Safety Science & Engineering

安全科学与工程

（083700）

1. Overview of the Program

The construction of safety science and engineering relies on the State Key Laboratory of Explosive Science and Technology (Beijing Institute of Technology), which has established a discipline system featuring combustion and explosion safety. The discipline has a high academic level, a reasonable structure of the academic team and advanced systematic research platform, to provide superior conditions for personnel training and scientific research.

This subject develops postgraduate training programs according to first-level disciplines. There are five major research directions.

1. Systematic safety theory and evaluation: Multi-factor system safety theory and method, system safety evaluation theory and method, hazard identification and evaluation method, accident causation theory under multi-factor cooperation, risk analysis and evaluation of complex system, Regional quantitative risk assessment (AQRA) theory and methods.

2. Dangerous substances and safety engineering: hazardous characteristics of inflammable and explosive and other dangerous substances, critical explosion criteria, hazard identification, reaction mechanism and safety theory, design, preparation and safety of flammable and explosive hazardous substances.

3. Disaster evolution dynamics: kinetic theory of the initiation, propagation, combustion and explosion of explosive hazards, the induction mechanism and process of explosion accidents, environmental conditions and physical and chemical properties of hazards, etc.

4. Safety monitoring and accident reconstruction: real-time on-line monitoring of system parameters before accidents and accidents, rapid disposal of insecure conditions, on-sits and effects, accident investigation and analysis, and accidents Prevent emergency plans.

5. Engineering safety and control technology: Engineering safety system research, major dangerous installations and accident prevention, emergency plan design, blasting engineering safety theory, engineering blasting effect and shock absorption control technology, engineering disaster numerical

simulation technology.

2. Training Target

The target is to train high-level innovative talents who have a good knowledge of international common sense, with the ability of spreading Chinese and foreign cultures occupied, so that to bring international graduate students into full play as a cultural bridge.

3. Length of Schooling

The basic length of schooling for master students is 2 years. In principle, students should complete the courses in the first academic year. Thesis work time should not be less than one year. The maximum length of study for master students is extended by 0.5 years on the basis of 2 years. The basic length of schooling for Ph.D. students is 4 years. In principle, students should complete the courses in the first academic year. Thesis work time should not be less than three years. The maximum length of study for Ph.D. students is extended by 2 years on the basis of 4 years.

4. Curriculum and Credit Requirements

Course Classification	Course Code	Course Name	Course Hours	Credits	Semester	Requirements	Master /Ph.D.	Credits Requirement
Public Course	3700001	Chinese Language 汉语	96	3+3	1+2	Compulsory	Master /Ph.D.	
	3700002	Outline of China 中国概况	32	2	1/2	Compulsory	Master /Ph.D.	
Major Basic Courses	1700001	Numerical Analysis 数值分析	32	2	1/2	Optional	Master /Ph.D.	Master≥2 Ph.D.≥2
	1700002	Matrix Analysis 矩阵分析	32	2	1/2	Optional	Master /Ph.D.	
	1700003	Scientific and Engineering Computing 科学与工程	48	3	1/2	Optional	Ph.D.	

			计算						
Optional Course	Major Core Courses	0201001	Introduction to Combustion and Detonation 燃烧与爆轰基础	32	2	1	Compulsory	Master /Ph.D.	Master≥2 Ph.D.≥2
	Major Optional course	0201002	Combustion and Explosion Measurement Technology 燃烧与爆炸测试基础	32	2	2	Optional	Master /Ph.D.	
		0201003	Principals of System Safety Evaluation 系统安全评估原理	32	2	2	Optional	Master /Ph.D.	
		0201004	Introduction & Application of Hazardous Chemicals 危险化学品概论及应用	32	2	2	Optional	Master /Ph.D.	
		0201005	Safety Engineering: Theory and Practice 安全工程：理论与实践	32	2	2	Optional	Master /Ph.D.	

Total Credits	Master≥18 credits Ph.D.≥12 credits

Notes：

1. Public Course

(1) Chinese Language: Set by International Students Center of BIT. All international students must take this compulsory course.

(2) Outline of China: Set by International Students Center of BIT. All international students must take this compulsory course.

2. Major Basic Courses

Academic postgraduates and PhD students should take at least 2 credits of Major Basic Courses.

3. Optional Course

(1) Major Core Courses

Academic postgraduates and PhD students should take at least 2 credits of Major Core Courses.

(2) Major Optional course

Master international students must take two optional courses of their own Program. Under the guidance of the supervisor, Master international students can take undergraduate courses if needed. Ph.D. international students can take undergraduate courses if needed.

5. Practice Part

1. Academic Activity (1 credit)

International Graduate Students need to participate in academic activities, academic lectures and academic conferences of their own fields. Giving oral speeches on academic conferences, whether on or off campus, are highly recommended.

2. Innovative Practice (1 credit)

International Graduate Students should take scientific research training and social practices during their training period, which should be carried-out and evaluated by supervisors.

6. The Dissertation Related Work

1. Literature Review& Opening Report

Under the guidance of the supervisor, International Graduate Students should pick a research direction as well as reading certain amount reference books, both Chinese or foreign languages, at the same time.

Master students should write a literature review, no less than 4000 words, based on the reading of over 30 papers, both Chinese or foreign languages, of their own research field.

Ph.D. students should write a literature review, no less than 5000 words, based on the reading of over 50 papers, both Chinese or foreign languages, of their own research field.

On the basis of the Literature Review, the Opening Report should mainly introduce following factors: research target, research meaning, methods of research, technical route, implementary plan, arrangements and expected results.

2. Mid-Term Evaluation

Schools organize Mid-Term Evaluation for International Students, which includes the evaluations of course study, literature review, opening report and the research progress of publishing papers and writing of Degree thesis.

3. Thesis Writing and Thesis Pre-Defense（for Ph.D. students）

International Graduate Students should complete a Degree thesis under the guidance of supervisors. Ph.D. students can take the Thesis Pre-Defense after finishing a supervisor-approved first draft.

4. Thesis Defense

After thesis approved and the Sub- Committee of Degree Assessment authorized, International Graduate Students can take the Thesis-Defense.

5. Degree Conferment

International students should acquire certain academic results as regulated when applying for a Master or Ph.D. Degree. Each program should clarify the categories of Master Degree and Ph.D. Degree.

Time nodes of relevant procedure

The Dissertation Related Work	**Master**	**Ph.D.**
Literature Review& Opening Report	Before week 1 of the 3rd semester	Before week 1 of the 5th semester
Mid-Term Evaluation	week 1-2 of the 4rd semester	Before week 1 of the 7th semester
Thesis Pre-Defense	——	Before Blind review
Thesis Defense	At least 9 months after the Opening Report	At least 18 months after the Opening Report
Degree Application	The application should be raised in a certain time after the Thesis Defense	

7. Course Syllabus

Course Code, Course Name, Class Hour, Credits, Course Description and Course Target, Teaching Method, Evaluation and Exams, Suitable Specialty, Prerequisites, Course Contents, Reference, and Lecturer Introduction.