

Master Program Majoring in Software engineering

(Major code: 085212 awarding a master degree in engineering)

1. Program objective

This program aims at training the students to master more intensive and systematic professional knowledge of software engineering so that they can engage in software engineering research and development. This program enables students to become creative elite professionals who possess strong capabilities of software design and implementation, strong capabilities of software project management, strong capabilities of communication and collaboration, and strong capabilities of international competitiveness. After graduation, the students can engage in computer or software engineering research, technology development, project management, teaching etc.

2. Introduction of discipline, major and research field

There are 3 research fields: software engineering technology, embedded system and Information Management.

(1) Software engineering technology

Focusing on fundamental software theory, capabilities of software research and development, capabilities of engineering practice, it aims to foster the students to become advanced project managers and technical development personnel who are needed urgently by software enterprises, such as software project manager, system analyst, senior software developing engineer, senior software quality engineer, test engineer, testing manager.

(2) Embedded system

Through learning the course in this field, Students will master the development of embedded application software and development process, get acquainted with the development platform and tools for embedded application software and have strong capability of developing an embedded system and embedded application system. After graduation, they will become senior engineers who engage in embedded system software and application software design, development, testing, maintenance and management.

(3) Information Management

In order to be a specialized personnel majored in information management, students should master the database management and optimization techniques; be familiar with the theories used in each phase of the data management life cycle; learn how to integrate and convert those various complicated data in the information system into the information the enterprise operation management needed; understand the basic principles and methods used in data warehousing and data mining; and manage to solve the physical problems in business intelligence by using practical tools.

3. Cultivation Mode and length of schooling

(1) Cultivation Mode

–The Cultivation Mode for Master students is a tutor-responsible system. The courses are classified into foundation courses, specialty courses and elective courses. The

training adopts a credit system which means that students need to get all required credits before applying for the thesis defense.

–Engineering practice

The training adopts university-Industry cooperation mode, taking enterprise and companies as experimental bases with a dual tutor-responsible system in which one is from university and the other is from industry. Students should take an engineering internship after finishing the courses. The engineering internship should be at least 6 months.

(2) Length of Schooling

The study period of Full-time master’s candidates is at least 2 years. On this basis, a two to four years flexible education system is adopted. During school period of the master degree, course study is generally not more than 1 year and the software engineering practice is not less than 6 months.

4. Courses and credits

Courses are classified into required courses and Electives courses.

Students should obtain at least 34 Credits.

There should be 22credits for Required Courses and 12credits for Electives courses.

Course List for Graduate Students Majoring in Software Engineering (34 Credits in Total)

Courses Property	Courses Name	Duration	Credits BJTU	Schedule		
				Fall	Spring	
Required (=22credits)	Basic Level Chinese	64	4	√	√	
	High Level Chinese	64	4			√
	Spoken Chinese	32	2	√	√	
	Software Project Training I	64	4		√	
	Software Project Training II	64	4			√
	Internship		4			
Electives (≥12 Credits)	Software Project Management	32	2	√		
	Software Requirement Engineering	32	2	√		
	Advanced Software Architecture	32	2	√		
	Software Quality Assurance	32	2			√
	Advanced Operating system	32	2			√
	Software Process Management	32	2		√	
	Software Metrics	32	2		√	
	Web Service Development Technology	32	2		√	
	Embedded Operating System	32	2		√	
	Embedded System Application Development	32	2		√	

	Internet of Things Technology	32	2			√
	Database development, management, and optimization	32	2		√	
	Big data fusion and data warehouse	32	2		√	
	Data Mining and Data Analyzing	32	2			√
	Mobile Application Development	32	2		√	
	Embedded Software Development based on Android	32	2			√
	Game Tool Development	32	2			√
	Game Design and Implementation	32	2			√
	Information Security: Technology and Application	32	2			√
	Front End Technology	32	2		√	
	Enlighten Entrepreneurship	16	1			√
	Career Planning and New Technology Seminar	16	1			√
	General Introduction to Chinese Socialism	16	1			√

Remarks: Direction 1---Software Engineering Technology;
Direction 2---Embedded System Application;
Direction 3---Information Management;

5. Engineering internship and requirements of thesis

- (1) Students should take an Engineering internship after finishing the courses The Engineering internship may be from May of the second year to June of the third year, lasting for at least 6 months. Students must submit the internship reports to their supervisor.
- (2) Students need to submit a thesis proposal which should be based on internship project.
- (3) The oral defense of the thesis must be conducted after students have obtained all 34 credits and should be agreed by the supervisor. Students who passed the thesis defense can be granted the Master degree of Beijing Jiaotong University.