

Department of Electrical and Electronic Engineering

Program of Information Engineering for Class 2018

I. Introduction

Information Engineering is a promising discipline, which is the result of signals and information processing technology, communication technology, and computer science rapidly penetrated into traditional information industries, and finally combined with the depth by it. In China, information industry is currently the most active and fast-growing profession. This industry has deeply involved in international competition now, and has also become the most vital supporting power of social productivity in many nations. These years, with the increasing demand on the eco-friendly, integrated, and smart information system, professional talents in information engineering are deeply in need.

II. Objectives

The Information Engineering major aims to cultivate students with solid fundamental theory on information transmission and processing, information gathering and its application. Upon graduation, students are expected to work in information processing, information transmission, communication networks, wireless communications, computer communications, information systems and other related professions. Our students can either continue post-graduate education in information engineering or related fields after graduation, or pursue research, development, education, and management positions at a broad spectrum of enterprises, research institutes, and universities.

III. Study Length and Degree Requirements

Study length: 4 years

Degree conferred: Bachelor of Engineering

The minimum credit requirement for graduation: 136.5 credits (not including English courses);

IV. Discipline

Major disciplines includes Information and Communications Engineering. Interdisciplinary subject includes Electrical and Electronics Science and Technology, Computer Science and

Technology.

V. Main Courses

Core courses includes Signals and Systems, Digital Signal Processing, Digital Image Processing, Speech Signal Processing, Communication Principles, Data Communications and Networking, Wireless Communications, Data Structures and Algorithm Analysis, Embedded System, Digital System Design, Communication System Design, Database Principles, Pattern Recognition, and DSP Design and Simulation .etc.

VI. Practice-Based Courses

Core practical training includes industrial practice, Advanced Electronic Science Experiment I (Outstanding students after their junior year, can join research working with their professor), and all sorts of domestic and international academic competitions.

VII. Course Structure and Credit Requirements

General Education (GE) Required Courses: 51 credits (not including English courses);

General Education (GE) Elective Courses: 10 credits (4 credits for Humanities Module, 4 credits for Social Sciences Module, and 2 credits for Arts Module);

Major Foundational Courses: 25 credits;

Major Core Courses: 22.5 credits;

Major Elective Courses: 16 credits;

Undergraduate Thesis/Projects, Research Projects and Internship: 12 credits;

The minimum credit requirement for graduation: 136.5 credits (not including English courses).

VIII. Requirements for Science Module of GE Required Courses

Course Cod	Course Name	Credit	Lab Credits	Hours/week	Term	Instruction Language	Prerequisite	Dept
MA101B	Calculus I A	4		4	Spr/ Fall	B/E	NA	MA
MA102B	Calculus II A	4		4	Spr/ Fall	B/E	Calculus I A	MA
MA103A	Linear Algebra I-A	4		4	Spr/ Fall	B/E	NA	MA
PHY103B	General Physics B (I)	4		4	Spr/ Fall	B/E	NA	PHY
PHY105B	General Physics B (II)	4		4	Spr/ Fall	B/E	General Physics B (I)	PHY
CH101B	General Chemistry B	3		3	Spr/ Fall	B/E	NA	CH
BIO102B	Introduction to Life Science	3		3	Spr/ Fall	B/E	NA	BIO
CS102A	Introduction to Computer Programming A	3	1	4	Spr/ Fall	B/E	NA	CS
PHY104B	Experiments of Fundamental Physics	2	2	4	Spr/ Fall	B/E	NA	PHY

IX. Pre-requisites for Major Declaration

Course Code	Course Name	Notes
MA103A	Linear Algebra I-A	
EE104	Fundamentals of Electric Circuits	
EE201-17	Analog Circuits	
EE201-17L	Analog Circuits Laboratory	
EE202-17	Digital Circuits	
EE202-17L	Digital Circuits Laboratory	
EE205	Signals and Systems	
EE206	Communication Principles	

X. Course Arrangement

Table 1: Major Required Course (Foundational and Core Courses)

Course Category	Course Code	Course Name	Credits	Lab Credits	Hours/Week	Terms	take the course Advised term to	language Instruction	Prerequisite	Dept.
Major Foundational Courses	EE104	Fundamentals of Electric Circuits	2		2	Spr/Fal I	1/Spr or Fall	B/E	MA102B MA103A or MA103B	EE
	EE201-17	Analog Circuits	3		3	Fall	2/Fall	C	PHY105B EE104	EE
	EE201-17 L	Analog Circuits Laboratory	1	1	2	Fall	2/Fall	B	EE201-17	EE
	EE202-17	Digital Circuits	3		3	Spr/Fal I	2/Spr or Fall	B/E	PHY105B	EE
	EE202-17 L	Digital Circuits Laboratory	1	1	2	Spr/Fal I	2/Spr or Fall	B/E	EE202-17	EE
	EE205	Signals and Systems	3	1	4	Fall	2/Fall	B	NA	EE
	EE206	Communication Principles	3	1	4	Spr	2/Spr	E	EE205	EE
	EE208	Engineering Electromagnetics	3	1	4	Spr	2/Spr	B	MA101B MA103A EE104	EE
	MA212	Probability and Statistics	3		3	Spr	2/Spr	B/E	MA102B Or MA102a	MA
	CS203B	Data Structures and Algorithm Analysis B	3	1	4	Fall	2/Fall	E	CS102A	CS
	Total		25	6	31					
Major Core Courses	EE301	Frontier Seminars in Modern Electronic Science and Technology I	1		1	Fall	3/Fall	B	NA	EE
	EE302	Frontier Seminars in Modern Electronic Science and Technology II	1		1	Spr	3/Spr	B	NA	EE
	EE313	Wireless Communications	3	1	4	Fall	3/Fall	B	EE206	EE
	CS305B	Computer Networks B	3	1	4	Fall	3/Fall	E	CS102A	CS
	EE323	Digital Signal Processing	3	1	4	Fall	3/Fall	E	EE205	EE
	EE326	Digital Image Processing	3	1	4	Spr	3/Spr	E	EE205	EE
	EE328	Speech Signal Processing	3	1	4	Spr	3/Spr	E	EE323	EE
	EE330	DSP Design and Simulation	1.5	1.5	3	Spr	3/Spr	B	EE323	EE
	EE332	Digital System Design	3	1	4	Spr	3/Spr	E	EE202-17	EE
	EE401	Frontier seminars in modern electronic science and technology III	1		1	Fall	4/Fall	B	NA	EE
	Total		22.5	7.5	30					
ct a	EE470	Internship*	2	2	16	Smr	3/Smr	NA	NA	EE

	EE480	Research Projects**	2	2				NA	NA	EE
	EE490	Undergraduate Thesis/Projects	8	8	8	Fall & Spr	4/Fall & Spr	NA	NA	EE
Total			1 2	1 2	2 4					
Notes: 1. Internship will be approximately 4 to 6 weeks, 14 to 16 hours per week. 2. Students can choose the term most appropriate for the course of Research Projects based on their study plan, so the advised term to take the course is not listed here. The minimum study load for this course is 48 to 64 hours in total.										

Table 2: Major Elective Courses

Course Code	Course Name	Credits	Lab Credits	Hours/week	Terms	take the course Advised term to	language Instruction	Prerequisite	Dept.
EE106	Introduction to Optoelectronic	2		2	Spr	1/Spr	B	NA	EE
EE203	Solid-state Electronics	3		3	Fall	2/Fall	B	NA	EE
EE204	Introduction to Semiconductor Devices	3	1	4	Spr	2/Spr	B	EE203	EE
EE210	Fundamentals of Optics	3		3	Spr	2/Spr	B	NA	EE
EE303	Fundamentals of Optoelectronic Technology	3	1	4	Fall	3/Fall	B	PHY105B	EE
EE304	Integrated Circuit Design	3	2	5	Fall	3/Fall	B	EE202-17 EE204	EE
EE305	Introduction to VLSI technology	3	1	4	Fall	3/Fall	E	EE203	EE
EE306	Introduction to MEMS	3	1	4	Spr	3/Spr	E	PHY105B	EE
EE307	Antennas and Radio Propagation	3	1	4	Spr	3/Spr	英	EE208	EE
EE308	Fiber Communication Principles and Techniques	3	1	4	Spr	3/Spr	B	NA	EE
EE309	Introduction to Semiconductor Optics	3		3	Fall	3/Fall	B	NA	EE
EE310	Principles and Technologies of Lasers	3		3	Spr	3/Spr	B	NA	EE
EE311	Optical Design	3	1	4	Fall	3/Fall	B	NA	EE
EE312	Design of Modern Communication Systems	3	1	4	Spr	3/Spr	B	EE206 EE313	EE
EE316	Microwave Engineering	3	1	4	Fall	3/Fall	E	EE104 EE201-17 EE208	EE
EE317	Advanced Electronic Science Experiment I	1	1	2	Fall	3/Fall	B	NA	EE
EE318	Advanced electronic science experiment II	1	1	2	Spr	3/Spr	B	NA	EE
EE320-15	Integrated Circuit Fabrication Laboratory	3	1.5	4.5	Spr Fall	3/Spr Fall	C	EE204	EE
EE322	Optoelectronics Devices Fabrication Laboratory	2	1	3	Spr	3/Spr	B	EE204	EE
EE325	Nonlinear Optimization Techniques for Electrical Engineering	3	1	4	Fall	3/Fall	B	MA102B MA103A	EE
EE327	Fundamentals of Information Optics	3	1	4	Fall	3/Fall	B	EE205	EE
EE334	Advanced Integrated Circuit Design: Machine Learning on Chip	3	1	4	Spr	3/Spr	E	EE202-17	EE
EE335	Liquid Crystal Optoelectronics	3	1	4	Fall	3/Fall	C	EE210	EE
EE336	Fundamentals of Photovoltaics	3	1	4	Fall	3/Fall	E	EE204	EE
EE337	Analog Integrated Circuit Design	3	1	4	Fall	3/Fall	B	EE201-17 EE204	EE

EE339	Analog IC Layout Design	1	1	2	Fall	3/Fall	B	EE304	EE
EE341	Advanced Integrated Circuit Design: Microprocessor	3	1	4	Fall	3/Fall	B	EE202-17	EE
EE343	Optoelectronic Instrumentation	3	1	4	Fall	3/Fall	B	NA	EE
EE345	Introduction of Wide Bandgap Semiconductors	3		3	Fall	3/Fall	B	EE203 or EE204	EE
EE402	Frontier Seminars in Modern Electronic Science and Technology IV	1		1	Spr	4/Spr	B	NA	EE
EE403	Introduction to Display and Lighting Technologies	2		2	Fall	4/Fall	B	EE204	EE
EE405	Advanced Electronic Science Experiment III	1	1	2	Fall	4/Fall	B	NA	EE
EE411	Information theory and coding	2		2	Fall	4/Fall	B	MA212	EE
EE417	Communications System Design II	2	2	4	Fall	4/Fall	E	EE316 EE206 EE307	EE
EE423-14	Pattern Recognition	3	1	4	Fall	4/Fall	B	EE323 EE326	EE
EE427	Principles of Remote Sensing	2		2	Fall	4/Fall	B	EE323 EE326	EE
EE429	Image and Video Processing	3	1	4	Fall	4/Fall	E	EE205 MA103A MA212	EE
EE431	BioMEMS and Lab-on-a-Chip	3		3	Fall	4/Fall	E	NA	EE
EE433	Modern Electric Vehicle Technologies	2		2	Fall	4/Fall	B	EE104 EE208	EE
EES101	Brief Introduction of "Creative Electronic Design I"	1	0.5	6	Smr	1/Smr	C	PHY105B	EE
EES102	DIY Project: Assembling an iPhone6	2	2	8	Smr	1/Smr	C	NA	EE
EES201	Brief Introduction of "Creative Electronic Design II"	0.5	0.5	4	Smr	2/Smr	C	NA	EE
EES202	Design based on LabVIEW Programming	1	1	8	Smr	2/Smr	C	NA	EE
EES203	Innovation and Entrepreneurship	0.5	0.5	4	Smr	2/Smr	C	NA	EE
EES204	Fiber Sensor Design	1	1	8	Smr	2/Smr	C	NA	EE
EES205	Advanced Technology Forecasting	1.5		6	Smr	2/Smr	E	NA	EE
EES301	Statistical Machine Learning	2		8	Smr	3/Smr	E	MA103 MA212	EE
EES302	2D Materials: Properties and Devices	2		8	Smr	3/Smr	E	无	EE
EES303	Convex Optimization	2		2	Smr	3/Smr	E	MA103A;M A215 或 MA212	EE
EES305	Electronic Materials	2		2	Smr	3/Smr	E	NA	EE
BMEB131	Introduction to Biomedical Engineering	2		2	Spr	1/Spr	C	NA	BMEB
BMEB221	Biomedical Instrumentation	4	2	6	Spr	2/Spr	C	NA	BMEB
CS301	Embedded System and	3	1	4	Fall	3/Fall	B	CS207	CS

	Microcomputer Principle								
CS307	Database Principle	3	1	4	Fall	3/Fall	B	NA	CS
CS403	Cryptography and Network Security	2		2	Fall	4/Fall	B	CS201 CS305 CS302	CS
MA104b	Linear Algebra II	4		4	Spr	1/Spr	B	MA103A	MA
MA201b	Ordinary Differential Equations B	4		4	Fall	2/Fall	B	MA102B	MA
MA208-13	Applied Stochastic Processes	4		4	Spr	2/Spr	E	MA212 or MA204	MA
Total		14 1.5	39	22 3.5					

Table 3: Overview of Practice-Based Courses

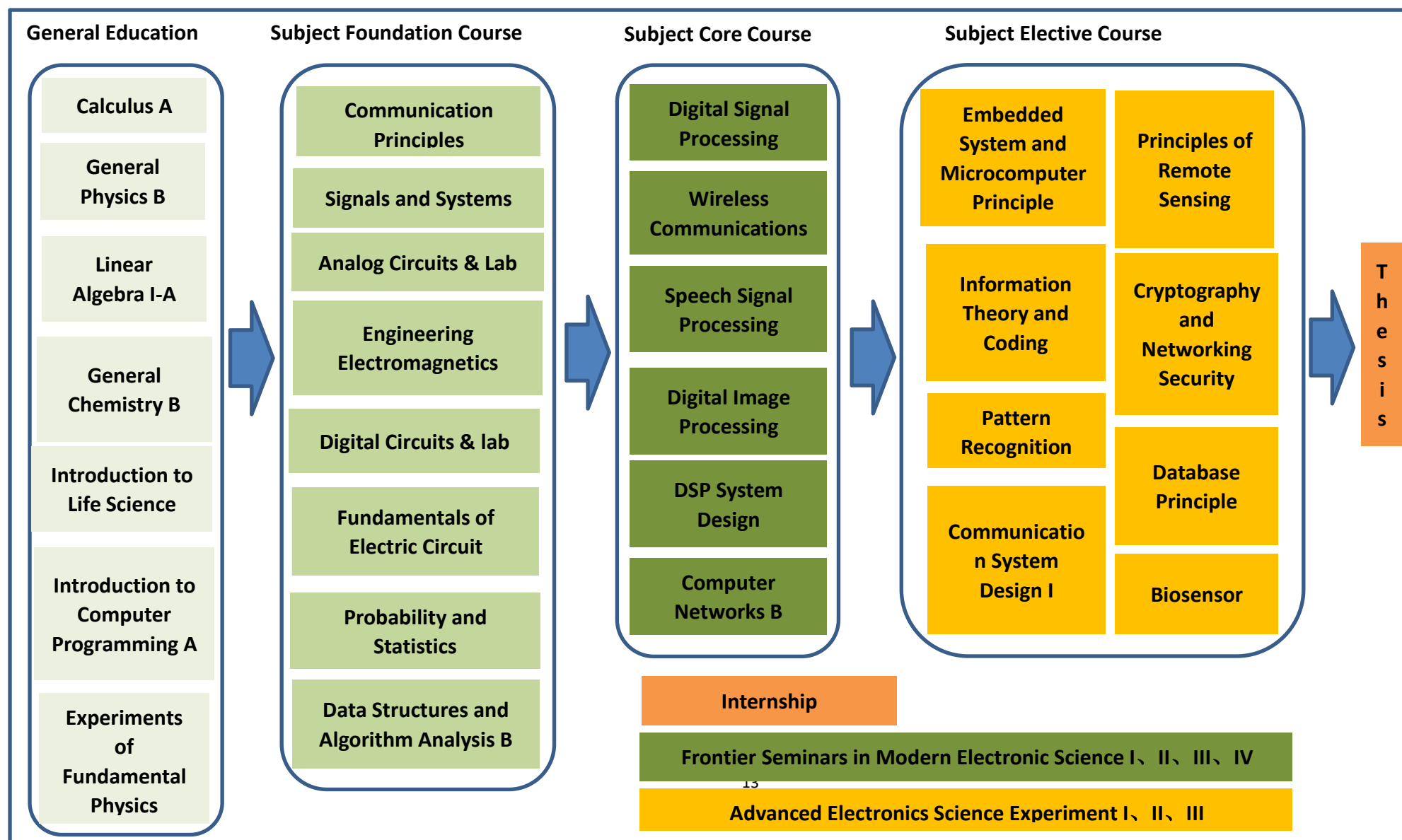
Course Code	Course Name	Credits	Lab Credits	Hours/week	Terms	take the course Advised term to	language Instruction	Prerequisite	Dept.
EE201-1 7L	Analog Circuits Laboratory	1	1	2	Fall	2/Fall	B	EE201-17	EE
EE202-1 7L	Digital Circuits Laboratory	1	1	2	Spr/ Fall	2/Spr or Fall	B/E	EE202-17	EE
EE205	Signals and Systems	3	1	4	Fall	2/Fall	B	NA	EE
EE206	Communication Principles	3	1	4	Spr	2/Spr	E	EE205	EE
EE208	Engineering Electromagnetics	3	1	4	Spr	2/Spr	B	MA101B MA103A EE104	EE
CS203B	Data Structures and Algorithm Analysis B	3	1	4	Fall	2/Fall	E	CS102A	CS
EE313	Wireless Communications	3	1	4	Fall	3/Fall	B	EE206	EE
CS305B	Computer Networks B	3	1	4	Fall	3/Fall	E	CS102A	CS
EE323	Digital Signal Processing	3	1	4	Fall	3/Fall	E	EE205	EE
EE326	Digital Image Processing	3	1	4	Spr	3/Spr	E	EE205	EE
EE328	Speech Signal Processing	3	1	4	Spr	3/Spr	E	EE323	EE
EE330	DSP Design and Simulation	1.5	1.5	3	Spr	3/Spr	B	EE323	EE
EE332	Digital System Design	3	1	4	Spr	3/Spr	E	EE202-17	EE
EE201-1 7L	Analog Circuits Laboratory	1	1	2	Fall	2/Fall	B	EE201-17	EE
EE202-1 7L	Digital Circuits Laboratory	1	1	2	Spr/ Fall	2/Spr or Fall	B/E	EE202-17	EE
EE205	Signals and Systems	3	1	4	Fall	2/Fall	B	NA	EE
EE206	Communication Principles	3	1	4	Spr	2/Spr	E	EE205	EE
EE470	Internship	2	2	16	Smr	3/Smr	NA	NA	EE
EE480	Research Projects	2	2				NA	NA	EE
EE490	Undergraduate Thesis/Projects	8	8	8	Fall Spr	4/Fall Spr	NA	NA	EE
EE204	Introduction to Semiconductor Devices	3	1	4	Spr	2/Spr	B	EE203	EE
EE303	Fundamentals of Optoelectronic Technology	3	1	4	Fall	3/Fall	B	PHY105B	EE
EE304	Integrated Circuit Design	3	2	5	Fall	3/Fall	B	EE202-17 EE204	EE
EE305	Introduction to VLSI technology	3	1	4	Fall	3/Fall	E	EE203	EE
EE306	Introduction to MEMS	3	1	4	Spr	3/Spr	E	PHY105B	EE
EE307	Antennas and Radio Propagation	3	1	4	Spr	3/Spr	英	EE208	EE
EE308	Fiber Communication Principles and Techniques	3	1	4	Spr	3/Spr	B	NA	EE
EE311	Optical Design	3	1	4	Fall	3/Fall	B	NA	EE
EE312	Design of Modern Communication Systems	3	1	4	Spr	3/Spr	B	EE206 EE313	EE

EE316	Microwave Engineering	3	1	4	Fall	3/Fall	E	EE104 EE201-17 EE208	EE
EE317	Advanced Electronic Science Experiment I	1	1	2	Fall	3/Fall	B	NA	EE
EE318	Advanced electronic science experiment II	1	1	2	Spr	3/Spr	B	NA	EE
EE320-1 5	Integrated Circuit Fabrication Laboratory	3	1.5	4.5	Spr Fall	3/Spr Fall	C	EE204	EE
EE322	Optoelectronics Devices Fabrication Laboratory	2	1	3	Spr	3/Spr	B	EE204	EE
EE325	Nonlinear Optimization Techniques for Electrical Engineering	3	1	4	Fall	3/Fall	B	MA102B MA103A	EE
EE327	Fundamentals of Information Optics	3	1	4	Fall	3/Fall	B	EE205	EE
EE334	Advanced Integrated Circuit Design: Machine Learning on Chip	3	1	4	Spr	3/Spr	E	EE202-17	EE
EE335	Liquid Crystal Optoelectronics	3	1	4	Fall	3/Fall	C	EE210	EE
EE336	Fundamentals of Photovoltaics	3	1	4	Fall	3/Fall	E	EE204	EE
EE337	Analog Integrated Circuit Design	3	1	4	Fall	3/Fall	B	EE201-17 EE204	EE
EE339	Analog IC Layout Design	1	1	2	Fall	3/Fall	B	EE304	EE
EE341	Advanced Integrated Circuit Design: Microprocessor	3	1	4	Fall	3/Fall	B	EE202-17	EE
EE343	Optoelectronic Instrumentation	3	1	4	Fall	3/Fall	B	NA	EE
EE345	Introduction of Wide Bandgap Semiconductors	3		3	Fall	3/Fall	B	EE203 or EE204	EE
EE405	Advanced Electronic Science Experiment III	1	1	2	Fall	4/Fall	B	NA	EE
EE417	Communications System Design II	2	2	4	Fall	4/Fall	E	EE316 EE206 EE307	EE
EE423-1 4	Pattern Recognition	3	1	4	Fall	4/Fall	B	EE323 EE326	EE
EE429	Image and Video Processing	3	1	4	Fall	4/Fall	E	EE205 MA103A MA212	EE
EES101	Brief Introduction of “Creative Electronic Design I”	1	0.5	6	Smr	1/Smr	C	PHY105B	EE
EES102	DIY Project: Assembling an iPhone6	2	2	8	Smr	1/Smr	C	NA	EE
EES201	Brief Introduction of “Creative Electronic Design II”	0.5	0.5	4	Smr	2/Smr	C	NA	EE
EES202	Design based on LabVIEW Programming	1	1	8	Smr	2/Smr	C	NA	EE
EES203	Innovation and Entrepreneurship	0.5	0.5	4	Smr	2/Smr	C	NA	EE
EES204	Fiber Sensor Design	1	1	8	Smr	2/Smr	C	NA	EE
BMEB22 1	Biomedical Instrumentation	4	2	6	Spr	2/Spr	C	NA	BMEB
CS301	Embedded System and Microcomputer Principle	3	1	4	Fall	3/Fall	B	CS207	CS
CS307	Database Principle	3	1	4	Fall	3/Fall	B	NA	CS
Total		132 .5	64.5	223. 5					

Table 4: Overview of Course Hours and Credits

Course Category	Total Course Hours	Total Credits	Credit Requirements
General Education (GE) Required Courses (not including English courses)	800	51	51
General Education (GE) Elective Courses		10	10
Major Foundational Courses	496	25	25
Major Core Courses	480	22.5	22.5
Major Elective Courses	3576	141.5	16
Research Projects, Internship and Undergraduate Thesis/Projects	380	12	12
Total (not including English courses)	5732	262	136.5

Curriculum Structure of Information Engineering



Note: The Subject Elective course lists include only part of the courses, see more in Program.