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

水力学及河流动力学博士生培养目标为，致力于培养本学科领域的高层次人才。毕业生在本门学科上掌握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，能熟练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，在科学或专门技术上做出创新性的成果；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。能够胜任大型复杂工程关键技术的研究开发，高等院校和研究机构的教学科研工作。

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 Hydro informatics）

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硕士学位者。

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

攻读博士学位的标准学制为 4 年，实行弹性学制，学习年限最短不低于 3 年，最长不超过 6 年。

六、学分要求和课程设置

本专业博士留学研究生课程总学分为 15 学分，其中学位课程为 11 学分，非学位课程为 4 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 was the first batch of master's degree, doctoral degree grant, in 1990 a postdoctoral station was established, in 1994 became the first batch of key disciplines in Jiangsu Province, in 2007 become 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 in Hydraulics and River Dynamics aims to cultivate high-level talent PhD students in this field. Graduates in the discipline can master a solid broad basic theory and system of in-depth expertise as well as have the ability to work independently in scientific research. Besides, they can skillfully use modern basic theory and advanced computing methods and experimental techniques to carry out

scientific research, and can be expertise to make innovative achievements. Graduates will be proficiency in reading the professional foreign literature, with strong English writing and international academic communication skills. They can be competent for large-scale complex engineering key technology research and development, and can be qualified for higher education institutions and research institutions of teaching and research work.

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 master 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 doctorate program is 4 years, the duration is minimum 3 years and no more than 6 years.

6. Credits and Courses

A doctoral student must take at least 15 credits of courses, including 11 credits of Required course of the degree and 4 credits of Non-required course of the degree.

水力学及河流动力学全英文留学博士研究生课程设置

Courses for Doctoral 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 11 学分 Required course of the degree 11 Credits	公共课程 General Courses	2015LXS01	*汉语Ⅰ Chinese Language Ⅰ	32	2	秋 fall	必修 Required Course
		2015LXS03	*中国概况 Introduction to China	32	2	秋 fall	
	基础课程 Basic Courses	2015JC02	应用数学 Applied Mathematics	64	4	秋 fall	选修 4 学分 4 Credits at least
		2015JC03	数值分析 Numerical Analysis	48	3	秋 fall	
		2015JC04	最优化方法 Optimization Methods	32	2	秋 fall	
	专业课程 Major Courses	2017SD13	水利工程学科前沿专题 Special Topics on Water Conservancy	16	1	春 Spring	必修 Required Course
		2017SD14	高等河流动力学 Advanced River Mechanics	32	2	春 Spring	选修 2 学分 2 Credits at least
		2017SD16	工程紊流的数值模拟方法及应用 Numerical Simulation Methods and Applications for Engineering Turbulence	32	2	秋 fall	
		2017SD04	工程水动力学 Engineering Hydrodynamics	32	2	春 Spring	
		2017SD15	多孔介质流体动力学 Dynamics of Fluids in Porous Media	32	2	春 Spring	
非学位课程 4 学分 Non-required course of the degree 4 Credits		2015LXS07	英文科技写作 The Art of Scientific Presentation and Writing in English	32	2	秋、春 Fall/Spring	必修 Required Course
		2015LXS05	跨一级学科选修博士课程 A course in other disciplines	32	2		必修 Required Course
教学环节 Academic Activities		学术活动 Seminar and Conferences					必修 Required Course
		科学研究 Scientific Research					
		文献阅读与综述 Literature Reading and Reviewing					