# 自动化专业培养方案

**专业名称与代码：**自动化专业080602 (080801)

**专业培养目标：**本专业培养具备有电工、电子技术、控制理论、自动检测与仪表、信息处理、系统工程、计算机技术与应用等较宽广领域的工程技术基础和一定的专业知识的高级工程技术类人才，使之能在运动控制、过程控制、电力电子技术、检测与自动化仪表、电子与计算机技术、信息处理、管理与决策等领域从事控制系统分析、设计、运行管理、科技开发及研究等方面工作。

**专业培养要求：**本专业学生主要学习电工技术、电子技术、控制理论、自动检测与仪表、信息处理、系统工程、计算机技术与应用等方面的基本理论与基本知识，受到较好的工程实践基本训练，具有控制系统分析、设计、开发与研究的基本能力。

毕业生应获得以下几方面的知识与能力：

1. 具有较扎实的自然科学基础，较好的人文社会科学基础和外语应用能力；

2. 掌握本专业领域必需的较宽的基础理论知识，主要包括电路理论、电子技术、控制理论、信息处理、计算机软硬件基础及应用等；

3. 较好地掌握运动控制、过程控制及自动化仪表、电力电子技术及信息处理等方面的知识，具有本专业领域1-2个专业方向的专业知识和技能，了解本专业学科前沿和发展趋势；

4. 获得较好的系统分析、系统设计及系统开发方面的工程实践训练；

5. 在本专业领域内具备一定的科学研究、科技开发和组织管理能力，具有较强的工作适应能力。

**主干学科：**控制科学与工程、电气工程、计算机科学与技术。

**核心课程：**电路理论、电子技术基础、自动控制理论、计算机原理及应用、传感器与检测技术、电力电子技术、计算机仿真、电机与电力拖动基础、过程控制、运动控制、计算机控制技术等。

**主要专业实验：**自动控制理论实验、电力电子技术实验、运动控制实验、过程控制实验、自动检测与仪表实验、计算机控制实验、系统仿真实验、网络及多媒体实验等。

**主要实践性教学环节：**包括金工实习、高级语言程序设计、电子工艺实习、单片机及接口技术教学实习、自动控制系统实习、生产实习、毕业实习与毕业设计等。

**修业年限：**四年。

**授予学位：**工学学士。

**相近专业：**电气工程及其自动化。

# Program for Automation

**Specialty and Code:** Automation 080602(080801)

**Education Objective:** Our program will develope the professional knowledge and abilities of electrotechnics, electronic technology, control theory, automatic measuring and instruments, information processing, system engineering, techniques and applications of computer. The students will become senior technicians to be engaged in such as motion control, industrial process control, electric and electronic techniques, measuring and automatic instruments, computer technology, information processing, management and decision, and system analysis, design, research and development.

**Education Requirements:** All students mainly study basic professional theories and knowledge of electrotechnics, electronic technology, control theory, automatic measuring and instrument, information processing, system engineering, techniques and applications of computer. The students will become specialized technicians with abilities of control system analysis, design, research and development, they must receive good engineering practice.

**Graduates Are Required:**

1. To have a solid foundation of natural science, social science and the humanities, as well as the ability of using English.
2. To have the basic professional theories and knowledge such as circuit theory, electronic technology, control theory, information processing, computer hardware and software and its applications.
3. To have the knowledge of motion control, industrial process control, automatic instrument, electrotechnics and information processing etc.; To have professional knowledge and techniques of specialized directions; Knowing discipline frontier and tendency.
4. To have good training in system analysis, design, research, development and engineering practice.
5. To have proper abilities of research, development and management in the professional field.

**Major Disciplines:** Control Science and Engineering; Electrical Engineering; Computer Science and Technology.

**Main Courses:** Circuit Theory; Electronic Technology; Automatic Control Theory; Computer Theory and Applications; Sensors and Measuring Techniques; Electrotechnics; Computer Simulation; Electrical Machinery and Drive; Process Control; Motion Control; Computer Control Technology etc.

**Lab Experiments:** Automatic Control Theory Experiment; Electrotechnics Experiments; Process Control Experiments; Motion Control Experiments; Automatic Measuring and Instrument Experiments; Computer Control Experiments; System Simulation Experiments; Network and Multimedia Experiments etc.

**Practical Work:** Metal Working Practice; Course Design for Computer Program ; Electronics Craft Practice; Single-chip Computer and Interface Practice; Practice to Automatic Control System； Engineering Practice; Graduate Design and Thesis.

**Duration:** Four years.

**Degree Granted:** Bachelor of Engineering.

**Related Specialties:** Electric Engineering and Automation.

# 自动化专业课程教学计划表

## Course Descriptions of Automation

| 课程类别 Classification | | 课程编号 Code | 课程名称 Course Name | 学分 Crs | 学时 Hrs | 学时分类 Class Hours | | 学期学分分配 Semester Credits | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | 讲课 Lec. | 实验 Lab | 一 1st | 二 2nd | 三 3rd | 四 4th | 五 5th | 六 6th | 七 7th | 八 8th |
| 通识教育课 Liberal Education Courses | 必修 Compulsory | 11706200 | 马克思主义基本原理<br>Principles of Marxism | 3 | 48 | 48 | | | 3 | | | | | | |
| | | 11706500 | 毛泽东思想和中国特色社会主义理论体系<br>Mao Tse-tung Thought and Introduction to the Theoretical System of Socialism with Chinese Characteristics | 4 | 64 | 64 | | | | 4 | | | | | |
| | | 11711800 | 中国近现代史纲要<br>The Essentials of Modern Chinese History | 2 | 32 | 32 | | | | | 2 | | | | |
| | | 120002*0 | 思想道德修养与法律基础<br>Morality Education and Fundamentals of Law | 3 | 48 | 48 | | 1.5 | 1.5 | | | | | | |
| | | 113027*0 | 体育<br>Physical Education | 6 | 96 | 96 | | 1.5 | 1.5 | 1.5 | 1.5 | | | | |
| | | 109005*0 | 大学英语<br>College English | 12 | 192 | 192 | | 2.5 | 2.5 | 3.5 | 3.5 | | | | |
| | | 11904100 | 计算机高级语言程序设计(C)<br>Computer High-level Language (C) | 3.5 | 56 | 40 | 16 | | | 3.5 | | | | | |
| | | 20714100 | 电子信息学科导论<br>Introduction to Electrical information Science | 1.5 | 24 | 24 | | 1.5 | | | | | | | |
| | | 14300100 | 军事理论<br>Military Theory | 2 | 32 | 32 | | 2 | | | | | | | |
| | 选修 Elective | TX35000G | 工程技术类<br>Engineering | 2 | 32 | | | | | | | | | | |
| | | TX35000J | 经济管理类<br>Economy & Management | 2 | 32 | | | | | | | | | | |
| | | TX35000R | 人文艺术类<br>Humanities & Arts | 2 | 32 | | | | | | | | | | |
| | | TX35000S | 社会科学类<br>Social Science | 2 | 32 | | | | | | | | | | |
| | | TX35000Z | 自然科学类<br>Natural Science | 2 | 32 | | | | | | | | | | |
| | | | 其他类<br>Other Courses | 2 | 32 | | | | | | | | | | |
| | | **小计 Sum** | | **49** | **784** | **576** | **16** | **9** | **8.5** | **12.5** | **7** | | | | |
| Fundamental Courses | 学科基础课 Disciplinary | 20714200 | 工程制图<br>Engineer drawing | 2.5 | 40 | 36 | 4 | | 2.5 | | | | | | |
| | | 212028*1 | 高等数学 A<br>Advanced Mathematics A | 12.5 | 200 | 200 | | 5.5 | 7 | | | | | | |
| | | 21208803 | 线性代数 C<br>Linear Algebra C | 2.5 | 40 | 40 | | 2.5 | | | | | | | |
| | | 212093*0 | 大学物理 C<br>University Physics C | 7 | 112 | 112 | | | 3.5 | 3.5 | | | | | |

| 课程类别 Classification | 课程编号 Code | 课程名称 Course Name | 学分 Crs | 学时 Hrs | 学时分类 Class Hours | | 学期学分分配 Semester Credits | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 讲课 Lec. | 实验 Lab | 一 1st | 二 2nd | 三 3rd | 四 4th | 五 5th | 六 6th | 七 7th | 八 8th |
| | 212092*2 | 物理实验 B<br>University Physical Experiment B | 3.5 | 56 | | 56 | | 2 | 1.5 | | | | | |
| | 21202400 | 概率统计与随机过程<br>Probability Theory & Stochastic Process | 3.5 | 56 | 56 | | | | | 3.5 | | | | |
| | 20702700 | 电路分析<br>Theory of Circuitry | 4.5 | 72 | 64 | 8 | | 4.5 | | | | | | |
| | 21201901 | 复变函数与积分变换 A<br>Function of Complex Variables & Integral Transformation A | 3.5 | 56 | 56 | | | | | 3.5 | | | | |
| | 20708801 | 模拟电路技术基础 A<br>Introductory Analog Electronics A | 4 | 64 | 54 | 10 | | | 4 | | | | | |
| | 20710701 | 数字电路技术基础 A<br>Digital Electronics A | 4 | 64 | 50 | 14 | | | | 4 | | | | |
| | 20701901 | 单片机原理及应用 A<br>Single- Chip Computer and Application A | 3.5 | 56 | 46 | 10 | | | | 3.5 | | | | |
| | 21109700 | 信号与系统<br>Signal and System | 3.5 | 56 | 48 | 8 | | | | 3.5 | | | | |
| | **小计 Sum** | | **54.5** | **872** | **762** | **110** | **10.5** | **17** | **9** | **18** | | | | |
| 专业主干课 Main Specialty Courses | 20712901 | 自动控制原理 A<br>Automatic Control Principles A | 5 | 80 | 72 | 8 | | | | | 5 | | | |
| | 20718501 | 电力电子技术 A<br>Power Electronic Technology A | 3.5 | 56 | 40 | 16 | | | | | 3.5 | | | |
| | 20702300 | 电机与电力拖动<br>Electrical Machinery &Drive | 3.5 | 56 | 48 | 8 | | | | | 3.5 | | | |
| | 20718602 | 传感器及检测技术 B<br>Sensors and Measuring Technology B | 3.5 | 56 | 46 | 10 | | | | | 3.5 | | | |
| | 20711400 | 微机控制技术<br>Micro-computer Control Technology | 3.5 | 56 | 46 | 10 | | | | | | 3.5 | | |
| | 20712400 | 运动控制系统<br>Motion Control System | 3.5 | 56 | 48 | 8 | | | | | | 3.5 | | |
| | 20705000 | 过程控制<br>Process Control | 3 | 48 | 40 | 8 | | | | | | 3 | | |
| | 20718700 | 控制系统数字仿真<br>Digital Simulation of Control System | 2.5 | 40 | 20 | 20 | | | | | 2.5 | | | |
| | 20718800 | 电气控制技术与 PLC<br>Electric control and Programmable Logic Controller | 2.5 | 40 | 24 | 16 | | | | | | 2.5 | | |
| | 20709400 | 嵌入式系统设计<br>Embedded System Design | 2.5 | 40 | 20 | 20 | | | | | | 2.5 | | |
| | **小计 Sum** | | **33** | **528** | **404** | **124** | | | | | **18** | **15** | | |

| 课程类别 Classi-fication | 课程编号 Code | 课程名称 Course Name | 学分 Crs | 学时 Hrs | 学时分类 Class Hours | | 学期学分分配 Semester Credits | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 讲课 Lec. | 实验 Lab | 一 1st | 二 2nd | 三 3rd | 四 4th | 五 5th | 六 6th | 七 7th | 八 8th |
| 专业选修课 Specialty Elective Courses | | 具体见专业选修课列表 | 20 | 320 | | | | | | | | | | |
| 合计 Sub-total | | | **156.5** | **2504** | **1742** | **250** | **19.5** | **25.5** | **21.5** | **25** | **18** | **15** | | |
| 实践环节 Practical Work | 40000100 | 劳动教育 Labor Education | 1 | 1 周 | | | 1 | | | | | | | |
| | 44300200 | 军事训练 Military Training | 2 | 2 周 | | | 2 | | | | | | | |
| | 40707404 | 金工实习 D Metalworking Practice D | 1.5 | 1 周 | | | 1.5 | | | | | | | |
| | 41904300 | 计算机高级语言课程设计(C) Course Design for High-level Computer Language (C) | 2 | 1.5 周 | | | | | 2 | | | | | |
| | 40703500 | 电子工艺实习 Electronics Craft Practice | 3 | 2 周 | | | | | 3 | | | | | |
| | 20718900 | 单片机及接口技术实习 Single-chip Computer and Interface Practice | 4.5 | 3 周 | | | | | | 4.5 | | | | |
| | 40712800 | 自动控制系统实习 Automatic Control System Pra | 6 | 4 周 | | | | | | | | **6** | | |
| | 42300200 | 生产实习 Production Practice | 4.5 | 3 周 | | | | | | | | | **4.5** | |
| | 42300100 | 毕业实习与毕业设计 Practice and Design for Graduation | 24 | 16 周 | | | | | | | | | | **24** |
| | **小计 Sum** | | **48.5** | **33.5 周** | | | **4.5** | | **5** | **4.5** | | **6** | **4.5** | **24** |
| 自主学习 Autonomous Learning | ZZ35S | 社会调查 Social Investigation | 3 | | | | | | | | | | | |
| | ZZ09Y | 大学英语（自主学习） College English(**Autonomous Learning**) | 2 | | | | | | | | | | | |
| | | 其它(学科竞赛、发明创造、科研报告) Others(Contest, Invention, Innovation & Research Presentation) | 3 | | | | | | | | | | | |
| | **小计 Sum** | | **8** | | | | | | | | | | | |
| 总计 Total | | | **213** | **2504 +33.5 周** | **1742** | **250** | **24** | **25.5** | **26.5** | **29.5** | **18** | **21** | **4.5** | **24** |
| 专业选修课列表 Specialty Elective Courses | 20712700 | 自动化专业导论 Introduction to Automation | 1 | 16 | 12 | 4 | | | 1 | | | | | |
| | 21908201 | 数据结构 A Data Structure A | 3.5 | 56 | | | | | | | 3.5 | | | |
| | 20719000 | 系统辨识 System Identification | 2.5 | 40 | 32 | 8 | | | | | 2.5 | | | |
| | 20814100 | 运筹学 Operational Research | 3 | 48 | 48 | | | | | | 3 | | | |

| 课程类别 Classi-fication | 课程编号 Code | 课程名称 Course Name | 学分 Crs | 学时 Hrs | 学时分类 Class Hours | | 学期学分分配 Semester Credits | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | 讲课 Lec. | 实验 Lab | 一 1st | 二 2nd | 三 3rd | 四 4th | 五 5th | 六 6th | 七 7th | 八 8th |
| | 20719100 | 集散控制与现场总线技术 Distributed Control and Fieldbus Technology | 2.5 | 40 | 32 | 8 | | | | | | 2.5 | | |
| | 20719200 | 线性系统理论 Linear System Theory | 2 | 32 | 32 | | | | | | | 2 | | |
| | 20719300 | 工厂供电 Power Supply for Works | 2 | 32 | 32 | | | | | | | 2 | | |
| | 21909102 | 数据库原理 B Database System B | 2.5 | 40 | 30 | 10 | | | | | | | 2.5 | |
| | 20711500 | 系统工程概论 Introduction to System Engineering | 2 | 32 | 32 | | | | | | | | 2 | |
| | 20719400 | 最优控制 Optimal Control | 2 | 32 | 32 | | | | | | | | 2 | |
| | 20705900 | 机器人学导论 Introduction to Robotics | 2 | 32 | 32 | | | | | | | | 2 | |
| | 20709500 | 人工智能与专家系统 Artificial Intelligence and Expert System | 2.5 | 40 | 36 | 4 | | | | | | | 2.5 | |
| | 20719500 | DSP 应用设计 The Applications of DSP | 2.5 | 40 | 20 | 20 | | | | | | | 2.5 | |
| | 20700200 | EDA 技术及应用 EDA Technique and Application | 2 | 32 | 16 | 16 | | | | | | | 2 | |
| | 21906102 | 计算机网络与应用 B Computer Network and Application B | 2.5 | 40 | 32 | 8 | | | | | 2.5 | | | |

注：通识教育选修课和自主学习学分未纳入具体学期。

## 自动化专业课程分类统计

| | 通识教育课程 Liberal Education Courses | | 学科基础课 Disciplinary Fundamental Courses | 专业主干课 Main Specialty Courses | 专业选修课 Specialty Elective Courses | 实践环节 Practical Work | 自主学习 Autonomous Learning | 学时总计 Total Hours | 学分总计 Total Credits |
|---|---|---|---|---|---|---|---|---|---|
| | 必修 | 选修 | | | | | | | |
| 学时/学分 | 592/37 | 192/12 | 872/54.5 | 528/33 | 320/20 | 33.5 周/48.5 | 8 | 2504+33.5 周 | 213 |
| 学分所占比例 | 23% | | 25.6% | 15.5% | 9.4% | 22.8% | 3.8% | | 100% |