Instructive Cultivation Plan for the Program of Telecommunication Engineering

(Grade 2020)

Course code: 080703

1. Orientation

Telecommunication engineering program focuses on the key developing areas of the communication industry to work hand in hand with industry leaders to strengthen students' practice ability of telecommunication engineering while consolidates students' theoretical foundation. At the same time, this program pays more attention to the training and exercise of students' professionalism during their internships, and aims to nurture applied senior engineering talents with solid foundation, high-quality, strong application and innovation ability in the field of Telecommunication Engineering in Shanghai, the Greater Yangtze River Delta and in China.

2. Cultivation Objectives

2.1. General Objective

The program aims to cultivate all-round applied senior engineering talents who will serve the socialist modernization construction in China, especially in the Yangtze River Delta Area. The students are required to fine accomplishment in culture and sciences, be dedicated and have a sense of social responsibility. They will master basic theoretical knowledge of Telecommunication Engineering and its application fields, have strong self-study ability and engineering practice ability, and can be engaged in communication system design, development, production, testing, and communication network planning, networking, optimization, operation, management and maintenance in the key areas of communication.

2.2. Value

Following the cross-generational evolution of mobile communication from 1G to 5G, this program tells the story of how China's communication technology grew from following others step to taking the frontier. Telecommunication Engineering trains students to be all-round professionals who are diligent and hardworking through general education and Ideological and Political courses.

2.3. Objectives students must achieve five years after graduation:

Graduates can achieve the following objectives about five years after graduation:

(1) Have a sound personality, good scientific and cultural literacy, social responsibility and professional ethics, and can comprehensively consider the influence of law, environment, society, culture and sustainable development in the engineering practices;

(2) Master the basic knowledge of Telecommunication Engineering, related mathematical and physical foundations and engineering technology principles, and possess the professional qualities and basic skills of engineers;

(3) Master the standards, norms and regulations related to the professional direction of Telecommunication Engineering, have strong engineering innovation capabilities, and be able to solve complex engineering problems;

(4) Have good teamwork and communication skills, have engineering project management and organization and coordination capabilities, and be able to play a leading or backbone role in Telecommunication Engineering tasks.

(5) Possess independent, life-long learning habits and abilities, be able to timely understand and track domestic and foreign technological development trends, can continuously improve their professional qualities, and respond to future challenges.

III. Requirement for Graduation

1. Engineering knowledge: master the relevant mathematics, natural sciences, engineering foundation and communication-related professional knowledge required for Telecommunication Engineering, and can use them to solve complex communication system development, system integration, maintenance and other related engineering problems.

1.1 Master basic knowledge of mathematics and related natural sciences required for telecommunication engineering: including calculus, linear algebra, complex functions, probability theory and mathematical statistics, and physics, electricity, optics, mechanics, etc.; master certain knowledge of humanities and social sciences;

1.2 Master the engineering theory and technical basic knowledge of telecommunication and related application fields, including: basic concepts of communication principles; master the system composition and working principles of at least one communication network, key technologies, and implementation methods of main components, such as data communication and mobile communication;

1.3 Be familiar with at least one communication network related knowledge, such as data communication, mobile communication; master the basic knowledge of communication network planning, survey, networking, optimization, operation, management and maintenance.

2. Problem analysis: Be able to apply mathematics, natural sciences, engineering foundations and communication-related professional knowledge to analyze, identify, and express complex engineering problems in telecommunication engineering and related application fields, and can obtain effective conclusions through independent study, literature research and analysis.

2.1. Be able to apply the basic principles of natural sciences such as mathematics, communication engineering foundation and professional knowledge to analyze, identify and express engineering problems in the fields of communication circuits, information processing and transmission, and telecommunication networks;

2.2. Be able to apply professional basic theories and software and hardware methods to identify and analyze the basic links and parameters of complex engineering problems;

2.3. Be able to analyze and solve complex engineering problems in the field of communication engineering with the help of literature research and obtain effective methods to solve the problems.

3. Design/development solutions: possess appropriate theoretical and practical experience, be able to design and plan communication network solutions that meet specific requirements, be able to design and develop telecommunication terminal product functional modules, which conform to the standards of the communication industry and reflect the basic professionalism in design and development process.

3.1 Be able to master the engineering design concepts, principles and methods involved in this program, learn from practical experience, and be able to determine design requirements, design schemes, implement design schemes, complete engineering tasks, and participate in relevant evaluations for at least one engineering problem in the field of telecommunication networks;

3.2 Have a certain sense of innovation, have preliminary software and hardware development capabilities, and have the ability to transform related technologies in telecommunication engineering and application fields; be able to apply professional basic knowledge and basic

principles, learn from practical experimental experience, and complete software/hardware design plan of simple systems or independent modules for specific needs, and reflect the professionalism in the design and development;

3.3 In the design of telecommunication system scheme, be able to consider fully the influence of multi-level factors, including cost, quality, society, health, safety, law, culture, environment and other aspects.

4. Research: Master the basic principles and methods of mathematics and physics, telecommunication engineering disciplines, proficient in the use of various equipment and instruments, and be able to use scientific methods and methods to model, analyze, design and test complex engineering problems in telecommunication engineering and application fields, and can conduct reasonably analysis, explanation and evaluation on the results, and give an improvement plan.

4.1 Be able to perform theoretical analysis and simulation of software and hardware modules in the communication field;

4.2 Be able to design experimental programs for complex engineering problems in communication fields such as communication networks, information transmission, and signal processing, and select reasonable experimental materials and equipment to construct experimental systems;

4.3. Be able to reasonably analyze, explain and evaluate scientific research issues, propose improvement plans and conduct theoretical analysis and summary, and can initially possess the awareness and ability of research learning.

5. Use modern tools: master programming languages such as Matlab, C/C++, Java, master DSP, ARM and other hardware development tools, be familiar with mobile communication base station commissioning software, be familiar with communication testing and network optimization software, and be able to choose and use appropriate modern engineering tools and information technology tools to simulate and predict complex engineering problems, and provide reasonable solutions.

5.1 Master basic computer operations and applications, grasp software development languages, system analysis and design and simulation tools commonly used in professional fields, and be able to use integrated development environment for program design;

5.2 Master the basic principles and operating methods of professional instruments and equipment in Telecommunication Engineering field, and be able to select and use instruments and equipment in a complex and comprehensive project reasonably;

5.3 Be able to use experimental equipment, computer software and modern information tools to simulate or simulate complex engineering problems in the communication system, and understand the requirements, scope and limitations of their use.

6. Engineering and society: be able to bear social responsibility: be able to conduct reasonable analysis based on the background knowledge of Telecommunication Engineering, evaluate the impact of professional engineering practices and complex engineering problem solutions on society, health, safety, law and culture, and understand the responsibilities to be undertaken.

6.1 Understand relevant technical standards, intellectual property rights, industrial policies, laws and regulations in the field of Telecommunication Engineering;

6.2 Be able to combine relevant engineering knowledge to analyze and evaluate the impact of professional engineering practices and solutions to complex engineering problems on society, health, safety, law, and culture.

7. Environment and sustainable development: be able to understand and evaluate the impact of professional engineering practices for complex engineering issues on the environment and sustainable development of society.

7.1 Understand the connotation of environmental protection and sustainable social development and related guidelines, policies, laws and regulations, and be able to correctly understand the impact of professional engineering practices for complex engineering issues on the environment and society;

7.2 In view of actual complex engineering problems, always consider the constraints of environment and sustainable development, correctly evaluate the impact of professional engineering practices on the environment and sustainable development of society, and assume corresponding responsibilities.

8. Professional standards: Have basic humanities and social science literacy and a sense of social responsibility, be able to understand and abide by the professional ethics and standards of Telecommunication Engineering in engineering practices, and can perform responsibilities.

8.1 Understand the core values of socialism, understand national conditions, safeguard national interests, be able to establish a correct political stand, world outlook, outlook on life and values;

8.2 Understand the professional nature and social responsibilities of communications engineers, and consciously abide by professional ethics and regulations in engineering practice.

9. Individuals and teams: be able to effectively communicate and exchange with industry colleagues and the public on complex engineering issues in the communications field, including writing reports and design manuscripts, making statements, expressing clearly or responding to instructions, have a certain international perspective, and be able to communicate and exchange under a cross-cultural context.

9.1 Be able to play the roles of individuals and team members in multidisciplinary projects covering communications engineering, give full play to their professional expertise, take the initiative to communicate effectively with other members, and cooperate in work;

9.2 Understand the organization and management of the team, be able to handle the interpersonal relationship of team members, and can give full play to the advantages of teamwork.

10. Communication: Be able to effectively communicate and exchange with industry colleagues and the public on complex engineering issues, including writing reports and design manuscripts, making statements, expressing clearly or responding to instructions, have a certain international perspective and be able to communicate and exchange under a cross-cultural context.

10.1 For complex engineering issues in the communications field, be able to express design ideas, methods and results in written and oral forms, and can communicate effectively with industry colleagues and the public;

10.2 Possess English listening, speaking, reading and writing skills, be familiar with professional vocabulary, be able to read professional related English literature, and understand the international development of the communications industry.

11. Project management: understand and master Telecommunication Engineering management principles and economic decision-making methods, and be able to apply them in a multi-disciplinary environment.

11.1 Understand the importance of project management and economic decision-making, master the basic principles of project management and common economic decision-making methods;

11.2 Be able to apply management principles and economic decision-making to the management of Telecommunication Engineering projects.

12. Lifelong learning: have the consciousness of independent learning and lifelong learning, and have the ability to continuously learn and adapt to development.

12.1 Through modern retrieval systems, be able to quickly acquire and learn new knowledge and new technology, and can apply professional knowledge;

12.2 Understand the characteristics of the development of communication technology, have the awareness of independent learning and lifelong learning, and be able to actively adapt to the development of technology;

12.3 Through self-study training in the process of solving complex engineering problems, master the methods of self-learning and have the ability to continuously learn and adapt to development.

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. Discipline

The main discipline of this program is Information and Telecommunication Engineering, and the closely related disciplines include: Electronic Science and Technology, Computer Science and Technology, Control Science and Engineering, etc.

8. Core Courses

8.1. Fundamentals of Circuit Analysis

This course mainly teaches sinusoidal circuits, linear circuits, DC circuits, transformers, RLC circuit transition processes, electrical control circuits, etc.

8.2. Analog electronics technology

This course teaches the principles and application technologies of diodes, triodes, amplifier circuits, power amplifiers, oscillator circuits, analog integrated circuits, functional module circuit.

8.3. Digital Electronic Technology

This course teaches the design of number system, combinational logic, sequential logic, A/D, D/A, medium and large-scale integrated circuits, and various digital logic circuits.

8.4. Electronic circuit of communication

This course teaches the basic principles and composition of signal reception and transmission, mixing, intermediate amplifier, detection, frequency modulation and amplitude modulation, frequency discrimination, phase lock and frequency synthesis, and the functions and application technologies of each unit circuit.

8.5. Signals and Systems

This course mainly discusses the time domain and frequency domain analysis of deterministic signals, description and characteristics of linear time invariant systems, and time domain analysis and transform domain analysis of signals passing through linear time invariant systems. Through the study of this course, students will master the basic theories and methods of using signals and systems to analyze and solve practical problems.

8.6. Digital signal processing and DSP technology application

This course teaches the basic theories, basic analysis methods, basic algorithms and design methods of digital signal processing. It teaches the architecture and basic principles of Digital Signal Processor (DSP), so that students will be familiar with the development tools and use of DSP, and master the software and hardware design of DSP system and the development method of digital signal processing application system.

8.7. Electromagnetic field and antenna

This course teaches the basic properties, propagation characteristics, propagation methods, and propagation methods of electromagnetic fields and electromagnetic waves, including the physical and mathematical foundations of electromagnetic field theory, alternating electromagnetic fields and uniform plane waves, electromagnetic waves in regular waveguides, electromagnetic wave radiation and electromagnetic wave propagation, etc.

8.8. Principle of communication

This course teaches the concepts of communication media, communication services, signals, bandwidth, modulation, coding, etc., the basic principles of digital and analog communication, the specific composition of wired communication systems, and the working principles of related communication equipment.

8.9. Mobile Communication Course Module (Module A)

Taking the cross-generation evolution of mobile communication technology as the main line and with actual engineering tasks as the orientation, this course mainly teaches the basic principles of 2G to 5G mobile communication systems and the design, construction, optimization, management and maintenance technology of modern mobile communication networks.

8.10. Data Communication Course Module (Module B)

Conduct systematic analysis on the key technologies and solutions involved in data communication, teach the whole process of data communication network engineering from planning, selection, construction, testing to management, and finally enables students to design, build, manage and maintain medium-scale commercial networks.

8.11. Fixed network communication course module (module C)

Relying on optical fiber communication technology, modern switching technology and broadband access technology, this course systematically teaches the architecture, design and construction of modern fixed communication networks, as well as the integrated development and application of various communication services.

8.12. Communication system development course module (module D)

Taking information acquisition, analysis and processing, storage and query as the main line, this course teaches the software and hardware development principles and methods of communication and information systems, so that students can understand and master typical embedded systems, database systems, fixed-line communications and mobile communications development technologies.

9. Practical Training (Related courses)

Practical teaching of various courses, program design and practice, data structure and algorithm course practice, circuit design simulation practice, computer composition course practice, MCU course design, innovation practice, Telecommunication Engineering pre-job training, Telecommunication Engineering internship, Telecommunication Engineering program Internship and graduation project (thesis).

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

Category	Total Credit	%	Total Course Hours	Theory Learning	Practical Training
General Education	50.5	33.33	960	896	64
Basic Course	35	33.33	560	440	120
Professional Course	30	20	480	336	144
Practical Training	25.5	16.67	760	0	760
General Course	10	6.67	160	160	0
Total	151	100	2920	1832	1088
Theory : Practice(%)	63:37				

11. 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	Morality and Laws	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	b1020012	Linear algebra	Test	2	32	32		Autumn 2
	Required	College of Arts and Sciences	b1020013	Probability Theory and Mathematical Statistics	Test	2	32	32		Autumn 2
	Required	College of Arts and Sciences	b1020018	College Chinese	Non-test	2	32	32		Spring 1
	Required	College of Arts and Sciences	b1020063	College Physics A(Module 2)	Test	3	48	48		Spring 1
	Required	College of Arts	b1020065	College Physics B	Test	2	32	32		Autumn 2

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
		and Sciences								
	Required	College of Arts and Sciences	b1020066	College Physics C	Non-test	1	32		32	Autumn 2
	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
	Required	College of Arts and Sciences	b1020003	General English III	Test	3	48	48		Autumn 1
	Required	College of Arts and Sciences	b1020004	General English IV	Test	3	48	48		Spring 1
	Required	College of Arts and Sciences	b1020005	General Academic English A	Test	2	32	32		Autumn 2
	Required	College of Arts and Sciences	---	English development	Non-test	2	32	32		Spring 2
Total (General Education)						50.5	960	896	64	
General Course	Required	College of Engineering	b2012297	Scientific paper writing and document retrieval	Non-test	2	32	32		Spring 1
	Selective	Others	b0-----	Social Science and Humanities Literacy （4 credits） Natural Science and Technological Innovation （2 credits） Public Art （2 credits）	Non-test	8	128	128		Autumn ，Spring
Subtotal (general course)						10	160	160	0	

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	b1020023	Complex function and integral transformation	Non-test	2	32	32		Spring 2
	Required	Work training	b2090008	Fundamentals of Circuit Analysis	Test	3	48	48		Spring 1
	Required	Work training	b2012061	Analog electronics technology	Test	4	64	48	16	Autumn 2
	Required	Work training	b2012099	Digital Electronic Technology	Test	3	48	36	12	Spring 2
	Required	College of Engineering	b2012283	Signals and Systems	Test	4	64	48	16	Spring 2
	Required	College of Engineering	b2012284	Digital signal processing and DSP technology application	Test	4	64	44	20	Autumn 3
	Required	College of Engineering	b2012018	Fundamentals of programming design	Test	4	64	40	24	Autumn 1
	Required	College of Engineering	b2012046	Principles of Computer Organization	Test	3	48	42	6	Spring 2
	Required	College of Engineering	b2012109	Communication principle	Test	3	48	36	12	Spring 3
	Required	College of Engineering	b2012131	Information Theory Foundation	Non-test	2	32	32		Spring 3
	Required	College of Engineering	b2012299	Electromagnetic field and antenna (English teaching)	Test	3	48	36	12	Autumn 3
	Required	College of Engineering	b2012176	Introduction to Telecommunication Engineering	Non-test	1	16	10	6	Autumn 1
Subtotal (Basic professional courses)						35	560	440	120	
Professional courses	Required	College of Engineering	b2012020	Principle and Application of Single Chip Microcomputer	Test	2	32	22	10	Spring 2
	Required	College of Engineering	b2012287	Electronic circuit of communication	Test	3	48	40	8	Autumn 3
	Required	College of Engineering	b2012084	Data Structures and Algorithms	Test	3	48	48		Spring 1
	Required	College of	b2012006	Java programming	Non-test	2	32	20	12	Spring 2

		Engineering								
	Required	College of Engineering	b2012187	Basics of Mobile Communication	Test	2	32	32	0	Autumn 3
	Required	College of Engineering	b2012090	Basics of Data Communication	Non-test	2	32	32	0	Autumn 3
	Subtotal (required professional courses)					12	192	146	46	
	★	Module	b2012188	4G Mobile Communication Technology	Non-test	2	32	24	8	Autumn 3
			b2012300	5G Mobile Communication Technology	Non-test	2	32	24	8	Autumn 3
			b2012301	Mobile Communication System Engineering	Non-test	2	32	20	12	Autumn 3
			b2012189	Network Optimization and Planning	Non-test	2	32	16	16	Spring 3
		Module	b2012172	Routing and Switching	Non-test	2	32	18	14	Autumn 3
			b2012173	Extended Network Design	Non-test	2	32	16	16	Spring 3
			b2012038	WAN Access Technology	Non-test	2	32	16	16	Spring 3
			b2012302	Data Communication System Engineering	Non-test	2	32	8	24	Spring 3
		Module	b2012125	Modern Exchange Technology	Non-test	2	32	20	12	Autumn 3
		Module	b2012069	Converged Communication	Non-test	2	32	26	6	Autumn 3
		Module	b2012034	Basics of Optical Communication	Non-test	2	32	20	12	Spring 3
		……	b2012054	Broadband Access Technology and Application	Non-test	2	32	22	10	Spring 3
		Module D	b2012065	Embedded System Application	Non-test	2	32	20	12	Autumn 3
			b2012089	Principle and Application of Database	Non-test	2	32	20	12	Autumn 3
			b2012288	Fixed-line communication development technology	Non-test	2	32	20	12	Spring 3
			b2012289	Mobile communication development technology	Non-test	2	32	20	12	Spring 3
			b2012101	Digital image processing	Non-test	2	32	22	10	Spring 3
	Subtotal (professional course modules)					16	256	142	114	
Subtotal (professional courses)						30	480	336	144	

Choose two of the three

11. Teaching schedule (3)

Category	Type	Provided by	Course Code	Course Name	Assessment	Credit	Course Hour	Theory Learning	Practical Training	Semester
Practical Training	Required	Work training	b4090002	Basic engineering training B	Non-test	2	48		48	Autumn 1
	Required	College of Engineering	b4012004	Program design and practice	Non-test	1	24		24	Summer 1
	Required	College of Engineering	b4012050	Data Structures and Algorithms course practice	Non-test	2	48		48	Summer 1
	Required	College of Engineering	b4012180	Comprehensive Practice of Communication Electronic Circuits	Non-test	2	48		48	Spring 3
	Required	College of Engineering	b4012032	Computer Composition Course Internship	Non-test	2	48		48	Summer 2
	Required	College of Engineering	b4012007	MCU Course Design	Non-test	2	48		48	Summer 2
	Required	College of Engineering	b4000016	Innovation and Entrepreneurship in Telecommunication Engineering	Non-test	2	48		48	Spring 3
	Required	College of Engineering	b4012181	Comprehensive pre-job training of communication engineering	Non-test	3	72		72	Summer 3
	Required	College of Engineering	b4012182	On-the-job comprehensive training of communication engineering	Non-test	3	72		72	Autumn 4
	Required	College of Engineering	b4012186	Labor Education B	Non-test	0.5	16		16	Spring 3
	Required	College of Engineering	b4012132	Graduation practice and graduation design (thesis) of Telecommunication Engineering	Non-test	6	288		288	Spring 4
	Subtotal (professional practice)					25.5	760		760	
Extracurricular Class	Required	Others	b5110001	Extracurricular Class	Non-test	1	-	-	-	Autumn ， Spring ， Summer
Total						152	2920	1832	1088	

Professional Certificates can be gained after learning following courses:

Students who have passed the courses of Fundamentals of Mobile Communication, 4G mobile communication technology, 5G mobile communication technology, Network planning and optimization, mobile communication system engineering can participate in the professional qualification certificate assessment related to their program: Nokia Siemens Networks Certification-Equipment and Commissioning, Nokia Siemens Networks certification-network optimization network planning.

Students who have obtained NSN certification-base station, NSN certification-network optimization and network planning, can replace credits with mobile communication system engineering, Network planning and optimization courses.

Students who have passed the courses of Fundamentals of Data Communication, Routing and switching, Extended network design, and WAN access technology can participate in the vocational qualification certificate assessment related to this program: CCNA.

12. Prerequisite for Course Study

No.	Course name	Prerequisite Course	No.	Course name	Prerequisite Course
1	Analog electronics technology Digital Electronic Technology	Fundamentals of Circuit Analysis	8	Basics of Optical Communication Broadband Access Technology and Application	Modern exchange technology
					Converged communication
2	Signals and Systems	Analog electronics technology	9	Mobile communication development technology Fixed-line communication development technology	Application of embedded system
		Digital Electronic Technology			Database principle and application
					JAVA PROGRAMMING
3	Digital signal processing and DSP technology application	Signals and Systems	10	Network planning and optimization Mobile communication	Fundamentals of Mobile Communication
		Principle and Application of Single Chip Microcomputer			4G mobile communication technology
4	Electromagnetic field and electromagnetic wave	Analog electronics technology	11	Data communication system engineering Extended network design WAN access technology	Fundamentals of Data Communication
		Digital Electronic Technology			Routing and switching
		Signals and Systems			
5	Information Theory Foundation	Probability Theory and Mathematical Statistics	12	Data Structures and Algorithms	Fundamentals of programming design
6	Electronic circuit of communication	Analog electronics technology	13	Communication principle	Digital signal processing and DSP technology application
		Digital Electronic Technology			Signals and Systems
7	Comprehensive practice of communication electronic circuits	Analog electronics technology	14	Application of embedded system	Fundamentals of programming design
		Digital Electronic Technology			Principle and Application of Single Chip Microcomputer
		Principle and Application of Single Chip Microcomputer			
		Electronic circuit of communication			

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.