

化学工程与工艺专业培养方案（2017版）

Curriculum for Undergraduate Chemical Engineering and Technology Major (Version of 2017)

一、培养目标

本专业培养适应社会主义经济和社会发展的需要，德、智、体、美、劳全面发展的社会主义事业建设者和接班人。掌握化学工程与工艺方面的知识，能在化工、冶金、能源、材料、环保、制药、炼油和轻工等部门从事工程设计、技术开发、工厂操作与管理、科学研究等方面工作的高素质应用型人才。毕业五年应达到以下目标：

1. 能熟练运用数学、自然科学、工程科学及化工专业的知识和方法解决化工及相关领域复杂工程问题；
2. 具备对新产品、新工艺、新技术和新设备进行研究、开发和设计的能力；
3. 熟悉国家对于化工生产、设计、研究与开发、环境保护等方面的方针、政策和法规；
4. 了解化学工程与技术的理论前沿，了解新工艺、新技术与新设备的发展动态；
5. 具有创新意识和独立获取新知识的能力；
6. 具有良好的表达和沟通能力以及团队合作和组织管理能力。

I. Training objectives

This major cultivates builders and successors of socialist cause who meet the needs of modern chemical industry, with all-round development of morality, intelligence, physique, aesthetic and labor. The graduate is qualified as the engineer or manager for research and development, and plant operation and management in the industry of chemical, metallurgy, energy, material, environment, medicine.

1. Mastering the basic knowledge, theories and experimental skills of preparation, processing, structure and performance test of materials;
2. Having the skills of chemical analysis and synthesis;
3. Having a good basis of natural sciences and humanities-social science, and know the general principles and knowledge of related majors;
4. Possessing a higher level of foreign language and computer application ability, and have practice and innovation ability;
5. Acquiring the preliminary ability of research and development on new materials and new technology, and the ability of materials design, research and analysis;

6. Acquiring the preliminary ability of material production, quality control, technology management and application;

二、毕业要求

1. **工程知识**: 掌握数学、自然科学、工程基础和专业知 识, 并能将工程知识应用到化工及相关领域复杂工程问题的解决中去。

2. **问题分析**: 能够应用数学、自然科学和工程科学的基本原理, 识别、表达、并通过文献研究分析化工及相关领域复杂工程问题, 以获得有效结论。

3. **设计/开发解决方案**: 能够设计针对化工及相关领域复杂工程问题的解决方案, 设计满足特定需求的系统、单元(部件)或工艺流程, 并能够在设计环节中体现创新意识, 考虑社会、健康、安全、法律、文化以及环境等因素。

4. **研究**: 能够基于科学原理并采用科学方法对化工及相关领域的复杂工程问题进行研究, 包括设计实验、分析与解释数据, 并通过信息综合得到合理有效的结论。

5. **使用现代工具**: 能够针对化工领域复杂工程问题, 开发、选择与使用恰当的技术、资源、现代工程工具和信息技术工具, 包括对化工及相关领域复杂工程问题的预测与模拟, 并能够理解其局限性。

6. **工程与社会**: 能够基于化工领域相关背景知识进行合理分析, 评价专业工程实践和化工领域复杂工程问题解决方案对社会、健康、安全、法律以及文化的影响, 并理解应承担的责任。

7. **环境和可持续发展**: 能够理解和评价针对化工领域复杂工程问题的工程实践对环境、社会可持续发展的影响。

8. **职业规范**: 具有人文社会科学素养、社会责任感, 能够在工程实践中理解并遵守工程职业道德和规范, 履行责任。

9. **个人和团队**: 能够在多学科背景下的团队中承担个体、团队成员以及负责人的角色。

10. **沟通**: 能够就化工领域复杂工程问题与业界同行及社会公众进行有效沟通和交流, 包括撰写报告和设计文稿、陈述发言、清晰表达或回应指令, 并具备一定的国际视野, 能够在跨文化背景下进行沟通和交流。

11. **项目管理**: 理解并掌握工程管理原理与经济决策方法, 并能在多学科环境中应用。

12. **终身学习**: 具有自主学习和终身学习的意识, 有不断学习和适应发展的能力。

II. Requirements

1. Engineering knowledge: The ability to apply mathematics, nature science, engineering basis and professional knowledge to solve complex chemical engineering process problems;

2. Problem analysis: The ability to apply basic principles of mathematics, science and engineering science in the identification, presentation, research and analysis of complex chemical engineering process problem on the basis of literature, and further to obtain efficient conclusions.

3. Design / develop solution project: The ability to design project for complex chemical engineering process problem solution for the purpose of chemical product engineering requirement; to design chemical system, unit (assemble unit) or technological process design for special requirements; to express of innovation spirit in the design with appreciation of broader context of society, health, safety, law, culture and environment issues.

4. Research: The ability to research into complex chemical engineering process problem based on science principle with science method, including experiment design, analysis and data interpretation, and further to obtain reasonable and efficient conclusions on the basis of information integration.

5. Modern tools utilization: The ability to develop, select, and utilize adequate technology, source, modern engineering tools and IT tools for complex engineering problem, including complex chemical engineering process problem prediction and simulation, and further to know about limitation of engineering problem.

6. Engineering and society: The ability to reasonably analyze and evaluate the influence of professional engineering practice and its complex chemical engineering process problem solution project on society, health, safety, law, and culture based on the relevant engineering theoretical knowledge, and further to understand the responsibilities to be undertaken.

7. Environments and sustainable development: The ability to understand and

evaluate engineering practice influence on process safety, environment and society sustainable development from complex chemical engineering process problem.

8. Professional norms: An understanding of the social and cultural context of their work, and the associated ethical responsibilities of professional engineering

9. Personality and teamwork: The ability to be multi-role as individuals, team members, and heads in a team on the background of multi-disciplines.

10. Communication: The ability to be efficient communication and exchanges with industry peers and public on complex chemical engineering process problem, including report writing, scheme designing, declaration, clear presentation, and instruction responses; to communicate and exchange in different cultures.

11. Project management: The ability to understand and master the principles of engineering management and economic decision method, and to be able to utilized in multi-disciplines environment.

12. Lifelong learning: The ability to be conscious of self-learning and lifelong learning; the ability to engage in continued learning and to adapt to development.

附：培养目标实现矩阵

| | 培养目标 1 | 培养目标 2 | 培养目标 3 | 培养目标 4 | 培养目标 5 | 培养目标 6 |
|--------|--------|--------|--------|--------|--------|--------|
| 毕业要求 1 | √ | | | | | |
| 毕业要求 2 | √ | | | | | |
| 毕业要求 3 | | √ | √ | | √ | |
| 毕业要求 4 | √ | √ | | | | |
| 毕业要求 5 | | √ | | | | |
| 毕业要求 6 | | | √ | √ | | |
| 毕业要求 7 | | | √ | √ | | |
| 毕业要求 8 | | | | √ | | |

| | | | | | | |
|---------|--|--|--|--|---|---|
| 毕业要求 9 | | | | | | √ |
| 毕业要求 10 | | | | | √ | √ |
| 毕业要求 11 | | | | | | √ |
| 毕业要求 12 | | | | | √ | |

三、专业主干课程

物理化学、化工原理、化学反应工程、化工热力学、化工过程分析与合成、化工环保与安全、能源化学、化工设备与材料、化工工程设计与技术经济分析。

III. Main courses

Physical Chemistry, Principles of Chemical Engineering, Chemical Reaction Engineering, Chemical Thermodynamics, Chemical Process Analysis and Synthesis, Chemical Engineering Environmental Protection and Safety, Energy Chemistry, Chemical Engineering Equipment and Materials, Chemical Engineering Design and Technical Economic Analysis.

四、基本学制：四年

IV. Recommended length of the program: 4 years

五、授予学位：工学学士

V. Degree: Bachelor of Engineering

学生修满所规定的最低毕业学分，符合武汉科技大学授予学士学位规定，授予工学学士学位。

六、毕业学分要求：174 学分

| 课程类型 | 学分要求 | 课程类型 | 学分要求 | |
|------------|--------|----------|--------|---------|
| 1、通识教育平台课程 | 45 | 3、专业课程模块 | 62 | |
| 必修课程 | 41 | 必修课程 | 42.5 | |
| 选修课程 * | 4 | 选修课程 | 专业方向课程 | 9.5 |
| 2、学科基础平台课程 | 44.5 | | 专业选修课程 | 10 (29) |
| 必修课程 | 36.5 | 4、实践教学模块 | 16.5 | |
| 选修课程 | 8 (15) | 5、素质拓展模块 | 6 | |

*通识教育选修课 4 学分包括：人文社科类 1 学分、艺术体育类 1 学分、自然科学类 1 学分、经济管理类 1 学分

VI. Credits required for graduation: 174 credits

| Type of courses | Academic credits | Type of courses | Academic credits | |
|---------------------------------|------------------|-------------------------------------|---------------------------------|---------|
| 1. Courses of general education | 45 | 3. Specialized Courses | 62 | |
| Required courses | 41 | Core specialized courses | 42.5 | |
| Elective courses | 4 | Elective courses | Directional specialized courses | 9.5 |
| 2. General disciplinary courses | 44.5 | | Elective specialized courses | 10 (29) |
| Required courses | 36.5 | 4. Practicum and internship courses | 16.5 | |
| Elective courses | 8 (15) | 5. Quality development courses | 6 | |

理、工、医、艺术类专业实践学分（学时）不少于总学分（学时）的 25%，文、法、经济、管理类专业实践学分（学时）不少于总学分（学时）的 15%。

七、毕业要求实现矩阵

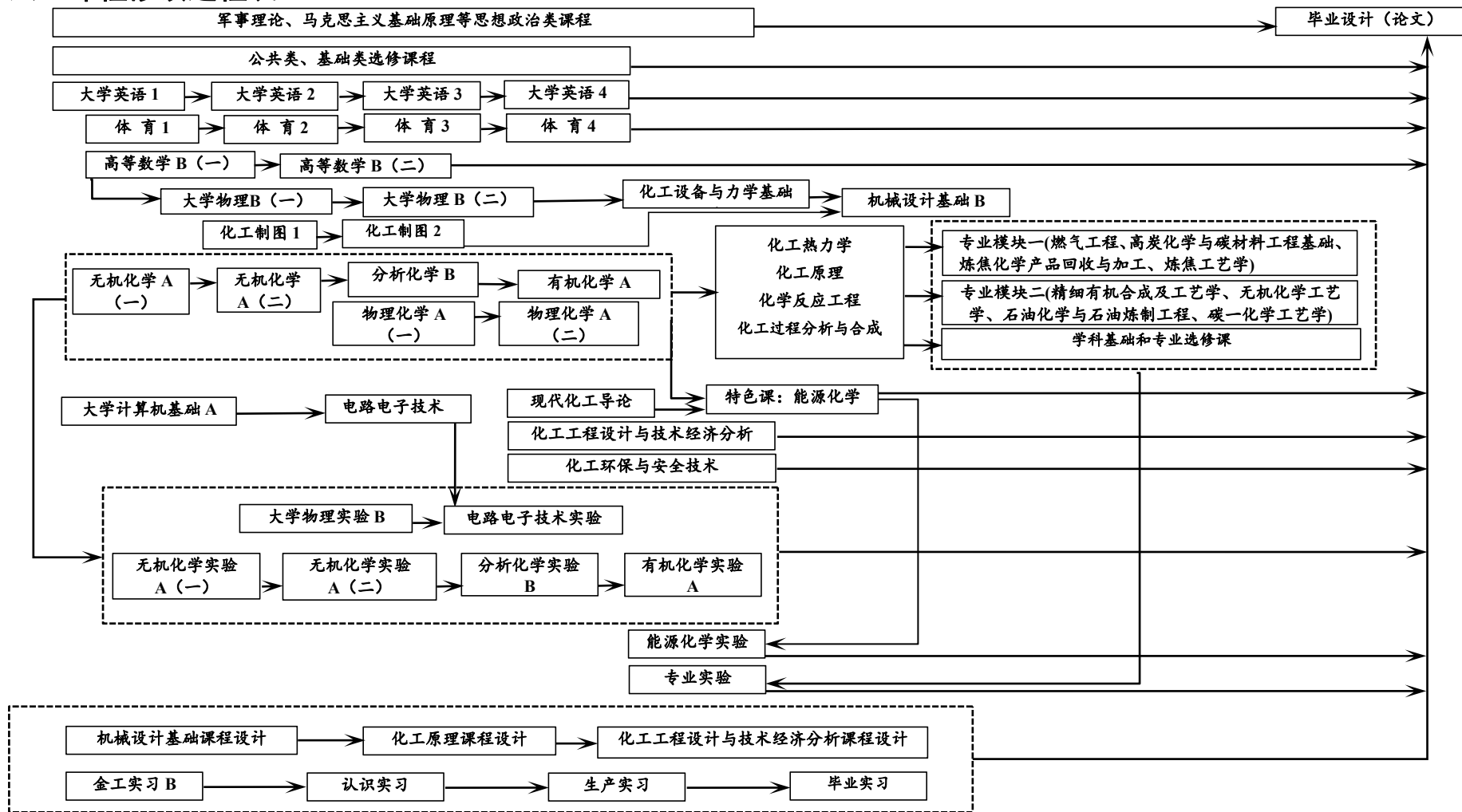
VII. Graduation Realization Matrix

| 课程名称 | 化学工程与工艺专业毕业要求 | | | | | | | | | | | |
|----------------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| 思想道德修养与法律基础 | | | | | | √ | | √ | | | | |
| 中国近现代史纲要 | | | | | | | | √ | | | | |
| 马克思主义基本原理 | | | | | | | | √ | | | | |
| 毛泽东思想和中国特色社会主义理论体系概论 | | | | | | | | √ | | | | |
| 形势与政策 | | | | | | √ | √ | √ | | √ | | √ |
| 军事理论与训练 | | | | | | | | | √ | | | |
| 体育 | | | | | | | | | √ | | | |
| 大学英语 | | | | | | | | | | √ | | |
| 大学计算机基础 A | | | | | √ | | | | | | | |
| 公益劳动 | | | | | | | | √ | √ | | | |
| 大学生心理健康教育 | | | | | | | | √ | | √ | | |
| 职业生涯规划与就业创业指导 | | | | | | √ | | √ | | | √ | √ |
| 化工制图 | √ | | √ | | √ | | | | | | | |

| 课程名称 | 化学工程与工艺专业毕业要求 | | | | | | | | | | | |
|-------------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| 机械设计基础 B | √ | | √ | | | | | | | | | |
| 电路电子技术 | | | | √ | √ | | | | | | | |
| 大学物理及实验 | √ | | | √ | | | | | | | | |
| 无机化学及实验 | √ | | | √ | | | | | | | | |
| 分析化学及实验 | | | | √ | √ | | | | | | | |
| 有机化学及实验 | √ | | √ | √ | | | | | | | | |
| 物理化学及实验 | √ | √ | | √ | | | | | | | | |
| 线性代数 | √ | √ | | | | | | | | | | |
| 专业英语 | | | | | | | | | | √ | | |
| 化工热力学 | √ | √ | | | | | | | | | | |
| 现代化工导论 | | | | | | | √ | √ | | √ | | √ |
| 化工原理 | √ | √ | | √ | | | | | | | | |
| 化学反应工程 | √ | √ | | | √ | | | | | √ | | |
| 化工过程分析与合成 | √ | √ | √ | √ | √ | | | | | | | |
| 化工工程设计与技术经济分析 | | √ | √ | | | √ | | | | | √ | |
| 化工工程设计与技术经济分析课程设计 | | | √ | | √ | | | | √ | | √ | |
| 化工设备与力学基础 | √ | √ | √ | | | | | | | | | |
| 化工环保与安全技术 | | √ | √ | | | √ | √ | √ | | | | |
| 能源化学及实验 | √ | √ | | √ | | | √ | | √ | √ | | |
| 燃气工程 | √ | √ | √ | | | | √ | | | | | |
| 高炭化学与碳材料工程基础 | | √ | | √ | | | | | | | | |
| 炼焦化学产品回收与加工 | | √ | √ | √ | | | √ | | | | | |
| 炼焦工艺学 | √ | √ | | √ | | | | | | | | |
| 精细有机合成及工艺学 | | √ | √ | √ | | | √ | | | | | |

| 课程名称 | 化学工程与工艺专业毕业要求 | | | | | | | | | | | |
|-------------|---------------|-----|-----|-----|-----|-----|-----|-----|-----|------|------|------|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) |
| 无机化学工艺学 | √ | √ | | √ | | | | | | | | |
| 石油化学与石油炼制工程 | √ | √ | √ | | | | √ | | | | | |
| 碳一化学工艺学 | | √ | | √ | | | | | | | | |
| 实验设计与数据处理 | | √ | | √ | | | | | | | | |
| 机械设计基础课程设计 | | | √ | | | | | | | | | |
| 化工原理课程设计 | | √ | √ | | √ | | | | √ | | | |
| 金工实习 B | | | √ | | | √ | | | √ | | | |
| 认识实习 | | | | | √ | √ | | √ | | | | |
| 生产实习 | | | | √ | | √ | √ | √ | √ | √ | | |
| 毕业实习 | | | | √ | √ | √ | | | | | √ | |
| 毕业设计（论文） | | | √ | | √ | √ | | | | √ | √ | √ |

八、课程修读进程表



九、教学环节设置及学分分布表

IX、Offered Course and Distribution of Academic Credits

| 课程类型 | 课程性质 | 课程编码 | 课程名称 | 学分 | 合计 | 课内学时 | | | 实践学时 | 学期 | 先修课程/备注 |
|------------------------------|----------|------|---|----|----|------|----|----|------|----|---------|
| | | | | | | 讲课 | 实验 | 上机 | | | |
| 平台 | 通识教育平台课程 | 必修 | 5105001 思想道德修养与法律基础 Moral Cultivation and Basics of Law | 3 | 48 | 40 | 0 | 0 | 8 | 1 | |
| | | | 5103001 中国近现代史纲要 An Outline of Modern and Contemporary History of China | 2 | 32 | 26 | 0 | 0 | 6 | 2 | |
| | | | 5102001 马克思主义基本原理 Fundamentals of Marxism | 3 | 48 | 40 | 0 | 0 | 8 | 3 | |
| | | | 5101001 毛泽东思想与中国特色社会主义理论体系概论 Theoretical system of socialism with Chinese characteristics | 6 | 96 | 64 | 0 | 0 | 32 | 4 | |
| | | | 1303601 大学计算机基础 A Computer Foundation A | 3 | 48 | 30 | 0 | 18 | 0 | 1 | |
| | | | 1401840 大学英语（一） College English (I) | 3 | 48 | 48 | 0 | 0 | 0 | 1 | |
| | | | 1401841 大学英语（二） College English (II) | 3 | 48 | 48 | 0 | 0 | 0 | 2 | |
| | | | 1401842 大学英语（三） College English (III) | 3 | 48 | 48 | 0 | 0 | 0 | 3 | |
| | | | 1401843 大学英语（四） College English (IV) | 3 | 48 | 48 | 0 | 0 | 0 | 4 | |
| | | | 1501882 体育(一) Physical Education(I) | 1 | 26 | 26 | 0 | 0 | 0 | 1 | |
| | | | 1501883 体育(二) Physical Education(II) | 1 | 34 | 34 | 0 | 0 | 0 | 2 | |
| | | | 1501884 体育(三) Physical Education(III) | 1 | 34 | 34 | 0 | 0 | 0 | 3 | |
| 1501885 体育(四) Physical | 1 | 34 | 34 | 0 | 0 | 0 | 4 | | | | |

| | | | | | | | | | | | | |
|----------|----|--|--|-----|----|----|----|---|----|---------------|------|--|
| | | | Education(IV) | | | | | | | | | |
| | | 2501004 | 大学生心理健康教育 Mental Health Education | 1 | 16 | 16 | 0 | 0 | 0 | 1 | | |
| | | 2501005 | 职业生涯规划与就业指导 Career Plan and Vocational Guidance | 1 | 16 | 16 | 0 | 0 | 0 | 2 | | |
| | | 2501001 | 军事理论与训练 Military Theory and Training | 3 | 3周 | 0 | 0 | 0 | 3周 | 1 | | |
| | | 2501002 | 公益劳动 Community Service | 1 | 16 | 0 | 0 | 0 | 16 | 4 | 分散进行 | |
| | | 5106001 | 形势与政策 World Affairs and State Policy | 2 | 32 | 32 | 0 | 0 | 0 | 1,2,3,4,5,6,7 | 分散进行 | |
| | 选修 | 人文社科类 1 学分 Humanity and Social Science 1 Academic Credits | | | | | | | | | | |
| | | 经济管理类 1 学分 Economic and Management 1 Academic Credits | | | | | | | | | | |
| | | 自然科学类 1 学分 Natural Science 1 Academic Credits | | | | | | | | | | |
| | | 艺术体育类 1 学分 Artistic and Sports 1 Academic Credits | | | | | | | | | | |
| 学科基础平台课程 | 必修 | 0702603 | 高等数学 B(一) Advanced Mathematics B (I) | 4 | 64 | 64 | 0 | 0 | 0 | 1 | | |
| | | 0702604 | 高等数学 B(二) Advanced Mathematics B (II) | 5 | 80 | 80 | 0 | 0 | 0 | 2 | | |
| | | 0302615 | 化工制图 (一) Chemical Drawing I | 2.5 | 40 | 34 | 0 | 6 | 0 | 1 | | |
| | | 0302616 | 化工制图 (二) Chemical Drawing II | 2 | 32 | 28 | 0 | 4 | 0 | 2 | | |
| | | 0304602 | 机械设计基础 B Basics of Mechanical Design B | 3.5 | 56 | 50 | 6 | 0 | 0 | 4 | | |
| | | 0401002 | 电路电子技术 | 4 | 64 | 48 | 16 | 0 | 0 | 3 | | |
| | | 0703605 | 大学物理 B(一) College Physics B(I) | 2.5 | 40 | 40 | 0 | 0 | 0 | 2 | | |
| | | 0703606 | 大学物理 B(二) College Physics B(II) | 2 | 32 | 32 | 0 | 0 | 0 | 3 | | |
| | | 0703607 | 大学物理实验 B | 1.5 | 24 | 0 | 24 | 0 | 0 | 3 | | |

| | | | | | | | | | | | |
|---------|--|-----|----------------------------------|----|----|---|---|---|--|--|--|
| | | | Experiments in College Physics B | | | | | | | | |
| 2206681 | 分析化学 B Analytical Chemistry B | 2 | 32 | 32 | 0 | 0 | 0 | 2 | | | |
| 2206682 | 分析化学实验 B Experiments in Analytical Chemistry B | 1.5 | 24 | 0 | 24 | 0 | 0 | 2 | | | |
| 2206661 | 无机化学 A(一) Inorganic Chemistry A (I) | 2.5 | 40 | 40 | 0 | 0 | 0 | 1 | | | |
| 2206662 | 无机化学 A(二) Inorganic Chemistry A (II) | 1.5 | 24 | 24 | 0 | 0 | 0 | 2 | | | |
| 2206663 | 无机化学实验 A(一) Experiments in Inorganic Chemistry A (I) | 1 | 16 | 0 | 16 | 0 | 0 | 1 | | | |
| 2206664 | 无机化学实验 A(二) Experiments in Inorganic Chemistry A (II) | 1 | 16 | 0 | 16 | 0 | 0 | 2 | | | |
| 2202044 | 线性代数 Linerar Algebra | 2 | 32 | 32 | 0 | 0 | 0 | 3 | | | |
| 2206003 | 专业英语 Specialized English | 2.5 | 40 | 40 | 0 | 0 | 0 | 5 | | | |
| 2202061 | 实验设计与数据处理 Experiment Design and Data Processing | 2 | 32 | 32 | 0 | 0 | 0 | 4 | | | |
| 0702026 | 高分子物理与化学 Polymer Physics and Chemistry | 1.5 | 24 | 24 | 0 | 0 | 0 | 5 | | | |
| 2203002 | 化工工程放大原理 Magnification Principles of Chemical Engineering | 1.5 | 24 | 24 | 0 | 0 | | 6 | | | |
| 2203001 | 传递过程基础 Fundamentals of Transfer Process | 2 | 32 | 32 | 0 | 0 | | 6 | | | |
| 2202049 | 分离工程 Separation Engineering | 1.5 | 24 | 24 | 0 | 0 | 0 | 6 | | | |
| 2202056 | 现代分析与测试技术 Modern Analysis and | 2 | 32 | 32 | 0 | 0 | 0 | 7 | | | |

| | | | | | | | | | | | | | |
|----|----------------|----------------|----|----------------------|--|-----|----|----|----|---|---|---|----------|
| | | | | Testing Technologies | | | | | | | | | |
| 模块 | 专业 课程 模块 | 专业 核心 课程 | 必修 | 2206671 | 有机化学 A Organic Chemistry A | 4 | 64 | 64 | 0 | 0 | | 3 | |
| | | | | 2206672 | 有机化学实验 A Experiments of Organic Chemistry A | 2.5 | 40 | 0 | 40 | 0 | | 3 | |
| | | | | 2206669 | 物理化学实验 A(一) Experiments of Physical Chemistry A (I) | 2 | 32 | 0 | 32 | 0 | 0 | 3 | |
| | | | | 2206670 | 物理化学实验 A(二) Experiments of Physical Chemistry A (II) | 1.5 | 24 | 0 | 24 | 0 | 0 | 4 | |
| | | | | 2206667 | 物理化学 A(一) Physical Chemistry A (I) | 2.5 | 40 | 40 | 0 | 0 | 0 | 3 | 无机化 学 |
| | | | | 2206668 | 物理化学 A(二) Physical Chemistry A (II) | 2 | 32 | 32 | 0 | 0 | 0 | 4 | |
| | | | | 2202103 | 化工环保与安全技术 Environmental Protection and Safety Technologies of Chemical Engineering | 2.5 | 40 | 40 | 0 | 0 | 0 | 5 | |
| | | | | 2202153 | 现代化工导论 Introduction to Modern Chemical Engineering | 1.5 | 24 | 24 | 0 | 0 | 0 | 1 | |
| | | | | 2202014 | 化学反应工程★ Chemical Reaction Engineering | 3.5 | 56 | 56 | 0 | 0 | 0 | 6 | 化工原 理 |
| | | | | 2202022 | 能源化学 Energy Chemistry | 2.5 | 40 | 40 | 0 | 0 | 0 | 5 | |
| | | | | 2202072 | 能源化学实验 Experiments of Energy Chemistry | 1 | 16 | 0 | 16 | 0 | 0 | 5 | |
| | | | | 2202102 | 化工过程分析与合成 Analysis and Synthesis of Chemical Process | 2.5 | 40 | 40 | 0 | 0 | 0 | 6 | 研讨课 |
| | | | | 2202012 | 化工热力学 Chemical Engineering Thermodynamics | 2.5 | 40 | 36 | 4 | 0 | | 4 | 物理化 学 |

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|--|----------------|----|---------|---|-----|----|----|---|---|---|---|----------|
| | | | 2203604 | 化工原理(一) Principles of Chemical Engineering (I) | 3.5 | 56 | 48 | 8 | 0 | 0 | 5 | |
| | | | 2203605 | 化工原理(二) Principles of Chemical Engineering (II) | 3.5 | 56 | 48 | 8 | 0 | 0 | 6 | |
| | | | 2202101 | 化工设备与力学基础 Chemical Engineering Equipments and Mechanics Basis | 3 | 48 | 48 | 0 | 0 | 0 | 5 | 工程 力学 |
| | | | 2202071 | 化工工程设计与技术 经济分析 Chemical Technology Design and Techno-Economics | 2 | 32 | 32 | 0 | 0 | 0 | 6 | 研讨课 |
| | 专业 方向 课程 | 选修 | 方向一 | | | | | | | | | |
| | | | 2202029 | 燃气工程 Gas Engineering | 2 | 32 | 32 | 0 | 0 | 0 | 6 | |
| | | | 2202069 | 高碳化学与碳材料工 程基础 Carbon Chemistry and Basis of Carbon Material Engineering | 2.5 | 40 | 40 | 0 | 0 | 0 | 5 | |
| | | | 2202077 | 炼焦化学产品回收与 加工 Recovery and Processing for Coke Oven Chemical Products | 2.5 | 40 | 32 | 8 | 0 | 0 | 7 | |
| | | | 2202150 | 炼焦工艺学 Coking Technology | 2.5 | 40 | 32 | 8 | 0 | 0 | 7 | |
| | | | 方向二 | | | | | | | | | |
| | | | 2202018 | 精细有机合成及工艺 学 Fine Organic Synthesization and Technology | 2.5 | 40 | 32 | 8 | 0 | 0 | 5 | |
| | | | 2202036 | 无机化学工艺学 Inorganic Chemistry Techniques | 2 | 32 | 32 | 0 | 0 | 0 | 6 | |
| | | | 2202075 | 石油化学与石油炼制 工程 Petrochemical and | 2.5 | 40 | 32 | 8 | 0 | 0 | 6 | |

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|--|----------------|---------|-----------------------------------|--|-----|----|----|----|---|---|---|--|
| | | | Petroleum Refining Engineering | | | | | | | | | |
| | | 2202078 | 碳一化学工艺学 C1 Chemical Technology | 2.5 | 40 | 34 | 6 | 0 | 0 | 7 | | |
| | 专业 任选 课程 | 选修 | 2202604 | 化学开放实验 Opening Chemistry Experiment | 1.5 | 24 | 0 | 24 | 0 | 0 | 5 | |
| | | | 2203005 | 化工仿真实验 Chemical Engineering Simulation Experiments | 1.5 | 24 | 0 | 24 | 0 | 0 | 6 | |
| | | | 2206012 | 应用催化 Applied Catalyzation | 2 | 32 | 32 | 0 | 0 | 0 | 4 | |
| | | | 2202019 | 绿色化学 Green Chemistry | 1.5 | 24 | 24 | 0 | 0 | 0 | 5 | |
| | | | 2202040 | 化工仪表与自动化 Chemical Instrument and Automation | 2 | 32 | 32 | 0 | 0 | 0 | 5 | |
| | | | 2202064 | 化学产品设计基础 Chemical Product Design Fundamental | 2 | 32 | 32 | 0 | 0 | 0 | 6 | |
| | | | 2202003 | 材料化学 Material Chemistry | 2 | 32 | 32 | 0 | 0 | 0 | 5 | |
| | | | 2202006 | 高分子材料加工工艺学 Polymer Materials Processing Technology | 2 | 32 | 32 | 0 | 0 | 0 | 6 | |
| | | | 2202021 | 纳米材料基础 Basics of Nanomaterials | 1.5 | 24 | 24 | 0 | 0 | 0 | 5 | |
| | | | 2202016 | 计算机在化工中的应用 Computer Application in Chemical Engineering | 2 | 32 | 22 | 10 | 0 | 0 | 6 | |
| | | | 2206687 | 制药工程导论 Introduction to pharmaceutical engineering | 2 | 32 | 32 | 0 | 0 | 0 | 5 | |
| | | | 1908696 | 工程美学导论 Introduction to engineering aesthetics | 1.5 | 24 | 24 | 0 | 0 | 0 | 7 | |
| | | | 2202028 | 燃料燃烧 | 2 | 32 | 32 | 0 | 0 | 0 | 7 | |

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|--------|----|--|--|--|-----|------|----|---|---|----|------|---|--|--|
| | | | | Fuel Burning | | | | | | | | | | |
| | | | 2202059 | 应用电化学 Applied Electrochemistry | 2 | 32 | 32 | 0 | 0 | 0 | 7 | | | |
| | | | 2202076 | 石油化工工艺学 Petroleum Chemical Technology | 2 | 32 | 32 | 0 | 0 | 0 | 7 | | | |
| | | | 2202104 | 现代煤化工 Modern Coal Chemical Engineering | 1.5 | 24 | 24 | 0 | 0 | 0 | 7 | | | |
| 实践教学模块 | 必修 | | 1701005 | 金工实习 B Metalworking Experience | 1.5 | 48 | 0 | 0 | 0 | 48 | 3 | | | |
| | | | 2202052 | 认识实习 Introductory Practice | 1 | 2 周 | | | | | 2 周 | 5 | | |
| | | | 0304005 | 机械设计基础课程设计 Course Project in Basics of Mechanical Design | 1 | 2 周 | 0 | 0 | 0 | | 2 周 | 5 | | |
| | | | 2203004 | 化工原理课程设计 Course Project in Principles of Chemical Engineering | 1 | 2 周 | 0 | 0 | 0 | | 2 周 | 6 | | |
| | | | 2202082 | 化工工程设计与技术经济分析课程设计 Course Project in Chemical Technology Design and Techno-Economics | 1 | 2 周 | 0 | 0 | 0 | | 2 周 | 7 | | |
| | | | 2202043 | 生产实习 Production Practice | 2 | 4 周 | 0 | 0 | 0 | | 4 周 | 7 | | |
| | | | 2202097 | 毕业实习 Pre-graduation Practice Experience | 1 | 2 周 | 0 | 0 | 0 | | 2 周 | 8 | | |
| | | | 2202098 | 毕业设计(论文) Pre-graduation Internship | 8 | 16 周 | 0 | 0 | 0 | | 16 周 | 8 | | |
| 素质拓展模块 | 必修 | | 创新教育 3 学分 Innovation Education 3 Academic Credits | | | | | | | | | | | |
| | | | 第二课堂 3 学分 Second Classroom 3 Academic Credits | | | | | | | | | | | |

十、教学进程安排表

| 学 期 | 周 次 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|-----|---|-----|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|--|--|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | | |
| 1 | ♀ | ♀ | ⊙/★ | ★ | ★ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● | | | | | | | | | | |
| 2 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● | | | | | | | | | | | | |
| 3 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● | | | | | | | | | | |
| 4 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● | | | | | | | | | | | |
| 5 | + | + | × | × | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● | | | | | | | | | | | |
| 6 | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● | × | × | | | | | | | | | | |
| 7 | / | / | / | / | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | □ | ● | | | | | | | | | | |
| 8 | # | # | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | ※ | √ | + | | | | | | | | | | | | |
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符号说明:

- 1、♀入学前机动 2、⊙入学教育 3、★军事理论与训练 4、□理论教学 5、√机动时间 6、●考试 7、×课程设计 8、E专业实验或实习
 9、一假期 10、▲学年论文 11、G技能训练 12、※毕业设计(论文) 13、+毕业鉴定 14、#毕业实习 15、S写生 16、/生产实习(金工实习)
 17、T教材教法 18、☆教育实习 19、○技能教育实习 20、◎专题讲座 21、◆公益劳动 22、△社会调查 23、+认识实习

十一、课程设置表

X. Courses offered

| 课程类别 | 课程性质 | 课程名称（学分/实验学时）【先修课程】 |
|----------|------|---|
| 通识教育平台课程 | 必修 | 思想道德修养与法律基础(3/8)；形势与政策(2)；毛泽东思想与中国特色社会主义理论体系概论(6/32)；马克思主义基本原理(3/8)；中国近现代纲要(2/6)；大学计算机文化基础B(3/18)；军事理论与训练(3)；公益劳动(1)；大学英语(一)(3)；大学英语(二)(3)；大学英语(三)(3)；大学英语(四)(3)；体育(一)(1)；体育(二)(1)；体育(三)(1)；体育(四)(1)；职业生涯规划与就业指导(1)；大学生心理健康教育(1) |
| | 选修 | 见通识教育选修课程一览表 |
| 学科基础平台课程 | 必修 | 化工制图(一)(2.5/6)；化工制图(二)(2/4)；机械设计基础B【工程力学】(3.5/6)；电路电子技术(4/16)；高等数学B(一)(4)；高等数学B(二)(5)；大学物理B(一)(3)；大学物理B(二)(1.5)；大学物理实验B(1.5/24)；无机化学A(一)(2.5)；无机化学A(二)(1.5)；无机化学实验A(一)(1/16)；无机化学实验A(二)(1/16)；分析化学B(2)；分析化学实验B(1.5/24)； |
| | 选修 | 线性代数(2)；纳米材料基础(1.5)；专业英语(2.5)；现代分析与测试技术(2)；化工工程放大原理(1.5)；高分子物理与化学(1.5)；传递过程基础(2)；分离工程(1.5) |
| 专业课程模块 | 必修 | 现代化工导论(1.5)；化工热力学【物理化学A】(2.5)；化学反应工程(双语)【化工原理】(3.5)；能源化学(2.5)；化工工程设计与技术经济(2)；能源化学实验【能源化学】(1/16)；化工设备与力学基础(3)；化工过程分析与合成(2.5)；化工环保与安全技术(2.5)；化工原理(一)(3)；化工原理(二)(3)；化工原理实验(1/16)；物理化学A(一)(2.5)；物理化学A(二)(2)；物理化学实验A(一)(2/32)；物理化学实验A(二)(1.5/24)；有机化学A(4)；有机化学实验A(2.5/40)； |
| | 选修 | 专业方向课程： 燃气工程(2)；高炭化学与碳材料工程基础(2.5)；炼焦化学产品回收与加工(2.5/8)；炼焦工艺学(2.5/8)；精细有机合成及工艺学(2.5/8)；无机化学工艺学(2)；石油化学与石油炼制工程(2.5/8)；碳一化学工艺学(2.5/6) 材料化学(2)；高分子材料加工工艺学(2)；计算机在化工中的应用(2/10)；绿色化学(1.5)；燃料燃烧(2)；化工仪表与自动化(2)；应用电化学(2)；实验设计与数据处理(2)；化学产品设计基础(2)；石油化工工艺学(2)；化工仿真实验(1.5/24)；应用催化(2)；现代煤化工(1.5)； |

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| | | 化学开放实验（1.5/24）；制药工程导论（2）；工程美学导论（1.5） |
| 实践教学模块 | 必修 | 金工实习 B（1.5）；机械设计基础课程设计（1）；化工原理课程设计（1）；化工工程设计与技术经济分析课程设计（1）；认识实习（1）；生产实习（2）；毕业实习（1）；毕业设计（论文）（8） |
| 素质拓展模块 | 必修 | 创新教育(3)；第二课堂(3) |

注：课程教学每 16 学时计 1 学分，体育课每学期 1 学分，

举例说明：电工技术（2/8）【大学物理 A（一）】，即电工技术课程学分为 2，含实验学时 8 学时，修读电工技术应先修课程大学物理 A（一）。