

# 化学工程与工艺

## 一、培养目标

培养掌握坚实的化学工程与工艺基础知识，具有从事化学工程与工艺工作所需要的数学、自然科学知识，具备良好的人文社会科学素养的化学工程与工艺人才，具有较强的社会责任感、良好的道德修养和身心素质，具备较强的工程实践能力、创新精神、团队精神、国际视野和管理能力，能够在化工、石油、医药、农药、精细化工、生物化工、材料等领域从事化工产品、医药品和材料的设计与生产、科技开发、应用研究和经营管理等方面的工作。

## 二、基本规格要求

(一) 学生将系统地学习本专业以下诸方面的基础理论知识和工程技术知识：

1. 无机化学、有机化学、物理化学、分析化学的基础理论与实验。
2. 化工原理、化工热力学、化学反应工程、分离工程、化工仪表与自动化的基础理论与实验。
3. 化工过程分析与合成、化工工艺学、化工机械基础、化工设计、化工安全工程、化工数学。
4. 新产品、新设备和新工艺开发与设计等。

(二) 本专业毕业生的基本要求是：

1. 具有良好的人文社会科学素养、强健的身心素质，较强的社会责任感和良好的工程职业道德。
2. 具有运用化工工程工作所需的相关数学、自然科学以及经济和管理知识的能力。
3. 系统地掌握化学工程与工艺的基础理论与专业知识，能够结合化工生产的社会经济目标，具有对化工新产品、新工艺、新技术和新设备进行研究、实验、开发、设计与企业管理的初步能力以及处理工程实际问题的综合能力；具有系统的工程实践学习经历；了解化学工程学的理论前沿，了解新工艺、新技术与新设备的发展动态。
4. 掌握基本的创新方法，具有创新精神；具有综合运用化工专业理论和技术手段设计系统和过程的能力，相关过程中能够综合考虑经济、环境、法律、安全、健康、伦理等制约因素。
5. 掌握文献检索、资料查询的基本方法，并熟练进行资料查询及运用现代信息技术获取相关信息的基本方法。
6. 熟悉国家对于化工生产、设计、研究与开发、环境保护和可持续发展等方面的方针、政策和法律、法规，能正确认识化工行业对于客观世界和社会的影响。
7. 具有一定的组织管理能力、较强的语言表达能力和人际交往能力，富有竞争意识、合作精神、应变能力与国际交往能力，及与国际交流、竞争与合作要求相适应的语言能力和开阔的国际视野。
8. 具有较强的自学和终身学习的意识和能力、不断提升自身的学习和发展潜力。

## 三、培养特色

本专业依托学科的高分子化工、精细化工、工业催化、低碳清洁能源化工等研究方向，在本科生培养环节设置化工过程工程专业方向模块和高分子与精细化工专业方向模块，结合学生的未来发展有针对性地培养学生，以利于学生毕业后的就业、继续深造及自主创业。本专业学生拥有坚实的自然科学基础和化工专业理论知识，具有较强的产品开发和工程设计能力以及工程应用能力。

## 四、学制、毕业基本要求及学位授予

1. 本科基本学制 4 年，弹性学习年限 3—6 年，按照学分管理制度管理。

2. 化学工程与工艺专业学生毕业最低学分数为 175 学分, 其中各类别课程及环节要求学分数如下表:

| 课程类别 | 通识必修 | 学门核心 | 学类核心 | 专业核心 | 专业选修 | 通识选修 | 集中实践 | 合计  |
|------|------|------|------|------|------|------|------|-----|
| 学分数  | 27   | 31.5 | 24   | 30   | 18   | 8    | 36.5 | 175 |

3. 学生修满培养方案规定的必修课、选修课及有关环节, 达到规定的最低毕业学分数, 并修完规定必修但不记学分的所有课程和环节, 德、智、体合格, 即可毕业。满足学位授予相关文件要求的, 授予工学学士学位。

## 五、课程设置及学分分布

### (一) 通识教育课程〔必修 27+ (6) 学分+选修 8 学分〕

通识教育课程包括必修和选修两部分。通识选修课程按《湖南大学通识选修 (文化素质教育) 课程方案》实施, 通识必修课程如下:

| 编码            | 课程名称                 | 学分         | 备注 |
|---------------|----------------------|------------|----|
| GE01101       | 毛泽东思想和中国特色社会主义理论体系概论 | 3+ (3)     |    |
| GE01039       | 思想道德修养与法律基础          | 1.5+ (1.5) |    |
| GE01100       | 形势与政策                | 0.5+ (1.5) |    |
| GE01102       | 中国近现代史纲要             | 2          |    |
| GE01103       | 马克思主义基本原理 (上)        | 2          |    |
| GE01104       | 马克思主义基本原理 (下)        | 2          |    |
| GE01012 (-15) | 大学英语                 | 8          |    |
| GE01088       | 计算机基本能力测试            | 0.5        |    |
| GE01095       | 计算机导论与程序设计           | 2.5        |    |
| GE01107 (-13) | 心理素质与生涯发展            | 1          |    |
| GE01089 (-92) | 体育                   | 4          |    |

### (二) 学门核心 (31.5 学分)

| 课程编码          | 课程名称       | 学分   | 备注 |
|---------------|------------|------|----|
| GE03025       | 高等数学 A (1) | 5    |    |
| GE03026       | 高等数学 A (2) | 5    |    |
| GE03003       | 线性代数 A     | 3    |    |
| GE03004       | 概率论与数理统计 A | 3    |    |
| GE03005       | 普通物理 A (1) | 3    |    |
| GE03006       | 普通物理 A (2) | 3    |    |
| GE03007 (-08) | 普通物理实验 A   | 2    |    |
| CH04038       | 电工电子学      | 3.5  |    |
| GE02053       | 电工电子实验     | 1    |    |
| CH04020       | 工程制图       | 3    |    |
| 合计            |            | 31.5 |    |

**(三) 学类核心 (24 学分)**

| 课程编码    | 课程名称           | 学分 | 备注 |
|---------|----------------|----|----|
| CH04043 | 物理化学 A (1)     | 3  |    |
| CH04044 | 物理化学 A (2)     | 2  |    |
| CH04045 | 有机化学 A (1)     | 3  |    |
| CH04046 | 有机化学 A (2)     | 2  |    |
| CH04047 | 无机化学 B         | 4  |    |
| CH04048 | 分析化学 B         | 3  |    |
| CH04049 | 基础无机化学实验 A     | 1  |    |
| CH04050 | 基础有机化学实验 A     | 2  |    |
| CH04051 | 基础物理化学实验 A (1) | 1  |    |
| CH04052 | 基础物理化学实验 A (2) | 1  |    |
| CH04053 | 基础分析化学实验 A     | 2  |    |
| 合计      |                | 24 |    |

**(四) 专业核心 (30 学分)**

| 课程编码    | 课程名称      | 学分 | 备注 |
|---------|-----------|----|----|
| CH05051 | 化工原理 (1)  | 3  |    |
| CH05052 | 化工原理 (2)  | 3  |    |
| CH05009 | 化学反应工程    | 3  |    |
| CH05053 | 化工热力学     | 3  |    |
| CH05054 | 化工设计      | 3  |    |
| CH05055 | 化工工艺学     | 2  |    |
| CH05056 | 化工分离工程    | 2  |    |
| CH05057 | 化工设备机械基础  | 2  |    |
| CH05058 | 化工过程分析与合成 | 2  |    |
| CH05059 | 化工安全与环保   | 2  |    |
| CH05060 | 化工仪表与自动化  | 2  |    |
| CH05061 | 化工数学      | 2  |    |
| CH05062 | 化工导论      | 1  |    |
| 合计      |           | 30 |    |

**(五) 选修课 (26 学分)**

## 专业方向模块 (二选一, 8 学分)

## 化工过程工程方向 (8 学分)

| 课程编码    | 课程名称      | 学分 | 备注 |
|---------|-----------|----|----|
| CH06064 | 化工传递过程    | 2  | 必选 |
| CH06065 | 反应器设计     | 2  | 必选 |
| CH06066 | 清洁能源化工基础  | 2  | 必选 |
| CH06057 | 工业催化原理及应用 | 2  | 必选 |

## 高分子化工方向 (8 学分)

| 课程编码    | 课程名称       | 学分 | 备注 |
|---------|------------|----|----|
| CH06067 | 高分子化学      | 2  | 必选 |
| CH06068 | 高分子材料      | 2  | 必选 |
| CH06069 | 高分子物理学     | 2  | 必选 |
| CH06070 | 精细化学品合成与应用 | 2  | 必选 |

## 专业选修课

| 课程编码                   | 课程名称         | 学分 | 备注 |
|------------------------|--------------|----|----|
| CH06064                | 化工传递过程       | 2  |    |
| CH06065                | 反应器设计        | 2  |    |
| CH06066                | 清洁能源化工基础     | 2  |    |
| CH06057                | 工业催化原理及应用    | 2  |    |
| CH06067                | 高分子化学        | 2  |    |
| CH06068                | 高分子材料        | 2  |    |
| CH06069                | 高分子物理学       | 2  |    |
| CH06070                | 精细化学品合成与应用   | 2  |    |
| CH06029                | 精细化工产品配方设计   | 2  |    |
| CH06071                | 化工专业英语与文献检索  | 2  |    |
| CH06072                | 催化剂工程        | 2  |    |
| CH06027                | 计算机在化工中的应用   | 2  |    |
| CH06013                | 化工产品设计       | 2  |    |
| CH06041                | 新型分离技术       | 2  |    |
| CH06016                | 化工过程开发与放大    | 2  |    |
| CH06073                | 制药工艺学        | 2  |    |
| CH06014                | 化工产品市场营销     | 2  |    |
| CH06074                | 产业用化学助剂开发与创业 | 2  |    |
| CH06033                | 生物化工基础       | 2  |    |
| CH06075                | 环境工程概论       | 2  |    |
| CH06076                | 绿色化学         | 2  |    |
| CH06077                | 纳米科学与技术      | 2  |    |
| CH06018                | 化工前沿         | 2  |    |
| CH06078                | 生物化学         | 2  |    |
| 合计 (24 选 5 门选修, 10 学分) |              |    |    |

注: 选修课中的 9 学分, 可在全校范围内跨专业选修。

**(六) 集中实践 (36.5 学分)**

| 课程编码    | 课程名称   | 学分   | 备注               |
|---------|--|------|------------------|
| GE01040 | 军事训练   | 0    | 军训、军事与国防 (含军事理论) |
| GE09030 | 中文写作实训   | 1    |                  |
| GE09006 | 金工实习 A   | 2    |                  |
| CH10023 | 毕业设计 (论文)  | 16   |                  |
| CH10004 | 认识实习   | 1    |                  |
| CH10016 | 生产实习 (含仿真实习)   | 2    |                  |
| CH10017 | 毕业实习   | 3    |                  |
| CH10018 | 化工基础设计 (含化工原理和化工设备机械课程设计)                                | 2    |                  |
| CH10019 | 化工综合设计 (含化工过程分析与合成课程设计等, 参加省级或国家级化工设计大赛并获奖可免修此门课程而获得此学分) | 3    |                  |
| CH10020 | 化工原理实验   | 2    |                  |
| CH10021 | 化工专业与创新实验  | 2.5  |                  |
| GE09021 | 电子电工实习 A   | 2    |                  |
|         | 总计   | 36.5 |                  |

## 六、课程责任教师一览表

| 序号 | 姓名  | 职称    | 学历学位 | 专业特长            | 课程（专业核心、专业选修、通识选修）                                     |
|----|-----|-------|------|-----------------|--|
| 1  | 徐伟箭 | 教授    | 博士   | 高分子化工、新型分离技术    | 分离工程、高分子化学、化工导论  |
| 2  | 胡艾希 | 教授    | 博士   | 药物合成与设计         | 药物合成与设计  |
| 3  | 周小平 | 教授    | 博士   | 反应工程、工业催化       | 化学反应工程、反应器设计、化工原理                                      |
| 4  | 邓剑如 | 教授    | 硕士   | 高分子化学、应用化学      | 高分子化学、高分子材料、高分子物理                                      |
| 5  | 晁自胜 | 教授    | 博士   | 绿色化工、工业催化       | 化工工艺学、工业催化原理与应用  |
| 6  | 张旭东 | 教授    | 博士   | 化学工程            | 化工原理、分离工程  |
| 7  | 尹双凤 | 教授    | 博士   | 工业催化、应用化学       | 化工工艺学、化工原理、催化剂工程、化工导论                                  |
| 8  | 阳卫军 | 教授    | 博士   | 工业催化、化工工艺       | 化工原理、化工仪表与自动化  |
| 9  | 郭栋才 | 教授    | 博士   | 化学工艺            | 化工工艺学、化工过程开发与放大  |
| 10 | 熊远钦 | 副教授   | 学士   | 化工产品市场营销、化工助剂生产 | 化工仪表与自动化、精细化工产品配方设计、化工产品市场营销、产业用化工助剂开发与创业              |
| 11 | 梁志武 | 教授    | 博士   | 化学工程            | 化工安全与环保、化工设备机械基础、化工数学、清洁能源化工基础、化工设计、化工基础课程设计、化工导论、化工前沿 |
| 12 | 童柏栋 | 教授    | 博士   | 化学工程            | 化工安全与环保  |
| 13 | 叶姣  | 副教授   | 硕士   | 药物合成            | 化工热力学、化工设备机械基础、化工基础设计、化学制药工艺学                          |
| 14 | 卢彦兵 | 副教授   | 博士   | 高分子             | 分离工程、高分子物理学、高分子化学                                      |
| 15 | 夏新年 | 副教授   | 博士   | 高分子合成、化工设计      | 分离工程、新型分离技术、化工综合设计                                     |
| 16 | 李文生 | 副教授   | 博士在读 | 化学工艺、新催化材料      | 化工原理、反应器设计、清洁能源化工基础、化工原理实验、化工基础课程设计                    |
| 17 | 王勤波 | 副教授   | 博士   | 过程工程、流程模拟       | 化工过程分析与合成、计算机在化工中的应用、化工综合设计                            |
| 18 | 任艳群 | 讲师    | 硕士   | 工业催化            | 化工设计、清洁能源化工基础、化工原理实验、化工基础课程设计、化工综合设计、化工过程开发与放大         |
| 19 | 杨林涛 | 讲师    | 硕士   | 精细化学品合成与工艺优化    | 化工原理、化工原理实验、化工原理课程设计                                   |
| 20 | 罗伟平 | 讲师    | 博士   | 绿色化工            | 化学反应工程、化工原理实验、化工专业实验                                   |
| 21 | 那艳清 | 副教授   | 学士   | 实验与实践           | 化工原理实验、普通化学实验、化工专业实验、化工安全与环保                           |
| 22 | 欧恩才 | 助理研究员 | 博士   | 高分子合成           | 化工产品设计、新型分离技术、高分子化学                                    |
| 23 | 邱仁华 | 助理教授  | 博士   | 工业催化、有机合成       | 化工热力学、精细化学品合成与应用、生物化工基础、环境工程概论、日用品化学技术与安全              |
| 24 | 罗潇  | 助理教授  | 博士   | 过程工程、流程模拟       | 化工数学、化工传递过程、化学反应工程                                     |
| 25 | 陈浪  | 助理研究员 | 博士   | 工业催化            | 生物化工基础、环境工程概论、绿色化学、纳米科学与技术                             |

续表

| 序号 | 姓名  | 职称 | 学历学位 | 专业特长 | 课程 (专业核心、专业选修、通识选修)  |
|----|-----|----|------|------|----------------------|
| 26 | 汪秋安 | 教授 | 博士   | 有机化学 | 有机化学 A I、有机化学 A II   |
| 27 | 王双印 | 教授 | 博士   | 物理化学 | 物理化学 A、基础物理化学实验、普通化学 |
| 28 | 何凤姣 | 教授 | 博士   | 无机化学 | 无机化学 B、基础无机化学实验      |
| 29 | 宦双燕 | 教授 | 博士   | 分析化学 | 分析化学 B、基础分析化学实验      |

## 七、专业责任教授

| 姓名  | 职称 | 学历学位 | 职务    | 职责        |
|-----|----|------|-------|-----------|
| 梁志武 | 教授 | 博士   | 化工系主任 | 负责本专业教学工作 |

# Chemical Engineering and Technology

## I . Training Goal

The chemical engineering and technology talents under this training program must be firmly mastered the basic knowledge of chemical engineering and technology, grasped mathematics and natural science knowledge needed for chemical engineering technology work, a good quality of humanities and social science and equipped with a strong sense of social responsibility, good moral accomplishment and the physical and mental quality, be possessed of strong engineering practice ability, innovation, teamwork spirit, international vision and management capability, so that they can engaged well in the design and production, technology development, application research, management and other work in the field of chemical engineering, petroleum, pharmaceuticals, pesticides, fine chemicals, bio-chemical engineering, materials, etc.

## II . Basic Requirements

1. Students will systematically study the following courses covering basic theoretical knowledge and engineering and technology knowledge:

(1) Basic theoretical knowledge and experiment of inorganic chemistry, organic chemistry, physical chemistry and analytical chemistry.

(2) Basic theoretical knowledge and experiment of principles of chemical engineering, chemical engineering thermodynamics, chemical reaction engineering, separation engineering and chemical meters and automation.

(3) Analysis and synthesis of chemical engineering process, chemical engineering technology, introduction to chemical equipment and machinery, chemical engineering design, chemical engineering safety and chemical engineering mathematics.

(4) Development and design of new products, new equipment and new technology, etc.

2. Basic requirements for the undergraduate students in this major:

(1) They should be equipped with good humanities and social science literacy, strong physical and psychological quality, strong social sense of responsibility and good engineering professional ethics.

(2) They should be equipped with the ability to accomplish the chemical engineering work applying mathematics, natural science and economic and management knowledge.

(3) They should systematically master the basic theory and expertise in chemical engineering and technology, be capable of binding chemical production of social and economic goals to research, experiment, develop, design, initially manage companies for new chemical products, new processes, new technology and new equipment, and possess the comprehensive ability to deal with practical engineering problems. They should also have systematic learning experience of engineering practice, understanding the theoretical frontier of chemical engineering, and the development of new technology, new technology and new equipment.

(4) They should have the spirit of innovation and master the basic way to innovate, be capable of the abilities to comprehensively employ chemical engineering theory and technology to design chemical

engineering systems and processes, during which economic, environment, law, security, health, ethic and other constraints are taken into consideration.

(5) They should master the basic methods for literature searching, and be skilled in data query together with the basic ways of using modern information technology to obtain relevant information.

(6) They should be familiar with nation's principles, policies and laws and rules concerning the chemical production, design, research and development, environmental protection and sustainable development, and correctly understand influence of chemical industry on the objective world and society.

(7) They should have a certain skills about organization and management, wonderful language expression and interpersonal skills, strong sense of competition, cooperation, adaptability and international communication ability. They should also qualify comfortable language skills and broad international perspective to meet with the international exchanges, competition and cooperation.

(8) They should have a strong self-awareness and ability of self-study and lifelong learning, and potential of constantly improvement their own learning and development.

### III. Training Characteristics

Relying on the research direction of polymer chemical engineering, fine chemical engineering, industrial catalysis, low-carbon clean chemical engineering energy and other research, two direction modules process engineering direction module and polymer and fine chemicals direction module have been set for undergraduate students. In order to facilitate their employment, continue their studies or create their own businesses after graduation, students are pointedly educated and trained combined with students' future development. The students have a solid foundation of natural science and chemical engineering professional knowledge, and have strong ability of product development, engineering design and consummate skills in engineering application.

### III. Education system, basic requirements of graduation and degree awarded

1. The basic education is four years for undergraduate students, and flexible learning age is 3 to 6 years, according to the credit system management.

2. The minimum credits required for graduation in chemical engineering and technology major is 175 credits, and the required credits of all kinds of courses and education segments are listed in the following table:

| Course Category | General Compulsory | Engineering Core Courses | Chemical Core Courses | Professional Core | Professional Elective | General Elective | Centralized Practice | Total |
|-----------------|--------------------|--------------------------|-----------------------|-------------------|-----------------------|------------------|----------------------|-------|
| Credits         | 27                 | 31.5                     | 24                    | 30                | 18                    | 8                | 36.5                 | 175   |

3. Students in this major will graduate after accomplished compulsory, elective and related courses, attained the required minimum credits for graduation prescribed in training program, completed compulsory courses but do not award credit, and qualified in moral, intellectual and physical. They will be granted bachelor of engineering after met the requirements of degree-granting documents.

## V. Curriculum and Credits Distribution

1. General Education Courses [required 27 + (6) + elective 8 credits]

The general education courses consist of required courses and elective courses. General education electives are designed according to the *Curriculum Design of General Education Electives of Hunan University*. Required general education courses are illustrated in the following table.



| Code         | Course Title  | Credit(s)  | Remarks |
|--------------|---|------------|---------|
| GE01101      | Introduction to Maoism and Theoretical System of Socialism with Chinese Characteristics | 3+ (3)     |         |
| GE01039      | Moral Cultivation and Law Basics  | 1.5+ (1.5) |         |
| GE01100      | Current Situation and Policies  | 0.5+ (1.5) |         |
| GE01102      | Outline of Modern Chinese History   | 2          |         |
| GE01103      | Fundamentals of Marxism I   | 2          |         |
| GE01104      | Fundamentals of Marxism II  | 2          |         |
| GE01012(-15) | College English   | 8          |         |
| GE01088      | Computer Proficiency Test   | 0.5        |         |
| GE01095      | Introduction to Computer Science and Programming  | 2.5        |         |
| GE01107(-13) | Psychological Health & Career Planning  | 1          |         |
| GE01089(-92) | Physical Education  | 4          |         |

### 2. Engineering core courses (31.5 credits)

| Code         | Course Title                                      | Credit(s) | Remarks |
|--------------|---|-----------|---------|
| GE03025      | Higher Mathematics A ( I )                        | 5         |         |
| GE03026      | Higher Mathematics A ( II )                       | 5         |         |
| GE03003      | Linear Algebra A                                  | 3         |         |
| GE03004      | Probability and Mathematical Statistics A ( III ) | 3         |         |
| GE03005      | General Physics A ( I )                           | 3         |         |
| GE03006      | General Physics A ( II )                          | 3         |         |
| GE03007(-08) | General Physics Experiment A ( II )               | 2         |         |
| CH04038      | Electrical and Electronic Engineering             | 3.5       |         |
| GE02053      | Electronics Experiment                            | 1         |         |
| CH04020      | Engineering Drawing                               | 3         |         |
| Total        |   | 31.5      |         |

### 3. Chemical core courses (24 credits)

| Code    | Course Title                                 | Credit(s) | Remarks |
|---------|--|-----------|---------|
| CH04043 | Physical Chemistry A ( I )                   | 3         |         |
| CH04044 | Physical Chemistry A ( II )                  | 2         |         |
| CH04045 | Organic Chemistry A ( I )                    | 3         |         |
| CH04046 | Organic Chemistry A ( II )                   | 2         |         |
| CH04047 | Inorganic Chemistry B                        | 4         |         |
| CH04048 | Analytical Chemistry B                       | 3         |         |
| CH04049 | Basic Inorganic Chemistry Experiment A       | 1         |         |
| CH04050 | Basic Organic Chemistry Experiment A         | 2         |         |
| CH04051 | Basic Physical Chemistry Experiment A ( I )  | 1         |         |
| CH04052 | Basic Physical Chemistry Experiment A ( II ) | 1         |         |
| CH04053 | Basic Analytical Chemistry Experiments A     | 2         |         |
| Total   |  | 24        |         |

## 4. Professional core (30 credits)

| Code    | Course Title   | Credit(s) | Remarks |
|---------|--|-----------|---------|
| CH05051 | Principles of Chemical Engineering I                     | 3         |         |
| CH05052 | Principles of Chemical Engineering II                    | 3         |         |
| CH05009 | Chemical Reaction Engineering                            | 3         |         |
| CH05053 | Chemical Thermodynamics                                  | 3         |         |
| CH05054 | Chemical Engineering Design                              | 3         |         |
| CH05055 | Chemical Engineering Technology                          | 2         |         |
| CH05056 | Chemical Separation Engineering                          | 2         |         |
| CH05057 | Mechanical Fundamental of Chemical Engineering Equipment | 2         |         |
| CH05058 | Chemical Process Analysis and Synthesis                  | 2         |         |
| CH05059 | Chemical Safety and Environmental Protection             | 2         |         |
| CH05060 | Chemical Meters and Automation                           | 2         |         |
| CH05061 | Chemical Engineering Mathematics                         | 2         |         |
| CH05062 | Introduction to Chemical Engineering                     | 1         |         |
| Total   |  | 30        |         |

## 5. Electives (26 credits)

## Specialty Modules(Choose one from two,8 credits)

## Chemical Process Engineering Direction(8 credits)

| Code    | Course Title  | Credit(s) | Remarks  |
|---------|---|-----------|----------|
| CH06064 | Transfer Process of Chemical Engineering            | 2         | Required |
| CH06065 | Reactor Design                                      | 2         | Required |
| CH06066 | Chemical Engineering Fundamental of Clean Energy    | 2         | Required |
| CH06057 | Principles and Applications of Industrial Catalysis | 2         | Required |

## Polymer Chemical Direction(8 credits)

| Code    | Course Title                             | Credit(s) | Remarks  |
|---------|--|-----------|----------|
| CH06067 | Polymer Chemistry                        | 2         | Required |
| CH06068 | Polymer Materials                        | 2         | Required |
| CH06069 | Polymer Physics                          | 2         | Required |
| CH06070 | Fine Chemicals Synthesis and Application | 2         | Required |

## Professional Elective

| Code    | Course Title  | Credit(s) | Remarks |
|---------|---|-----------|---------|
| CH06064 | Chemical Transfer Process                           | 2         |         |
| CH06065 | Reactor Design                                      | 2         |         |
| CH06066 | Chemical Engineering Fundamental of Clean Energy    | 2         |         |
| CH06057 | Principles and Applications of Industrial Catalysis | 2         |         |
| CH06067 | Polymer chemistry                                   | 2         |         |
| CH06068 | Polymer Materials                                   | 2         |         |
| CH06069 | Polymer Physics                                     | 2         |         |
| CH06070 | Fine Chemicals Synthesis and Application            | 2         |         |
| CH06029 | Chemical products Formulation                       | 2         |         |
| CH06071 | Chemical English and Literature Search              | 2         |         |
| CH06072 | Catalyst Engineering                                | 2         |         |
| CH06027 | Computer Applications in Chemical Industry          | 2         |         |
| CH06013 | Chemical Product Design                             | 2         |         |
| CH06041 | New Separation Technology                           | 2         |         |

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| Code  | Course Title  | Credit(s) | Remarks |
|---|---|-----------|---------|
| CH06016                                       | Chemical Process Development and Magnification                  | 2         |         |
| CH06073                                       | Chemical Pharmaceutical Technology                              | 2         |         |
| CH06014                                       | Chemical Products Marketing                                     | 2         |         |
| CH06074                                       | Industrial chemical additives: Development and Entrepreneurship | 2         |         |
| CH06033                                       | Fundamental of Biochemical Engineering                          | 2         |         |
| CH06075                                       | Introduction to Environmental Engineering                       | 2         |         |
| CH06076                                       | Green Chemistry   | 2         |         |
| CH06077                                       | Nano-science and Technology                                     | 2         |         |
| CH06018                                       | Frontier of Chemical Engineering                                | 2         |         |
| CH06078                                       | Biochemistry  | 2         |         |
| Total (Choose 5 from 24 electives,10 credits) |   |           |         |

Note: Students may take cross-major electives within the 9 elective credits.

#### (6) Centralized Practice (36.5 credits)

| Code    | Course Title   | Credit(s) | Remarks   |
|---------|--|-----------|---|
| GE01040 | Military Training  | 0         | Military training, military and defense (including military theory) |
| GE09030 | Chinese Writing Training   | 1         |   |
| GE09006 | Metalworking Practice A  | 2         |   |
| CH10016 | Graduation Design (Thesis)   | 16        |   |
| CH10004 | Cognition Practice   | 1         |   |
| CH10016 | Production Practice (including Simulation Training)  | 2         |   |
| CH10017 | Graduation Practice  | 3         |   |
| CH10018 | Basic Chemical Engineering Design (including Chemical Principles and Chemical Equipment Machinery Curriculum Design)   | 2         |   |
| CH10019 | Comprehensive Chemical Engineering Design (including Chemical Process Analysis and Synthesis, Winners Participating in the Provincial or National Chemical Engineering Design Competition can Obtain Course Credits Instead of the Exam) | 3         |   |
| CH10020 | Principles of Chemical Engineering Experiments   | 2         |   |
| CH10021 | Chemical Engineering Professional Innovation Experiment  | 2.5       |   |
| GE09021 | Electronic and Electrical Practice A   | 2         |   |
|         | Total  | 36.5      |   |

## VI. Curriculum-Charging Teachers List

| No. | Name           | Academic Title      | Education Background | Major  | Courses (Professional Core, Specialization Courses, Courses of General Education)  |
|-----|----------------|---------------------|----------------------|--|--|
| 1   | Xu Weijian     | Professor           | Doctor               | Polymer Chemical Engineering, New Separation Technique     | Chemical Separation Engineering, Polymer Chemistry, Introduction to Chemical Engineering   |
| 2   | Hu Aixi        | Professor           | Doctor               | Drug synthesis and design                                  | Drug synthesis and design  |
| 3   | Zhou Xiaoping  | Professor           | Doctor               | Reaction Engineering, Industrial Catalysis                 | Chemical Reaction Engineering, Reactor Design, Principles of Chemical Engineering  |
| 4   | Deng Jianru    | Professor           | Master               | Polymer Chemical, Applied Chemistry                        | Polymer Chemistry, Polymer Material, Polymer Physics   |
| 5   | Chao Zisheng   | Professor           | Doctor               | Green Chemical Engineering, Industrial Catalysis           | Chemical Engineering Technology, Industry Catalytic Principle and Application  |
| 6   | Zhang Xudong   | Professor           | Doctor               | Chemical Engineering                                       | Principles of Chemical Engineering, Chemical Separation Engineering  |
| 7   | Yin Shuangfeng | Professor           | Doctor               | Industrial Catalysis, Applied Chemistry                    | Chemical Engineering Technology, Principles of Chemical Engineering, Catalyst Engineering, Introduction to Chemical Engineering  |
| 8   | Yang Weijun    | Professor           | Doctor               | Industrial Catalysis                                       | Principles of Chemical Engineering, Chemical Meters and Automation   |
| 9   | Guo Dongcai    | Professor           | Doctor               | Chemical Technology Chemical Engineering Process           | Chemical Engineering Technology, Chemical Engineering Process Development and Magnification  |
| 10  | Xiong Yuanqin  | Associate Professor | Bachelor             | Chemical Products Marketing, Chemical Additives Production | Chemical Meters and Automation, Fine Product Formulation, Chemical Products Marketing, Industrial chemical additives; Development and Entrepreneurship   |
| 11  | Liang Zhiwu    | Professor           | Doctor               | Chemical Engineering                                       | Chemical Engineering Safety and Environmental Protection, Mechanical Fundamental of Chemical Engineering Equipment, Chemical Engineering Mathematics, Chemical Engineering, Fundamental for Clean Energy, Chemical Engineering Design, Basic Chemical Engineering Design, Introduction to Chemical Engineering, Frontier of Chemical Engineering |
| 12  | Tong Baidong   | Professor           | Doctor               | Chemical Engineering                                       | Chemical Engineering safety and Environmental Protection   |
| 13  | Ye Jiao        | Associate Professor | Master               | Drug Synthesis   | Chemical Engineering Thermodynamics, Mechanical Fundamental of Chemical Engineering Equipment, Basic Chemical Engineering Design, Chemical Pharmaceutical Technology   |

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| No. | Name        | Academic Title      | Education Background | Major   | Courses (Professional Core, Specialization Courses, Courses of General Education)   |
|-----|-------------|---------------------|----------------------|---|---|
| 14  | Lu Yanbing  | Associate Professor | Doctor               | Polymer Chemistry and Physics                     | Chemical Separation Engineering, Polymer Physics, Polymer Chemistry   |
| 15  | Xia Xinnian | Associate Professor | Doctor               | Polymer Synthesis, Engineering Design             | Chemical Separation Engineering, New Separation Technology, Comprehensive Chemical Engineering Design   |
| 16  | Li Wensheng | Associate Professor | Ph. D Candidate      | Chemical Technology, New Catalytic Materials      | Principles of Chemical Engineering, Reactor Design, Chemical Engineering Fundamental of Clean Energy, Principles of Chemical Engineering Experiments, Basic Chemical Engineering Design   |
| 17  | Wang Qinbo  | Associate Professor | Doctor               | Process Engineering, Process Simulation           | Chemical Process Analysis and Synthesis, Computer Application in Chemical Engineering, Comprehensive Chemical Engineering Design  |
| 18  | Ren Yanqun  | Lecturer            | Master               | Industrial Catalysis                              | Chemical Engineering Design, Chemical Engineering Fundamental of Clean Energy, Principles of Chemical Engineering Experiments, Basic Chemical Engineering Design, Comprehensive Chemical Engineering Design, Chemical Engineering Process Development and Magnification |
| 19  | Yang Lintao | Lecturer            | Master               | Fine Chemicals Synthesis and Process Optimization | Principles of Chemical Engineering, Principles of Chemical Engineering Experiments, Basic Chemical Engineering Design   |
| 20  | Luo Weiping | Lecturer            | Doctor               | Green Chemical Engineering                        | Chemical Reaction Engineering, Principles of Chemical Engineering Experiments, Chemical Engineering Professional Experiment   |
| 21  | Na Yanqing  | Associate Professor | Bachelor             | Experiment and practice                           | Principles of Chemical Engineering Experiments, General Chemistry Experiments, Chemical Engineering Professional Innovation Experiment, Chemical Safety and Environmental Protection  |
| 22  | Ou Encai    | Research Assistant  | Doctor               | Polymer Synthesis                                 | Chemical Product Design, New Separation Technology, Polymer Chemistry   |
| 23  | Qiu Renhua  | Associate Professor | Doctor               | Industrial Catalysis, Organic Synthesis           | Chemical Engineering Thermodynamics, Fine Chemicals Synthesis and Application, Fundamental of Biological Chemical Industry, Introduction to Environmental Engineering   |
| 24  | Luo Xiao    | Assistant Professor | Doctor               | Process Engineering, Process Simulation           | Chemical Engineering Mathematics, Chemical Transfer Processes, Chemical Reaction Process  |

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| No. | Name           | Academic Title     | Education Background | Major                | Courses (Professional Core, Specialization Courses, Courses of General Education)   |
|-----|----------------|--------------------|----------------------|----------------------|---|
| 25  | Chen Lang      | Research Assistant | Doctor               | Industrial Catalysis | Fundamental of Biological Chemical Industry, Introduction to Environmental Engineering, Green chemistry, Nanoscience and Nanotechnology |
| 26  | Wang Qiu'an    | Professor          | Doctor               | Organic Chemistry    | Organic Chemistry A I, Organic Chemistry A II   |
| 27  | Wang Shuangyin | Professor          | Doctor               | Physical Chemistry   | Physical Chemistry A, Fundamental Physical Chemistry Experiment, General Chemistry  |
| 28  | He Fengjiao    | Professor          | Doctor               | Inorganic Chemistry  | Inorganic Chemistry B, Fundamental Inorganic Chemistry Experiment   |
| 29  | Huan Shuangyan | Professor          | Doctor               | Analytical Chemistry | Analytical Chemistry B, Fundamental Analytical Chemistry Experiment   |

## VII. Charging Professor

| Name        | Academic Title | Education Background | Duty                                    | Responsibility                          |
|-------------|----------------|----------------------|---|---|
| Liang Zhiwu | Professor      | Ph. D                | Department Head of Chemical Engineering | Responsible for the Teaching Management |

(翻译人:邱仁华、卢彦兵、梁志武)