

土木工程 (0814)

Civil Engineering

学科门类：工学 (08) 一级学科：土木工程 (0814)

Discipline: 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余名教学科研人员，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. 河海大学硕士层次外国留学生应当在土木工程领域中具有较好的国际视野，能够在多个国家

的实际环境中运用和发展土木工程的知识、技能和方法，并具备参与国际事务和国际竞争的能力。

2. 以英语为专业教学语言的学科、专业中，外国留学生毕业时，硕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. 培养从事铁路、公路、水利等工程和堤坝、房屋、桥梁、隧道、边坡、地下工程研究工作的高层次人才。毕业生应具有一定的数学、力学、地质学理论基础、系统的工程专业知识，和对复杂工程问题建模分析的能力，能较熟练的运用现代基础理论和先进的计算方法及实验技术手段开展科学研究，能够从事大型复杂工程的技术开发以及高等院校和研究机构的教学科研工作。学生将在导师的指导下，结合导师的研究课题，掌握土木工程领域的基础知识，了解新问题与新进展，鼓励学生应用获得的知识和技能解决实际问题的能力。

II. Training Objectives

1. International master graduates of Hohai University are expected to have good international view, to apply and develop the theories, skills, and methodologies in the actual environment of several countries, and to participate in the international academic affairs.

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

3. To cultivate high-level talents engaged in railway, highway, water conservancy and other projects, as well as dam, building, bridge, tunnel, slope and underground engineering research. Graduates should have a certain mathematics, mechanics, geology theory, systems engineering professional knowledge, and the ability of modeling analysis of complex engineering problem, can skilled use of modern advanced basic theory and the calculation method of technical means to carry out the scientific research and experiment, to engage in large-scale complex engineering technology development and the teaching and scientific research of universities and research institutions. Under the guidance of the tutor, students will master the basic knowledge in the field of civil engineering, understand the new problems and new progress, and encourage students to apply the knowledge and skills acquired to solve practical problems.

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

学术学位全英文硕士留学研究生的标准学制为 3 年。实行弹性学制，学习年限最短不少于 2 年，最长不超过 5 年。

IV. Number of Years Requirement

The master program typically requires 3 years to complete. However, the completing time may vary to 2 years as the minimum and 5 years as the maximum.

五、学分要求和课程设置

1. 学术学位全英文硕士留学研究生课程总学分为 28 学分，其中学位课程为 20 学分，非学位课程为 8 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 Provision

1. International academic master students will complete 28 credits, 20 of which are from degree courses, and 8 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 master degree, Chinese language courses can be exempted, of which the details can be referred to in relevant regulations.

The specific curriculum provision is as follows:

土木工程全英文学术型留学硕士研究生课程设置

Curriculum for English Taught International Academic Master Students Majoring 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 20 学分	公共 课程 General Courses	2022LM000001	汉语 I Chinese Language I	2	48	秋 Autumn	必修 Compulsory
		2022LM000002	汉语 II Chinese Language II	2	48	春 Spring	
		2022LM000003	中国概况 Introduction to China	2	36	秋 Autumn	
		2022LM110001	论文写作指导 Guide of Thesis Writing	2	32	秋、春 Autumn/ Spring	
	基础 课程 Basic Courses	2022LM880003	数值分析 Numerical Analysis	3	48	秋 Autumn	选修 6 学分 Optional 6 credits at least
		2022LM880004	数学物理方程 Partial Differential Equations	2	32	秋 Autumn	
		2022LM770003	弹性力学 Elastic Mechanics	2	32	秋 Autumn	
		2022LM770001	流体力学 Fluid Mechanics	2	32	秋 Autumn	
		2022LM991001	环境大地测量学 Environmental Geodesy	2	32	秋 Autumn	选修 2 学分 Optional 2 credits at least
		2022LM991501	工程经济学 Engineering Economy	2	32	春 Spring	
	专业课程 Major Courses	2022LM040101	高等土力学 I Advanced Soil Mechanics I	3	48	春 Spring	选修 4 学分 Optional 4 credits at least
		2022LM040102	高等岩石力学 Advanced Rock Mechanics	4	64	春 Spring	
		2022LM040103	基础工程分析 I Foundation Engineering Analysis I	2	32	春 Spring	
		2022LM040104	结构试验与量测技术 Structure Test and Monitoring Technique	2	32	春 Spring	
非学位课程 Non-degree Course 8 学分	2022LM110002	中国国情教育（水韵课堂） Water Harmony Lectures	1	16	秋、春 Autumn/ Spring	必修 Compulsory	
	2022LM040107	渗流理论与测试 Seepage Theory and Test	2	32	春 Spring	选修 7 学分 Optional 7 credits at least	
	2022LM770004	有限元法 Finite Element Method	3	48	秋 Autumn		
	2022LM040105	大跨度空间结构 Long Span Space Structure	2	32	春 Spring		
	2022LM770002	塑性力学 Plasticity Mechanics	2	32	春 Spring		
	2022LM040106	岩土工程风险与可靠性分析 Risk and reliability analysis in geotechnical engineering	2	32	春 Spring		
	选修硕士课程 Optional courses for master						选修 Optional
教学环节 Academic Activities	学术活动（含博导讲座） Seminar and Conferences (including lecturers 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

研究生入学后，应在导师指导下，在规定的时间内按照培养方案和学位论文工作的有关规定，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

硕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，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 10 次以上的学术交流活动，博导讲座至少 2 次。硕士研究生参加学术活动必须填写《河海大学硕士研究生参加学术活动登记本》。

3. 实践活动

为培养劳动实践能力和责任意识，学术学位硕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。

VI. Academic Activities

1. Study Proposal

The master students must prepare a study proposal on how they will complete the master 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

Master students must participate in academic conferences, seminars by experts and PhD advisors, and discussion panels. Before their dissertation defense, master students must participate in seminars and conferences over 10 times, including at least 2 seminars by PhD advisors. All the seminars and presentations should be recorded in relevant record book.

3. Practical Activities

Master 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.

七、论文工作

可使用英文撰写论文。学术学位硕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《河海大学硕士学位论文工作管理办法》和学院相关文件执行。

VII. Dissertation Writing

The dissertations of academic master 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 Master's Dissertation Management Measures” and relevant documents in College of Civil and Transportation Engineering. Dissertation 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. 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.
5. 胡聿贤. 北京: 地震工程学[M]. 地震出版社, 2006.
6. 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.
7. 蔡美峰. 岩石力学与工程[M]. 北京: 科学出版社, 2004.
8. 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.
9. 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.
10. 李广信. 高等土力学(第2版)[M]. 北京: 清华大学出版社, 2016.
11. 谢定义. 非饱和土土力学[M]. 北京: 高等教育出版社, 2015.

12. 关宝树. 隧道工程施工要点集[M]. 北京: 人民交通出版社, 2011.
13. 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.
14. 刘鑫, 洪宝宁. 城市地下工程[M]. 北京: 中国建筑工业出版社, 2021.
15. 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.
16. 陈国兴. 岩土地震工程学[M]. 北京: 科学出版社, 2007.
17. 丁选明等. 桩基动力学原理[M]. 北京: 科学出版社, 2021.
18. Craig R. F. Craig's Soil Mechanics[M]. Spon Press Taylor & Francis Group, 7th edition 2004.
19. David Muir Wood. Soil Behaviour and Critical State Soil Mechanics[M]. Cambridge University Press, 1990.
20. James K. Mitchell. Fundamentals of Soil Behavior[M]. Wiley, 2nd edition 1993.
21. Braja M. Das. Advanced Soil Mechanics[M]. Taylor & Francis, 3rd edition 2008.
22. Braja M. Das. Fundamentals of Geotechnical Engineering[M]. Brooks/Cole, 2000.
23. Santamarina J. C., Katherine A. Klein, Moheb A. Fam. Soils and Waves: Particulate Materials Behavior, Characterization and Process Monitoring[M]. John Wiley & Sons Ltd, 2001.
24. Fredlund D. G., Rahardjo H. Soil Mechanics for Unsaturated Soils[M]. John Wiley & Sons, 1993.
25. Charles W. W. Ng, Bruce Menzies. Advanced Unsaturated Soil Mechanics and Engineering[M].
26. David M. Potts, Lidija Zdravkovic. Finite Element Analysis in Geotechnical Engineering: Theory and Application[M]. Taylor & Francis, 2007.
27. Donald P. Coduto. Foundation Design: Principles and Practices[M]. Prentice Hall, 2nd edition 2000.
28. Hudson J A, et al. Comprehensive Rock Engineering Principles, Practice and Projects[M]. Oxford: Pergamon Press, 1993.
29. 岩土工程学报.
30. 岩土力学.
31. 岩石力学与工程学报.
32. 水利学报.

33. 土木工程学报.
34. 河海大学学报.
35. 世界地震工程.
36. 防灾减灾工程学报.
37. Geotechnique.
38. Journal of Geotechnical and Geoenvironmental Engineering.
39. Canadian Geotechnical Journal.
40. Soils and Foundations.
41. Geotechnical Testing Journal.
42. Computers and Geotechnics.
43. International Journal of Rock Mechanics and Mining Sciences.
44. Rock Mechanics and Rock Engineering.
45. International Journal for Numerical and Analytical Methods in Geomechanics.
46. Ocean Engineering.
47. Journal of Earthquake Engineering.
48. Marine Georesources & Geotechnology.
49. Geophysical Journal International.
50. Applied Ocean Research.
51. Earthquake Spectra.
52. Soil Dynamic and Earthquake Engineering.
53. China Ocean Engineering.
54. Applied Mathematics and Mechanics.
55. Earthquake Engineering and Engineering Vibration.
56. Bulletin of the Seismological Society of America.
57. Journal of Engineering Mechanics, ASCE.

58. Earthquake Engineering and Structural Dynamics.

59. Landslides.

60. Engineering Geology.