Department of Electrical and Electronic Engineering

Program of Information Engineering for International Students (2021)

I. Introduction

Information Engineering is a new and promising discipline. It is developed as multiple areas involving signal and information processing technology, communication technology, and computer science rapidly penetrate into traditional information technology (IT) industries. In China, information technology industry is currently the most active and fast-growing profession. This area is deeply involved in international technology competition now, and has also globally become the most vital engine of social and economic productivity and development. Recently, with the increasing demand on the eco-friendly, integrated, and smart information system, professional talents in information engineering are deeply in need.

II. Objectives and Learning Outcomes

Attributes that alumni of Information Engineering should demonstrate 3-5 years after graduation include 4 aspects. Alumni are:

Technical Skills: technically competent to conduct research and development in the industry and universities in the broad fields of Electronics and Information Engineering in general, and Communication Engineering in particular.

Engineering Ethos: able to think critically and creatively, able to use engineering principles to embrace challenging engineering and non-engineering problems encountered at work, able to apply an analytic mindset, make informed decisions and able to provide innovative solutions.

Attitude: self-motivated with a desire for lifelong learning to adapt to the fast changing environment, able to operate with integrity and responsibility, having optimism and composure under tight schedule, and committed to make a positive impact on society locally and globally.

Leadership: effective communicators, well-prepared to advance towards leadership positions, able to capitalize the individual strengths of team members, and able to nurture the team to achieve goals.

Student Outcomes (SOs) that prepare graduates to enter the professional practice of engineering:

SO 1: an ability to identify, formulate, and solve complex engineering problems1 by applying principles of engineering, science, and mathematics.

SO 2: an ability to apply engineering design to produce solutions that meet specified needs with consideration of public health, safety, and welfare, as well as global, cultural, social, environmental, and economic factors.

SO 3: an ability to communicate effectively with a range of audiences.

SO 4: an ability to recognize ethical and professional responsibilities in engineering

situations and make informed judgments, which must consider the impact of engineering solutions in global, economic, environmental, and societal contexts.

SO 5: an ability to function effectively on a team whose members together provide leadership, create a collaborative and inclusive environment, establish goals, plan tasks, and meet objectives.

SO 6: an ability to develop and conduct appropriate experimentation, analyze and interpret data, and use engineering judgment to draw conclusions.

SO 7: an ability to acquire and apply new knowledge as needed, using appropriate learning strategies.

SO 8: knowledge of probability and statistics including applications, differential and integral calculus, sciences, engineering sciences and computing science and application to analyze and design complex information engineering systems.

SO 9: knowledge and application of advanced mathematics, such as differential equations, linear algebra, and complex variable.

SO 10: knowledge and application of information processing methods.

III. Study Length and Graduation Requirements

Study length: 4 years

Degree conferred: Bachelor of Engineering

The minimum credit requirement for graduation: 136 credits (not including English courses);

Category	Module	Minimum Credit Requirement
General Education (GE) Required Courses （48 credits）	Science	28
	Physical Education	4
	Chinese Languages & Culture	16
General Education (GE) Elective Courses （13 credits）	Humanities	4
	Social Sciences	4
	Arts	2
	Science	3
Major Course （75 credits）	Major Foundational Courses	26
	Major Core Courses	16
	Major Elective Courses	23
	Internship and Undergraduate Thesis / Projects	10
Total (not including English courses)		136

IV. Discipline

Information Engineering

V. Main Courses

Core courses include Fundamentals of Electric Circuits, Analog Circuits, Analog Circuits Laboratory, Digital Circuits, Digital Circuits Laboratory, Signals and Systems, Engineering Mathematics, Engineering Electromagnetics, Probability and Statistics, Microprocessors and Microsystems, Communication Principles, Frontier Seminars in Modern Electronic Science and

Technology I, Advanced Electronic Science Experiment I, Advanced Electronic Science Experiment II, Digital Signal Processing, Digital System Design, Computer Networks B, Advanced Electronic Science Experiment III.

VI. Practice-Based Courses

Core practical training includes Industrial practice, Advanced Electronic Science Experiment (Outstanding students after their junior year, can join research working by their professor), and all sorts of domestic and international academic and innovative competitions. See the table 3.

VII. Pre-requisites for Major Declaration

Major Declaration Time	Course Code	Course Name	Prerequisite
Declare major at the end of First Year	MA101B	Calculus I A	NA
	MA102B	Calculus II A	MA101B
	MA107A	Linear Algebra A	NA
	PHY103B	General Physics B (I)	NA
	PHY105B	General Physics B (II)	PHY103B
	CS102A	Introduction to Computer Programming A	NA
	EE104	Fundamentals of Electric Circuits	MA101B MA107A
Declare major at the end of Second Year	MA101B	Calculus I A	NA
	MA102B	Calculus II A	MA101B
	MA107A	Linear Algebra A	NA
	PHY103B	General Physics B (I)	NA
	PHY105B	General Physics B (II)	PHY103B
	CS102A	Introduction to Computer Programming A	NA
	EE104	Fundamentals of Electric Circuits	MA101B MA107A
	EE205	Signals and Systems	MA101B
	MA212	Probability and Statistics	MA102B
Notes: At the end of First Year, In addition to the above courses, students must pass the interview.			

VIII. Requirements for of GE Required Courses

(I) Science Module

Course Code	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 I B	PHY
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
Total		28	3	31				

(II) Physical Education

Course Code	Course Name	Credits	Hours/week	Terms	Instruction language	Prerequisite	Dept.
GE131	Physical Education I	1	2	Fall	C	NA	PE Center
GE132	Physical Education II	1	2	Spr	C	NA	
GE231	Physical Education III	1	2	Fall	C	NA	
GE232	Physical Education IV	1	2	Spr	C	NA	
GE331	Physical Education V	0	2	Fall	C	NA	
GE332	Physical Education VI	0	2	Spr	C	NA	
Total		4	12				

GE131、GE132、GE231、GE232、GE331、GE332 are required PE courses offered by Center For Physical Education. Students are required to select a specific sport program each semester. Student who meets the exemption conditions stated in "SUSTech Physical Education Course Exemption Regulation" can apply for exemption from GE331 and GE332.

(III) Chinese Languages & Culture

Course Code	Course Name	Credit	Hours/week	Term	Language Instruction	Prerequisite	Dept.
CLE008	Elementary Chinese I	2	4	1/Fall	B	NA	CLE
CLE009	Elementary Chinese II	2	4	1/Spr	B	CLE008	
CLE027	Intermediate Chinese I	2	4	2/Fall	B	CLE009	
CLE028	Intermediate Chinese II	2	4	2/Spr	B	CLE027	
CLE031	Advanced Chinese I	2	4	3/Fall	B	CLE028	
CLE032	Advanced Chinese II	2	4	3/Spr	B	CLE031	
CLE033	Chinese Culture	2	2	Spr/Fall	B/E	NA	CLE/ HUM/ SSC
CLE034	Chinese History	2	2	Spr/Fall	B/E	NA	

(IV) English Language

Students will undertake the English Placement Test and be placed into three levels according to the result of the test and their performance in the National College Entrance Exam. Students at different levels are required to take the courses with a different credit value in total.

Level A: 8 credits; SUSTech English III, English for Academic Purposes and 2-credit CLE elective course

Level B: 12 credits; SUSTech English II, SUSTech English III, English for Academic Purposes, and 2-credit CLE elective course

Level C: 14 credits; SUSTech English I, SUSTech English II, SUSTech English III, and English for Academic Purposes.

List of English Language Courses

Course Code	Course Name	Credit	Hours/week	Language Instruction	Prerequisite	Dept	Notes
CLE021	SUSTech English I	4	4	E	NA	CLE	Required
CLE022	SUSTech English II	4	4	E	CLE021		
CLE023	SUSTech English III	4	4	E	CLE022		
CLE030	English for Academic Purposes	2	2	E	CLE023		
/	(at least one 2-credit CLE elective course)	2	2	E	CLE030		Level A & B Required

IX Requirements for of GE Elective Courses

(I) Students are required to complete 4 credits for the Humanities Module and Social Sciences Module respectively, and 2 credits for the Music and Art Module. In particular, HUM051 Engineering Philosophy and Engineering Ethics is compulsory. (Information about the available courses and the instruction language will be announced before the course selection session).

(II) Students are required to complete 3 credits for Science Module

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	Language Instruction	Prerequisite	Dept
CH101B	General Chemistry B	3		3	Fall/Spr	1/ Fall/Spr	NA	CH
CS201	Discrete Mathematics	3		3	Fall/Spr	2/ Spr	MA102B MA107A	CS
CS202	Computer Organization	3	1	4	Spr	2/ Spr	CS207or EE202-17	CS
CS205	C/C++ Program Design	3	1	4	Fall/Spr	2/ Fall	NA	CS
Total		12	2	14				

X. Major 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/Fall	1/Spr	B/E	MA101B MA107A	EE
	EE201-17	Analog Circuits	3		3	Spr/Fall	2/Fall	B/E	PHY105B EE104	EE
	EE201-17 L	Analog Circuits Laboratory	1	1	2	Spr/Fall	2/Fall	B/E	EE201-17	EE
	EE202-17	Digital Circuits	3		3	Spr/Fall	2/Spr	B/E	PHY105B	EE
	EE202-17 L	Digital Circuits Laboratory	1	1	2	Spr/Fall	2/Spr	B/E	EE202-17	EE
	EE205	Signals and Systems	3	1	4	Spr/Fall	2/Fall	B/E	MA101B	EE
	EE207	Engineering Mathematics	4		4	Fall	2/Fall	E	MA102B PHY105B MA107A	EE
	EE208	Engineering Electromagnetics	3	1	4	Spr/Fall	2/Spr	B	MA107A EE104	EE
	MA212	Probability and Statistics	3		3	Spr	2/Spr	B	MA102B	MA
	EE351	Microprocessors and Microsystems	3	1	4	Fall	3/Fall	B	EE201-17 EE202-17	EE
	Total		26	5	31					
Major Core Courses	EE206	Communication Principles	3	1	4	Spr	2/Spr	E	EE205	EE
	EE301	Frontier Seminars in Modern Electronic Science and Technology I	1		1	Fall	3/Fall	B	EE201-17 or EE202-17	EE
	EE317	Advanced Electronic Science Experiment I	1	1	2	Fall	3 / Fall	B	EE201-17o r EE202-17	EE
	EE318	Advanced Electronic Science Experiment II	1	1	2	Spr	3 / Spr	B	EE201-17o r EE202-17	EE
	CS305	Computer Networks	3	1	4	Spr	3/ Spr	E	CS102A	CS
	EE323	Digital Signal Processing	3	1	4	Fall	3/ Fall	E	EE205	EE
	EE332	Digital System Design	3	1	4	Spr	3/ Spr	E	EE202-17	EE
	EE405	Advanced Electronic Science Experiment III	1	1	2	Fall	4 / Fall	B	EE201-17o r EE202-17	EE
	Total		16	7	23					
Practice	EE470	Internship	2	2	16	Smr	3/Smr	NA	NA	EE
	EE490	Undergraduate Thesis/Projects*	8	8	8	Fall& Spr	4/Fall& Spr	NA	NA	EE
Total			10	10	24					

Notes:
1.Students who have completed Comprehensive Design Ⅰ&Ⅱ（COE491 & COE492）are not required to take the Graduation Projects/Thesis(EE490).

Table 2: Major Elective Courses

Course Category	Course Code	Course Name	Credits	Lab Credits	Hours / week	Term	Advised term to take the course	Instruction language	Prerequisite	Dept.
Module A	EE326	Digital Image Processing	3	1	4	Spr	3/Spr	E	EE205	EE
	EE328	Speech Signal Processing	3	1	4	Spr	3/Spr	B	EE323	EE
	EE340	Statistical Learning for Data Science	3		3	Spr	3/Spr	B	MA107A	EE
	EE342	Sensors and Applications	3		3	Spr	3/Spr	C	PHY103B	EE
	EE346	Mobile Robot Navigation and Control	3	1	4	Spr	3/Spr	E	EE205 MA212	EE
	EE368	Fundamentals of Robotics	3	1	4	Spr	3/Spr	E	EE205	EE
	EE433	Modern Electric Vehicle Technologies	2		2	Fall	4/Fall	B	EE208	EE
	CS203B	Data Structures and Algorithm Analysis B	3	1	4	Fall	2/Fall	B	CS102A	CS
	CS307	Principles of Database Systems	3	1	4	Fall	3/Fall	B	NA	CS
	CS405	Machine Learning	3	1	4	Fall	4/Fall	B	MA212 MA107A	CS
Module B	EE108	Optoelectronics Intellisense	3		3	Spr	1/Spr	E	NA	EE
	EE203	Solid-state Electronics	3		3	Fall	2/Fall	B/E	PHY105B	EE
	EE204	Introduction to Semiconductor Devices	3	1	4	Spr/Fall	2/Spr	B/E	EE203	EE
	EE210	Fundamentals of Optics	3		3	Spr/Fall	2/Spr	B	PHY105B	EE
	EE303	Fundamentals of Optoelectronic Technology	3	1	4	Fall	3/Fall	B	PHY105B	EE
	EE305	Introduction to VLSI Technology	3	1	4	Fall	3/Fall	B	EE203	EE
	EE307	Antennas and Radio Propagation	3	1	4	Spr	3/Spr	E	EE208 EE104	EE
	EE308	Fiber Communication Principles and Techniques	3	1	4	Spr	3/Spr	B	MA102B	EE
	EE309	Introduction to Semiconductor Optics	3		3	Fall	3/Fall	B	MA102B EE203	EE
	EE310	Principles and Technologies of Lasers	3		3	Spr	3/Spr	B	MA102B EE210	EE
	EE311	Optical Design	3	1	4	Fall	3/Fall	B	EE210	EE
	EE312	Design of Modern Communication Systems	3	1	4	Spr	3/Spr	B	EE206 EE313	EE
	EE313	Wireless Communications	3	1	4	Fall	3/Fall	E	EE206	EE
	EE316	Microwave Engineering	3	1	4	Fall	3/Fall	E	EE201-17 EE208	EE
	EE322	Optoelectronics Devices Fabrication Laboratory	2	1	3	Spr	3/Spr	B	EE204	EE
	EE335	Liquid crystal optoelectronics	3	1	4	Fall	3/Fall	C	EE210	EE
	EE336	Fundamentals of Photovoltaics	3	1	4	Spr	3/Spr	E	EE204	EE
	EE345	Introduction of Wide Bandgap Semiconductors	3		3	Fall	3/Fall	B	EE203 or EE204	EE
	EE404	Organic Electronics	2		2	Spr	4/Spr	B	无	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
	EE435	Semiconductor Information Display Technologies	3		3	Fall	4/Fall	B	EE203 EE204	EE
	CS208	Algorithm Design and Analysis	3	1	4	Spr	2/Spr	E	CS102A CS203B	CS
	CS303B	Artificial Intelligence B	3	1	4	Fall	3/Fall	B	CS203B CS102A MA212	CS

	MA305	Numerical Analysis	3		3	Fall	3/Fall	B	MA203A or MA213	MA
Total			**100**	**23**	**123**					
Notes: At least 23 credits are required , and at least three courses from Module A are required.										

Table 3: Overview of Practice-Based Courses

Course Code	Course Name	Credits	Lab Credits	Hours / week	Term	Advised term to take the course	Instruction language	Prerequisite	Dept.
EE201-17L	Analog Circuits Laboratory	1	1	2	Spr/Fall	2/Fall	B/E	EE201-17	EE
EE202-17L	Digital Circuits Laboratory	1	1	2	Spr/Fall	2/Spr	B/E	EE202-17	EE
EE204	Introduction to Semiconductor Devices	3	1	4	Spr/Fall	2/Spr	B/E	EE203	EE
EE205	Signals and Systems	3	1	4	Spr/Fall	2/Fall	B/E	MA101B	EE
EE206	Communication Principles	3	1	4	Spr	2/Spr	E	EE205	EE
EE208	Engineering Electromagnetics	3	1	4	Spr/Fall	2/Spr	B	MA107A EE104	EE
EE303	Fundamentals of Optoelectronic Technology	3	1	4	Fall	3/Fall	B	PHY105B	EE
EE305	Introduction to VLSI Technology	3	1	4	Fall	3/Fall	B	EE203	EE
EE307	Antennas and Radio Propagation	3	1	4	Spr	3/Spr	E	EE208 EE104	EE
EE308	Fiber Communication Principles and Techniques	3	1	4	Spr	3/Spr	B	MA102B	EE
EE311	Optical Design	3	1	4	Fall	3/Fall	B	EE210	EE
EE312	Design of Modern Communication Systems	3	1	4	Spr	3/Spr	B	EE206 EE313	EE
EE313	Wireless Communications	3	1	4	Fall	3/Fall	E	EE206	EE
EE316	Microwave Engineering	3	1	4	Fall	3/Fall	E	EE201-17 EE208	EE
EE317	Advanced Electronic Science Experiment I	1	1	2	Fall	3/Fall	B	EE201-17 or EE202-17	EE
EE318	Advanced Electronic Science Experiment II	1	1	2	Spr	3/Spr	B	EE201-17 or EE202-17	EE
EE322	Optoelectronics Devices Fabrication Laboratory	2	1	3	Spr	3/Spr	B	EE204	EE
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	B	EE323	EE
EE332	Digital System Design	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	Spr	3/Spr	E	EE204	EE
EE346	Mobile Robot Navigation and Control	3	1	4	Spr	3/Spr	E	EE205 MA212	EE
EE351	Microprocessors and Microsystems	3	1	4	Fall	3/Fall	B	EE201-17 EE202-17	EE
EE368	Fundamentals of Robotics	3	1	4	Spr	3/Spr	E	EE205	EE
EE405	Advanced Electronic Science Experiment III	1	1	2	Fall	4/Fall	B	EE201-17 or EE202-17	EE

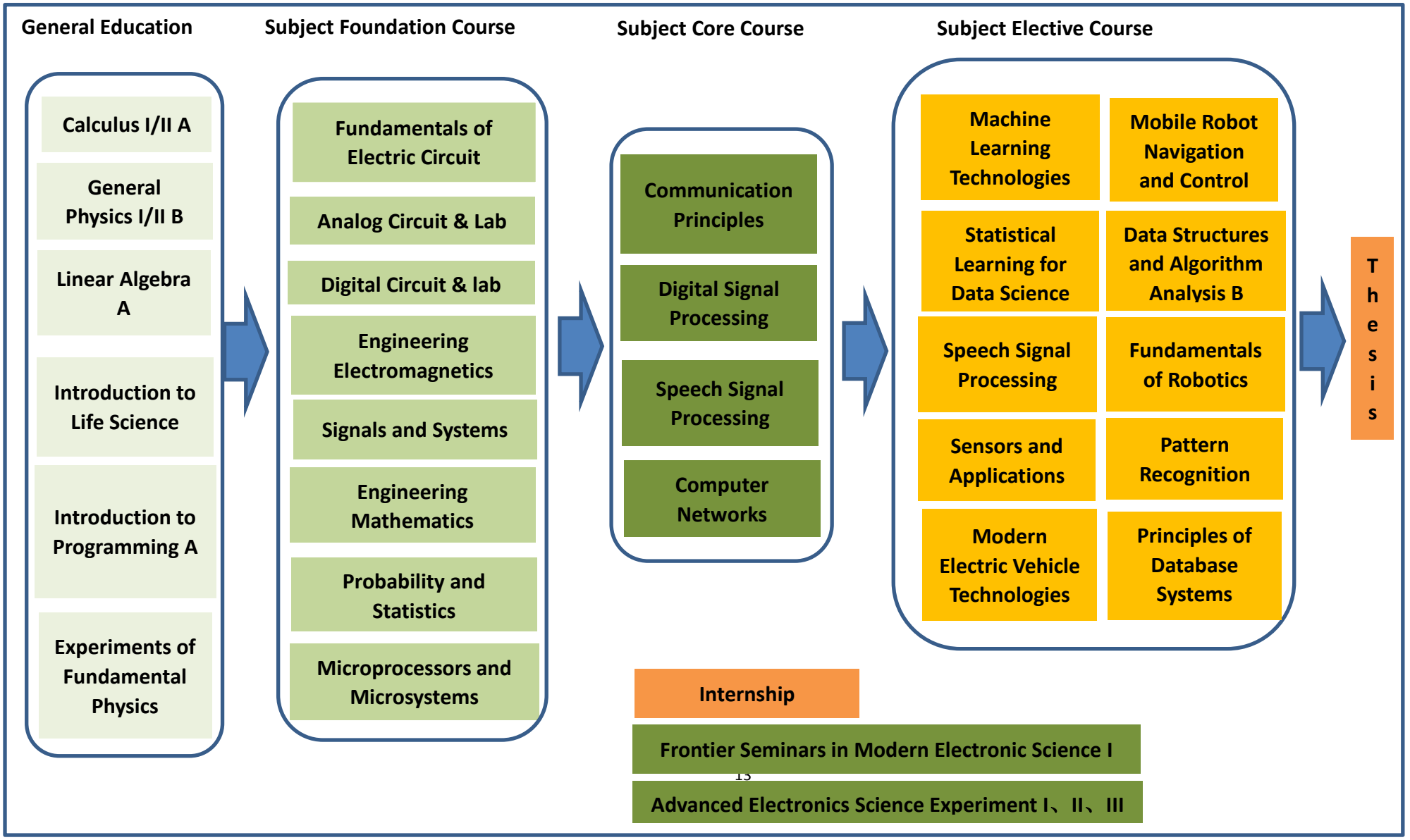
EE417	Communications System Design II	2	2	4	Fall	4/Fall	E	EE316 EE206 EE307	EE
EE470	Internship	2	2	16	Smr	3/Smr	NA	NA	EE
EE490	Undergraduate Thesis/Projects	8	8	8	Fall& Spr	4/Fall& Spr	NA	NA	EE
CS203B	Data Structures and Algorithm Analysis B	3	1	4	Fall	2/Fall	B	CS102A	CS
CS208	Algorithm Design and Analysis	3	1	4	Spr	2/Spr	E	CS102A CS203B	CS
CS303B	Artificial Intelligence B	3	1	4	Fall	3/Fall	B	CS203B CS102A MA212	CS
CS305	Computer networks	3	1	4	Fall	3/Fall	B	CS102A	CS
CS307	Principles of Database Systems	3	1	4	Fall	3/Fall	B	NA	CS
CS405	Machine Learning	3	1	4	Fall	4/Fall	B	MA212 MA107A	CS
Total		**100**	**45**	**149**					

Table 4: Overview of Course Hours and Credits

Course Category	Total Course Hours	Total Credits	Credit Requirements	Percentage of the Total*
General Education (GE) Required Courses (not including English courses)	1168	48	48	35
General Education (GE) Elective Courses			13	10
Major Foundational Courses	496	26	26	19
Major Core Courses	368	16	16	12
Major Elective Courses	1968	100	23	17
Internship and Undergraduate Thesis/Projects	352	10	10	7
Total (not including English courses)	4352	200	136	100

* Percentage of the total= Credit requirements of each line / Total credit requirements

Curriculum Structure of Information Engineering



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