

Armament Science and Technology

兵器科学与技术

(082600)

1. Overview of the Program

The Armament Science and Technology Discipline, founded in 1950s, is the earliest national defense discipline in China and has been qualified to recruit PhD students since 1984. In 2007, it is awarded the national first-level discipline and ranks Top 1 in the national assessments in 2008, 2012, and 2017. The discipline now takes pride in our research groups with profound academic knowledge, reasonable structure, solidify cooperation, innovation, and outstanding contributions, and is led by a lot of talent researchers including academician, Chang Jiang scholars, National Outstanding Experts, etc. The discipline consists of the Science and Technology Innovation Team and the National Defense Science and Technology Innovation Team honored by Ministry of Education and the Ministry of Industry Information Technology. Together with National Key Laboratory, National Defense Science and Technology Key Laboratory, and the Key Laboratory of the Ministry of Education, a high-level innovative research platform is provided.

The Armament Science and Technology is consist of six secondary disciplines as following:

- (1) Weapon Design and Application Engineering. It mainly studies theory and method of weapon system design, weapon integration and system confrontation, integrated design of weapon and platform, weapon launch and ballistic planning, unmanned aerial vehicle system technology, intelligent robot, precision guided weapon, intelligent and dexterous weapon cross-domain coordination accusation technology and new probability, the new concept of system, and so on.
- (2) Damage Technology and Ammunition Engineering. It mainly studies damage mechanism and theory, warhead technology, ammunition design theory, damage assessment, integrated damage, ammunition and platform integration, photo electricity and magnetic damage, cyber damage, new concept of damage, and so on.
- (3) Explosion Theory and Impact Engineering. It mainly studies theory of detonation and explosion, shock dynamics of material and structure, theory and application of high speed penetration, calculation of explosion mechanics, shock wave physics and chemistry, underwater explosion and impact,

mechanism of biological damage, hypervelocity collision, new concept explosion theory, and so on.

(4) Energetic Materials and Special Energy. It mainly studies high energy density compounds, green energetic compounds, high energy mixed explosives, complex system energetic materials, high active energy storage materials, high efficiency functional materials, advanced pyrotechnics, military pyrotechnics and materials, special energy devices and materials, solid state storage batteries and materials, new concept energetic materials, new concepts of energy, and so on.

(5) Target Detection and Ammunition Information. It mainly studies target detection, ammunition intelligent control, weapon terminal information confrontation, ammunition information, intelligent information processing, intelligent cluster technology, damage control, single soldier equipment digitalization, new concept of detection technology, and so on.

(6) Safety Technology and Protection Engineering. It mainly studies design of weapon safety, ammunition safety technology, protection theory and technology, advanced protective material and structure, intelligent security technology, anti-terrorism and explosion-proof technology, wearable protection, new concept of protection technology, and so on.

2. Training Target

The target is to train high-level innovative talents who have 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.	Master=6 Ph.D.=6	
	3700002	Outline of China 中国概况	32	2	1/2	Compulsory	Master /Ph.D.	Master=2 Ph.D.=2	
Major Basic Courses	0201006	Flight Dynamics Principles 飞行系统动力学	32	2	2	Compulsory	Master /Ph.D.	Master \geq 2 Ph.D. \geq 2	
Optional Course	Major Core Courses	0201007	Engineering Design of Conventional Warheads 常规战斗部工程设计	32	2	1	Optional	Master /Ph.D.	Master \geq 2 Ph.D. \geq 2
		0201008	Mobile Computing 移动计算	32	2	2			
		0201009	Chemistry of energetic materials 含能材料化学	48	3	1			

Beijing Institute of Technology Graduate Program 2018

		0201010	Continuum Mechanics 连续介质 力学	32	2	1			
Major Optional course		0201011	Dynamic Behaviors of Materials 材料动态力 学行为	32	2	2	Optional	Master /Ph.D.	Master ≥ 6 Ph.D. ≥ 2
		0201012	Physical Gas Dynamic 气体动力学	32	2	1			
		0201013	Micro- & nanoscale Energetic Materials and Devices 微纳含能材 料与器件	32	2	2			
		0201014	Molecular dynamics theory and computation 分子动力学 理论与计算	32	2	1			
		0201015	Structural Response to Blast Loading 结构冲击动 力学响应	32	2	2			

Beijing Institute of Technology Graduate Program 2018

		0201016	Shock physics and chemistry 冲击波物理与化学	48	3	1			
		0201005	Safety Engineering: Theory and Practice 安全工程: 理论与实践	32	2	2			
		0201001	Introduction to Combustion and Detonation 燃烧与爆轰基础	32	2	1			
Total Credits		Master \geq 18 credits Ph.D. \geq 14 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

Different Programs can set their own Major Basic Course.

3. Optional Course

(1) Major Core Courses

Different Programs can set their own Major Core Course.

(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 3 rd semester	Before week 1 of the 5 th semester
Mid-Term Evaluation	week 1-2 of the 4 rd semester	Before week 1 of the 7 th 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.