

# School of Communication Engineering

Subject: Information and Communication Engineering      Code: 081000

## I. Educational Goal

This major aims at training students to be professionals in information and communication engineering. Students will master the basic principles of Marxism, Mao Zedong Thought and Deng Xiaoping Theory, master the fundamental theoretic knowledge and the systemic specialized knowledge in information and communication engineering, be familiar with state-of-art and advanced research methods in this subject or research direction, have the capability to carry on various kinds of work on research, design, development and operation in information and communication engineering.

## II. Majors and Research Directions

1. Communication and Information Systems (second-level subject code: 081001)  
Research directions: 1) Wireless Communication Systems, 2) Optical Communication Systems, 3) Software (Defined) Radio Technology, 4) Communication ASIC Design, 5) Multi-media Communications and Technology
2. Signal and Information Processing (second-level subject code: 081002) Research directions: 1)Signal Processing, 2) Digital Communication Technology, 3)Personal Communications and Mobile Communications, 4)Image Processing and Transmission, 5)Communication Networks and Information Security Technology
3. Information Security ( second-level subject code: 0810Z1) Research directions: 1) Theory of Algebraic Curves based Cryptology, 2) Complexity of periodic keying sequence, 3) Biological Feature Recognition and its application to cryptology, 4) Information Hiding and Digital Watermarking, 5)Information System Security, 6) Communication Network Security, 7) Information Security Test and Assessment

## III. Program Duration

The program duration of this subject is 2.5 years, in which there is 1 year for course learning and the other 1.5 years for academic master students to take part in research, thesis writing and oral defense.

## IV. Educational Modes and Principles

### 1. Program structure and credit requirements

- (1) The time for course study is two semesters. The curriculum consists of degree courses, non-degree courses and the required procedure. The master courses include common course, specialized basic course and specialized core course; the non-degree courses include specialized elective course and common elective course. The minimum requirement on credits for master students in course study stage is 28 credits, including 17 credits for degree course, 8 credits for non-degree and 3 credits for the required procedure, but the total credits should not exceed 33.
- (2) Students, with the guide of supervisors, are allowed to choose to study specialized basic degree courses, specialized core degree courses and specialized elective

courses such as mathematics from School of Science, computer science and technology from School of Computing and Control and Engineering from School of Automation Engineering and the credits can be counted as elective course (including specialized elective courses and common elective courses) credits in this subject program.

- (3) Students, with the guide of supervisors, are allowed to choose to study extra specialized degree course in this subject program. The credits can be counted as elective course (including specialized elective courses and common elective courses) credits in this subject program.

2. Supervisor-responsibility system and program requirement

The combination of supervisor-responsibility system and collective training is employed in this subject.

3. Others

V.

**Curriculum for Information and Communication Engineering**

Type	Names of Courses	Class Hours	Credits	Semester				Method of Assessment	Written	
				1	2	3	4			
Master's Degree Course	Common Course	Study on The Theory and Practice of Socialism with Chinese Characteristics	32	2	2				Exam	
		English	48	3	3				Exam	
	Specialized Basic Course	Theory of Information and Coding	48	3	3				Exam	
		Selected Topics in Mathematics for Information Engineering	48	3	3				Exam	
	Specialized Core Course	Mobile Communications and Personal Communications	48	3	3				Exam	
		Digital Communications	48	3		3			Exam	
		Signal Detection and Estimation	48	3	3				Exam	
		Adaptive Signal Processing	48	3		3			Exam	
		Modern Cryptography	48	3		3			Exam	
		Modern Algebra and its Applications	48	3	3				Exam	
	Required Credits		17-19							
	Non-Master's Degree Course	Specialized Elective Course	Optimization in Modern Communication Networks	48	3	3				Test
IP Switch Technologies			48	3		3			Test	
Principle of Software Defined Radio			48	3		3			Test	
Speech and Image Processing and Transmission			48	3		3			Test	
Principle and Technology of Advanced Optical Fiber Communications			48	3		3			Test	
Optoelectronics and Experiment			48	3	3				Test	

	Principles and Applications of Digital Signal Processor	34	2		2			Test		
	Access Networks Technology	34	2		2			Test		
	Wireless Communications Principles and Practice	48	3		3			Test		
	Advanced Digital Signal Processing	48	3		3			Test		
	Optical Networks	34	2	2				Test		
	High Level Synthesis of Digital VLSI System	48	3		3			Test		
	Wavelet Analysis and Time-Frequency Analysis	48	3		3			Test		
	Information Security Technique	48	3		3			Test		
	Spread Spectrum Communication	48	3		3			Test		
		48	3		3			Test		
		48	3		3			Test		
		48	3		3			Test		
		48	3	3				Test		
		48	3		3			Test		
		48	3		3			Test		
	Required Credits	6-8								
Common Elective Course	Introduction to Dialectics of Nature	32	1	2	2			Test		
	Stress management and potential development	16	1	2	2			Test		
	English Speaking & Listening	32	1	2	2			Test		
	Second Foreign Language	32	1	2	2			Test		
	Scientific Index Search	16	1	2	2			Test		
	Enterprise Management	16	1	2	2			Test		
	Intellectual Property	16	1	2	2			Test		
	PE	32	1	2	2			Test		
									Test	
									Test	
	Required Credits	2-3								
	Required Credits	8-11								
Required Procedure	Literature Survey and Thesis Proposal		1		▲	▲		Test		
	Teaching or Engineering Practice		1			▲	▲	Test		
	Research Thesis and Academic Report		1			▲	▲	Test		
	Required Credits	3								
Total Credits	28-33									

## VI. Thesis

The degree thesis plays an important role in the training of academic master students and

the students are required to a formal thesis with a certain theoretical and practical level.

1. Requirements on thesis (on quality and format)

It is required that, in the thesis, the basic arguments and conclusions are right, the concept is clear and the analysis is serious. The experiment results are real and reliable, and are correctly calculated. The conclusions should be explained with theory. The minimum length is 30,000 words. The thesis should include: abstracts in Chinese and English, Contents, Literature Review, Theory, Experiments, Data Processing/Algorithm programs, Conclusion, Acknowledge, Reference, Appendix and etc. The format should be formal.

2. Publication requirements

The students are required to publish at least one paper related to their majors in domestic or international open issued journal (with form journal ID) or conference proceeding. In the paper, the student should be listed as the first author (or supervisor/co-supervisor is the first author and the student is the second author).

3. Research Topics selection and starting

The research topic selection usually starts at the beginning of the second year. The topic should come from the first-level subject and with some theoretical and practical values. The topic selection should be completed by the end of the third semester.

4. Thesis defense

The thesis experience starting report, topic research, thesis writing and blind examination. The working time for thesis, from the starting to the completion of thesis examination, should not be less than 1 year.

The thesis defense should be completed by the end of the first month in the fifth semester. There should be two thesis examiners, one of which is external experts.

5. Graduation and Degree Award

Students who complete course study, obtain required credits, pass the thesis defense, and meet the conditions for degree awarding, will be awarded the master degree after the approval of the degree committee of Hangzhou Dianzi University.

## VII. Others