

## **Bachelor of Chemical Engineering**

The program is aimed to broaden and deepen students' knowledge and understanding of Chemical Engineering. The graduates would have a sound theoretical grasp of the science and principles, combined with practical experience and an awareness of their responsibilities for the society and the environment. The graduates would be qualified for professional chemical and process engineers in the industry or following a postgraduate route into a research, industrial or academic career.

Career prospects for Chemical Engineers are bright and promising in China. The breadth of knowledge and skills acquired during the degree programme also provide the possibilities for chemical engineering graduates to seek various opportunities in other sectors, such as utilities, consulting, banking and finance, and as officers in government agencies.

### **Strengths:**

- The program has been accredited by IChemE at Master Level.
- A continuing commitment to (and a leading role in) the development of chemical engineering education within China
- A comprehensive, modern and forward-looking chemical engineering curriculum with a strong core and a good depth and breadth of advanced subjects through the provision of a wide range of elective subjects that are based on the research strengths of the School
- Excellent opportunities for the students to experience research project work within the School's research laboratories.
- Excellent staff resources in terms of numbers, qualifications and morale.
- Excellent physical facilities in terms of laboratories, library and IT. The laboratory facilities for teaching are of a particularly high standard in terms of the students' learning experience and the quality and range of experimental rigs.

The intensive engineering practice is one feature of the chemical engineering programs. We have extensive and well-equipped laboratory facilities and these are used to effectively deliver a high-quality laboratory experience, including experience at pilot-plant level. Although the learning outcomes can be achieved in these short periods are limited, the visits do provide the students with a valuable awareness of industrial practice and the students to get benefits from the visits. The companies that regularly host the academic visits (plant visit) by our students include:

1. Oil Refinery of Tianjin, Dagang Oilfield Group Company.
2. Dezhou Shihua Chemical Company
3. Sinopec Tianjin Branch
4. Tianjin Aktcat Company
5. SINOPEC /SABIC Tianjin Petrochemical Company Limited
6. Tianjin Dagu Chemical Company
7. Yanshan Petrochemical

Furthermore, in the final-year design project, students would have the opportunity to apply their knowledge to practical industry problems and therefore develop their problem solving skills and team working skills.

## Program Syllabus (155 Credits)

YEAR 1			
Semester 1 (20.5 credits)		Semester 2 (23.5 credits)	
Mathematics (2A)	6	Mathematics (2B)	5
Physics (A)	4	Inorganic Chemistry (B)	2.5
Physics Lab	1	Inorganic Chemistry Lab (B)	1
Inorganic Chemistry (A)	2.5	Inorganic Chemistry (A)	2
Inorganic Chemistry Lab (A)	1	Physical Chemistry (A)	3
Introduction to Chemical Engineering	2	Physical Chemistry Lab(A)	1
PE	1	*Introduction to Process Design	2
Chinese	3	PE	1
		Chinese	3
		China Studies	3

YEAR 2			
Semester 3 (Compulsory 15 credits)		Semester 4 (Compulsory 16 credits)	
Linear Algebra	3	Engineering Math (for Chem. Eng.)	3
Physical Chemistry (B)	3	Heat Transfer	2
Physical Chemistry Lab (B)	1	Chemical Engineering Thermodynamics	3
Chemical Process Safety	2	Design Project (1)	1
Fluid Mechanics	2	Research Projects (1)	2
Organic Chemistry (B)	2	Chemical Engineering Lab (1)	2
Organic Chemistry Lab	1	Introduction to Biochemical Engineering	2
PE	1	PE	1

YEAR 1-2: Electives (3+4 credits)			
Choose 3 or more credits		Choose 4 or more credits	
Chinese-English Translation	1	Introduction to Food Engineering	2
Technical Writing	2	Introduction to Polymer Engineering	2

Introduction to Management	2	Introduction to Electrochemistry	2
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### YEAR 3

<b>Semester 5 (16 credits)</b>		<b>Semester 6 (16 credits)</b>	
Chemical Equipment Design	3	Separation Processes	3
Mass Transfer	3	Analysis and Synthesis of Chemical Processes	2
Chemical Process Flow sheeting	2	Transport Phenomena	2
Chemical Reaction Engineering	4	Chemical Process Design	3
Environmental Chemical Engineering	2	Chemical Engineering Lab 2	2
Chemical Process Control	2	Design Project (2)	2
		Research Project (2)	2

### YEAR 4

<b>Semester 7 (Compulsory 19 credits)</b>		<b>Semester 8 (Compulsory 10 credits)</b>	
Industrial Visit and Practice	2	*Final Design Project(Continued from Week 1-4)	
Industrial Chemical Processes	3	*Final Design Project (from Week 5-16)	10
Novel Separation Technology	2		
Molecular Science and Product Engineering	2		
*Final Design Project (from Week 14-21)	10		

### YEAR 3-4: Electives (12 credits)

Biochemistry	2	Catalytic Science and Progress	2
Introduction to Cleaner Production	2	Membrane Science and Technology	2
Nanomaterial Science and Technology	2	Gas and Petroleum Processing	2
Water Pollution Control	2	Life Cycle Assessment	2
Metabolic Engineering	2	Particle Mechanics and Processing	2
Biology	2	Reactor Design	2

Environmental Biotechnology	2		
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