

软件工程（0835）

Software Engineering

学科门类：工学（08） 一级学科：软件工程（0835）

Discipline Category: Engineering (08)

First-Class Discipline: Software Engineering (0835)

一、学科简介

河海大学软件工程一级学科是以我校“计算机科学与技术”一级学科博士点、“水信息学”二级学科博士点和计算机科学与技术博士后流动站为依托，以国家优势学科创新平台、国家级科研基地和省部级科研基地为支撑，于2011年新增为一级博士点学科，同年被评为江苏省重点学科。目前拥有江苏省“青蓝工程”优秀学科梯队1个，教育部新世纪优秀人才1名，教育部高等学校计算机科学与技术教学指导委员会软件工程专业教学指导分委员会委员1名，江苏省“六大人才高峰”项目获得者5人，江苏省“333工程”入选者7人。

近年来，本学科紧密围绕江苏软件强省建设和水利信息化的发展和需要，依托河海大学优势学科平台建设，承接了国家“973”、“863”、自然科学基金等基础研究类项目，以及三峡工程管理系统、国家防汛抗旱指挥系统、数字黄河工程、水资源监控管理系统等一批重大工程的信息化建设项目，积极推进水利信息化工作。在领域工程技术、复杂软件系统建模与验证、数据管理与领域知识发现、软件工程安全理论与技术、万维网软件工程等方向上形成了明显的特色和优势。

I. Discipline Overview

The first-level discipline of software engineering of Hohai University is based on the first-level doctoral program of computer science and technology, the second-level doctoral program of water informatics and the postdoctoral station of computer science and technology, supported by the national advantageous discipline innovation platform, national research bases and provincial and ministerial research bases. In 2011, the first-

level doctoral program was added. It was awarded as a critical discipline in Jiangsu Province in the same year. At present, there is one excellent discipline echelon of "Youth and Blue Project" in Jiangsu Province, one exceptional talent of the new century from the Ministry of Education, one member of the Teaching Steering Committee of Software Engineering of the Teaching Steering Committee of Computer Science and Technology in Higher Education Institutions of the Ministry of Education, and five members of "Six Talent Summits" in Jiangsu Province. Five winners of the "Six Talent Summits" project in Jiangsu Province and seven selected candidates of the "333 Project" in Jiangsu Province.

In recent years, the discipline closely focused on the construction of Jiangsu software province and the development and needs of water resources informatization, relying on the structure of the excellent discipline platform of Hohai University, and undertakes the national "973", "863", natural science funds and other primary research projects, as well as We, have conducted several significant projects such as the Three Gorges Project Management System, the National Flood Control and Drought Relief Command System, the Digital Yellow River Project, and the Water Resources Monitoring and Management System, and actively promoted the work of water resources informatization. We have formed prominent characteristics and advantages in domain engineering technology, complex software system modelling and verification, data management and domain knowledge discovery, software engineering security theory and technology, and World Wide Web software engineering.

二、培养目标

1. 河海大学硕士层次外国留学生应当在软件工程领域中具有较好的国际视野，能够在多个国家的实际环境中运用和发展软件工程的知识、技能和方法，并具备参与国际事务和国际竞争的能力。
2. 以英语为专业教学语言的学科、专业中，外国留学生毕业时，硕士研究生的中文能力应当至少达到《国际汉语能力标准》三级水平。
3. 软件工程硕士留学研究生旨在培养软件工程领域的高级专门人才。培养在软件工程领域内掌

握坚实的基础理论和系统的专业知识；具有从事科学研究工作或独立担负专门技术工作的能力；了解中国文化并具备汉语日常交流能力的高级专门人才。

II. Training Objectives

1. International master graduates of Hohai University are expected to have good international view, to apply and develop the theories, skills, and methodologies in the actual environment of several countries, and to participate in the international academic affairs.

2. International master graduates must meet the requirement of Level 3 in Chinese Language Proficiency Scales upon graduation if they conduct their coursework in English.

3. The master's degree in software engineering aims to cultivate senior professionals in the field of software engineering. It cultivates senior professionals who have a solid basic theory and systematic professional knowledge in the field of software engineering; who have the ability to engage in scientific research work or take up specialized technical work independently; who understand Chinese culture and have the ability to communicate in Chinese on a daily basis.

三、主要研究方向

1. 领域软件工程方法学
2. 复杂软件体系结构
3. 智能软件与大数据技术
4. 可信软件与质量控制

III. Research Directions

1. Domain Software Engineering Methodology
2. Complex Software Architecture
3. Intelligent Software and Big Data Techniques
4. Confidence Software and Quality Control

四、学制和学习年限

学术学位全英文硕士留学研究生的标准学制为 3 年。实行弹性学制，学习年限最短不少于 2 年，最长不超过 5 年。

IV. Number of Years Requirement

The master program typically requires 3 years to complete. However, the completing time may vary to 2 years as the minimum and 5 years as the maximum.

五、学分要求和课程设置

1. 学术学位全英文硕士留学研究生课程总学分为 28 学分，其中学位课程一般为 20 学分，非学位课程一般为 8 学分。另设教学环节。所有课程学习一般应在入学后 1 年内完成。

2. 汉语课每学分为 24 学时，中国概况课每学分为 18 学时，其他课程每学分为 16 学时。

3. 中国国情教育（水韵课堂）为系列专题讲座，要求学生按照要求完成规定的学习任务。

4. 对于汉语水平已达到毕业要求的学生，可申请免修汉语，具体要求详见留学生课程免修有关规定。

具体课程设置如下：

V. Credit Requirements and Curriculum

1. International academic master students will complete 28 credits , 20 of which are from degree courses, and 8 of which are from non-degree courses. Students will also complete academic activities. Coursework will be completed in one year after registration.

2. Each credit of Chinese language course is 24 credit hours. Each credit of Introduction to China is 18 credit hours. For other courses, each credit is 16 credit hours.

3. “Water Harmony Lectures” is a series of seminars, which require students to complete the specified learning tasks.

4. For students who have met the Chinese language requirement for the master degree, Chinese language courses can be exempted, of which the details can be referred to in relevant regulations.

The specific curriculum is as follows:

软件工程全英文学术型留学硕士研究生课程设置

Curriculum for English Taught International Academic Master Students in Software Engineering

课程类别 Category	课程代码 Course Code	课程名称 Course Name	学分 Credit	学时 Hours	开课学期 Term	备注 Remarks	
学位课程 Degree Course 20 学分	公共课程 General Courses	2022LM000001	汉语I Chinese Language I	2	48	秋 Autumn	必修 Compulsory
		2022LM000002	汉语II Chinese Language II	2	48	春 Spring	
		2022LM000003	中国概况 Introduction to China	2	36	秋 Autumn	
		2022LM110001	论文写作指导 Guide of Thesis Writing	2	32	秋、春 Autumn/ Spring	
	基础课程 Basic Courses	2022LM880001	矩阵论 Matrix Theory	2	32	春 Autumn	必修 Compulsory
		2022LM880002	最优化方法 Optimization Methods	2	32	秋 Autumn	
		2022LM070115	信息与编码 Information Theory and Coding (Bilingual)	2	32	秋 Autumn	选修 4 学分 Optional 4 Credits at least
		2022LM070108	通信网理论基础 Fundamentals of Communication Networks	2	32	秋 Autumn	
		2022LM070102	数字信号处理 Digital Signal Processing	2	32	秋 Autumn	
		2022LM070103	数字视频基础 Digital Video Basics	2	32	春 Spring	
		2022LM070104	分布式计算 Distributed Computing	2	32	秋 Autumn	
	专业课程 Major Courses	2022LM070116	现代通信技术 Modern Communication Technology	2	32	春 Spring	选修 4 学分 Optional 4 Credits at least
		2022LM990701	数字通信 Digital Communication	2	32	春 Spring	
		2022LM070111	移动通信 Mobile Telecommunications	2	32	秋 Autumn	
		2022LM070110	数据管理技术 Data management technology	2	32	春 Spring	
		2022LM070107	信息安全 Information Security	2	32	春 Spring	
		2022LM070105	机器学习 Machine Learning	2	32	秋 Autumn	
	非学位课程 Non-degree Course 8 学分	2022LM110002	中国国情教育（水韵课堂） Water Harmony Lectures	1	16	秋、春 Autumn/ Spring	必修 Compulsory
2022LM070112		计算机辅助设计 Computer-Aided Design	2	32	春 Spring	选修 7 学分 Optional 7 Credits at least	
2022LM070109		算法设计与分析 Design and Analysis of Algorithms	2	32	春 Spring		
2022LM070114		视觉信息处理 Visual Information Processing	2	32	秋 Autumn		
2022LM070113		数值计算编程语言 Numerical Computing Programming Language	2	32	春 Spring		
2022LM330001		程序设计方法 Method of Programming	2	32	秋 Autumn		
选修硕士课程 Optional courses for master							选修 Optional
教学环节	学术活动（含博导讲座）					必修	

Academic Activities	Seminar and Conferences	Compulsory
	实践活动 Practice Activity	
	科学研究 Scientific Research	

六、教学环节

1. 个人培养计划

学术学位硕士研究生入学后，应在导师指导下，在规定时间内按照培养方案和学位论文工作有关规定，结合研究方向和本人实际情况制定个人培养计划，其中学习计划在入学 2 个月内提交。

2. 学术活动

学术学位硕士研究生学术活动包括参加国内外学术会议、专家学术讲座，以及研究生学术研讨活动等。申请学位论文答辩前必须参加 10 次以上的学术交流活动，其中博导讲座至少 2 次。研究生参加学术活动必须填写相关学术活动登记本。

3. 实践活动

为培养劳动实践能力和责任意识，学术学位硕士研究生必须参加实践活动，实践活动形式包括助教、助管、助研、生产实践、社会实践等。由导师对学生实践环节的时长和效果进行考核和评价。

VI. Academic Activities

1. Study Proposal

The master students must prepare a study proposal on how they will complete the master degree by considering their research interests, advice from their research advisors, and other requirements mentioned in this document. The proposal must be submitted in two months after official registration.

2. Seminars and Presentations

Master students must participate in academic conferences, seminars by experts and PhD advisors, and discussion panels. Before their dissertation defense, master students must participate in seminars and conferences over 10 times, including at least 2 seminars by PhD advisors. All the seminars and presentations should be recorded in relevant record book.

3. Practice Activities

Master students are required to participate in practice activities to prepare professional development. Practice activities include teaching assistantship, research assistantship, management assistantship, and

industry engagement etc., which are to be assessed by the advisors.

七、论文工作

学术学位硕士学位论文研究工作必须经过文献阅读、论文选题、论文计划及开题报告、论文中期检查、科研成果产出、学位论文预审、学位论文评阅、学位论文答辩等环节。具体按照《河海大学硕士学位论文工作管理办法》和学院相关文件执行。留学硕士研究生可使用英文撰写论文。

VII. Dissertation

The dissertations of academic master students are required to complete the stages of literature review, topic selection, dissertation plan and dissertation proposal, mid-term examination, output of scientific research achievements, pre-examination, review and assessment, and dissertation defense. Detailed requirements can be referred to in “Hohai University Master's Dissertation Management Measures” and relevant documents in College of Computer and Information. Dissertation in English is acceptable.

八、本学科推荐阅读的重要书目、专著和学术期刊

VIII. Recommended Bibliographies, Monographs and Academic Journals of the Discipline

1. (美) 普雷斯曼 著, 郑人杰 等译, 《软件工程: 实践者研究方法》(原书第7版), 机械工业出版社, ISBN: 9787111335818
2. (英) 萨默维尔 著, 程成 等译, 《软件工程》(原书第9版), 机械工业出版社, ISBN: 9787111334989
3. (美) 佩腾 (Patton, R.) 著, 张小松 等译, 《软件测试》(原书第2版), 机械工业出版社, ISBN: 9787111185260
4. 伽玛 等著, 李英军 等译, 《设计模式可复用 面向对象软件的基础》, 机械工业出版社, ISBN: 9787111075752

5. (美) Martin Flower 著, 《重构: 改善既有代码的设计》, 人民邮电出版社, ISBN: 9787115221704
6. (德) 布施曼 等著, 袁国忠 译, 《面向模式的软件架构, 卷 1: 模式系统》, 人民邮电出版社, ISBN: 9787115332158
7. (美) Douglas Schmidt (德) Michael Stal (德) Hans Rohnert (德) Frank Buschmann 著, 《面向模式的软件架构, 卷 2: 并发和联网对象模式》, 人民邮电出版社, ISBN: 9787115332141
8. (德) 基歇尔, (印) 耆那 著, 袁国忠 译, 《面向模式的软件架构 卷 3: 资源管理模式》, 人民邮电出版社, ISBN: 9787115313430
9. (英) 休斯, (英) 考特莱尔 著, 廖彬山, 周卫华 译, 《软件项目管理(原书第 5 版)》, 机械工业出版社, ISBN: 9787111309642
10. ACM Transactions on Programming Languages & Systems, ACM, <http://www.acm.org/toplas>
11. ACM Transactions on Software Engineering Methodology, ACM, <http://www.acm.org/pubs/tosem>
12. ACM Transactions on Software Engineering Methodology, IEEE, <http://www.Computer.org/portal/web/tse/home>
13. IEEE Transactions on Service Computing, IEEE, <http://www.Computer.org/portal/web/tsc>
14. Information and Software Technology, Elsevier, <http://www.sciencedirect.com/science/journal/09505849>
15. Journal of Functional Programming, Cambridge University Press, <http://journals.cambridge.org/action/displayjournal?jid=JFP>
16. Journal of Software: Evolution and Process, Wiley, [http://onlinelibrary.wiley.com/journal/10.1002/\(ISSN\)2047-7481](http://onlinelibrary.wiley.com/journal/10.1002/(ISSN)2047-7481)
17. Journal of Systems and Software, Elsevier <http://www.journals.elsevier.com/journal-of-systems-and-software/>
18. Requirements Engineering, Springer, <http://www.springer.com/computer/swe/journal/766>

19. Software and System Modeling Springer , <http://www.sosym.org/>
20. Software:Practice and Experience, Wiley, <http://www3.interscience.wiley.com/cgi-bin/jhome/1752>
21. Software Testing,Verification and Reliability,Wiley,Practice and Experience, Wiley,
<http://as.wiley.com/WileyCDA/WileyTitle/productCdSTVR.html>