Systems and Control Engineering

Ⅰ. Degree

Bachelor of Engineering *(B.Eng.)*

Ⅱ. Normal Period of Study

4 years

Ⅲ. Objectives

The educational objectives of the program are the following career and professional accomplishments that the program is preparing graduates to achieve within a few years after graduation:

1. Work as effective team members or team leaders in the development of automatic control systems covering a wide range of business, educational and scientific applications.

2. Enter professional careers in positions including, systems analyst, systems designer, systems integrator, hardware and software systems developer, technical supporter for automation systems.

3. Undertake graduate studies and develop the knowledge and expertise to complete advanced studies or do research in control science, engineering and other scientific fields.

4. Work in teams, communicating effectively with technical and non-technical team members, clients and customers, while meeting the social and ethical responsibilities of their profession.

5. Explore, synthesize, and implement ideas in their areas of interest and activity.

6. Adapt to new technologies and methodologies with the skills required to react to a changing world.

Ⅳ. Requirements

The students will learn about fundamental and advanced concepts of systems modeling, simulation and control, receive systematic engineering practice training, and master how to apply these to solve various engineering system performance analysis, design and control problems.

The graduates should obtain the knowledge and abilities in the following aspects:

1. An ability to apply knowledge of mathematics, science, and engineering

2. An ability to perform scientific research, including designing and conducting experiments, data analysis and interpretation

3. An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

4. An ability to identify, formulate, and solve engineering problems

5. An understanding of professional and ethical responsibility

6. An ability of organization, management and cooperation

7. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context

8. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice

9. An ability to function on multidisciplinary teams

10. An ability to communicate effectively

11. An ability to engage in life-long learning and adapt to development

Ⅴ. Core Courses

Circuits, Analog Circuits, Digital Logic Circuits, Power Electronics Technology, Microcomputer Principle and Interface Technology, Control Engineering Fundamentals, Modern Control Theory Fundamentals, Signals and Systems, Digital Image Processing, Data Communications and Networks, Sensors and Measurement Technology, Process Control Systems, Motion Control Systems, Embedded Control Systems and Its Applications.

Ⅵ. Components of the 4-year Curriculum

Category	Credits
1. General Education Courses	22
2. Discipline Education Courses	42
3. Specialized Courses	79
Total	**143**

Ⅶ. Table of Teaching Plan for Major of Systems and Control Engineering

课程编码 Course No	课程名称‖Course Name	学分	总学时	讲课	实验	上机	实践	学年-学期 Academic Year-Semester												开课单位
								Ⅰ-0	Ⅰ-1	Ⅰ-2	Ⅱ-0	Ⅱ-1	Ⅱ-2	Ⅲ-0	Ⅲ-1	Ⅲ-2	Ⅳ-0	Ⅳ-1	Ⅳ-2	
必修课程●通识教育课（22学分）‖Compulsory Course●Course of General Education																				
140228E1	中国概况【英】‖Introduction to China[E]	2	32	32					2											114
210206E1	太极拳【英】‖Tai Chi[E]	2	32	32					2											122
581113E2	汉语入门（Ⅰ）【英】‖Fundamental Chinese（Ⅰ)[E]	4	64	64					4											371
580116E1	中国历史与文化【英】‖Chinese History and Culture[E]	2	32	32						2										371
582113E2	汉语入门（Ⅱ）【英】‖Fundamental Chinese（Ⅱ)[E]	4	64	64						4										371
581114E1	汉语进阶（Ⅰ）【英】‖Chinese for Specific Purpose（Ⅰ）	4	64	64								4								371
582114E1	汉语进阶（Ⅱ）【英】‖Chinese for Specific Purpose（Ⅱ）	4	64	64									4							371
必修课程●学科教育课（42学分）‖Compulsory Course●Course of Discipline Education																				
050217E1	工程制图【英】‖Engineering Drawing[E]	3	48	48					3											101
060007E2	Visual C++程序设计【英】‖VISUAL C++ Programming[E]	4	64	48		16			4											106
111233E4	高等数学（Ⅰ）【英】‖Advanced Mathematics（Ⅰ)[E]	6	96	96					6											113
060009E1	Visual C++课程设计【英】‖Course Design of VISUAL C++[E]	1	40			16	24			1										106
111208E6	大学物理（Ⅰ）【英】‖College Physics（Ⅰ)[E]	4.5	72	72						4.5										113
111209E4	大学物理实验(Ⅰ)【英】‖Experiments on College Physics（Ⅰ)[E]	1.5	24		24					1.5										113
112233E1	高等数学（Ⅱ）【英】‖Advanced Mathematics（Ⅱ)[E]	6	96	96						6										113
110240E1	工程数学【英】‖Engineering Mathematics[E]	4	64	64								4								113
110312E3	线性代数【英】‖Linear Algebra[E]	3	48	48								3								113
112208E6	大学物理（Ⅱ）【英】‖College Physics（Ⅱ)[E]	4.5	72	72								4.5								113
112209E4	大学物理实验(Ⅱ)【英】‖Experiments on College Physics（Ⅱ)[E]	1.5	24		24							1.5								113
110226E1	概率与统计【英】‖Probability and Statistics[E]	3	48	48									3							113
必修课程●专业基础课（79学分）‖Compulsory Course●Fundamental Specialized Course																				

课程编码 Course No	课程名称‖Course Name	学分	总学时	讲课	实验	上机	实践	学年-学期 Academic Year-Semester												开课单位
								Ⅰ-0	Ⅰ-1	Ⅰ-2	Ⅱ-0	Ⅱ-1	Ⅱ-2	Ⅲ-0	Ⅲ-1	Ⅲ-2	Ⅳ-0	Ⅳ-1	Ⅳ-2	
230201E4	金属工艺实习【英】‖Metal Technics Practice[E]	2	80				80			2										369
040339E2	电子工艺实习【英】‖Practice on Electronic Technology[E]	2	80				80				2									369
100221E4	电路【英】‖Electric Circuits[E]	4.5	72	64	8							4.5								104
040263E2	数字逻辑电路【英】‖Digital Logic Circuits[E]	4	64	56	8								4							104
040268E1	模拟电子线路【英】‖Analog Electronic Circuits[E]	4	64	56	8								4							104
041370E1	电工电子综合实验（Ⅰ）【英】‖Comprehensive Experiments on Electrical Engineering and Electron (Ⅰ)[E]	1	40				40						1							104
100317E1	数据通信与网络【英】‖Data Communication and Network[E]	2.5	40	34	6								2.5							110
100553E1	MATLAB 编程导论【英】‖Introduction to MatLab Programming[E]	2	32	32									2							110
040308E3	信号与系统【英】‖Signal and System[E]	4.5	72	72											4.5					104
041400E2	EDA 设计（Ⅰ）【英】‖Electronic Design Automation (Ⅰ)[E]	1	40				40								1					104
042370E1	电工电子综合实验（Ⅱ）【英】‖Comprehensive Experiments on Electrical Engineering and Electron (Ⅱ)[E]	1.5	60		60										1.5					104
042400E2	EDA 设计（Ⅱ）【英】‖Electronic Design Automation (Ⅱ)[E]	1	40				40								1					104
100208E2	传感器与检测技术【英】‖Sensors and Measurement Technology[E]	2	32	26	6										2					110
100217E3	电力电子技术【英】‖Power Electronics Technology[E]	2.5	40	36	4										2.5					110
100254E6	控制工程基础【英】‖Control Engineering Fundamentals[E]	3.5	56	56											3.5					110
100544E2	控制电机【英】‖Control Electric Machinery[E]	3	48	40			8								3					110
100236E1	过程控制系统【英】‖Process Control Systems[E]	3	48	32			16									3				110
100266E2	数字图像处理【英】‖Digital Image Processing[E]	2	32	32												2				110
100270E3	微机原理与接口技术【英】‖Microcomputer Principle and Interface Technology[E]	4	64	56	8											4				110
100282E2	现代控制理论基础【英】‖Modern Control Theory[E]	3.5	56	48	8											3.5				110
100312E1	导航技术基础【英】‖Introduction to Navigation[E]	2	32	24	8											2				110

课程编码 Course No	课程名称‖Course Name	学分	总学时	讲课	实验	上机	实践	学年-学期 Academic Year-Semester												开课单位
								Ⅰ-0	Ⅰ-1	Ⅰ-2	Ⅱ-0	Ⅱ-1	Ⅱ-2	Ⅲ-0	Ⅲ-1	Ⅲ-2	Ⅳ-0	Ⅳ-1	Ⅳ-2	
100325E1	移动机器人综合实验【英】‖Comprehensive Experiments of Mobile Robot[E]	1	40				40									1				110
100201E3	PLC 原理及应用【英】‖PLC: Principles And Applications[E]	3	48	32	16													3		110
100289E1	控制系统综合课程设计【英】‖Comprehensive Course Design of Control Systems[E]	3	120				120											3		110
100296E1	运动控制系统【英】‖Motion Control Systems[E]	3	48	40	8													3		110
100320E2	嵌入式控制系统及应用【英】‖Embedded Control Systems & Applications[E]	2.5	40	32			8											2.5		110
100324E1	嵌入式控制系统综合实验【英】‖Comprehensive Experiment on Embedded Control System[E]	1	40				40											1		110
100203E2	毕业设计【英】‖Graduation Project[E]	10	560				560												10	110
	必修课程汇总‖Compulsory Courses Total	143	3036	1712	196	32	1096	0	21	21	2	21.5	20.5	0	19	15.5	0	12.5	10	

注：学期为“0”的表示夏季学期，“1”秋季学期，“2”春季学期。

Notes：semester ‘0’ stands for Summer semester, ‘1’ and ‘2’ stands for Autumn semester and Spring semester.