

水力学及河流动力学（081502）

学科门类：工学（08）一级学科：水利工程（0815）

一、专业描述

河海大学水力学及河流动力学学科 1981 年首批获得硕士、博士学位授予权，1990 年建立博士后流动站，1994 年成为首批江苏省重点学科，2007 年成为国家二级重点学科，也是国家“211 工程”重点建设学科，水资源高效利用与工程安全国家工程研究中心和水文水资源与水利工程科学国家重点实验室是该学科研究支撑平台。

多年来，结合我国重大水利工程建设和河流开发利用的实践，本学科在水工水力学、生态环境水力学和平原河网水动力学研究方面具有明显优势和学科特色。研究领域主要包括工程水力学、泥沙工程与河流管理、水利信息技术、工程渗流及地下水环境、现代流体测试技术等方面，研究成果在我国河流治理、水力发电、水运、给排水、环境生态水利、水土保持等领域得到了广泛应用。

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、系统的专门知识及必要的工程实践技能；具有从事科学研究工作或独立担负专门技术工作的能力。了解学科研究的前沿动态和发展趋势，能熟练阅读本专业的英文文献资料，具有扎实的外文写作能力和较强的国际学术交流能力；熟练应用相关基础理论、先进的计算方法和实验技术解决专门

技术问题和从事科学研究；毕业后能够胜任高等教学、科研、规划设计和管理工作。

三、研究方向

1. 河流管理与生态环境 (River Management, Aquatic Ecology and Environment)

2. 工程水力学理论与应用 (Theory and Applications of Engineering Hydraulics)

3. 水沙运动理论与工程应用 (Flow, Sediment Transportation and Its Application in River Engineering)

4. 工程渗流及地下水环境 (Engineering Seepage and Ground water Environment)

5. 计算水力学及水信息技术 (Computational Hydraulics and Hydroinformatics)

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，学习年限为2-5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 and River Dynamics (081502)

Discipline: Engineering (08)

First-Class Discipline: Water Conservancy (0815)

1. Discipline Description

The discipline of hydraulics and river dynamics of Hohai University in 1981 became the first batch of master's degree, doctoral degree grant, in 1990 established a postdoctoral station, in 1994 became the first batch of key disciplines in Jiangsu Province, in 2007 became the national key disciplines. It is also the national "211 Project" key construction disciplines. "National Engineering Research Center of Water Resources Efficient Utilization and Engineering Safety" and "State Key Laboratory of Hydrology-Water Resources and Hydraulic Engineering" are the research support platform of this subject.

Over the years, combined with China's major water conservancy construction and river development and utilization of the practice, the discipline in the hydraulic hydraulics, ecological environment hydraulics and plain river hydrodynamics research has obvious advantages and advanced disciplines characteristics. The research areas include engineering hydraulics, sediment engineering and river management, water information technology, engineering infiltration flow and groundwater environment, modern fluid testing technology and so on. Research results have been widely used in China's river management, hydropower, water transportation, water supply and drainage, environmental ecological water conservancy, soil and water conservation and many other fields.

2. Program Description

The program aims to foster highly qualified specialists in the field of Hydraulics and River Dynamics with the consolidation of their basic theories, systematic professional knowledge and necessary engineering practice, and the development of their ability on scientific research and technological work. They should fully understand the frontier technology and development trend in this research field, read the English documents and papers frequently in this discipline and related fields, have a strong ability to write English documents and be active in the international academy communication. They are able to solve the technical problems and carry

out their research work with the proficient application of the fundamental theories, advanced computational methods and experimental technology, and then be fully qualified for the work on higher education, scientific research, planning, design and management.

3. Research Directions

- River Management, Aquatic Ecology and Environment
- Theory and Applications of Engineering Hydraulics
- Flow, Sediment Transportation and It Application in River Engineering
- Engineering Seepage and Ground water Environment
- Computational Hydraulics and Hydro informatics

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.

水力学及河流动力学全英文留学硕士研究生课程设置

Courses for Master Students of Hydraulics and River Dynamics

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 Courses 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	2017SD01	河流动力学 River Mechanics	32	2	春 spring	必修 RequiredC ourse
		2017SD06	工程紊流的数值模拟方法 Numerical Simulation Methods for Engineering Turbulence	32	2	秋 fall	
		2017SD07	工程水动力学及应用 Engineering Hydrodynamics and Applications	32	2	春 spring	
	专业课程 Major Courses	2017SD08	多孔介质中的水流与溶质运移 Flow and Transport in Porous Media	32	2	春 spring	必修 RequiredC ourse
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 Required Course	
	2015LXS06	*综合素质课 Comprehensive Quality	16	1			
	2015JC26	计算机辅助设计 Computer-Aided Design	32	2	春 spring		
	2015JC25	程序设计方法 Methods of Programming	32	2	秋 fall		
	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						