

Ph.D. Program in Processing Equipment and Control Engineering

1. Introduction to Major

The discipline of Processing Equipment and Control Engineering was founded in 1952 to adapt to the needs of talents in modern chemical engineering industry. During the last six decades. The discipline of Processing Equipment and Control Engineering committed to the research and development of large equipments in many key industries in national economy, like petrochemical, power, light industry, medicine, environmental protection, etc. A tight integration of process research and equipment research was emphasized. Great contributions were made to the creation of novel, efficient, energy saving equipments and the guarantee of a safe and normal operation. The department has started to recruit postgraduate students since 1956, and Ph.D students since 1998. It is entitled to grant master degrees, doctoral degrees and post-doc positions. There are 6 PhD advisors and 10 associate professors in the department. Research Fundings consist of State 863 Projects, National Natural Science Foundation of China, Tianjin Key Science and Technology Projects and many other research projects funded from industries.

Research area: Reliability of process equipment; heterogeneous separation theory and technology; Multiphase mass transfer and reaction engineering; Process measurement and control; Microsystem manufacture technology.

2. Objectives

Students should have concrete theoretical knowledge of mathematics, mechanics, mechanical engineering and chemical engineering, and wide academic view on the process equipment and machinery. He should master basic theoretical knowledge of process equipment and machinery, and the experimental skills and designing methods about the developing, designing and manufacturing of process equipment and machinery. Students should be able to individually conduct research, teaching and technical responsibility in process equipment and machinery field. Capability of creation and mastering of a foreign language are required. Ph D. graduates will be able to work in chemical, petroleum, energy, pharmaceutical, light industry, environmental protection and other departments, engaged in scientific research, teaching, design, development, production and management.

3. Duration

Study duration is 3-4 years. Course study is one semester.

4. Courses and Credits

Student must complete a total of no less than 16 credit points, in which at least 6 cpts are degree courses, at least 3 cpts compulsory courses, and at least 7 cpts operational courses. At least one course should beyond the first grade discipline.

Course Type	Course code	Course Name	Hours	Points	Note
Degree Courses	B131G002	Marxism in contemporary China	36	2	
	B207G001	Seminars on disciplinary frontier	20	1	
		Frontier lecture on chemical process equipments	60	3	

Compulsory Courses		Lectures on academic frontiers and academic ethics		1	
		Academic report		0.5	
		International academic communication		0.5	
		English communication and application		1	
Optional Courses		Public English	60	2	
	B131R003	Applied stochastic processes	32	1.5	
	B131R005	Selected scientific computation	60	3	
	B131R007	Applied multivariate statistical analysis	60	3	
	B131C001	Modern physics and advanced technology	40	2	
	B131C003	Modern chemistry and advanced technology	40	2	
		Continuum mechanics	20	1	
		Chemical process monitoring and control	20	1	
		Selected Readings of Marxist classics	18	1	
		One course beyond the Chem. Eng.			

5. Dissertation

(1) Thesis proposal

The thesis proposal should be carried out under the guidance of the instructor. Ordinary doctoral students should finish it at the end of the second semester; direct PhD students at the end of the fourth semester; MS-PhD students at the end of the second semester in their doctoral stage.

(2) Mid-term examination

The mid-term examination should be carried out at the end of the second semester after the thesis proposal. The capabilities, the progress of the thesis, work attitudes and effort of the students will be examined by the evaluation teams organized by the school. Those passed could continue their thesis. The mid-term examination could be arranged with the academic reports.

(3) Requirements of thesis writing and defense

Requirements of thesis writing and defense are in accordance with “Detailed rules of master degree and doctoral degree in Tianjin University”.