岩石水力学与工程[M]. 北京: 水利水电出版社, 2005.
17. 王梦恕. 中国隧道及地下工程修建技术[M]. 北京: 人民交通出版社, 2010.
18. 卢廷浩, 刘军等. 岩土工程数值方法与应用[M]. 南京: 河海大学出版社, 2011.
19. 朱合华, 张子新. 地下建筑结构[M]. 北京: 中国建筑工业出版社, 2005.
20. 朱伟. 隧道标准规范(盾构篇)及解说[M]. 北京: 中国建筑工业出版社, 2010.
21. 刘鑫, 洪宝宁. 城市地下工程[M]. 北京: 中国建筑工业出版社, 2021.

22. 高玮. 基于仿生计算智能的地下工程反分析: 理论与应用[M]. 北京: 科学出版社,2009.
23. 陈国兴. 岩土地震工程学[M]. 北京: 科学出版社, 2007.
24. 丁选明等. 桩基动力学原理[M]. 北京: 科学出版社, 2021.
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26. David Muir Wood. Soil Behaviour and Critical State Soil Mechanics[M]. Cambridge University Press, 1990.
27. James K. Mitchell. Fundamentals of Soil Behavior[M]. Wiley, 2nd edition 1993.
28. Braja M. Das. Advanced Soil Mechanics[M].Taylor & Francis, 3rd edition 2008.
29. Braja M. Das. Fundamentals of Geotechnical Engineering[M]. Brooks/Cole, 2000.
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31. Fredlund D.G., Rahardjo H. Soil Mechanics for Unsaturated Soils[M].John Wiley & Sons, 1993.
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33. David M. Potts,Lidija Zdravkovi. Finite Element Analysis in Geotechnical Engineering:Theory and Application[M].Taylor & Francis, 2007.
34. Donald P. Coduto. Foundation Design : Principles and Practices[M].Prentice Hall, 2nd edition 2000.
35. Duncan, J. M. and Wright, S. G.. Soil strength and slope stability. Hoboken, New Jersey, John Wiley & Sons, Inc. 2005.
36. 岩土工程学报.
37. 岩土力学.
38. 岩石力学与工程学报.
39. 水利学报.
40. 土木工程学报.
41. 世界地震工程.

42. 防灾减灾工程学报.
43. 河海大学学报.
44. Geotechnique.
45. Journal of Geotechnical and Geoenvironmental Engineering.
46. Canadian Geotechnical Journal.
47. Soils and Foundations.
48. Computers and Geotechnics.
49. International Journal of Rock Mechanics and Mining Sciences.
50. Rock Mechanics and Rock Engineering.
51. International Journal for Numerical and Analytical Methods in Geomechanics.
52. Ocean Engineering.
53. Journal of Earthquake Engineering.
54. Marine Georesources & Geotechnology.
55. Geophysical Journal International.
56. Applied Ocean Research.
57. Earthquake Spectra.
58. Soil Dynamic and Earthquake Engineering.
59. Earthquake Engineering and Engineering Vibration.
60. Bulletin of the Seismological Society of America.
61. China Ocean Engineering.
62. Applied Mathematics and Mechanics.
63. Engineering Geology.
64. Journal of Engineering Mechanics, ASCE.
65. Earthquake Engineering and Structural Dynamics.

66. Landslides.