武汉理工大学自动化学院

School of Automation of
Wuhan University of Technology

本科专业培养方案

Undergraduate Program

（Grade 2013）

武汉理工大学教务处

Academic Affairs Office of Wuhan University of Technology

目　录

电气工程及其自动化…… 11-1
Electrical Engineering and Automation …… 11-1
自动化…… 11-7
Automation …… 11-7
电气工程及自动化专业（卓越工程师班）……11-14
Electrical Engineering and Automation (Excellent Engineer Class) ……11-14
自动化（卓越工程师班） ……11-20
Automation(Excellent Engineer Class) ……11-20

电气工程及其自动化专业本科培养方案
Undergraduate Program for Specialty in Electrical Engineering and Automation

一、业务培养目标

Ⅰ Educational Objectives

本专业培养能够从事与电气工程有关的系统运行、自动控制、电力电子技术、信息处理与通信技术、试验分析、经济管理以及电子与计算机技术应用等领域研制开发工作的宽口径、复合型高级工程技术人才。

This program aims at training advanced and comprehensive technical talents with flexible adaptabilities, who are capable of jobs related to fields of system operation, automatic control, power electronics, information processing and communication technology, experiment analysis, economic management and application of computer technology, etc.

二、业务培养要求

Ⅱ Educational Requirement

本专业学生主要学习电工技术、电子技术、信息控制、传感与检测技术、计算机技术、电力电子和电力传动、电力工程等方面的基本理论和基本知识。本专业主要特点是强弱电结合、电工技术与电子技术相结合、软件与硬件结合、元件与系统结合，学生受到电工电子、信息控制及计算机技术方面的基本训练，具有解决电气工程技术分析与控制技术问题的基本能力。

毕业生应获得以下几方面的知识能力：

1.具有较扎实的自然科学基础，较好的人文社会科学和管理科学基础知识；

2.系统掌握本专业领域必需的较宽的技术基础理论知识，主要包括电工理论，电子技术，控制理论，信息处理，计算机软硬件基本原理及应用等；

3.获得较好的工程实践训练，较好地掌握电气工程、自动化技术及信息处理等方面的知识、具有较熟练的计算机应用能力；

4.具有本专业领域内 1-2 个专业方向的专业知识与技能，了解本专业学科前沿和发展趋势；

5.具备一定的科学研究，科技开发和组织管理的实际工作能力，具有较强的工作适应能力；

6.具有较强的英语综合应用能力。在今后工作和社会交往中能用英语有效地进行口头和书面的信息交流，能熟练进行外文阅读，有一定的科技外语写作能力。

Students of this program are required to acquire basic theories and knowledge of electrotechnics, electronics, information processing, sensor and detecting technique, computer technique, power electronics and drives, power engineering, etc. The main characteristics of this program are the integrations of strong and weak electricity, electrotechnics and electronics, software and hardware as well as element and system. Students will have a good basic training in electrotechnics and electronics, information and control, and computer technology together with fundamental ability to solve problems in technique analysis and control of electric engineering.

The graduates are also required to acquire the knowledge or abilities as follows:

1. Having solid foundation for natural science, humanities and management;

2. Mastering basic theories of required techniques, including electrotechnics, control theory, information processing, fundamentals and applications of computer software and hardware;

3. Acquiring broad knowledge of engineering practice training, electric engineering, automation technology and information processing together with good computer application ability;

4. Having professional knowledge and skills in 1-2 fields of this major; getting familiar with the frontier and development trend of the relative fields;

5. Being capable of sci-tech research, development and management in actual work with comparatively stronger adaptability;

6. Acquiring comprehensive application of English,being proficient in both spoken and written communication as well as reading and sci-tech writing.

三、主干学科

Ⅲ Major Disciplines

主干学科：电气工程、控制科学与工程、计算机科学与技术

Major Disciplines: Electrical Engineering, Control Science and Engineering, Computer Science and Technique.

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：电路原理、电子技术、微机原理及接口技术、电力电子技术、电机学、自动控制原理、电力电子装置及控制、电力系统分析、电力系统继电保护

Core Courses: Circuit Theory, Electronics, Microcomputer Principles & Interfacing Technique, Power Electronics, Electric Machinery, Automatic Control Principles, Power Electronic System and Control, Power System Analysis, Protective Relaying in Power Systems

专业特色课程：配电系统及其自动化，可再生能源发电技术

Characteristic Courses: Distribution Systems and it’s Automation, Renewable Energy Technologies

五、计划学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineering

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	47.5	39	\	20.5	\	190
选修课 Elective Courses	9	4	15	10	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

八、理论教学进程表

Ⅷ Theoretical Course Schedule

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese	2	32					1-6		
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6		
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		1060003130	军事理论 Military Theory	1	32			16		1		
		4210001110	体育 1 Physical Education Ⅰ	1	32					1		
		4210002110	体育 2 Physical Education Ⅱ	1	32					2	体育 1	
		4210003110	体育 3 Physical Education Ⅲ	1	32					3	体育 2	
		4210004110	体育 4 Physical Education Ⅳ	1	32					4	体育 3	
		1050001110	心理健康教育 Mental Health Education	1	16					1		
		4030002110	大学英语 A1 College English A 1	3	64				16	1		
		4030003110	大学英语 A2 College English A Ⅱ	3	64				16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A Ⅲ	3	64				16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A Ⅳ	3	64				16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1		
		程序设计语言课程组(三选一，3 学分)										
		4120023110	计算机程序设计基础（C 语言） Fundamentals of Computer Program Design (C)	3	48		12			1-2		
		4120025110	计算机程序设计基础（FORTRAN 语言） Fundamentals of Computer Program Design (FORTRAN)	3	48		12			1-2		
		4120024110	计算机程序设计基础（VB 语言） Fundamentals of Computer Program Design(VB)	3	48		12			1-2		
		小 计 Subtotal		35	736		24	64	64			
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。 All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively..								
		人文社科类 Arts and Social Science Courses										
		经济管理类 Economy and Management Courses										

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
		科学技术类 Science and Technology Courses										
		艺术体育类 Art and Physical Education Courses										
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4100128130	专业导论 Introduction to Specialty	1	16					1		
		4080041110	工程图学 B Engineering Graphics B	4	64		4			1		
		4050063110	高等数学 A 上 Advanced Mathematics AⅠ	5	80					1		
		4050064110	高等数学 A 下 Advanced Mathematics AⅡ	5	80					2	高等数学 A 上	
		4050058110	概率论与数理统计 B Probability and Mathematical Statistics B	3	48					4		
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050052110	复变函数与积分变换 B Complex Function and Integral Transform B	3	48					3		
		4050021110	大学物理 A 上 Physics AⅠ	3.5	56					2		
		4050022110	大学物理 A 下 Physics AⅡ	3.5	56					3	大学物理 A 上	
		4050222110	物理实验 A 上 Physics Lab. AⅠ	1	28	28				3	大学物理 A 上	
		4050223110	物理实验 A 下 Physics Lab. AⅡ	1	28	28				4	大学物理 A 下	
		4100030110	电路原理 A 上 Circuit Theory AⅠ	3	48					2		
		4100031110	电路原理 A 下 Circuit Theory AⅡ	3	48					3	电路原理 A 上	
		4100032110	电路原理 A 实验上 Circuit Theory Exp AⅠ	0.5	16	16				2	电路原理 A 上	
		4100033110	电路原理 A 实验下 Circuit Theory Exp AⅡ	0.5	16	16				3	电路原理 A 下	
		4110049110	模拟电子技术基础 B Analog Electronic Technology B	3.5	56					3		
		4110051110	模拟电子技术基础实验 Analog Electronic Exp	0.5	16	16				3		
		4110067110	数字电子技术基础 B Digital Electronic Technology B	3.5	56					4		
		4110068110	数字电子技术基础实验 Digital Electronic Exp	0.5	16	16				4		
		小 计 Subtotal		47.5	816	120	4					
	选修课 Elective Courses	4100045110	计算机软件技术基础 Computer Software Technology Basement	2	32	2				3		
		4100034110	电气 CAD (A) Electrical CAD(A)	3	48		20			4		
		4100137130	电磁场 Electromagnetic field	2	32					4		

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
		4120075110	数据库技术 Database Technology	2	32		12			4		
		小 计 Subtotal		9	144	2	32					
		修读说明：要求至少选修 4 学分 NOTE: Minimum subtotal credits: 4										
专业课程 Specialized Courses	必修课 Required Courses	4100014110	电机学上 Electric Machinery I	3.5	56	8				4		
		4100015110	电机学 2 Electric Machinery Ⅱ	3.5	56	8				5		
		4100119120	微机原理及接口技术 Microcomputer Principles and Interfacing Technique	5	80	16		8		5		
		4100124120	自动控制原理 A Automatic Control Principle A	5	80	8		8		5		
		4100017110	电力电子技术 A Power Electronics A	4	64	12				5		
		4100067110	电气工程基础 Basic Principle of Power System Engineering	3.5	56	8				5		
		4100115120	电力系统分析 Power System Analysis	5	80	12		8		6		
		4100141130	电力电子装置及控制 Power Electronic System and Control	2.5	40	8				6		
		4100143130	电力系统继电保护 Protective Relaying in Power Systems	3	48	8		8		7		
		4100114120	电力拖动与控制系统 Electric Drive and Control System	4	64	8		8		7		
		小 计 Subtotal		39	624	96		40				
	选修课 Elective Courses	4100042110	高电压技术 High-voltage Technology	2	32					5		
		4100013110	电机控制技术 Motor Control Technique	2	32					6		
		4100027110	电力系统自动化 Automatic Techniques in Power System	3.5	56	8				6		
		4100038110	电器控制与可编程控制器 A Control Apparatus and PLC A	4	64	16				6		
		4100007110	单片机原理与应用 Principle and Application of Single Chip Computer	3	48	8				6		
		4100048110	可再生能源发电技术 Renewable Energy Technologies	2.5	40	8				6		
		4100004110	传感与检测技术 B Sensor and Detecting Technique B	2	32	8				6		
		4100037110	电气工程综合实验 Automation Experiment	1	32	32				7		
		4100051110	配电系统及其自动化 Distribution Systems and it’s Automation	2	32					7		
		4100052110	汽车电气技术 Electric Technology of Automotive	2	32					7		
		4100022110	电力市场与电力经济 Power Market and Power Economy	2	32					7		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
		4100058110	现代控制理论 Modern Control Theory	2	32	6				7		
		4100020110	电力电子技术在电力系统中的应用 Power Electronics in Power Systems	2.5	40					7		
		4100039110	电源技术 Power Supply Technologies	2	32					7		
		小 计 Subtotal		32.5	536	86						
		修读说明：要求至少选修 15 学分 NOTE: Minimum subtotal credits: 15										
个性课程 Personalized Course	选修课 Elective Courses	4100133130	计算机控制技术 B Computer Control Technique B	4	64	8				6		
		4100047110	可视化程序设计 Visualization Programming	2	32	8				7		
		4100049110	控制系统仿真技术 Computer Simulation on Control System	2	32		16			7		
		4100001110	DSP 技术与应用 DSP Technology & Application	2	32	4				7		
		小 计 Subtotal		10	160	20	16					
		修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE：Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.										

九、集中性实践教学环节建议进程表

Ⅸ Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term
1060002110	军事训练 Military Training	3	1.5	1
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3
4080151110	机械制造工程实训 C Mechanical Manufacturing Engineering Practice C	2	2	4
4100127120	电工电子基础强化训练 Foundation Strengthening Training on Electronic & Electrics	1	1	4(暑期)(during the summer holiday)
4100082110	生产实习 Practice of Manufacture	3	3	6(暑期)(during the summer holiday)
4100126120	毕业设计 Graduate Thesis	17	11	8
小 计 Subtotal		28	20.5	

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

The course of *Situation & Policy*, 16 hours per term with 2 credits, is taught according to specific topics and tested at the end of the 7th term. The course will be arranged by the University's Student Development Instruction Center.

自动化专业本科培养方案
Undergraduate Program for Specialty in Automation

一、业务培养目标

Ⅰ Educational Objectives

本专业培养的学生应具备电工技术、电子技术、控制理论、传感与检测技术、信息处理、系统工程、计算机技术与应用和网络技术等领域的工程技术基础和一定的专业知识，能在运动控制、过程控制、电力电子技术、自动化仪表、电子与计算机技术、管理与决策等领域从事系统分析、系统设计、系统运行、科技开发及研究等方面的高级工程技术人才。

This program aims at training advanced talents with profound and professional knowledge in broad fields including electro-techniques, electronic technology, control theory, sensor and detecting technique, information processing, systems engineering, computer technology and application and network technology, who are capable of jobs related to dynamic control, process control, power electronics, automation instrument, electronics and computer technology, management and decision-making.

二、业务培养要求

Ⅱ Educational Requirement

本专业学生主要学习电工技术、电子技术、控制理论、系统工程、传感与检测技术、计算机技术与应用和网络技术等方面的基础理论和基本知识，受到较好的工程实践基本训练，具有系统分析、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；

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

3．较好地掌握运动控制、工业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及发展趋势；

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．在本专业领域内具有一定的科学研究、科技开发和组织管理能力，具有较强的工作适应能力；

6．掌握文献检索、资料查询的方法，具有一定的科学研究和实际工作能力；

7．具有较强的英语综合应用能力，特别是听说能力，在今后工作和社会交往中能用英语有效地进行口头和书面的信息交流，能熟练进行外文阅读，有一定的科技英语写作能力。

Students of this program are required to acquire basic theories and knowledge of electro-techniques, electronics, control theory, systematic engineering, sensor and detecting technique, computer technology and application and network technology; receive good training on practical engineering and master good abilities to conduct systematic analysis, design, development and research.

The graduates are also required to acquire the knowledge or abilities as follows:

1. Having solid foundation for natural science, humanities and management;

2. Mastering basic theories of required techniques, including circuit theory, electronics, control theory, fundamentals and applications of computer software;

3.Acquiring broad knowledge of dynamic control, industrial process control, automatic instrument, power electronic technology and information processing; having professional knowledge and skills in 1-2 fields of this major; getting familiar with the frontier and development trend of the relative fields;

4. Getting better engineering practice training on systematic analysis, design and development;

5. Being capable of sci-tech research, development and management in actual work with comparatively stronger adaptability,

6. Mastering basic methods of literature retrieval and information inquiry, and having abilities of scientific research and practical working;

7. Acquiring comprehensive application of English, especially in speaking and listening; being proficient in both spoken and written communication as well as reading and sci-tech writing.

三、主干学科

Ⅲ Major Disciplines

主干学科：控制科学与工程、电气工程、计算机科学与技术

Major Disciplines: Control Science and Engineering, Electrical Engineering, Computer Science and Technology

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：电路原理、电子技术、自动控制原理、微机原理及接口技术、运动控制系统

Core Courses: Circuit Theory, Electronics, Automatic Control Principle, Microcomputer Principles & Interfacing Technique，Motion Control System

专业特色课程：汽车电子及信息系统

Characteristic Courses: Electronic & Information System of Automobile

五、计划学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineering

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 / 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	47.5	35	\	21.5	\	190
选修课 Elective Courses	9	4	18	10	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

八、理论教学进程表

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课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6		
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and Socialism with Chinese Characteristics	4	96			32		1-6		
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		1060003130	军事理论 Military Theory	1	32			16		1-4		
		4210001110	体育 1 Physical Education Ⅰ	1	32					1		
		4210002110	体育 2 Physical Education Ⅱ	1	32					2	体育 1	
		4210003110	体育 3 Physical Education Ⅲ	1	32					3	体育 2	
		4210004110	体育 4 Physical Education Ⅳ	1	32					4	体育 3	
		1050001110	心理健康教育 Mental Health Education	1	16					1-2		
		4030002110	大学英语 A1 College English A 1	3	64				16	1		
		4030003110	大学英语 A2 College English A Ⅱ	3	64				16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A Ⅲ	3	64				16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A Ⅳ	3	64				16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1		
		程序设计语言课程组(三选一，3 学分)										
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C)	3	48		12			1-2		
		4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design(VB)	3	48		12			1-2		
		4120024110	计算机程序设计基础(FORTRAN 语言) Fundamentals of Computer Program Design(FORTRAN)	3	48		12			1-2		
		小 计 Subtotal		35	736		24	64	64			

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课程名称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。 All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively.								
		人文社科类 Arts and Social Science Courses										
		经济管理类 Economy and Management Courses										
		科学技术类 Science and Technology Courses										
		艺术体育类 Art and Physical Education Courses										
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4100128130	专业导论 Introduction to Specialty	1	16					1		
		4080041110	工程图学 B Engineering Graphics B	4	64		4			1		
		4050063110	高等数学 A 上 Advanced Mathematics AⅠ	5	80					1		
		4050064110	高等数学 A 下 Advanced Mathematics AⅡ	5	80					2	高等数学 A 上	
		4050058110	概率论与数理统计 B Probability and Mathematical Statistics B	3	48					4		
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050052110	复变函数与积分变换 B Complex Function and Integral Transform	3	48					3		
		4050021110	大学物理 A 上 Physics AⅠ	3.5	56					2		
		4050022110	大学物理 A 下 Physics AⅡ	3.5	56					3	大学物理 A 上	
		4050222110	物理实验 A 上 Physics Lab. AⅠ	1	28	28				3	大学物理 A 上	
		4050223110	物理实验 A 下 Physics Lab. AⅡ	1	28	28				4	大学物理 A 下	
		4100030110	电路原理 A 上 Circuit Theory AⅠ	3	48					2		
		4100031110	电路原理 A 下 Circuit Theory AⅡ	3	48					3	电路原理 A 上	
		4100032110	电路原理 A 实验上 Circuit Theory Exp AⅠ	0.5	16	16				2	电路原理 A 上	
		4100033110	电路原理 A 实验下 Circuit Theory Exp AⅡ	0.5	16	16				3	电路原理 A 下	
		4110049110	模拟电子技术基础 B Analog Electronic Technology B	3.5	56					3		
		4110051110	模拟电子技术基础实验 Analog Electronic Exp	0.5	16	16				3		
		4110067110	数字电子技术基础 B Digital Electronic Technology B	3.5	56					4		
		4110068110	数字电子技术基础实验 Digital Electronic Exp	0.5	16	16				4		
		小 计 Subtotal		47.5	816	120	4					

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extracur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
	选修课 Elective Courses	4100045110	计算机软件技术基础 Computer Software Technology Basement	2	32	2				3		
		4100034110	电气 CAD (A) Electrical CAD (A)	3	48		20			4		
		4100137130	电磁场 Electromagnetic field	2	32					4		
		4120075110	数据库技术 Database Technology	2	32		12			4		
		小 计 Subtotal		9	144	2	32					
		修读说明：要求至少选修 4 学分 NOTE: Minimum subtotal credits: 4										
专业课程 Specialized Courses	必修课 Required Courses	4100119120	微机原理及接口技术 Microcomputer Principles and Interfacing Technique	5	80	16		8		5		
		4100016110	电机与拖动基础 Basic of Electric Machines and Electric Drives	4	64	14				5		
		4100124120	自动控制原理 A Automatic Control Principle A	5	80	8		8		5		
		4100139130	电力电子技术 Power Electronics	3.5	56	8		8		5		
		4100003110	传感与检测技术 A Sensor and Detecting Technique A	3	48	8				6		
		4100117120	计算机控制技术 Computer Control Technique A	4.5	72	8		8		6		
		4100123120	运动控制系统 A Motion Control System A	5.5	88	12		8		7		
		4100120120	仪表与过程控制系统 A Instrument and Process Control System A	4.5	72	8		8		7		
		小 计 Subtotal		35	560	82		48				
	选修课 Elective Courses	4100054110	图像处理 Image Processing and Analysis	2	32	4				4		
		4100040110	电子设计自动化 A Electronic Design Automation A	3	48	12				5		
		4100046110	检测理论与方法 Detecting Theory and Method	2	32					5		
		4100057110	系统工程导论 Introduction to System Engineering	2	32					5		
		4100050110	模式识别概论 Introduction to Pattern Recognition	2	32					5		
		4100007110	单片机原理与应用 Principle and Application of Single Chip Computer	3	48	8				6		
		4100038110	电器控制与可编程控制器 A Control Apparatus and PLC A	4	64	16				6		
		4100058110	现代控制理论 Modern Control Theory	2	32	6				6		
		4100043110	工厂供电与节能技术 Plant Power Supply& Power Saving Technology	3	48	6				6		

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.			
		4100047110	可视化程序设计 Visualization Programming	2	32	8				7		
		4100041110	多媒体技术 Multi-Media Technology	2	32	6				7		
		4100001110	DSP 技术与应用 DSP Technology & Application	2	32	4				7		
		4100063110	自动化综合实验 Automation Experiment	1	32	32				7		
		4100053110	汽车电子及信息系统 Electronic & Information System of Automobile	2	32	4				7		
		小 计 Subtotal		32	528	106						
		修读说明：要求至少选修 18 学分 NOTE: Minimum subtotal credits: 18										
个性课程 Personalized Course	选修课 Elective Courses	4100134130	可再生能源发电技术 Renewable Energy Technologies	2	32					6		
		4100142130	电力电子装置及控制 Power Electronic System and Control	2	32					6		
		4100135130	嵌入式系统技术与应用 Embedded System Technique and Application	2	32					6		
		4100103110	智能仪器仪表 Intelligent Instrumentation	2	32					6		
		4100132130	工业控制网络与系统集成技术 Industrial Network and System integration	2	32					7		
		4100039110	电源技术 Power Supply Technologies	2	32					7		
		小 计 Subtotal		12	224							
		修读说明：学生可跨专业自主选择修读全校其他专业的课程，建议修读以上课程。要求至少选修 10 学分。 NOTE：Students can choose any courses from the other specialties, and are especially suggested to choose the courses above. Minimum subtotal credits: 10.										

九、集中性实践教学环节建议进程表

Ⅸ Practice Schedule

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term
1060002110	军事训练 Military Training	3	1.5	1
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3
4080151110	机械制造工程实训 C Mechanical Manufacturing Engineering Practice B	2	2	4
4100127120	电工电子基础强化训练 Foundation Strengthening Training on Electronic & Electrics	1	1	4(暑期)(during the summer holiday)
4100080110	能力拓展训练 Ability Development Training	1	1	6(暑期)(during the summer holiday)
4100082110	生产实习 Practice of Manufacture	3	3	6(暑期)(during the summer holiday)

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term
4100125120	毕业设计 Graduate Thesis	17	11	8
小　　计　Subtotal		29	21.5	

十、其它要求

X　Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

The course of *Situation & Policy*, 16 hours per term with 2 credits, is taught according to specific topics and tested at the end of the 7th term. The course will be arranged by the University's Student Development Instruction Center.

电气工程及自动化专业（卓越工程师班）本科培养方案
Undergraduate Program for Specialty in Electrical Engineering and Automation (Excellent Engineer Class)

一、专业培养目标

Ⅰ Educational Objectives

本专业培养具有坚实的自然科学基础、电气科学与工程专业基础，良好的人文社会科学基础，拥有良好的工程素质、较强的工程实践能力和创新精神，具有较强的电气工程专业能力，以及良好的交流和沟通能力、组织管理能力，具有国际视野的工程技术及管理人才。本专业毕业的学生，既可从事电气工程领域的产品开发与设计、生产及应用、新技术开发及工程服务、系统运行与维护等方面的工作，也可承担企业管理、生产技术管理及企业市场经营等工作。

This program aims at training advanced and comprehensive technical talents with solid foundation of nature science, electrical engineering and humanity social sciences, with good engineering quality, strong engineering practice capability, innovation spirit, sound ability in communication,organization, and international perspective. Students graduate from this major are capable of jobs related to fields of electrical engineering, such as product development and design, production and application, new technique development, system operation and maintenance, and industrial enterprise management,etc.

二、专业培养要求

Ⅱ Educational Requirement

毕业生应获得以下几方面的知识能力：

1.具有较扎实的自然科学基础，较好的人文社会科学和管理科学基础知识；

2.系统掌握本专业领域较宽的技术基础理论知识，主要包括电工理论，电子技术，信息处理，计算机软硬件技术，控制理论，电力电子技术，电力工程理论等；

3.获得较好的工程实践训练，较好地掌握电气工程、自动化技术及信息处理等方面的知识、具有较熟练的计算机应用能力；

4.具有本专业领域内 1-2 个专业方向的专业知识与技能，了解本专业学科前沿和发展趋势；

5.具备一定的科学研究，科技开发和组织管理的实际工作能力，具有较强的工作适应能力；

6.熟悉本专业领域技术标准，相关行业的政策、法律和法规；

7.具有较强的英语综合应用能力，在今后工作和社会交往中能用英语有效地进行口头和书面的信息交流，能熟练进行外文阅读，有一定的科技外语写作能力。

The graduates are also required to acquire the knowledge or abilities as follows:

1. Having solid foundation for natural science, humanities and management;

2. Mastering basic theories of electrical engineering, including electrotechnics, electronics，information processing, fundamentals and applications of computer software and hardware, control theory, power electronics and electric power engineering;

3. Acquiring broad knowledge of engineering practice training, electrical engineering, automation technology and information processing together with good computer application ability;

4. Having professional knowledge and skills in 1-2 fields of this major; getting familiar with the frontier and development trend of the relative fields;

5. Being capable of sci-tech research, development and management in actual work with comparatively stronger adaptability;

6.Being acquaintance with technique standard, law, industrial policy and regulation in Electrical Engineering.

7. Acquiring comprehensive application of English, especially in speaking and listening; being proficient in both spoken and written communication as well as reading and sci-tech writing.

三、主干学科

Ⅲ Major Disciplines & Major Courses

主干学科：电气工程、控制科学与工程、计算机科学与技术

Major Disciplines: Electrical Engineering, Control Science and Engineering, Computer Science and Technique.

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：电路原理、电子技术、微机原理及接口技术、电力电子技术、电机学、自动控制原理、电力电子装置及控制、电气工程基础、电力系统分析、电力系统继电保护

Core Courses: Circuit Theory, Electronics, Microcomputer Principles & Interfacing Technique, Power Electronics, Electric Machinery, Automatic Control Principles，Power Electronic System and Control，Basic Principle of Power System Engineering, Power System Analysis，Protective Relaying in Power Systems

专业特色课程：配电系统及其自动化、电能转换与控制技术、可再生能源发电技术

Characteristic Courses: Electric Drive and Control System, Sensor and Detecting Technique, Control Apparatus and PLC

五、学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineering

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 / 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	47.5	35	\	33.5	\	190
选修课 Elective Courses	9	4	16	\	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

学生应积极参加课外科技训练活动，提高设计和动手能力。学生参加电气工程创新设计训练计划或自动化学院开放实验室项目并通过考核者可获得 2 学分/项（最多可获 4 学分）。参加控制学科竞赛或其他学科竞赛并获有等次奖者可获 2 学分/项（最多可或 4 学分），认定的竞赛包括：国家级或省级以上大学生电子设计竞赛、机器人竞赛、数学建模竞赛、节能减排竞赛。以上获得的学分可替代课外学分。

Students should actively participate in extracurricular activities to improve system design and practical ability. Students who participates in training programs or Open Lab experiments and passes the examination can obtain 2 credits for each project (maximum of 4 credits can be obtained). Students who participates in discipline competition and be awarded prize can obtain 2 credits for each prize (maximum of 4 credits can be obtained). The authorized competitions include: National or provincial Undergraduate Electronic Design

Contest, robot competitions, mathematics modeling contest, energy conservation contest. The credits obtained can replace the extra-class credits.

八、理论教学进程表

Ⅷ Theory Course Schedule

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6		
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and	4	96			32		1-6		
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		1060003130	军事理论 Military Theory	1	32			16		1-4		
		4210001110	体育 1 Physical Education Ⅰ	1	32					1		
		4210002110	体育 2 Physical Education Ⅱ	1	32					2	体育 1	
		4210003110	体育 3 Physical Education Ⅲ	1	32					3	体育 2	
		4210004110	体育 4 Physical Education Ⅳ	1	32					4	体育 3	
		1050001110	心理健康教育 Mental Health Education	1	16					1-2		
		4030002110	大学英语 A1 College English A 1	3	64				16	1		
		4030003110	大学英语 A2 College English A Ⅱ	3	64				16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A Ⅲ	3	64				16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A Ⅳ	3	64				16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1		
		程序设计语言课程组(三选一，3 学分)										
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C)	3	48		12			1		
		4120024110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design(FORTRAN)	3	48		12			1		
		4120025110	计算机程序设计基础(VC 语言) Fundamentals of Computer Program Design(VB)	3	48		12			1		
		小 计 Subtotal		35	736		24	64	64			

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses		全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。 All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively..								
		人文社科类 Arts and Social Science Courses										
		经济管理类 Economy and Management Courses										
		科学技术类 Science and Technology Courses										
		艺术体育类 Art and Physical Education Courses										
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4100128130	专业导论 Introduction to Specialty	1	16					1		
		4080041110	工程图学 B Engineering Graphics B	4	64		4			1		
		4050063110	高等数学 A 上 Advanced Mathematics AⅠ	5	80					1		
		4050064110	高等数学 A 下 Advanced Mathematics AⅡ	5	80					2	高等数学 A 上	
		4050058110	概率论与数理统计 B Probability and Mathematical Statistics B	3	48					4		
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050052110	复变函数与积分变换 B Complex Function and Integral Transform B	3	48					3		
		4050021110	大学物理 A 上 Physics AⅠ	3.5	56					2		
		4050022110	大学物理 A 下 Physics AⅡ	3.5	56					3	大学物理 A 上	
		4050222110	物理实验 A 上 Physics Lab. AⅠ	1	28	28				3	大学物理 A 上	
		4050223110	物理实验 A 下 Physics Lab. AⅡ	1	28	28				4	大学物理 A 下	
		4100030110	电路原理 A 上 Circuit Theory AⅠ	3	48					2		
		4100031110	电路原理 A 下 Circuit Theory AⅡ	3	48					3	电路原理 A 上	
		4100032110	电路原理 A 实验上 Circuit Theory Exp AⅠ	0.5	16	16				2	电路原理 A 上	
		4100033110	电路原理 A 实验下 Circuit Theory Exp AⅡ	0.5	16	16				3	电路原理 A 下	
		4110049110	模拟电子技术基础 B Analog Electronic Technology B	3.5	56					3		
		4110051110	模拟电子技术基础实验 Analog Electronic Exp	0.5	16	16				3		
		4110067110	数字电子技术基础 B Digital Electronic Technology B	3.5	56					4		
		4110068110	数字电子技术基础实验 Digital Electronic Exp	0.5	16	16				4		

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
		小 计 Subtotal		47.5	816	120	4					
	选修课 Elective Courses	4100045110	计算机软件技术基础 Computer Software Technology Basement	2	32	2				3		
		4100034110	电气 CAD (A) Electrical CAD(A)	3	48		20			4		
		4100137130	电磁场 Electromagnetic field	2	32					4		
		4120075110	数据库技术 Database Technology	2	32		12			4		
		小 计 Subtotal		9	144	2	32					
		修读说明：要求至少选修 4 学分 NOTE: Minimum subtotal credits: 4										
专业课程 Specialized Courses	必修课 Required Courses	4100014110	电机学上 Electric Machinery I	3.5	56	8				4		
		4100015110	电机学下 Electric Machinery Ⅱ	3.5	56	8				5		
		4100119120	微机原理及接口技术 Microcomputer Principles and Interfacing Technique	5	80	16		8		5		
		4100124120	自动控制原理 A Automatic Control Principle A	5	80	8		8		5		
		4100017110	电力电子技术 A Power Electronics A	4	64	12				5		
		4100067110	电气工程基础 Basic Principle of Power System Engineering	3.5	56	8				5		
		4100113120	电力电子装置及控制 Power Electronic System and Control	2.5	40	8				6		
		4100115120	电力系统分析 Power System Analysis	5	80	12		8		6		
		4100116120	电力系统继电保护 Protective Relaying in Power Systems	3	48	8		8		7		
		小 计 Subtotal		35	560	88		32				
	选修课 Elective Courses	4100004110	传感与检测技术 B Sensor and Detecting Technique B	2	32					5		
		4100042110	高电压技术 High-voltage Technology	2	32					5		
		4100038110	电器控制与可编程控制器 A Control Apparatus and PLC A	4	64	16				6		
		4100013110	电机控制技术 Motor Control Technique	2	32					6		
		4100048110	可再生能源发电技术 Renewable Energy Technologies	2	32					6		
		4100037110	电气工程综合实验 Automation Experiment	1	32					6		
		4100027110	电力系统自动化 Automatic Techniques in Power System	3.5	56					6		
		4100022110	电力市场与电力经济 Power Market and Power Economy	2	32					6		

课程类别 Course Classification	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Operation	实践 Practice	课外 Extra-cur.			
		4100051110	配电系统及其自动化 Distribution Systems and it's Automation	2	32					6		
		4100052110	汽车电气技术 Electric Technology of Automotive	2	32					6		
		4100130130	电能转换与控制技术 Power Conversion and Control Technique	2	32					6		
		4100131130	发电厂电气部分 Electrical Systems of Power Plants	2	32					7		
		4100114120	电力拖动与控制系统 Electric Drive and Control System A	4	64	8		8		7		
		4100020110	电力电子在电力系统中的应用 Power Electronics in Power Systems	2	32					7		
		小 计 Subtotal		33.5	664	8	0	8				
		修读说明：要求至少选修 16 学分 NOTE: Minimum subtotal credits: 16										

九、集中性实践教学进程表

Ⅸ Practice Training Table

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term
1060002110	军事训练 Military Training	3	1.5	1
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3
4080151110	机械制造工程实训 C Mechanical Manufacturing Engineering Practice C	2	2	4
4100127120	电工电子基础强化训练 Foundation Strengthening Training on Electronic &	1	1	4
4100108110	工程设计训练(电气工程) Engineering design Training	2	2	6
4100081110	生产实习 Practice of Manufacture	3	3	6
4100109110	专业实践 Professional Practice	3	3	7
4100110110	岗位实习 Job Practice	8	8	7
4100126120	毕业设计 Graduate Thesis	17	11	8
小 计 Subtotal		41	33.5	

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.

自动化专业（卓越工程师班）本科培养方案
Undergraduate Program for Specialty in Automation (Excellent Engineer Class)

一、专业培养目标

Ⅰ Educational Objectives

培养具有扎实的自然科学基础、自动化专业基础，良好的人文社会科学基础，拥有良好的工程素质、较强的工程实践能力和创新精神，具有较强的自动化领域的科学研究、科技开发和组织管理能力，具有较强的工作适应能力以及良好的交流和沟通能力，具有国际视野的工程技术及管理人才。本专业毕业的学生，既可在运动控制、过程控制、电力电子技术、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系统分析、系统设计、系统运行、科技开发及研究等方面的工作，也可承担企业管理、生产技术管理及企业市场经营等工作。

This program aims at training advanced and comprehensive technical talents with solid foundation of nature science, automation and humanity social sciences, with good engineering quality, strong engineering practice capability, innovation spirit, strong ability of sci-tech research, development and management in automation, with comparatively stronger adaptability and sound ability in communication, organization, and international perspective. Students graduate from this major are capable of jobs related to system analysis, design, operation, development, and industrial enterprise management in the fields of automation, such as motion control, process control, power electronics, automation instrument, electronics and computer technique, information process, management and decision-making.

二、专业培养要求

Ⅱ Educational Requirement

本专业本科毕业生应具备以下几方面的知识和能力：

1. 具有较好的人文科学素养，具有社会责任感和良好的工程职业道德。

2. 具有扎实的数学、物理等自然科学基础，以及良好的人文社会科学基础和管理科学基础。

3. 系统地掌握本专业领域技术基础理论，具有本专业领域 1-2 个专业方向的专业知识和技能，熟悉本专业学科前沿和发展趋势、相关专业领域的基本知识。

4. 获得系统分析、设计及开发方面的工程实践训练；具备一定的企业和社会环境下的综合工程实践经验；具备较强的工程创新意识和工程创新的基本能力。

5. 具有对工程问题的基本认知和判断能力，能够根据实际工程的要求提出问题，并综合运用所学科学理论方法和技术手段分析、解决工程实际问题。

6. 具有终生学习能力、较强的交流和沟通能力、团队合作的能力，具有一定的组织管理能力、价值效益意识，能够参与跨专业及国际性的竞争与合作。

The graduates are also required to acquire the knowledge or abilities as follows:

1. Having good qualities of humanities, social responsibility and professional ethics.

2. Having solid foundation for natural science, humanities and management.

3. Mastering basic theories of automation, having professional knowledge and skills in 1-2 fields of this major; getting familiar with the frontier and development trend of the relative fields.

4. Getting better engineering practice training on systematic analysis, design and development; Acquiring practical experience in industrial enterprise, basic innovation sense and ability in engineering .

5. Being capable of understanding and judging engineering problem. Being able to raise and solve engineering problem through theoretical analysis and technic method according engineering requirements.

6. Having ability for professional self-growth by studying, strong ability of communication and team

cooperation, management, and consciousness of benefit-cost. Being capable of participating in multidisciplinary and international cooperation and competition.

三、主干学科

Ⅲ Major Disciplines & Major Courses

主干学科：控制科学与工程、电气工程、计算机科学与技术

Major Disciplines: Control Science and Engineering, Electrical Engineering, Computer Science and Technology

四、专业核心课程与专业特色课程

Ⅳ Core Courses and Characteristic Courses

专业核心课程：电路原理、电子技术、自动控制原理、微机原理及接口技术、电力电子技术

Core Courses: Circuit Theory, Electronics, Automatic Control Principle， Microcomputer Principles & Interfacing Technique, Power Electronics

专业特色课程：汽车电子及信息系统，测控管一体化系统实验

Characteristic Courses: Electronic & Information System of Automobile, Exp. on Integrated Tech of Measurement, Control and Management

五、学制与学位

Ⅴ Length of School and Degree

修业年限：四年

Duration： Four Years

授予学位：工学学士

Degree Granted: Bachelor of Engineering

六、最低毕业学分规定

Ⅵ Graduation Credit Criteria

课程类别 课程性质	通识课程 Public Basic Courses	学科大类课程 Basic Disciplinary Courses	专业课程 Specialized Courses	个性课程 Personalized Course	集中性实践 Practice Courses	课外学分 Study Credit after Class	总学分 Total Credits
必修课 Required Courses	35	47.5	36	\	33.5	\	190
选修课 Elective Courses	9	4	15	\	\	10	

七、课程修读指导建议

Ⅶ Recommendations on Course Studies

学生应积极参加课外科技训练活动，提高设计和动手能力。学生参加自动化创新设计训练计划或自动化学院开放实验室项目并通过考核者可获得 2 学分/项（最多可获 4 学分）。参加控制学科竞赛或其他学科竞赛并获有等次奖者可获 2 学分/项（最多可或 4 学分），认定的竞赛包括：国家级或省级以上大学生电子设计竞赛、机器人竞赛、数学建模竞赛、节能减排竞赛。以上获得的学分可替代课外学分。

Students should actively participate in extracurricular activities to improve system design and practical ability. Students who participates in training programs or Open Lab experiments and passes the examination can obtain 2 credits for each project (maximum of 4 credits can be obtained). Students who participates in discipline competition and be awarded prize can obtain 2 credits for each prize (maximum of 4 credits can be obtained). The authorized competitions include: National or provincial Undergraduate Electronic Design Contest, robot competitions, mathematics modeling contest, energy conservation contest. The credits obtained can replace the extra-class credits.

八、理论教学进程表

Ⅷ Theory Course Schedule

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
通识课程 Public Basic Courses	必修课 Required Courses	4220001110	思想道德修养与法律基础 Morals, Ethics and Fundamentals of Law	3	48			8		1-6		
		4220002110	中国近现代史纲要 Outline of Contemporary and Modern Chinese History	2	32					1-6		
		4220003110	毛泽东思想和中国特色社会主义理论体系概论 Introduction to Mao Zedong Thought and	4	96			32		1-6		
		4220005110	马克思主义基本原理 Marxism Philosophy	3	48			8		1-6		
		1060003130	军事理论 Military Theory	1	32			16		1-4		
		4210001110	体育 1 Physical Education Ⅰ	1	32					1		
		4210002110	体育 2 Physical Education Ⅱ	1	32					2	体育 1	
		4210003110	体育 3 Physical Education Ⅲ	1	32					3	体育 2	
		4210004110	体育 4 Physical Education Ⅳ	1	32					4	体育 3	
		1050001110	心理健康教育 Mental Health Education	1	16					1-2		
		4030002110	大学英语 A1 College English A 1	3	64				16	1		
		4030003110	大学英语 A2 College English A Ⅱ	3	64				16	2	大学英语 A1	
		4030004110	大学英语 A3 College English A Ⅲ	3	64				16	3	大学英语 A2	
		4030005110	大学英语 A4 College English A Ⅳ	3	64				16	4	大学英语 A3	
		4120017110	大学计算机基础 Foundation of Computer	2	32		12			1		
		程序设计语言课程组(三选一，3 学分)										
		4120023110	计算机程序设计基础(C 语言) Fundamentals of Computer Program Design(C)	3	48		12			1		
		4120024110	计算机程序设计基础(FORTRAN 语言) Fundamentals of Computer Program Design(FORTRAN)	3	48		12			1		
		4120025110	计算机程序设计基础(VB 语言) Fundamentals of Computer Program Design(VB)	3	48		12			1		
		小 计 Subtotal		35	736		24	64	64			
	选修课 Elective Courses	创新创业类 Innovation and Entrepreneurship Courses	全校学生要求至少取得 9 学分，建议在每个类别中分别至少选修一门课程。 All students are required to obtain at least nine credits, and suggested to select at least one course in five categories respectively.									
		人文社科类 Arts and Social Science Courses										
		经济管理类 Economy and Management Courses										
		科学技术类 Science and Technology Courses										

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
		艺术体育类 Art and Physical Education Courses										
学科大类课程 Basic Disciplinary Courses	必修课 Required Courses	4100128130	专业导论 Introduction to Specialty	1	16					1		
		4080041110	工程图学 B Engineering Graphics B	4	64		4			1		
		4050063110	高等数学 A 上 Advanced Mathematics AⅠ	5	80					1		
		4050064110	高等数学 A 下 Advanced Mathematics AⅡ	5	80					2	高等数学 A 上	
		4050058110	概率论与数理统计 B Probability and Mathematical Statistics B	3	48					4		
		4050229110	线性代数 Linear Algebra	2.5	40					2		
		4050052110	复变函数与积分变换 B Complex Function and Integral Transform B	3	48					3		
		4050021110	大学物理 A 上 Physics AⅠ	3.5	56					2		
		4050022110	大学物理 A 下 Physics AⅡ	3.5	56					3	大学物理 A 上	
		4050222110	物理实验 A 上 Physics Lab. AⅠ	1	28	28				3	大学物理 A 上	
		4050223110	物理实验 A 下 Physics Lab. AⅡ	1	28	28				4	大学物理 A 下	
		4100030110	电路原理 A 上 Circuit Theory AⅠ	3	48					2		
		4100031110	电路原理 A 下 Circuit Theory AⅡ	3	48					3	电路原理 A 上	
		4100032110	电路原理 A 实验上 Circuit Theory Exp AⅠ	0.5	16	16				2	电路原理 A 上	
		4100033110	电路原理 A 实验下 Circuit Theory Exp AⅡ	0.5	16	16				3	电路原理 A 下	
		4110049110	模拟电子技术基础 B Analog Electronic Technology B	3.5	56					3		
		4110051110	模拟电子技术基础实验 Analog Electronic Exp	0.5	16	16				3		
		4110067110	数字电子技术基础 B Digital Electronic Technology B	3.5	56					4		
		4110068110	数字电子技术基础实验 Digital Electronic Exp	0.5	16	16				4		
		小 计 Subtotal		47.5	816	120	4					
	选修课 Elective Courses	4100045110	计算机软件技术基础 Computer Software Technology Basement	2	32	2				3		
		4100034110	电气 CAD (A) Electrical CAD(A)	3	48		20			4		
		4100137130	电磁场 Electromagnetic field	2	32					4		
		4120075110	数据库技术 Database Technology	2	32		12			4		

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including 总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.	建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
		小 计 Subtotal		9	144	2	32					
		修读说明：要求至少选修 4 学分 NOTE: Minimum subtotal credits: 4										
专业课程 Specialized Courses	必修课 Required Courses	4100119120	微机原理及接口技术 Microcomputer Principles and Interfacing Technique	5	80	16		8		5		
		4100016110	电机与拖动基础 Basic of Electric Machines and Electric Drives	4	64	14				5		
		4100124120	自动控制原理 A Automatic Control Principle A	5	80	8		8		5		
		4100017110	电力电子技术 A Power Electronics A	4	64	12				5		
		4100003110	传感与检测技术 A Sensor and Detecting Technique A	3	48	8				6		
		4100123120	运动控制系统 A Motion Control System A	5.5	88	12		8		6		
		4100093110	计算机控制技术 B Computer control technology B	2.5	40	8				6		
		4100094110	电器控制与可编程控制器 B Electrical control and PLC B	3.5	56	16				6		
		4100121120	仪表与过程控制系统 B Instrument and Process Control System	3.5	56	8		8		7		
		小 计 Subtotal		36	576	102		32				
	选修课 Elective Courses	公共部分 Public parts										
		4100054110	图像处理 Image Processing and Analysis	2	32	4				4		
		4100057110	系统工程导论 Introduction to System Engineering	2	32					5		
		4100046110	检测理论与方法 Detecting Theory and Method	2	32					5		
		4100050110	模式识别概论 Introduction to Pattern Recognition	2	32					5		
		4100043110	工厂供电与节能技术 Plant Power Supply & Power Saving Techn	3	48	6				6		
		4100001110	DSP 技术与应用 DSP Technology & Application	2	32	4				6		
		4100049110	控制系统仿真技术 Simulation of Control System	2	32		16			6		
		4100063110	自动化综合实验 Automation Experiment	1	32	32				6		
		4100053110	汽车电子及信息系统 Electronic & Information System of Automobile	2	32	4				6		
		4100047110	可视化程序设计 Visualization Programming	2	32	8				7		
		小 计 Subtotal		18	304	54	16					
		修读说明：要求至少选修 9 学分。 NOTE: Minimum subtotal credits:9										

课程类别 Course Classifi-cation	课程性质 Course Nature	课程编号 Course Number	课 程 名 称 Course Title	学分 Crs	学时分配 Including					建议修读学期 Suggested Term	先修课程 Prerequisite Course	第二专业 Second Major
					总学时 Tot hrs.	实验 Exp.	上机 Opera-tion	实践 Prac-tice	课外 Extra-cur.			
		选修模块 1 Module 1 of Elective Courses										
		4100098110	控制工程项目管理 Project Management of Control Engineering	2	32					5		
		4100097110	工业控制网络与系统集成技术 Industrial Network and System integration	3	48					6		
		4100099110	工业控制系统综合实验 Industrial Control System Experiment	1	32	32				6		
		选修模块 2 Module 2 of Elective Courses										
		4100096110	电子设计自动化 B Electronic Design Automation B	2	32					5		
		4100100110	嵌入式系统技术与应用 Embedded System Technique and	3	48					6		
		4100101110	嵌入式系统技术与应用综合实验 Embedded System Experiment	1	32	32				6		
		选修模块 3 Module 3 of Elective Courses										
		4100102110	数据处理方法与技术 Data Process Method and Technique	3	48					6		
		4100103110	智能仪器仪表 Intelligent Instrumentation	2	32					6		
		4100104110	测控管一体化系统实验 Exp. on Integrated Tech of Measurement, Control and Management	1	32	32				6		
		小 计 Subtotal		18	336	96						
		修读说明：要求至少选修其中一个模块，取得 6 学分 NOTE: Minimum subtotal credits: 6, choose one group courses.										

九、集中性实践教学进程表

Ⅸ Practice Training Table

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term
1060002110	军事训练 Military Training	3	1.5	1
4100068110	电工电子实习 A Practice in Electrical Engineering & Electronics A	2	2	3
4080151110	机械制造工程实训 C Mechanical Manufacturing Engineering Practice C	2	2	4
4100138130	电工电子综合课程设计 Complex Course Design for Electronic & Electrics	1	1	4
4100108110	工程设计训练 Engineering design Training	2	2	6
4100082110	生产实习 Practice of Manufacture	3	3	6
4100109110	专业实践 Professional Practice	3	3	7
4100110110	岗位实习 Job Practice	8	8	7

课程编号 Course Number	实践环节名称 Practice Courses Name	周数 Weeks	学分 Crs	建议修读学期 Suggested Term
4100125120	毕业设计 Graduate Thesis	17	11	8
小　　计　Subtotal		41	33.5	

十、其它要求

Ⅹ Other Demands

《形势与政策》课程，平均每学期 16 学时，一般按专题进行，在第七学期末考核，计 2 个课外学分，具体由学校学生发展指导中心负责组织落实。

Situation & Policy, a 16 hours/term with 2 credits course, is taught according to topics and tested at the end of the 7th term . The course will be arranged by the University Students' Affairs' Department in each school.