

# **Undergraduate Program for Chemical Engineering and Process of Jiangsu University**

(2011)

## **I. Brief Introduction**

Chemical Engineering and Process, a fast developing discipline in 21st century, is based on the studies of basic rules of chemical production processes and fundamental Principles, involving of related production processes, researches, designs and optimization in chemical engineering area. It plays a pivotal roles in the sustainable economic development, especially for new materials, biotechnology, new energy resources, environment and so on.

## **II. Program objectives**

Comprehensive development of physical and moral training to adapt to the contemporary needs of the development of chemical engineering. Basic theory, skills and research methods of chemical engineering will be carried out. After four-year education, the students should have the ability to serve the fundamental industry with modern scientific technology of chemistry and engineering, be able to do scientific research, product and process design, technical administration and so on.

## **III. Research Fields**

- (1) Chemical Engineering Process
- (2) Polymer Material and Chemistry
- (3) New Chemical Material and Energy Resources
- (4) Fine Chemicals
- (5) Chemical Reaction Engineering
- (6) Industrial Catalysis

## **IV. Program Duration and Degree**

- (1) The study of Chemical Engineering and Technics program usually lasts 4 years and is composed of five type course, but the length of schooling is flexibly 3-6 years based on the credit system;
- (2) After studying in this major and having passed all the exams, student will be awarded Bachelor's degree of Engineering.

## V. Requirements

Abide by the relevant policies and decrees formulated by the Chinese government, and the rules and regulations of Jiangsu University (JU).

Study hard and have good moral character. Respect the teaching staff and Chinese traditions and customs.

Develop scientific attitude in research and study and stress the combination of theory and practice. Have a good command of basic theories and systematic knowledge in the field of Communication Engineering.

Be in good health condition.

## VI. Credit and Key Courses

(1) The total credits for the program are no less than **205.5**, in which no less than **76.5** credits is for University General Education Courses (Type A Courses), **57** credits for Specialized Core Courses (Type B Courses), no less than **21** credits for Specialized Elective courses (Type C Courses), no less than **18** credits for Specialized Extension Courses (Type D Courses), and **33** credits for Intensive practicum or curriculum project.

(2) The key courses which will be instructed in the 4 years include:

Inorganic and Analytical Chemistry	Organic Chemistry
Physical Chemistry	Process Engineering Principles
Basic Chemical Equipment Mechanical	Chemical Meters and Automation
Chemical Reaction Engineering	Chemical Engineering Thermodynamics
Chemical Technology	Fine Chemical Technology
Industrial Catalysis	Separation Engineering

## VII. Curriculum and Credit Distribution

(1) Type A Courses ( $\geq 76.5$  credits, students should select at least 2 credits from the elective courses listed below )

No.	School	Name of Course	Term	Credit	Total Hours	Theory Hours	Practice Hours	Required Elective
A0101	IEEC	Chinese- I 汉语- I	1	12	180	270	0	Required
A0102	IEEC	Chinese- II 汉语- II	2	6	90	75	15	Required
A0103	IEEC	Chinese-III 汉语-III	3	6	90	75	15	Required
A0104	IEEC	Chinese-IV 汉语-IV	4	6	90	75	15	Required
A0200	IEEC	Overview of China 中国概论	1	4	60	45	15	Required
A0301	PED	Sports - I 体育- I	1	2	30	10	20	Elective
A0302	PED	Sports- II 体育- II	2	2	30	10	20	Elective
A0303	PED	Sports-III 体育-III	3	2	30	10	20	Elective
A0304	PED	Sports-IV 体育-IV	4	2	30	10	20	Elective
A0401	FOS	Advanced Mathematics 高等数学 (理学院)	1,2	11	165	165	0	Required
A0402	FOS	Linear Algebra 线性代数 (理学院)	3	2	30	30	0	Required
A0403	FOS	Probability Theory 概率论 (理学院)	4	3	45	45	0	Required
A0404	FOS	College Physics B 大学物理 B (理学院)	2,3	6	90	90	0	Required
A0405	FOS	Physics Experiments B 物理实验 B (理学院)	2,3	2.5	38	0	38	Required
A0500	SCSTE	Fundamentals of Computer Operation and Programming(C Language) 计算机基础与 C 语言	2,3	8	120	80	40	Required
A0600	SA	Chinese Fine Arts 中国美术	2	2	30	30	0	Elective
A0700	SA	Chinese Music 中国音乐	3	2	30	30	0	Elective
		<b>Total A</b>		<b>78.5</b>	<b>1178</b>	<b>960</b>	<b>218</b>	

**Type B Courses(57 credits )**

No.	School	Name of Course	Term	Credit	Total Hours	Theory Hours	Practice Hours	Required Elective
B0100	SCCE	Inorganic and Analytical Chemistry 无机及分析化学	1	6	90	90	0	Required
B0200	SCCE	Instrumental Analysis 仪器分析	4	2	30	30	0	Required
B0300	SCCE	Organic Chemistry 有机化学	2	5	75	75	0	Required
B0400	SCCE	Physical Chemistry 物理化学	3.4	6	90	90	0	Required
B0500	SCCE	Inorganic and Analytical Chemistry Laboratory 无机及分析化学实验	1	4	60	0	60	Required
B0600	SCCE	Organic Chemistry Laboratory 有机化学实验	2	2	30	0	30	Required
B0700	SCCE	Physical Chemistry Laboratory 物理化学实验	4	3	45	0	45	Required
B0800	SCCE	Instrumental Analysis Laboratory 仪器分析实验	4	2	30	0	30	Required
B0900	SME	Chemical Engineering Cartography 化工制图	3	4	60	48	12	Required
B1000	CEIE	Electronics in Electrical Engineering(A) 电工电子学 (A)	5、6	5.5	85	85	0	Required
B1100	CEIE	Electronics in Electrical Engineering(A) Laboratory 电工电子学 (A) 实验	6	1.5	20	0	20	Required
B1200	SCCE	Process Engineering Principles 过程工程原理	5	6	90	90	0	Required
B1300	SCCE	Lab Work for Process Engineering Principles 过程工程原理实验	5	3	45	0	45	Required
B1400	SCCE	Basic Chemical Equipment Mechanical 化工设备机械基础	4	4	60	60	0	Required
B1500	SCCE	Chemical Meters and Automation 化工仪表与自动化	6	3	45	35	10	Required
		<b>Total B</b>		57	855	603	252	

**Type C Courses( $\geq 21$  credits, students should select at least 2 credits from the elective courses listed below )**

No.	School	Name of Course	Term	Credit	Total Hours	Theory Hours	Practice Hours	Required Elective
C0100	SCCE	Chemical Reaction Engineering 化学反应工程	6	3	45	45	0	Required
C0200	SCCE	Chemical Engineering Thermodynamics 化工热力学	6	2	30	30	0	Required
C0300	SCCE	Chemical Engineering Design 化工设计	5	2	30	30	0	Required
C0400	SCCE	Chemical Technology 化工工艺学	6	2	30	30	0	Required
C0500	SCCE	Principle of Transport Processes 传递过程原理	5	2.5	38	38	0	Elective
C0600	SCCE	Separation Engineering 分离工程	7	2	30	30	0	Elective
C0700	SCCE	Fine Chemical Technology 精细化工工艺学	5	2	30	30	0	Required
C0800	SCCE	Industrial Catalysis 工业催化	7	2	30	30	0	Required
C0900	SCCE	Fine Chemical Technology Laboratory 精细化工专业实验	5	3	45	0	45	Required
C1000	SCCE	Special Experiment of Chemical Engineering 化工专业实验	7	3	45	0	45	Required
<b>Total C</b>				23.5	353	263	90	

**Type D Courses: ( $\geq 18$  credits, students should select at least 18 credits from the elective courses listed below )**

No.	School	Name of Course	Term	Credit	Total Hours	Theory Hours	Practice Hours	Required Elective
D0101	SCCE	Principles and Applications of Reactor Design 反应器设计原理	7	2	30	30	0	Elective
D0102	SCCE	Fine Organic Synthesis Technology 精细有机合成技术	7	2	30	30	0	Elective
D0103	SCCE	Chemical Systems Engineering 化工系统工程	7	2	30	30	0	Elective
D0104	SCCE	Polymerization Reaction Engineering 聚合反应工程	7	2	30	30	0	Elective
D0105	SCCE	Introduction of Chemical Environmental Engineering 化工环境工程概论	7	2	30	30	0	Elective
D0106	SCCE	CAD for Chemical 计算机化工辅助设计	7	2	30	30	0	Elective
D0107	SCCE	Chemistry of Paper Chemicals 造纸化学品化学	7	2	30	30	0	Elective
D0108	SCCE	Chemical Corrosion and Protection 化工腐蚀与防护	7	2	30	30	0	Elective
D0109	SCCE	Introduction to the Safety of Chemical Processes 化工安全工程概论	7	2	30	30	0	Elective

D0110	SCCE	Polymer Chemistry and Physics 高分子化学与物理	7	3	45	45	0	Elective
D0111	SCCE	Materials Chemistry 材料化学	6	2	30	30	0	Elective
D0112	SCCE	Petrochemical Engineering Technology 石油加工工艺学	6	2	30	30	0	Elective
D0113	SCCE	Functional Materials 功能材料	6	2	30	30	0	Elective
		<b>Total D</b>		27	405	405	0	

**Type E Courses: Practice (33 credits )**

No.	Name of Course	Term	Credit	Weeks	Remark
E0100	Freshman Transition 入学教育	1	1	1	
E0200	Manufacturing Practice 金工实习	2	2	2	
E0300	Chemical Engineering Cognition Practice 化工认识实习	3	2	2	
E0400	Engineering Practise 生产实习	6	3	3	
E0500	Course Work of Process Engineering Principles 过程工程原理课程设计	5	2	2	
E0600	Chemical Engineering Technology and Design of Equipments 化工工艺与设备设计	7	4	4	
E0700	Comprehensive Chemistry Laboratory 综合化学实验	4	2	2	
E0800	Training on Chemical Experimental Skill 化学实验技能训练	4	1	1	
E0900	Graduation Design (Thesis) 毕业设计(论文)	8	16	16	
	<b>Total E</b>		33	33	

## The Allocation of Credits and course

Term	Name of Course	Credit	Required Credit	Elective Credit	Practice Credit
1	Chinese- I 汉语- I	12	36	0	1
	Overview of China 中国概论	4			
	Sports - I 体育- I	2			
	Freshman Transition 入学教育	1			
	Advanced Mathematics 高等数学	6			
	Inorganic and Analytical Chemistry 无机及分析化学	6			
	Inorganic and Analytical Chemistry Laboratory 无机及分析化学实验	4			
2	Chinese- II 汉语- II	6	29.5	2	2
	Sports- II 体育- II	2			
	Advanced Mathematics 高等数学	5			
	Fundamentals of Computer Operation and Programming(C Language) 计算机基础与 C 语言	4			
	Chinese Fine Arts 中国美术	2			
	College Physics B 大学物理 B	4			
	Physics Experiments B 物理实验 B	1.5			
	Organic Chemistry 有机化学	5			
	Organic Chemistry Laboratory 有机化学实验	2			
	Manufacturing Practice 金工实习	2			
3	Chinese-III 汉语-III	6	24	2	2
	Sports-III 体育-III	2			
	Fundamentals of Computer Operation and Programming(C Language) 计算机基础与 C 语言	4			
	Chinese Music 中国音乐	2			
	Linear Algebra 线性代数	2			
	College Physics B 大学物理 B	2			
	Physics Experiments B 物理实验 B	1			
	Chemical Engineering Cartography 化工制图	4			
	Physical Chemistry 物理化学	3			
	Chemical Engineering Cognition Practice 化工认识实习	2			

4	Chinese-IV 汉语-IV	6	26	0	3
	Sports-IV 体育-IV	2			
	Probability Theory 概率论	3			
	Physical Chemistry 物理化学	3			
	Physical Chemistry Laboratory 物理化学实验	3			
	Basic Chemical Equipment Mechanical 化工设备机械基础	4			
	Instrumental Analysis 仪器分析	2			
	Instrumental Analysis Laboratory 仪器分析实验	3			
	Comprehensive Chemistry Laboratory 综合化学实验	2			
	Training on Chemical Experimental Skill 化学实验技能训练	1			
5	Process Engineering Principles 过程工程原理	6	19.5	2.5	2
	Lab Work for Process Engineering Principles 过程工程原理实验	3			
	Chemical Engineering Design 化工设计	2			
	Fine Chemical Technology 精细化工工艺学	2			
	Fine Chemical Technology Laboratory 精细化工专业实验	3			
	Electronics in Electrical Engineering(A) 电工电子学(A)	3.5			
	Principle of Transport Processes 传递过程原理	2.5			
	Course Work of Process Engineering Principles 过程工程原理课程设计	2			
6	Chemical Reaction Engineering 化学反应工程	3	13.5	11	3
	Chemical Engineering Thermodynamics 化工热力学	2			
	Chemical Technology 化工工艺学	2			
	Fine Organic Synthesis Technology 精细有机合成技术	2			
	Materials Chemistry 材料化学	2			
	Petrochemical Engineering Technology 石油加工工艺学	2			
	Functional Materials 功能材料	2			
	Chemical Meters and Automation 化工仪表与自动化	3			
	Electronics in Electrical Engineering(A) 电工电子学(A)	2			
	Electronics in Electrical Engineering(A) Laboratory 电工电子学(A)实验	1.5			



	Polymer Chemistry and Physics 高分子化学与物理	3			
	Engineering Practise 生产实习	3			
7	Separation Engineering 分离工程	2	5	18	4
	Industrial Catalysis 工业催化	2			
	Special Experiment of Chemical Engineering 化工专业实验	3			
	Principles and Applications of Reactor Design 反应器设计原理	2			
	Chemical Systems Engineering 化工系统工程	2			
	Polymerization Reaction Engineering 聚合反应工程	2			
	Introduction of Chemical Environmental Engineering 化工环境工程概论	2			
	CAD for Chemical 计算机化工辅助设计	2			
	Chemistry of Paper Chemicals 造纸化学品化学	2			
	Chemical Corrosion and Protection 化工腐蚀与防护	2			
	Introduction to the Safety of Chemical Processes 化工安全工程概论	2			
	Chemical Engineering Technology and Design of Equipments 化工工艺与设备设计	4			
8	Graduation Design (Thesis) 毕业设计(论文)	16	0	0	16
<b>Total</b>		<b>222</b>	<b>153.5</b>	<b>35.5</b>	<b>33</b>