工程力学（080104）

学科门类：工学（08）　一级学科：力学（0801）

一、专业描述

力学是应用物理科学的一个分支学科，主要研究物体或系统受外力作用后的响应。工程力学属于力学学科中的一个二级学科，专注于求解工程实践中所遇到的各种相关力学和工程问题。需要综合应用数学、力学和工程科学中的基本原理，强调力学理论的工程应用。工程力学在土木水利工程、机械工程、航空航天工程等领域有着广泛的应用。

河海大学工程力学学科，是国家重点学科和江苏省重点学科。其主要特色是紧密结合水利水电和土木工程，着重解决重大水电工程中的复杂结构分析和复杂工程问题的求解。学科从属于力学与材料学院，其前身工程力学系是河海大学最早建立的 5 个系科之一。工程力学系的创始人、著名力学专家徐芝纶院士也是水工结构工程学科博士点的第一个博士生导师。力学学科目前有 45 名教学科研人员，其中包括 26 名教授，15 名博导。近年来承担了大量与与水电工程有关的科研课题，包括多项国家重点基础研究（973）项目课题，一项重点基金和一项杰出青年基金，大量面上基金、青年基金和横向项目，近三年科研经费总额超过 4 千万。

二、培养目标

河海大学工程力学硕士生的培养目标为，致力于培养适应现代土木水电工程需求的工程技术人才。毕业生应掌握力学基础理论和系统的工程实践知

识，具有较强的工程建模和分析计算能力，能够胜任大型工程的技术工作和技术性管理工作。

培养方案的设计为确保学生能达到预定的培养目标，包含了课程学习、相关学术训练和专业课题研究。学生需要完成一定数量的研究生基础和专业课程学习，并且参加导师课题组的学术活动，在导师指导下，完成选定的课题研究和硕士学位论文。

三、研究方向

工程力学专业全英文硕士生培养计划包括（但不限于）一下几个主要研究方向:

1. 工程结构的静、动力分析
2. 工程问题的数值建模和模拟
3. 工程材料特性和结构安全

四、申请条件

工程力学全英文专业硕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18学分，非学位课程为10学分。另设教学环节。硕士生还必须结合研究课题完成一篇硕士论文，并通过答辩。工程力学专业硕士课程设置如下表。

Engineering Mechanics（080104）

Discipline：Engineering（08）

First-Class Discipline：Mechanics（0801）

1. Discipline Description

Mechanics is a discipline of applied physical science that studies the responses of bodies or body systems to the external forces. Engineering mechanics is an applied branch of mechanics devoted to the solution of mechanics problems arising in engineering practices, through integrated application of mathematical, scientific and engineering principles. Research in engineering mechanics has wide applications in many engineering fields including civil engineering, mechanical engineering, aeronautics and astronautics engineering, etc.

Engineering Mechanics in Hohai University is a key discipline of the country as well as a key discipline of Jiangsu Province. Highlighted by engineering applications, research in the Discipline of Engineering Mechanics at Hohai University is mainly focused on practical problems encountered in large hydro-electric engineering, geotechnical and structural engineering. Special emphasis is placed on the understanding of physical principles underlyingmodern engineering design. The discipline is accommodated in the college of Mechanics of Materials, which was formally known as the Department of Engineering Mechanics, one of the 5 earliest found departments in Hohai University. The late Prof. Xu Zhilun, a renowned engineering scientist in China and a fellow of the Chinese Academy of Science, was a department founder. He was also the first PhD supervisor in the discipline of hydraulic engineering. Currently the discipline has 45 academic staff, among them 26 are professors and PhD supervisors. They are engaged in many research projects in the areas of Structural Analysis and Safety Assessment of High Dams, the Mechanical Property of Engineering Materials, Computational Mechanics and Engineering Simulations, etc. In the last three years, the discipline has undertaken several research projects in the National Basic Research Program (973) funded by the Ministry of Science and Technology, a NSFC priority research project and an Outstanding Young Scientist Funding, many NSFC general research

projects and other research and consulting projects. The total research funding in the last three years has exceeded RMB40 million Yuan.

2. Program Description

The program aims to foster qualified engineers in response to the needs of modern civil engineering. Graduates will be equipped with knowledge of the mechanics principles and skills for solving technical problems in engineering practices, and can undertake demanding technical works in large engineering projects.

The program is designed to help students achieve this goal through course study and research work. Students will have access to high level courses leading to a graduate degree. They will also have the opportunities to increase their knowledge in understanding the engineering principles and to develop their problem solving techniques through joining a research project and producing a master thesis.

3. Research Directions

The research fields for the M.Eng. program in the discipline of Engineering Mechanics fall within the following main research fields:

- Static and dynamic analysis of engineering structures;
- Numerical Modelling and simulations of Engineering Problems;
- Optimization of engineering structures
- Engineering Materials and Structure Safety

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 18 credits of required course of the degree and 10 credits of Non-required course of the degree. A dissertation of the research subject and an oral defense are also required. Module structure of the doctorate program of Engineering Mechanics is listed below.

工程力学全英文留学硕士研究生课程设置

Courses for Master Students of Engineering Mechanics

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 18 学分 Required course of the degree 18 Credits	公共课程 General Courses	2015LXS01	*汉语Ⅰ Chinese Language Ⅰ	32	2	秋 fall	必修 Required course
		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	2015JC01	数学物理方程 Partial Differential Equations of Mathematical Physics	32	2	秋 fall	必修 Required course
		2015JC03	数值分析 Numerical Analysis	32	2	秋 fall	
	专业基础课程 Major BasicCourses	2015JC09	弹性力学 Theory of Elasticity	48	3	秋 fall	选修 4 学分 4 Credits at least
		2015LC03	有限单元法 Finite Element Method	32	2	秋 fall	
		2015LC04	流体力学 Fluid Mechanics	32	2	秋 fall	
	专业课程 Major Courses	2015LC05	塑性力学 Engineering Plasticity	32	2	春 spring	选修 4 学分 4 Credits at least
		2015JC10	结构动力学 Structural Dynamics	32	2	春 spring	
		2015LC06	材料结构与性能 Structures and Properties of Material	32	2	春 spring	
非学位课程 10 学分 Non-required course of the degree 10 Credits		2015LXS05	跨学科课程 A course in other disciplines	32	2		必修 Required Courses
		2015LXS07	英文科技写作 The Art of Scientific Presentation and Writing in English	32	2	秋、春 fall、spring	选修 8 学分 8Credits at least
		2015LC02	高等计算力学 Advanced computational mechanics	32	2	春 spring	
		2015LC07	结构优化设计 Structural Optimization	32	2	春 spring	
		2015LC08	实验力学 Modern Experimental Mechanics	32	2	春 spring	
		2015LC09	研究专题 Special topics in research area	32	2		
教学环节 Academic Activities		学术活动 Seminar and Conferences					必修 Required Courses
		科学研究 Scientific Research					
		文献阅读与综述 Literature Reading and Reviewing					