

大地测量学与测量工程（081601）

学科门类：工学（08）一级学科：测绘科学与技术（0816）

一、专业描述

测绘科学与技术是地球科学的一个分支学科，主要研究内容是对地理表面、空间距离以及海洋深度与阔度进行测量描绘、数据收集与信息整理。大地测量学与测量工程属于测绘科学与技术学科中的一个二级学科，专注于培养具备地面测量、海洋测量、空间测量、摄影测量与遥感以及地图编制等方面的知识的人才，使其能在国民经济各部门从事国家基础测绘建设、陆海空运载工具导航与管理、城市和工程建设、矿产资源勘察与开发、国土资源调查与管理、地图与地理信息系统的设计实施和研究、环境保护与灾害预防等领域的工程测量工作。

河海大学“大地测量学与测量工程”博士点于 2003 年设置，2007 年设立“测绘科学与技术”博士后流动站。学科在各种特殊精度要求的测量技术和方法、安全监控模型和监测系统的网络化理论与方法、安全监控信息管理系统及专家评判系统、卫星导航和精密定位技术、多系统定位信息融合模型与方法、多源遥感自动化测量及水利 GIS 信息化管理等方面研究具有特色和优势。依托测绘工程研究所、遥感空间信息工程研究所、水利建设 3S 技术应用联合实验室（与香港理工大学共建）以及江苏省测绘教学示范中心、测绘工程实验室等平台，具有良好的科研及研究生培养环境。实验室配备先进的测量仪器设备、多种开发平台软件。毕业生的主要就业方向为各类科研机构、高等院

校以及国土、城建、规划等政府相关部门。

二、培养目标

具有实事求是的科学态度和端正严谨的诚信学风，理论联系实际，善于钻研与创新，具有良好的团队合作精神，系统深入地掌握测绘学科领域内基础理论、专门知识和技能方法，能熟练应用一门外语进行科学研究与交流，具有较高计算机应用能力，对测绘学的现状和发展趋势有深入全面的了解，具有独立与创造性从事本学科科学研究和有效解决实际问题的能力，面向测绘工程重大需求的德智体美全面发展的高层次学术型人才。

三、研究方向

大地测量学与测量工程全英文博士生培养计划包括（但不限于）以下研究方向：

- 1、现代大地测量理论与方法
- 2、精密工程测量理论与技术
- 3、形变监测与安全监控理论与技术
- 4、卫星大地测量及应用
- 5、现代摄影测量理论与方法
- 6、多源遥感信息融合及应用
- 7、虚拟现实技术与三维 GIS
- 8、卫星精密定位

四、申请条件

大地测量学与测量工程博士生申请人需要满足以下条件：

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

博士生需要完成总学分为 15 学分的课程学习，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。博士生还必须结合研究课题完成一篇博士论文，并通过答辩。大地测量学与测量工程学科博士课程设置如下表。

Geodesy and Surveying Engineering (081601)

Discipline: Engineering (08)

First-Class Discipline: Surveying and Mapping (0816)

1. Discipline Description

Surveying and Mapping is a branch of Earth Sciences in which the main research content is the measurement and collection of data and information about the physical earth and our environment. Geodesy and Survey Engineering is a sub-discipline of Surveying and Mapping, which focus on training engineering and technicians who have the knowledge of topographic surveys, hydrographic surveys, spatial measurements, photogrammetry and remote sensing, and map compilation. And these professionals are engaged in engineering surveying works such as national basic surveying and mapping projects, vehicle navigation and management, city and engineering constructions, mineral resources exploration and exploitation, territorial resources surveys and management, environmental protection and disaster prevention, and implementation and research of Cartography and Geographic Information Systems.

The Doctoral Program of Geodesy and Survey Engineering of Hohai University was set up in 2003 and the Postdoctoral Research Station in 2007. It has features and advantages in various measurement techniques and methods which has special precision requirements such as control surveys and method of safety monitoring model and monitoring system, safety monitoring information management system and expert evaluation system, satellite navigation and positioning technologies, information fusion model and method of multiple positioning systems, etc.. These platforms, such as the Surveying and Mapping Engineering Institute, the Remote Sensing and Space Information Engineering Institute, the “3S” Technology and Application United Laboratories of Water Conservancy Construction (Cooperating with the Hong Kong Polytechnic University), Surveying and Mapping Engineering Laboratory, provided students with a favorable academic environment.

2. Program Description

The program in Geodesy and Survey Engineering aims at cultivating high-level individuals with solid fundamental knowledge in the field of surveying and mapping and specialized in a particular engineering application.,who are capable of handling complex technical problems in large engineering projects, can undertake research and development project in large engineering companies or teaching and research work in academic institutions. Through the program, students have opportunities to develop their problem-solving ability with new knowledge and skills, and to make their own contributions to their research field.

The program is designed to provide students with an intellectual environment to explore the knowledge and principles in Geodesy and Survey Engineering applications through research project under guidance of an established professor (PhD supervisor). Through the program, students have opportunities to develop their problem-solving ability with new knowledge and skills, and to make their own contributions to their research field.

3. Research Directions

The PhD program in Geodesy and Survey Engineering is mainly oriented (but not limited) to the following research areas:

- Modern Theory and Method of Surveying Engineering
- Theory and Technique of Precise Engineering Surveying
- Deformation Monitoring and Safety Control Theory and Technology
- Satellite Geodesy
- Theory and Method of Modern Photogrammetry
- Fusion and Application of Multi-sensor Remotely Sensed Data
- Virtual Reality Technology and Three-dimensional GIS
- Precise Satellite Positioning

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

In accordance with the code of graduate study in Hohai University, the doctorate program requires students to complete minimum 15 credits points of course study and participate in other academic activities for graduation, among which minimum 10 credits are Required course of the degree and minimum 5 credits are Non-required course of the degree. A research thesis is also Required course of the degree for obtaining the academic degree. A list of the courses for doctorate program in the discipline of Geodesy and Surveying Engineering is presented below.

大地测量学与测量工程博士留学研究生课程设置

Courses for Doctoral Students of Geodesy and Surveying Engineering

课程类别 Categories		课程编号 No	课程名称 Course	学时 Hours	学分 Credits	开课学期 Term	备注 Note
学位课程 10 学分 Required course of the degree 10 Credits	公共课 General Courses	2015LXS01	*汉语 I Chinese Language I	32	2	秋 fall	必修 RequiredCourse
		2015LXS03	*中国概况 Introduction to China	32	2	秋 fall	
	专业基础 课程 Major BasicCourses	2015JC03	数值分析 Numerical Analysis	48	3	秋 fall	选修 4 学分 4 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	
	专业课 Major Courses	2015DX01	现代大地测量学 Modern Geodesy	32	2	春 Spring	选修 2 学分 2 Credits at least
		2017DX04	全球导航卫星系统原理及 应用 Global Navigation Satellite System Principle and Application	32	2	秋 fall	
		2015DX11	高级空间分析 Advanced Spatial Analysis	32	2	秋 fall	
	非学位课程 5 学分 Non-required course of the degree 5 Credits	2015LXS05	*跨学科选修 Interdisciplinary Elective	32	2		必修 RequiredCourse
2015LXS06		*综合素质课 Comprehensive Quality	16	1			
2015DX04		大地测量学与测量工程学 科前沿专题讲座 Special Topic on Geodesy and Surveying Engineering	32	2	春 Spring	选修 2 学分 2 Credits at least	
2015DX05		遥感地学分析 Remote Sensing Geo-Analysis	32	2	春 Spring		
2015DX06		遥感科学与进展 Frontiers of Remote Sensing Science	32	2	春 Spring		
2015DX02		最优估计理论在空间大地 测量中应用 Application of Optimal Estimation Theory in Space Geodesy	32	2	春 Spring		
2017DX02		数字高程模型 Digital Elevation Model	32	2	春 Spring		
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						