

## **Ph.D. Program in Industrial Catalysis**

### **1. Introduction to Major**

Industrial Catalysis discipline of Tianjin University was set up in 1970. Students for Master's degree were enrolled in 1978. Doctorate Students were enrolled in 1984. It is the first industrial catalysis discipline for Bachelor's, Master's and Doctor's degree, and it is also the first state key discipline for industrial catalysis, which is in the leading position nationwide. We have built post-doctoral research station with other disciplines in School of Chemical Engineering and Technology, and built the State Key Laboratory of Chemical Engineering with Chemical Engineering discipline together. We have established close international cooperation with many American and European universities. We have finished many project supported by 863 Program, 973 Program, and the National Natural Science Foundation of China. Focusing on advanced catalytic materials and catalytic reaction engineering, five stable research fields have been formed: (1) Solid catalyst and catalytic reaction engineering, (2) Energy and environmentally friendly catalytic process engineering, (3) Catalysis of rare earth and transition metal elements, (4) Product engineering in catalytic process, (5) Molecular modeling and catalysis. We possess strong foundation and high research level on these five fields.

### **2. Objectives**

The students should be experts of R&D on catalyst and reactor in the fields of chemical engineering, petrochemical engineering, new energy, environment, resources and medicine. The students should have a certain depth theoretical knowledge of the catalytic. Attention is also paid to the management ability.

### **3. Duration**

Completion of the doctoral requirements typically requires 3-4 years from date of entry, including at least half a year and 16 cpts of coursework.

### **4. Courses and Credits**

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

<b>Course Type</b>	<b>Course code</b>	<b>Course Name</b>	<b>Hours</b>	<b>Points</b>	<b>Note</b>
Degree Courses	B131G002	Marxism in contemporary China	40	2	
	B207G001	Frontiers of catalysis science and engineering	40	2	
	B207E020	Advanced principles for catalytic processes	40	2	

Course Type	Course code	Course Name	Hours	Points	Note
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	B131GF05	Public English	40	2	
	B131R001	Nonlinear mathematics (part one)	32	1.5	
	B131R002	Nonlinear mathematics (part two)	32	1.5	
	B131R003	Applied stochastic processes	32	1.5	
	B131R005	Selected scientific computation	60	3	
	B131R007	Applied multivariate statistical analysis	60	3	
	B131E001	Modern physics and advanced technology	40	2	
		Scientific thesis writing in English	40	2	
		Molecular modeling and catalysis	20	1	
		Selected Readings of Marxist classics	20	1	

## 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 evaluation teams organized by the school will examine the capabilities, the progress of the thesis, work attitudes and effort of the students. 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”.