

水工结构工程（081503）

学科门类：工学（08）一级学科：水利工程（0815）

一、专业描述

河海大学水工结构工程学科创建于 1952 年，1981 年获硕士、博士学位授予权，1990 年建立博士后流动站，1996 年被确定为水利部重点学科，1997 年为成为国家“211 工程”重点建设学科，1999 年设立教育部长江学者奖励计划特聘教授岗位，2001 年被评为国家重点学科，同年成立教育部水利水电工程安全工程研究中心，2002 年成立了南京土工合成材料工程技术研究中心。

我校水工结构工程学科注重基础及应用基础研究，紧跟国际前沿，围绕国家重大需求，先后承担了国家自然科学基金、国家 973 计划、国家科技支撑计划、国家重点研发计划以及长江三峡、二滩、小湾、小浪底、锦屏、糯扎渡、南水北调等众多重大水利水电工程的科研课题，取得了大量科研成果及显著的社会和经济效益。

二、培养目标

本学科旨在培养本学科领域的高级专门人才。在本门学科上掌握坚实的基础理论和系统的专门知识；具有从事科学研究工作或独立担负专门技术工作的能力。能够熟练阅读本专业外文文献，具有较强的英文写作和国际学术交流能力。

三、研究方向

1. 高坝及坝基安全监控理论、方法和技术（Safety Monitoring Theories,

- Methods and Techniques for High Dams and Their Foundations)
2. 坝工设计计算理论与试验技术 (Computation Theories and Experimental Techniques for Dam Designs)
 3. 高边坡及地下工程 (High Slopes and Underground Engineering)
 4. 大型水闸、船闸及输水结构 (Sluices, Ship Locks and Water Transport Structures)
 5. 水工混凝土新材料新工艺 (Materials and Construction for Hydraulic Concrete Structures)

四、申请条件

1. 已在我国认可的海内外高校或学术机构获得本科学位者。
2. 能够用英语进行课程学习、阅读文献和进行学术写作，能够用英语进行日常交流。

五、培养年限

学术型硕士学制为3年，实行弹性学制，学习年限最短不低于2年，最长不超过5年。

六、学分要求和课程设置

本专业硕士留学研究生课程总学分为28学分，其中学位课程为19学分，非学位课程为9学分。另设教学环节。具体开设课程见附表。

Hydraulics Structure Engineering (081503)

Discipline: Engineering (08)

First-Class Discipline: Water Conservancy (0815)

1. Discipline Description

The discipline of Hydraulic Structure Engineering in Hohai University was founded in 1952. The discipline was qualified for awarding master and doctoral degree in 1981 and the post-doctor research workshop was established in 1990. In 1996, the discipline was awarded a key discipline of Ministry of Water Resources and was chosen as a key discipline of national "211 Project" in 1997. The set of "Cheung Kong Scholars Program" Distinguished Professor position of the Ministry of Education was approved in 1999. The discipline of hydraulic structure engineering was awarded a national key discipline in 2001, and safety engineering research center of water conservancy and hydropower engineering of the Ministry of Education was established in the same year. Nanjing geosynthetics engineering technology research center was set up in 2002.

The discipline of Hydraulic Structure Engineering has been focusing on basic and applied research, following closely the international development in this field and meeting the national strategic demand. Many high-level research missions were accomplished, such as National Natural Science Foundation of China, National 973 Program, National Science-Technology Support Program and National Key R & D Plan, as well as some major water conservancy and hydropower engineering research projects, for instance, Yangtze River Three Gorges, Ertan, Xiaowan, Xiaolangdi, Jinping, Nuozhaduhydropower station and South-to-North Water Diversion project. A large number of scientific research achievements and significant social and economic benefits were obtained.

2. Program Description

The program aims at cultivating advanced professional individuals in the fields of hydraulic structure engineering. The candidate should: 1) be equipped with comprehensive fundamental knowledge and theory in this discipline; 2) be capable of doing research work or undertaking expertise work independently in the scientific research; 3) read the English

documents and papers in this discipline and related fields, write English documents and be active in the international academy communication.

3. Research Directions

- Safety Monitoring Theories, Methods and Techniques for High Dams and Their Foundations
- Computation Theories and Experimental Techniques for Dam Designs
- High Slopes and Underground Engineering
- Sluices, Ship Locks and Water Transport Structures
- Materials and Construction for Hydraulic Concrete Structures

4. Application Requirements

(1) You have received the bachelor degree from the domestic and overseas universities or academic institutions accredited by the Ministry of Education.

(2) You have the ability to read and write academic papers and communicate in English.

5. Educational System and Duration

The master program is 3 years; the duration is minimum 2 years and no more than 5 years.

6. Credits and Courses

A master student must take at least 28 credits of courses, including 19 credits of required course of the degree and 9 credits of Non-required course of the degree.

水工结构工程全英文留学硕士研究生课程设置

Courses for Master Students of Hydraulics Structure Engineering

课程类别 Categories		课程编号 No	课程名称 Course	学时 Hours	学分 Credit	开课学期 Term	备注 Note
学位课程 19 学分 Required course of the degree 19 Credits	公共课程 General Courses	2015LXS01	*汉语 I Chinese Language I	32	2	秋 fall	必修 RequiredC ourse
		2015LXS02	汉语 II Chinese Language II	32	2	春 spring	
		2015LXS03	中国概况 Introduction to China	32	2	秋 fall	
	学科基础 课程 Discipline Basic Courses	2015JC03	数值分析 Numerical Analysis	48	3	秋 fall	选修 5 学分 5 Credits at least
		2015JC04	最优化方法 Optimization Methods	32	2	秋 fall	
		2015JC01	数学物理方程 Partial Differential Equations	32	2	春 spring	
	专业基础 课程 Major BasicCourses	2017SD09	水工结构有限元分析 Finite Element Method For Hydraulic Structure	64	4	秋 fall	选修 6 学分 6 Credits at least
		2015JC09	弹性力学 Elastic Mechanics	32	2	秋 fall n	
		2015LC05	塑性力学 Plastic Mechanics	32	2	春 spring	
	专业课程 Major Courses	2017SD02	高等水工结构学 Advanced Hydraulic Structure	32	2	春 spring	选修 2 学分 2 Credits at least
		2017SD10	大坝安全监控理论与应用 Dam Safety Monitoring Theory and Its Application	32	2	春 spring	
		2017SD11	地下工程与边坡稳定 Underground Engineering and Slope Stability	32	2	春 spring	
		2017SD03	工程渗流分析与控制 Seepage Analysis and Controlling Engineering	32	2	春 spring	
		2017SD12	水利工程施工新技术 New Construction Technology of Hydraulic Engineering	32	2	秋 fall	
		2017SD05	土石坝地震工程 Earth Rock Earthquake Engineering	32	2	春 spring	
非学位课程 9 学分 Non-required course of the degree 9 Credits	2015LXS05	*跨学科选修 Interdisciplinary Elective	32	2		必修 RequiredC ourse	
	2015LXS06	*综合素质课 Comprehensive Quality	16	1			
	2015JC25	程序设计方法 Methods of Programming	32	2	秋 fall		
	2015JC26	计算机辅助设计 Computer-Aided Design	32	2	春 spring		
	2015LXS07	英文科技写作 The Art of Scientific Presentation and Writing in English	32	2	秋、春 fall or spring		
教学环节 Academic Activities	学术活动 Seminar and Conferences					必修 RequiredC ourse	
	科学研究 Scientific Research						
	文献阅读与综述 Literature Reading and Reviewing						