Instructive Cultivation Plan for the Program of Electronic Information Engineering

(Grade 2020)

Course code: 080701

1. Orientation

Electronic information engineering program aims at cultivating application-oriented senior engineering and technical talents who have solid and broad basic theories, basic knowledge and basic skills of electronic technology and information systems, and are capable of engaging in the research, design, application and development of various electronic equipment and information systems.

2. Cultivation Objectives

2.1. General cultivation objective

The program of electronic information engineering cultivates new-age builders with comprehensive development of morality, intelligence, physical education, beauty and labor, who have a wide-range performance. This program focuses on practice and emphasizes innovation. Students mainly learn the basic theories and basic knowledge of signal acquisition and processing, electronic equipment and information systems, etc., and receive basic training in various electronic and information engineering practices. This program cultivates students' good scientific quality, strong knowledge renewal ability and extensive engineering adaptability, so that they will be able to engage in various types of electronic equipment and information system research, design, application, development, management and technical service.

2.2. Objective of value guidance

Electronic information engineering program takes the spirit of model workers and craftsmanship as the value guide and takes the education and teaching activities of students' core ability training as the carrier to cultivate students' strong sense of social responsibility, selfless dedication, and excellent integrity. Regarding "strengthening moral education and cultivating people" as the central link of education and through incorporating the spirit of craftsmanship, the engineer values and engineering ethics education into the practices, this program will train students to have a rigorous, meticulous, dedicated and responsible working attitude, refined working concept, master superb skills, diligent thinking, be good at research, brave in innovation, and master the planning, design and implementation of new electronic systems and other superb skills in the new era of builders.

2.3. Objectives students must achieve five years after graduation:

Training objective 1: Have a sense of social responsibility and good professional ethics, and be able to comprehensively consider the influence of factors such as law, environment, society, culture and sustainable development in engineering practice;

Training objective 2: Master the relevant standards, norms, and regulations in the field of electronic information engineering, be able to track cutting-edge technologies in this field, have the ability to innovate in theory and engineering, and the ability to apply new technologies to engineering practice;

Training objective 3: Have a healthy body and mind quality, good humanities and science literacy, have team spirit, and have good communication, coordination, cooperation, competition and

engineering project management capabilities;

Training objective 4: Have an international vision and can use a foreign language for international communication. Be able to actively adapt to the ever-changing domestic and international situation and environment, develop the habit of independent learning and lifelong learning, and continuously increase knowledge reserves and improve capabilities;

Training objective 5: Have a wealth of professional technical work experience, be able to comprehensively use basic knowledge of engineering mathematics and professional knowledge in the field of electronic information engineering to solve complicated engineering technology issues of related fields such as automotive electronic information system design and integration, signal and information processing, and intelligent hardware engineering design, thus growing into industry backbone and high-level talents.

3. Requirement for Graduation

3.1. Engineering knowledge:

Have the ability to combine mathematics, natural sciences, electronic engineering foundations, professional foundations and professional knowledge to express complex engineering problems in the field of electronic information engineering, model complex engineering problems in the field of electronic information engineering, and solve complex engineering problems of electronic information engineering fields, and evaluate solutions to complex engineering problems in the field of electronic information engineering.

3.1.1 Be able to use language tools of mathematics, natural sciences, and engineering sciences to express engineering problems in their professional field.

3.1.2 Be able to establish and solve appropriate mathematical models for specific research objects.

3.1.3 Be able to use relevant knowledge and mathematical model methods to deduce and analyze electronic information professional engineering problems.

3.2. Problem analysis:

Master the commonly used analysis methods in the field of electronic information engineering, and be able to apply the basic principles of mathematics, natural science and electronic information science to identify, express, and analyze complex engineering issues in the field of electronic information through literature research to obtain effective conclusions.

3.2.1 Be able to use the basic principles of mathematics, natural sciences and engineering sciences to accurately identify and judge the key links of complex engineering problems in the professional field of electronic information engineering.

3.2.2 Be able to correctly express complex engineering problems in the professional field of electronic information based on relevant scientific principles and mathematical model methods.

3.2.3 Be able to recognize that there are many options for solving problems, be familiar with the retrieval channels of related information in the electronic information program, can use literature information resources to analyze topics, evaluate retrieval results, and seek alternative solutions.

3.2.4 Be able to use basic principles and use literature research to analyze the influencing factors in the process of solving complex engineering problems in the professional field and can obtain effective conclusions.

3.3. Design solution:

Be able to design systems, software and hardware units (components) or process flows that meet the indicators and requirements for specific needs, and be able to reflect the sense of innovation in the design process while considering social, health, safety, legal, cultural and environmental factors, and has the ability to independently design project solutions.

3.3.1 Master the basic design/development methods, technology and language tools of the engineering design and product development cycle and process in the professional field of electronic information, and understand the various factors that affect the design objectives and technical solutions.

3.3.2 Be able to complete the unit (component) design for the specific needs of the electronic information engineering professional field.

3.3.3 Be able to design a small system or process flow in the professional field of electronic information engineering, and obtain innovation capabilities in the design to reflect the sense of innovation.

3.3.4 Be able to comprehensively consider the influence of social, health, safety, legal, cultural and environmental constraints in the design.

3.4. Research:

Be able to study electronic information systems and software and hardware modules based on scientific principles and by using scientific methods, be able to design experiment plans for complex engineering problems in electronic information engineering, and obtain experimental data, and can analyze and interpret experimental results, and get reasonable and effective conclusions through information synthesis.

3.4.1 Be able to study and analyze solutions to complex engineering problems in the professional field based on scientific principles, through literature research and related methods.

3.4.2 Be able to choose a research route to design simulation and hardware experiment programs according to the characteristics of the object.

3.4.3 Be able to construct an experimental system or platform according to the experimental plan, conduct experiments safely, and collect experimental data correctly.

3.4.4 Be able to analyze and synthesize the collected experimental data, analyze and explain the 3.experimental results, and obtain reasonable and effective conclusions.

5. Using modern tools:

Be able to develop and use various electronic test-related equipment, select and use various simulation software for complex engineering problems in the field of electronic information.

3.5.1 Familiar with the use of modern instruments, information technology tools, engineering tools and simulation software commonly used in electronic information engineering.

3.5.2 Can select and use appropriate technology, resources, modern instruments, information technology tools, engineering tools and professional simulation software to analyze, calculate and design complex engineering problems in the professional field of electronic information engineering.

3.5.3 Be able to learn, select and develop modern tools and simulation software that meet specific needs for specific objects, simulate and predict professional problems, and be able to understand and analyze its limitations.

3.6. Engineering and society:

Master the basic methods, processes, and implementation specifications of engineering design, be able to conduct reasonable analysis based on the relevant background knowledge of electronic information engineering, evaluate the impact of electronic information professional engineering practices and complex engineering problem solutions on society, health, safety, law and culture, and understand the responsibility to be undertaken.

3.6.1 Understand the technical standard system, intellectual property rights, industrial policies, laws and regulations in related fields of electronic information engineering, and understand the impact on engineering activities under different social and cultural backgrounds.

3.6.2 Be able to analyze and evaluate the impact of electronic information engineering professional engineering practices and complex engineering problem solutions on society, health, safety, law, and culture, as well as the impact of these constraints on project implementation, and understand the possible consequences and results and responsibility to be born of engineering activities.

3.7. Environment and sustainable development:

Understand the connotation and significance of environmental and social sustainable development. Understand the basic guidelines, policies, laws, and regulations of environmental and social sustainable development, and be able to correctly understand the impact of engineering practices for complex engineering issues in the electronic information field on the environmental and social sustainable development.

3.7.1 Know and understand the concepts and connotations of environmental protection and sustainable development, and have the awareness of environmental protection and sustainable development.

3.7.2 Be able to consider the sustainability of professional engineering practices from the perspective of environmental protection and sustainable development, and can evaluate the hidden dangers in the product cycle and possible damage to humans and the environment.

3.8. Professional norms:

Have a certain knowledge of humanities and social sciences, have humanities and social science literacy and a sense of social responsibility, be able to understand and abide by engineering professional ethics and norms in the practice of electronic information engineering, and can perform responsibilities.

3.8.1 Have firm and correct political stances and viewpoints, have a scientific world outlook, outlook on life and values, be patriotic and understand China’s national conditions; have a healthy psychological quality, correct self-awareness, good emotional management skills, and be able to manage the contradiction in learning, life and work rationally, understand the relationship between individuals and society.

8.2 Have the ideological awareness of honesty, understand the engineering professional ethics and norms of honesty, fairness, and honesty, and be able to consciously abide by them in engineering 3.practice.

8.3 Understand the responsibility of engineers for the safety, health, welfare and environmental protection of the public, and consciously perform their responsibilities in engineering practice.

3.9. Individuals and teams:

Be able to assume the roles of individuals, team members and leaders in a team under a

multidisciplinary background. Understand certain project management procedures and project implementation procedures.

3.9.1 Have good interpersonal relationships, a strong sense of cooperation, and be able to effectively communicate and cooperate with members of other disciplines.

3.9.2 Have a sense of coordination and teamwork, and be able to work independently or cooperatively in a team.

3.9.3 Possess certain organizational leadership ability, be able to organize, coordinate and direct the team to carry out works.

3.10. Communication:

Be able to effectively communicate and exchange with industry colleagues and the public on complex engineering issues in the electronic information field, have a certain international perspective, and be able to communicate and exchange under a cross-cultural context.

3.10.1 Be able to skillfully use language and words to express their views and opinions clearly in oral, manuscripts, charts, reports, etc. on professional issues in the field of electronic information, can respond to instructions and queries, and be able to communicate and exchange effectively with industry peers and the public, meanwhile, understand the differences in communication with industry colleagues and the public.

3.10.2 Understand the channels for discovering the frontier knowledge of disciplines in the professional field, have a certain international perspective, understand the international development trends and research hotspots in the professional field, understand and respect the differences and diversity of different cultures in the world.

3.10.3 Have the language and written expression skills for cross-cultural communication, and be able to communicate and exchange with each other under a cross-cultural context on the subject of the program.

3.11. Project management:

Understand and master the engineering management principles and economic decision-making methods related to electronic information, and be able to apply them in a multidisciplinary environment.

3.11.1 Master the engineering management and economic decision-making methods involved in engineering projects in this professional field.

3.11.2 Have cost awareness and profit concepts, understand the cost structure of the entire cycle and process of engineering and products, and understand the engineering management and economic decision-making issues involved.

3.11.3 Be able to apply engineering management and economic decision-making methods in the process of designing and developing solutions in a multidisciplinary environment (including simulation environment).

3.12. Lifelong learning:

Have the awareness of independent learning and lifelong learning, and master the basic methods and approaches to track the frontiers and development trends of electronic information disciplines. For the needs of personal and professional development, have the ability to continuously learn, self-improve and adapt to development.

3.12.1 Under the background of social development, recognize the necessity of autonomous learning and lifelong learning, keep up with technological progress, have a sense of crisis, and have the concept of lifelong learning.

3.12.2 Master scientific learning methods and have the ability to learn independently, including the ability to understand technical problems, the ability to summarize and propose questions, etc.

4. Schooling System

Four years

5. Length of Study

Flexible study period, generally four years, the minimum length of flexibility is not less than three years, the longest not more than six years.

6. Requirements for Graduation and Degree Conferring

Students of this program must complete the minimum credits required for each category of courses and complete all the content specified in extracurricular class according to the requirements of the instructional training plan, and the total credits must reach 152 credits for graduation; those who meet the requirements for bachelor's degree can be conferred bachelor degree in engineering.

7. Disciplines

Electronic Science and Technology, Information and Communication Engineering, Computer Science and Technology.

8. Core Courses

1. Fundamentals of Circuit Analysis

This course mainly teaches the concepts of circuit model, circuit law, electric power and energy, voltage source, current source, controlled source, linearity and nonlinearity; analysis of resistance circuit, equivalent concept, superposition theorem, substitution theorem, maximum power transmission theorem; dynamic circuit analysis, energy storage of capacitors and inductors, establishment and solution of first-order circuit equations, time constants, concepts of transient and steady state; sinusoidal steady-state circuit analysis, symmetrical three-phase circuit analysis and calculation, non-sinusoidal periodic current circuits, etc.

2. Analog electronics technique

This course teaches the working principle and basic characteristics and parameters of semiconductor devices; the composition, working principle, static and dynamic analysis methods of amplifying circuit; the circuit structure, working principle, basic analysis methods of negative feedback amplifying circuit, stability and phase compensation method of negative feedback amplifying circuit; composition and basic characteristics of integrated operational amplifier, main performance indicators, application circuits; power amplifier functions, performance indicators, power amplifier circuit efficiency; principles, performance indicators and design methods of rectification, filtering, and voltage stabilization circuit.

3. Digital Electronic Technology

This course teaches the basics of digital logic, logic gate circuits, combinational logic circuits; counters, registers, shift registers, sequence signal generators, common sequential logic integrated circuits; programmable logic devices, A/D converters and D/A converters, analysis and design

methods of integrated digital circuits, etc.

4. Signals and Systems

This course teaches the basic concepts of signals and systems, continuous system time domain analysis, continuous signal frequency domain analysis, continuous system frequency domain analysis, continuous system complex frequency domain analysis, complex frequency domain system functions; discrete signal and system time domain analysis; discrete signal and system domain analysis; state variable method, etc.

5. Electromagnetic field and electromagnetic wave

This course teaches the definition and expressions of gradient of scalar field, divergence and curl of vector field; basic equations and boundary conditions of static electromagnetic field; Maxwell equation and boundary conditions of time-varying electromagnetic field, definition and application of scalar potential, vector magnetic potential; the physical meaning of electromagnetic energy density, energy flow density vector and energy theorem; complex vector representation method of sinusoidal electromagnetic field; propagation characteristics of plane electromagnetic wave in ideal medium and conductive medium; radiation characteristics of current element, dipole antenna and parabolic antenna, the working principle of the antenna, etc.

6. Principle and Application of Single-Chip Microcomputer

This course teaches the principle, structure, interface and application technology of single-chip microcomputers. The main contents include: basic knowledge of microcomputer, hardware structure of single chip microcomputer, instruction system, programming, interrupt system, timer and application, serial port and serial communication, minimum system design of single chip microcomputer and serial peripheral chip extension, application system interface configuration and system application examples.

7. Digital signal processing

This course teaches the basic theories, basic analysis methods, basic algorithms and design methods of digital signal processing. The content includes time fast Fourier transform, Z transform, basic network structure of time domain discrete system, state variable analysis method, infinite impulse response digital filter design, finite impulse response digital filter design, all-pass filter, comb filter, lattice filter, decimation and interpolation filter, realization of digital signal processing, quantization error analysis, etc.

8. RF electronic circuit

This course teaches frequency selective loop and impedance matching network, noise and small signal amplifier, radio resonance power amplifier, sine wave oscillator, modulation and demodulation principle and circuit, amplitude modulation and demodulation, mixing, angle modulation and demodulation, digital modulation and demodulation, feedback and control, digital frequency synthesis, function and application technology of the unit circuit, etc.

9. Application of embedded system

This course teaches the basic concepts of embedded systems, the structure of embedded microprocessors based on ARM architecture, instruction systems and peripheral interfaces. For specific application systems, this course introduces ARM assembly language programming, embedded C language programming, embedded C language programming skills, mixed programming of C language and assembly language, highlights the mastery of basic knowledge, focuses on the cultivation of application ability, and emphasizes the formation of engineering consciousness.

10. First level project (automobile electronics comprehensive training)

As the main line of the first-level engineering training project, the automotive electronics comprehensive training project runs through six semesters from the first grade to the fourth grade. The training is divided into three stages: in the initial stage, relying on the off-campus automotive electronics practice base and in the form of school-enterprise joint teaching, through the introduction of basic knowledge of automotive electronic systems, the project organizes visits and learning of related companies in the industry to help students understand basic concepts and application scenarios of automotive electronic systems, have a preliminary understanding of relevant design specifications in the industry, and have a certain degree of understanding of the development status and trends of automotive electronics. At the same time, the project will further inspires students' engineering thinking and innovation consciousness, and encourages students to participate in innovation competitions. Through this stage of training, students will be clear about the follow-up professional foundation and professional courses.

In the intermediate stage of the project, through the reasonable setting of the course group and under the framework of related knowledge, students are required to take the smart electric car as the development platform to complete the hardware design and production of the related electronic control system, including: hardware design and realization of the main controller, related sensors and the drive. In the advanced stage of the project, with the in-depth study of the students' professional foundation and professional courses, the embedded software design of the smart electric car will be carried out on the basis of the intermediate stage, which will guide the students to design and manufacture more comprehensive and complex automotive electronic application system independently. It is required to complete the integration of relevant electronic control and information acquisition and processing software, design and manufacture smart electric vehicles with basic motion control, environmental perception and information processing functions.

The difficulty of the three stages of the first-level project is progressively higher, and the knowledge preparation is closely integrated with related courses and complements each other. Through the first-level project, students' theoretical integration with practice and comprehensive practical ability will be significantly improved, so that they will gradually obtain the ability to independently design and produce related systems.

11. Level 2 Project (Intelligent Perception)

The intelligent perception project organizes teaching and practical activities in the unit of curriculum group, including: circuit technology and practice, sensor and microcomputer interface technology, single-chip microcomputer principle and application, and application of embedded system. Use the knowledge and skills of these courses to solve specific problems in engineering practice related to the course group, so that theoretical teaching and engineering practice are closely integrated and mutually supportive, thus training students' professional ability, communication ability, team spirit and leadership ability.

This project trains students in basic skills such as electronic technology, sensor technology and interfaces, and intelligent processors. The project is centered on the new energy vehicle battery monitoring system project, and closely combines theory and practice. Students will flexibly apply the knowledge they have learned to apply intelligent detection, monitoring and management of related parameters of the battery pack. Students study in groups generally, usually a group of 3 to 4 students.

Mainly assess students' professional ability (including knowledge and skills innovation ability), communication ability, teamwork ability and sense of responsibility, according to their weight, design the score value of each part.

12. Level 2 project (car embedded system)

The embedded system training project organizes teaching and practice activities in the unit of

course group, including: main courses such as automotive embedded operating system, electromagnetic field and electromagnetic wave, automotive electronics and radio frequency electronic circuit. The knowledge and skills of these main courses are used to solve specific problems in engineering practice related to the course group, so that theoretical teaching and engineering practice are closely integrated and mutually supported, and students' professional ability, communication ability, team spirit and leadership ability are trained.

This project takes the common embedded application engineering problems in the automotive electronics field as the background, and trains students to be proficient in applying embedded system knowledge to solve problems. Students are required to comprehensively design automotive embedded systems, and relying on inux and Android automotive operating systems, complete multi-task functions such as data acquisition and simple analysis of relevant in-vehicle sensors. Students study in groups, usually a group of 3 to 4 students.

The project mainly assesses students' professional ability (including knowledge and skills innovation ability), communication ability, teamwork ability and sense of responsibility, according to their weight, design the score value of each part.

13. Level 2 Project (Signal and Information Processing Comprehensive Project)

The information and signal processing comprehensive project organizes teaching and practical activities in the unit of curriculum group, including: signal and system, digital signal processing and application, digital image processing and other main courses. The knowledge and skills of these main courses are used to solve specific problems in engineering practice related to the course group, so that theoretical teaching and engineering practice are closely integrated and mutually supportive, and students' professional ability, communication ability, team spirit and leadership ability will be trained.

This project is based on engineering problems in the field of automotive electronics to train students to master the comprehensive design capabilities of relevant common information and signal processing. Students are required to master the basic application algorithms of digital signal processing, the application system design of digital image processing in driving safety and car entertainment, and to focus on the design and realization of image stitching and car surround view functions. Students will study in groups, usually a group of 3 to 4 students.

It mainly assesses the students' professional ability (including the ability to innovate in knowledge and skills), communication ability, teamwork ability and sense of responsibility. According to the weight, the score value of each part is designed.

14. Level 2 project (innovative design)

Innovative design projects rely on various college student innovation competition platforms, such as college student electronic design competition, Challenge Cup, Robcup Robotics Competition, Freescale Smart Car Competition, etc., and focus on cultivating students' innovation ability. Application-oriented innovative talents should possess innovative consciousness, innovative spirit, innovative ability and be able to achieve innovative results. Disciplinary competition is an important link in the integration of intra- and extra-curricular practical education and teaching. It is an effective carrier for cultivating students' innovative spirit and practical ability, and plays an important role for cultivating and improving students' innovative thinking, innovative ability, teamwork spirit, solving practical problems, and practical ability.

This project runs through the two-and-a-half years from the second grade first semester to the fourth grade first semester. During this period, students are required to complete innovation credits, to participate in subject competitions in the form of teams and individuals. Through discussions with the instructor, students' innovation ability, hands-on practical ability, teamwork ability, expression and document writing ability will be exercised.

It mainly assesses the students' professional ability (including the ability to innovate in knowledge and skills), communication ability, teamwork ability and sense of responsibility. According to the weight, the score value of each part is designed.

9. Practical Training

First-level projects, second-level projects, curriculum design, graduation practice, graduation design (thesis).

10. Course Structure and Course Hours (excluding extracurricular class)

Category	Total Credit	%	Total Course Hours	Theory Learning	Practical Training
General Education	51.5	34	992	924	68
Basic Course	26	17	416	336	80
Professional Course	24	16	384	296	88
Practical Training	39.5	26	1096	0	1096
General Course	10	7	160	160	0
Total	151	100	3048	1716	1332
Theory : Practice(%)	56:44				

XI. Teaching schedule (1)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
General Education	Required	School of Marxism	b1080001	Basic principles of Marxism	Test	3	48	42	6	Spring 1
	Required	School of Marxism	b1080003	Ideological and moral cultivation and legal foundation	Non-test	3	48	42	6	Spring 1
	Required	School of Marxism	b1080006	Outline of Chinese Modern History	Non-test	3	48	42	6	Autumn 1
	Required	School of Marxism	b1080004	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics I	Test	3	48	42	6	Autumn 2
	Required	School of Marxism	b1080007	Introduction to Mao Zedong Thought and the Theoretical System of Socialism with Chinese Characteristics II	Test	2	32	28	4	Spring 2
	Required	School of Marxism	-----	Situation and Policy (Module 1～4)	Non-test	2	32	28	4	Autumn 1～Spring 2
	Required	School of Marxism	b1080008	Labor Education A	Non-test	0.5	16	16		Autumn 2
	Required	College of Arts and Sciences	b1020080	Advanced Mathematics A1	Test	4	64	64		Autumn 1
	Required	College of Arts and Sciences	b1020081	Advanced Mathematics A2	Test	4	64	64		Spring 1
	Required	College of Arts and Sciences	b1020063	College Physics A(Module 2)	Test	3	48	48		Spring 1
	Required	College of Arts and Sciences	b1020065	College Physics B	Test	2	32	32		Autumn 2
	Required	College of Arts and Sciences	b1020066	College Physics C	Non-test	1	32		32	Autumn 2
	Required	College of Arts and Sciences	b1020035	College chemistry	Non-test	1	32	28	4	Spring 1
	Required	College of Arts and Sciences	b1020012	Linear algebra	Test	2	32	32		Spring 1
	Required	College of Arts and Sciences	b1020013	Probability Theory and Mathematical Statistics	Test	2	32	32		Autumn 2

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
	Required	College of Arts and Sciences	b1020018	College Chinese	Non-test	2	32	32		Spring 1
	Required	Department of Physical Education	-----	Physical Education I～VI	Non-test	3	160	160		Autumn 1～Autumn 4
	Required	Others	b1110003	Military skills	Non-test	0.5	2W			Autumn 1
	Required	College of Arts and Sciences	b1110002	Military theory	Non-test	0.5	32	32		Autumn 2
	★ English (Selective 1 Module 10 credits)	Module A	b1020003	General English III	Test	3	48	48		Autumn 1
			b1020004	General English IV	Test	3	48	48		Spring 1
			b1020005	General Academic English A	Test	2	32	32		Autumn 2
			---	English development	Non-test	2	32	32		Spring 2
		Module B	b1020002	General English II	Test	3	48	48		Autumn 1
			b1020003	General English III	Test	3	48	48		Spring 1
			b1020006	General Academic English B	Test	2	32	32		Autumn 2
			---	English development	Non-test	2	32	32		Spring 2
		Module C	b1020001	General English I	Test	4	64	64		Autumn 1
			b1020002	General English II	Test	3	48	48		Spring 1
			b1020003	General English III	Test	3	48	48		Autumn 2
	★ German	College of Arts and Sciences	b1020040	German I	Test	3	48	48		Autumn 1
		College of Arts and Sciences	b1020041	German II	Test	3	48	48		Spring 1
		College of Arts and Sciences	b1020042	German III	Test	4	64	64		Autumn 2
	★ Japanese	College of Arts and Sciences	b1020077	Japanese I	Test	3	48	48		Autumn 1
		College of Arts and Sciences	b1020078	Japanese II	Test	3	48	48		Spring 1
		College of Arts and Sciences	b1020079	Japanese III	Test	4	64	64		Autumn 2
Total (General Education Basic Courses)						**51.5**	**992**	**924**	**68**	
General Course	Selective	Others	b0-----	Social Science and Humanities Literacy (4 credits)	Non-test	10	160	160		Autumn , Spring

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
				Natural Science and Technological Innovation(4 credits) Public Art (2 credits)						
Subtotal (general course)						**10**	**160**	**160**	**0**	

(★Note: The first foreign language has a total of 10 credits, including College English, German, and Japanese. Choose the appropriate language according to your needs; among them, if you choose College English, please choose the appropriate module in module ABC)

11. Teaching schedule (2)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
Basic professional courses	Required	College of Arts and Sciences	b1020100	Complex function and integral transformation	Test	3	48	48		Autumn 2
	Required	College of Engineering	b2012298	Foundation of programming design	Test	3	48	36	12	Autumn 1
	Required	Work training	b2090008	Fundamentals of Circuit Analysis	Test	3	48	36	12	Autumn 1
	Required	Work training	b2012061	Analog electronics	Test	4	64	48	16	Spring 1
	Required	Work training	b2011123	Digital Electronic Technology	Test	4	64	48	16	Autumn 2
	Required	College of Engineering	b2012129	Signals and Systems	Test	3	48	36	12	Spring 2
	Required	College of Engineering	b2012103	Digital signal processing	Test	3	48	36	12	Autumn 3
	Required	College of Engineering	b2012131	Information Theory Foundation	Test	2	32	32		Spring 2
	Required	College of Engineering	b2012175	Introduction to Electronic Information Engineering	Non-test	1	16	16		Autumn 1
Subtotal (Basic professional courses)						**26**	**416**	**336**	**80**	
Professional courses	Required	College of Engineering	b2012022	Electromagnetic field and electromagnetic wave	Test	2	32	32		Spring 3
	Required	College of Engineering	b2012249	RF electronic circuit	Test	2	32	24	8	Spring 2
	Required	College of Engineering	b2012101	Digital image processing	Non-test	2	32	24	8	Spring 3
	Required	College of Engineering	b2012021	Principle and Application of Single Chip Microcomputer	Test	3	48	36	12	Autumn 2
	Required	College of Engineering	b2012243	Sensor and microcomputer interface technology	Test	2	32	24	8	Spring 2
	Required	College of Engineering	b2012244	Automotive Embedded Operating System	Test	3	48	36	12	Autumn 3
	Required	College of Engineering	b2012245	Automotive electronics	Test	3	48	36	12	Autumn 3
	Required	College of Engineering	b2012066	Application of embedded system	Test	3	48	36	12	Spring 2

	Subtotal (required professional courses)					**20**	**320**	**248**	**72**	
	★Module Selective 4 credits	Module A	b2012246	FPGA PRINCIPLES AND APPLICATIONS (ENGLISH TEACHING)	Non-test	2	32	24	8	Spring 3
			b2012247	Internet of Vehicles Technology	Non-test	2	32	24	8	Autumn 4
			b2012248	Radio Frequency Identification Technology	Non-test					Autumn 3
		Module B	b2012002	PRINCIPLES AND APPLICATIONS OF DSP (ENGLISH TEACHING)	Non-test	2	32	24	8	Spring 3
			b2012148	Speech signal processing	Non-test	2	32	24	8	Autumn 3
			b2012296	Artificial intelligence technology	Non-test					Autumn 4
	Subtotal (Professional modules)					**4**	**64**	**48**	**16**	
Subtotal (professional courses)						**24**	**384**	**296**	**88**	

11. Teaching schedule (3)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
Vocational practice	Required	College of Engineering	b4000006	Innovation and Entrepreneurship of Electronic Information Engineering	Non-test	2	48		48	Spring 3
	Required	College of Engineering	b4012004	Program design and practice	Non-test	1	24		24	Spring 1
	Required	College of Engineering	b4012143	Level 1 project (Automobile Electronics Comprehensive Training I)	Non-test	1	24		24	Summer 1
	Required	College of Engineering	b4012144	Level 1 project (Automobile Electronics Comprehensive Training II)	Non-test	3	72		72	Summer 2
	Required	College of Engineering	b4012145	Level 1 project (Automobile Electronics Comprehensive Training III)	Non-test	3	72		72	Summer 3
	Required	College of Engineering	b4012146	Level 2 project (IntelliSense)	Non-test	3	72		72	Autumn 3
	Required	College of Engineering	b4012147	Level 2 project (Automotive embedded system)	Non-test	3	72		72	Spring 3
	Required	College of Engineering	b4012148	Level 2 project (Signal and information processing integration)	Non-test	3	72		72	Autumn 4
	Required	Work training	b4090002	Basic engineering training B	Non-test	2	48		48	Autumn 1
	Required	College of Engineering	b4012011	Basic Practice of Electronic Engineering	Non-test	2	48		48	Summer 1
	Required	College of Engineering	b4012010	Circuit design simulation practice	Non-test	2	48		48	Spring 2
	Required	College of Engineering	b4012078	Printed board design and signal integrity analysis	Non-test	2	48		48	Spring 2
	Required	College of Engineering	b4012150	MCU system design	Non-test	2	48		48	Spring 2
	Required	College of Engineering	b4012151	Embedded System Design	Non-test	2	48		48	Summer 2
	Required	College of Engineering	b4012186	Labor Education B	Non-test	0.5	16		16	Spring 3
	Required	College of Engineering	b4012136	Electronic Information Engineering Program Graduation Practice and Graduation Design (Thesis)	Non-test	6	288		288	Spring 4

	Subtotal (required practice courses)					**37.5**	**1048**		**1048**	
	★Professional course module Selective2 credits	Module A	b4012149	FPGA Engineering practice	Non-test	2	48		48	Summer 3
		Module B	b4012001	DSP Engineering practice	Non-test	2	48		48	Summer 3
	Subtotal (practice module)					**2**	**48**		**48**	
Subtotal (professional practice)						**39.5**	**1096**		**1096**	
Extracurricular Class	Required	Others	b5110001	Extracurricular Class	Non-test	1	-	-	-	Autumn, Spring, Summer
Total						**152**	**3048**	**1716**	**1332**	

★1. Guidance for professional module courses and practical module courses:

Professional courses are divided into modules according to different ability requirements. Students must select one of the modules and obtain the required credits for that module. Professional practice modules must be selected according to the corresponding professional course modules.

1. Module A: Smart hardware. Focus on learning knowledge of intelligent hardware systems, and train students to have basic abilities in intelligent hardware system design, development, and commissioning;
2. Module B: Signal and information processing. Focus on learning signal processing and other knowledge, and train students to have basic abilities in signal processing system design, development, and commissioning.
3. Students must select one of two courses: FPGA Principles and Applications (English teaching) and Principles and Applications of DSP (English teaching).

2. Professional Certificates can be gained after learning following courses:

Students who have passed the courses of Analog electronics, Digital Electronic Technology, Principle and Application of Single Chip Microcomputer, Signals and Systems, Application of embedded system can participate in the professional qualification certificate assessment related to this program: electronic engineer (senior), embedded engineer (intermediate)

Students who have obtained the qualification certificate of electronic engineer (advanced) can apply for exemption from MCU course design and obtain corresponding credits; students who have obtained the qualification certificate of embedded engineer (intermediate) can apply for the exemption from Embedded System Design and obtain corresponding credits; students obtained awards and the awards of competitions above the industry association level can apply for exemption from the Innovation and Entrepreneurship of Electronic Information Engineering and obtain corresponding credits.

12. Prerequisite for Course Study

No.	Course name	Prerequisite Course	No.	Course name	Prerequisite Course
1	Analog electronics	Fundamentals of Circuit Analysis	11	Embedded System Design	Application of embedded system
2	Digital Electronic Technology	Fundamentals of Circuit Analysis	12	Information Theory Foundation	Complex function and integral transformation Probability Theory and Mathematical Statistics
3	Principle and Application of Single Chip Microcomputer	Fundamentals of Circuit Analysis Analog electronics Digital Electronic Technology	13	PRINCIPLES AND APPLICATIONS OF DSP (ENGLISH TEACHING)	Digital signal processing
4	Signals and Systems	Fundamentals of Circuit Analysis Complex function and integral transformation	14	Digital image processing	Digital signal processing
5	Digital signal processing	Signals and Systems	15	Speech signal processing	Digital signal processing
6	Electromagnetic field and electromagnetic wave	Fundamentals of Circuit Analysis Analog electronics Digital Electronic Technology	16	RF electronic circuit	Analog electronics Digital Electronic Technology
7	Application of embedded system	Principle and Application of Single Chip Microcomputer	17	Automotive electronics	Analog electronics Digital Electronic Technology
8	Programmable Logic Device Application (English teaching)	Analog electronics Digital Electronic Technology	18	Sensor and microcomputer interface technology	Analog electronics Digital Electronic Technology
9	MCU course design	Principle and Application of Single Chip Microcomputer	19		
10	Automotive Embedded Operating System	Application of embedded system Foundation of programming design	20		

13. Extracurricular Class

Through taking extracurricular classes, students are encouraged to take part in academic lectures, social practice activities, campus cultural and sports activities, innovative and entrepreneurial activities, voluntary activities, etc. to improve their social adaptability and enhance the competitiveness in the job market. Details are specified in Students' Manual.