

# **School of Microelectronics**

## **Program of Microelectronic Science and Engineering for International Students (2020)**

### **I. Introduction**

The main objective of the School of Microelectronics is in the direction of integrated circuit chip design and manufacturing, and fosters innovative leading talents oriented to internationalization and industrialization. This discipline is a new engineering discipline developed on many basic disciplines. It is the pioneer and foundation of electronic science and information technology in the 21st century. It is also an important foundation for the development of modern high-tech and national economic modernization. Mainly researching the design and manufacturing technology of semiconductor devices and VLSI, and closely integrating with the industry. The School of Microelectronics will closely cooperate with the electronic engineering departments of famous universities in the Great Bay Area (such as the University of Hong Kong, Hong Kong University of Science and Technology, and the University of Macau), as well as many leading enterprises in Shenzhen's local electronic information direction (such as Huawei, ZTE, Tencent, etc.) Also will cooperate with the four research directions of EDA, VLSI-SoC, wide WBG semiconductor, and future communication. Therefore, the project class is different from the existing microelectronics disciplines, and will further explore new engineering construction oriented by internationalization and industrialization.

### **II. Objectives and Learning Outcomes**

The Microelectronic Science and Engineering major aims to provide students not only solid theoretical knowledge in semiconductor materials and devices, but also intends to the cultivate innovative leading talents capable of manufacturing and designing integrated circuit chips. The students can participate in microelectronics science and engineering courses offered by university teachers in Hong Kong and Macau at SUSTech, as well as internship courses (such as Huawei, ZTE, Tencent, etc.). After graduating, the students can work in the design of electronic components manufacturing, integrated circuits and systems in various related enterprises, or they can continue their studies or research in famous universities in the Great Bay Area (such as Hong Kong University, Hong Kong University of Science and Technology, the University of Macau).

### **III. Study Length and Graduation Requirements**

Study length: 4 years

Degree conferred: Bachelor of Engineering

The minimum credit requirement for graduation: 139 credits (not including English courses);

Category	Module	Minimum Credit Requirement
General Education (GE) Required Courses (52 credits)	Science	32
	Physical Education	4
	Chinese Languages & Culture	16
General Education (GE) Elective Courses (10 credits)	Humanities	4
	Social Sciences	4
	Arts	2
Major Course (77 credits)	Major Foundational Courses	24
	Major Core Courses	22
	Major Elective Courses	19
	Research Projects, Internship and Undergraduate Thesis / Projects	12
Total (not including English courses)		139

#### IV. Discipline

Major disciplines include Microelectronics Science and Engineering, integrated circuit Engineering .etc.

#### V. Main Courses

Core courses include Calculus, Linear Algebra, Engineering Mathematics, General Chemistry, General Physics, Engineering Drawing, Solid-State Electronics, CMOS VLSI Design, CMOSVLSI Fabrication Technology, CMOS Analog Integrated Circuit Design, Microprocessor Design, Electronic Design Automation (EDA) Basics, Advanced Semiconductor Device etc.

#### VI. Practice-Based Courses

Core practical training includes Microelectronic related experiments, IC process internship (sophomore), integrated circuit design internship (sophomore), new engineering course innovation project experiment (third), Shenzhen industrialization company internship (sophomore summer vacation, junior summer vacation), HKUST/HKU/UM exchange internship (Seniors), as well as various academic competitions, such as the National IC Design Competition.

Major professional experiment includes Analog Circuit experiment, Digital Circuit experiment, Semiconductor Devices experiment.

## VII. Pre-requisites for Major Declaration

Major Declaration Time	Course Code	Course Name	Prerequisite
Declare major at the end of First Year	SME102	Fundamentals of Integrated Circuit	
	EE104	Fundamentals of Electric Circuits	MA101B MA107B
	MA102B	Calculus II A	MA101B
	MA107A	Linear Algebra A	
	PHY105B	General Physics B (II)	PHY103B
	CS102B	Introduction to Computer Programming B	CS101B
	PHY104B	Experiments of Fundamental Physics	
Notes: At the end of First Year, In addition to the above courses, students must pass the interview.			
Declare major at the end of Second Year	SME102	Fundamentals of Integrated Circuit	
	EE104	Fundamentals of Electric Circuits	MA101B MA107B
	MA102B	Calculus II A	MA101B
	MA107A	Linear Algebra A	
	PHY105B	General Physics B (II)	PHY103B
	CS102B	Introduction to Computer Programming B	CS101B
	PHY104B	Experiments of Fundamental Physics	
	EE201-17	Analog Circuits	PHY105B EE104
	EE201-17L	Analog Circuits Laboratory	EE201-17
	EE202-17	Digital Circuits	PHY105B
	EE202-17L	Digital Circuits Laboratory	EE202-17
	EE203	Solid-state Electronics	PHY105B
EE204	Introduction to Semiconductor Devices	EE203	

## VIII. Requirements for GE Required Courses

### (I) Science Module

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	Language Instruction	Prerequisite	Dept
MA101B	Calculus I A	4		4	Spr/Fall	B/E	NA	MATH
MA102B	Calculus II A	4		4	Spr/Fall	B/E	MA101B	MATH
MA107A	Linear Algebra A	4		4	Spr/Fall	B/E	NA	MATH
PHY103B	General Physics I B	4		4	Spr/Fall	B/E	NA	PHY
PHY105B	General Physics II B	4		4	Spr/Fall	B/E	PHY103B	PHY
PHY104B	Experiment for Foundation of Physics	2	2	4	Spr/Fall	B/E	NA	PHY
CH101B	General Chemistry B	3		3	Spr/Fall	B/E	NA	CH
BIO102B	Introduction to Life Science	4		4	Spr/Fall	B/E	NA	BIO
CS102B	Introduction to Programming B	3	1	4	Spr/Fall	B/E	NA	CSE
Total		32	3	35				

### (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	/	Fall	C	NA	
GE332	Physical Education VI	0	/	Spr	C	NA	
GE431	Physical Education VII	0	/	Fall	C	NA	
GE432	Physical Education VIII	0	/	Spr	C	NA	
Total		4	8				

Note: All physical education courses are general required courses. For Semester 1-4, each course (GE131, GE132, GE231, GE232) counted as 1 credit; for semester 5-8, (GE331, GE332, GE431, GE432) are extracurriculum courses without no credits, details can be referred to Physical Education Curriculum Program of Sustech.

### (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	
Total		16	28				

### (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: 6 credits; SUSTech English III, and English for Academic Purposes

Level B: 10 credits; SUSTech English II, SUSTech English III, and English for Academic Purposes

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

Course Code	Course Name	Credit	Hours/week	Language Instruction	Prerequisite	Dept
CLE021	SUSTech English I	4	4	E	NA	CLE
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	

### IX Requirements for GE Elective Courses

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. (Information about the available courses and the instruction language will be announced before the course selection session)

## X. Major Course Arrangement

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

Course Category	Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	take the course Advised term to	Instruction Language	Prerequisite	Dept.
Major Foundational Courses	SME102	Fundamentals of Integrated Circuit	2		2	Spr	1/ Spr	B		SME
	EE104	Fundamentals of Electric Circuits	2		2	Spr/ Fall	1/Spr or Fall	B	MA101B MA107A or MA107B	EE
	EE201-17	Analog Circuits	3		3	Fall	2/Fall	B	PHY105B EE104	EE
	EE201-17L	Analog Circuits Laboratory	1	1	2	Fall	2/Fall	B	EE201-17	EE
	EE202-17	Digital Circuits	3		3	Spr/ Fall	2/Spr or Fall	B	PHY105B	EE
	EE202-17L	Digital Circuits Laboratory	1	1	2	Spr/ Fall	2/Spr or Fall	B	EE202-17	EE
	EE204	Introduction to Semiconductor Devices	3	1	4	Spr	2/Spr	B	EE203	EE
	EE203	Solid-state Electronics	3		3	Fall	2/Fall	B	PHY105	EE
	EE205	Signals and systems	3	1	4	Fall	2/Fall	B	MA101B	EE
	EE208	Engineering Electromagnetics	3	1	4	Spr	2/Spr	B	MA101B MA107A EE104	EE
	Total			24	5	29				
Major Core Courses	SME301	Frontier Seminars in Microelectronics and IC Designs I	1		1	Spr/ Fall	3/Fall	B	NA	SME
	SME302	Frontier Seminars in Microelectronics and IC Designs II	1		1	Spr	3/Spr	B	NA	SME
	SME303	Advanced Microelectronics Experiment I	1	1	2	Fall	3/ Fall	B	NA	SME
	SME304	Advanced Microelectronics Experiment II	1	1	2	Spr	3/Spr	B	NA	SME
	SME305	CMOS VLSI Fabrication Technology	3	1	4	Fall	3/Fall	B	NA	SME
	SME306	CMOS VLSI Design	3	2	5	Spr	3/Spr	B	EE202 EE204	SME
	SME307	CMOS Analog Integrated Circuit Design	3	1	4	Fall	3/Fall	B	EE201-17 EE204	SME
	SME309	Microprocessor Design	3	1	4	Fall	3/Fall	B	EE202-17	SME
	SME312	Electronic Design Automation (EDA) Basics	3	1	4	Spr	3/Spr	E		SME

	SME319	Fundamentals of Semiconductor Devices and Packaging	3		3	Spr	3/Spr	B	EE204	SME
	Total		22	8	30					
Practice	SME470	Internship	2	2	4	smr	3/smr	C	NA	SME
	SME471	Summer Research	2	2	4	smr	3/smr	B	NA	SME
	SME480	Projects of Science and Technology Innovation	2	2		Spr & Fall	4/ Spr Fall	B	NA	SME
	SME490	Thesis(Graduation Project)	8	8	8	Spr&Fall	4/Spr Fall	B	NA	SME
	Total		12	12	16					

Note:

Students who have completed Comprehensive Design I & II (COE491 & COE492) are not required to take the Graduation Projects/Thesis (SME490).

Choose the Internship (SME470) or Summer Research(SME471) to complete.

**Table 2: Major Elective Courses**

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	take the course Advised term to	Instruction Location	Prerequisite	Dept.
SME310	Deep learning on chip	3	1		Spr	3/Spr	B	EE202-17	SME
SME311	The Foundation of IC Layout Design	1	1		Spr	3/Spr	C	SME306 or SME307	SME
SME313	Power ICs Application Laboratory	1	1		Spr	3/Spr	C	NA	SME
SME314	Biosensor Basics and DNA Sequencing Application	3		4	Spr	3/Spr	B	EE204or CH101B	SME
SME315	Design of Micro and Nano Sensors	3		4	Fall	3/Fall	B	PHY105B	SME
SME317	System-on-a-Chip Design	3	1	4	Fall	3/Fall	B	EE202-17	SME
SME321	Introduction to GaN Semiconductor Materials and Devices	3		4	Fall	3/Fall	B	EE203	SME
SME323	Principle of Nano-optics	3		4	Fall	3/Fall	B		SME
SME405	Advances in Micro Energy and Micro Sensing	2	1	2	Fall	3/Fall	B	NA	SME
SME403	Advanced Microelectronics Experiment III	1	1	2	Spr	4/Fall	B	NA	SME
SMES201	An Introduction of Machine Learning and EDA	2		2	Smr	2/Smr	E	NA	SME
SMES203	Fundamentals of Power IC Design	3		3	Smr	2/Smr	E	NA	SME
SMES204	Introduction to Nanoelectronics	2		2	Smr	2/Smr	E	NA	SME
SMES205	Fundamentals of Semiconductor Materials	2		2	Smr	2/Smr	E	NA	SME
SMES206	Selected Small Size Integrated Circuit Devices	1		1	Smr	2/Smr	B	EE204	SME
EE106	Introduction to Optoelectronic	2		2	Spr	1/Spr	B	NA	EE
EE206	Communication Principles	3	1	4	Spr	2/Spr	E	EE205	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
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	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	C	NA	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	EE104 EE201-17 EE208	EE
EE322	Optoelectronic Devices Fabrication	2	1	3	Spr	3/Spr	B	EE204	EE
EE323	Digital Signal Processing	3	1	4	Fall	3/Fall	E	EE205	EE
EE325	Nonlinear Optimization Techniques for Electrical Engineering	3	1	4	Fall	3/Fall	E	MA102B MA107A	EE
EE326	Digital Image Processing	3	1	4	Spr	3/Spr	E	EE205	EE
EE327	Fundamentals of Information Optics	3	1	4	Fall	3/Fall	B	EE205	EE
EE328	Speech Signal Processing	3	1	4	Spr	3/Spr	B	EE323	EE
EE330	DSP Design and Simulation	1.5	1.5	3	Spr	3/Spr	C	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	Fall	3/Fall	E	EE204	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
EE403	Introduction to Display and Lighting Technologies	2		2	Fall	4/Fall	B	EE204	EE
EE404	Organic Electronics	2		2	Spr	4/Spr	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
EE431	Bio MEMS 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
EES102	DIY Project: Assembling an iphone6	2	2	8	Smr	1/Smr	C	NA	EE
EES202	Design Based on Lab VIEW 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 Sense 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	MA107A	EE

								MA212	
EES302	2D Materials: Properties and Devices	2		8	Smr	3/Smr	E	NA	EE
EES303	Convex optimization	2		2	Smr	3/Smr	E	MA107A; MA215 or MA212	EE
EES305	Electronic Materials	2		2	Smr	3/Smr	E	NA	EE
MSE102	Frontier Seminars in Materials Science and Engineering	1		1	Spr	1/Spr	B	NA	MSE
MSE334	Introduction to Energy Materials	2		2	Spr	3/Spr	B	PHY105B PHY104 MSE001	MSE
MSE320	Introduction to Photovoltaic Thermal Technology	3		3	Spr	3/Spr	B	PHY105B EE201-17 EE204	MSE
MSE403	Advanced Materials Characterization Techniques	3		3	Spr	4/Spr	E	MSE001	MSE
MSE413	3D Printing and Laser-based Advanced Manufacturing	3		3	Fall	3/Fall	E	NA	MSE
CH212-16	Advanced Instrumentation Systems I	4	2	6	Spr	2/Spr	E	CH101A	CH
CH304	Nanomaterials Synthesis and Nanotechnology	2		2	Spr	3/Spr	E	CH202 CH302	CH
CH306	Laboratory for Micro-Nano Synthesis, Technology and Application	2	2	4	Spr	3/Spr	E	CH202 CH302	CH
CH407	Selected Topics in Nanoscience and Nanotechnology	3	1	4	Fall	4/Fall	E	CH202 CH302	CH
ESE212	Environment Monitoring	2		2	Spr	2/Spr	E	NA	ESE
ESE407	Introduction to Numerical Simulation Methods	3		3	Fall	4/Fall	C	NA	ESE
ME310	Fundamentals of Measurement Technology	3		3	Spr	3/Spr	B	EE205 ME307	ME
ME411	New Energy Technology	3	1	4	Fall	4/Fall	B	ME304	ME
CS205	C/C++Program Design	3	1	4	Spr/Fall	2/Fall	E	NA	CS
CS301	Embedded System and Microcomputer Principle	3	1	4	Fall	3/Fall	B	CS207	CS
CS303B	Computer Major Artificial Intelligence B	3	1	4	Fall	3/Fall	E	CS102A CS203B MA212	CS
CS305B	Computer networks B	3	1	4	Fall	3/Fall	E	CS102A	CS
CS401	Intelligent Robot	3	1	4	Spr	4/ Spr	B	NA	CS
MAE202	Mechanics of Materials	3		3	Spr	2/Spr	C	MAE203	MAE
MAE303	Fluid Mechanics	4		4	Fall	3/Fall	E	MAE204	MAE
MAE305	Engineering Thermodynamics	3		3	Fall	3/Fall	C	NA	MAE
MAE411	Micro and Nano Mechanics	3		3	Fall	4/Fall	C	NA	MAE
BMEB131	Introduction to Biomedical Engineering	2		2	Spr	1/Spr	C	NA	BME B

BMEB317	Principles of Medical Imaging Systems	3		3	Fall	3/Fall			BME B
MA110	MATLAB Programming and Application	3	1	4	Spr	1/Spr	B	NA	MA
MA201b	Ordinary Differential Equations B	4		4	Fall	2/Fall	B	MA102B	MA
MA202	Complex Analysis	3		3	Spr	2/Spr	B	MA203A or MA213	MA
MA206	Mathematical Modelling	3	1	4	Spr	2/Spr		MA203A or MA213	MA
MA212	Probability Theory and Statistics	3		3	Spr	2/Spr	B	MA102B or MA102A	MA
MA303	Partial Differential Equations	3		3	Fall	3/Fall	B	MA201A	MA
MA305	Numerical Analysis	3		3	Fall	3/Fall	C	MA203A or MA213	MA
PHY206-15	Quantum Mechanics I	3		3	Spr	2/Spr	C	PHY205-15 PHY203-15	PHY
PHY321-15	Introduction to Solid State Physics	4		4	Fall	3/Fall	B	PHY206-15	PHY
PHY322	Lectures on Elected Research Software	2		2	Spr	3/Spr	C	NA	PHY
PHY423-15	Physics of Thin Films	3		3	Fall	4/Fall	E	PHY321-15 PHY204	PHY
<b>Total</b>		234.5	46	311					
Notes:									
1. Students are required to complete 19 credits for the Major Elective Courses.									

**Table 3: Overview of Practice-Based Courses**

Course Code	Course Name	Credit	Lab Credits	Hours/week	Term	take the course Advised term to	Instruction language	Prerequisite	Dept.
SME305	CMOS VLSI Fabrication Technology	3	1	4	Fall	3/Fall	B	NA	SME
SME306	CMOS VLSI Design	3	2	5	Spr	3/Spr	B	EE202 EE204	SME
SME307	CMOS Analog Integrated Circuit Design	3	1	4	Fall	3/Fall	B	EE201-17 EE204	SME
SME308	Advanced Semiconductor Fabrication Laboratory	3	15	45	Spr	3/Spr	C	EE204	SME
SME309	Microprocessor Design	3	1	4	Fall	3/Fall	B	EE202-17	SME
SME310	Deep learning on chip	3	1		Spr	3/Spr	B	EE201-17	SME
SME311	The Foundation of IC Layout Design	1	1		Spr	3/Spr	C	SME306 or SME307	SME
SME312	Electronic Design Automation (EDA) Basics	3	1	4	Spr	3/Spr	E	EE104 MA102B and MA103A	SME
SME313	Power ICs Application Laboratory	1	1		Spr	3/Spr	C		SME
SME317	System-on-a-Chip Design	3	1	4	Fall	3/Fall	B	EE202	SME
SME403	Advanced Microelectronics Experiment III	1	1	2	Spr	4/Fall	B	NA	SME
SME405	Advances in Micro Energy and Micro Sensing	2	1	2	Fall	3/Fall	B		SME
SME470	Internship	2	2	16	Smr	3/Smr	C	NA	SME
SME490	Thesis(Graduation Project)	8	8	8	Fall/ Spr	4/Fall/Spr	C	NA	SME
EE201-17 L	Analog Circuits Laboratory	1	1	2	Fall	2/Fall	B	EE201-17	EE
EE202-17 L	Digital Circuits Laboratory	1	1	2	Fall/ Spr	2/Spr or Fall	B	EE202-17	EE
EE204	Introduction to Semiconductor Devices	3	1	4	Spr	2/Spr	B	EE203	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 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	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	E	EE208 EE104	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	C	NA	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	EE104 EE201-17 EE208	EE
EE320-15	Integrated Circuit Fabrication Laboratory	3	15	45	Spr Fall	3/Spr/F all	B	EE204	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
EE325	Nonlinear Optimization Techniques for Electrical Engineering	3	1	4	Fall	3/Fall	E	MA102B MA107A	EE
EE326	Digital Image Processing	3	1	4	Spr	3/Spr	E	EE205	EE
EE327	Fundamentals of Information Optics	3	1	4	Fall	3/Fall	B	EE205	EE
EE328	Speech Signal Processing	3	1	4	Spr	3/Spr	B	EE323	EE
EE330	DSP Design and Simulation	15	15	3	Spr	3/Spr	C	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	Fall	3/Fall	E	EE204	EE
EE343	Optoelectronic Instrumentation	3	1	4	Fall	3/Fall	B	NA	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
EE423-14	Pattern Recognition	3	1	4	Fall	4/Fall	B	EE323 EE326	EE
EES102	DIY Project: Assembling an iPhone6	2	2	8	Smr	1/Smr	C	NA	EE
EES202	Design based on LabVIEW Programming	1	1	8	Smr	2/Smr	C	NA	EE
EES203	Innovation and Entrepreneurship	05	05	4	Smr	2/Smr	C	NA	EE
EES204	Fiber Sensor Design	1	1	8	Smr	2/Smr	C	NA	EE
EE470	Internship	2	2	16	Smr	3/Smr	NA	NA	EE

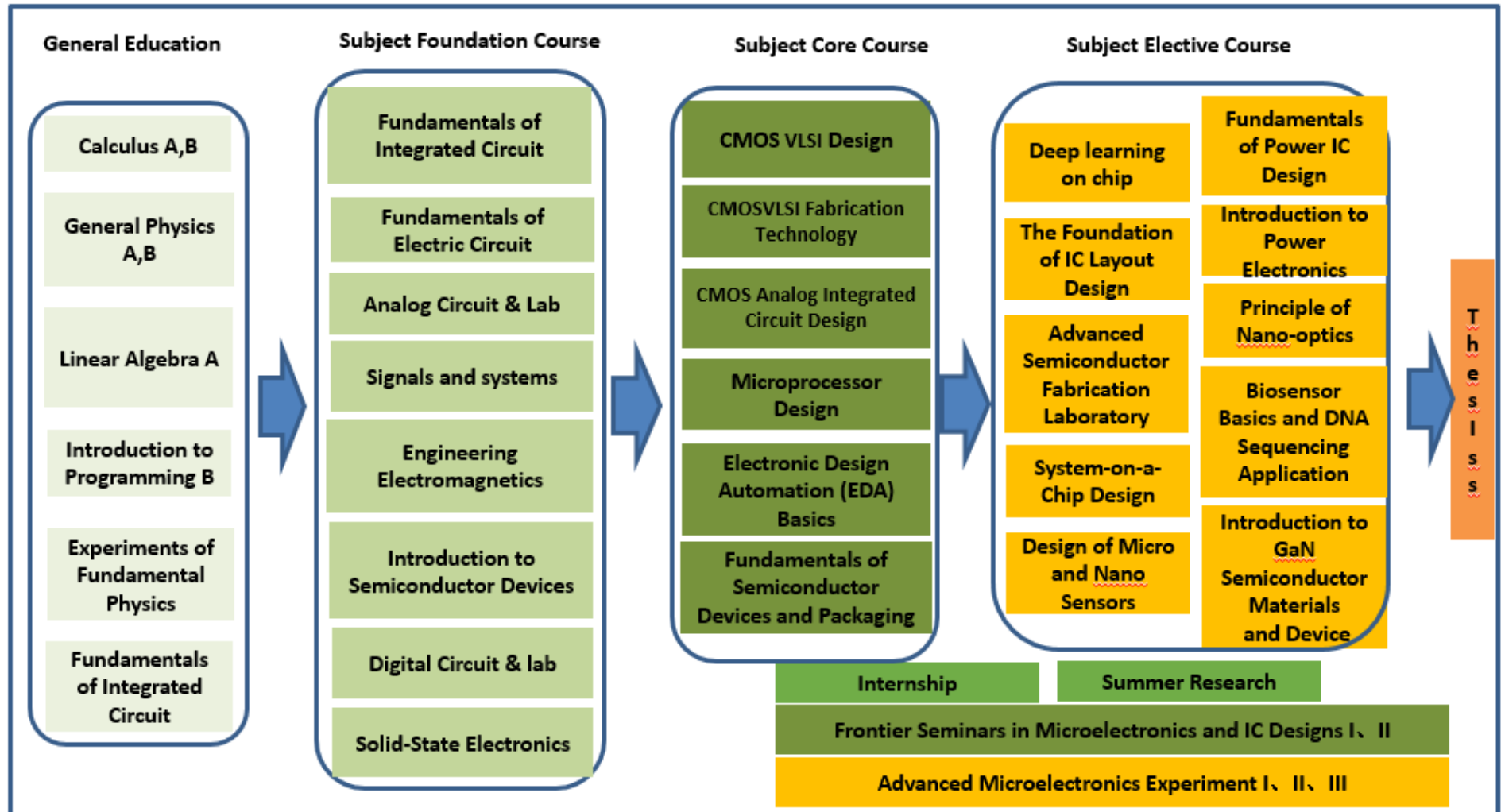
EE480	Projects of Science and Technology Innovation	2	2				NA	NA	EE
MSE308	Energy Materials Science	3	1	4	Spr	3/Spr	B	PHY105B PHY104 MSE001	MSE
CH212-16	Advanced Instrumentation Systems I	4	2	6	Spr	2/Spr	E	CH101A	CH
CH306	Laboratory for Micro-Nano Synthesis, Technology and Application	2	2	4	Spr	3/Spr	E	CH202 CH302	CH
CH407	Selected Topics in Nanoscience and Nanotechnology	3	1	4	Fall	4/Fall	E	CH202 CH302	CH
ME102	CAD and Engineering Drawing	3	15	45	Spr/Fall	1/Spr or Fall	C	NA	ME
ME411	New Energy Technology	3	1	4	Fall	4/Fall	B	ME304	ME
CS205	C/C++Program Design	3	1	4	Spr/Fall	2/Fall	E	NA	CS
CS203B	Data Structures and Algorithm Analysis B	3	1	4	Fall	2/Fall	C	CS102A	CS
CS301	Embedded System and Microcomputer Principle	3	1	4	Fall	3/Fall	B	CS207	CS
CS303B	Artificial Intelligence B	3	1	4	Fall	3/Fall	E	CS102A CS203B MA212	CS
CS305B	Computer networks B	3	1	4	Fall	3/Fall	E	CS102A	CS
CS401	Intelligent Robots	3	1	4	Spr	4 Spr	B	NA	CS
MA110	MATLAB Programming and Application	3	1	4	Spr	1/Spr	B	NA	MA
MA206	Mathematical Modelling	3	1	4	Spr	2/Spr		MA203A or MA213	MA
<b>Total</b>		<b>1535</b>	<b>73</b>	<b>2515</b>					

**Table 4: Overview of Course Hours and Credits**

<b>Course Category</b>	<b>Total Course Hours</b>	<b>Total Credits</b>	<b>Credit Requirements</b>	<b>Percentage of the Total*</b>
<b>General Education (GE) Required Courses (not including English courses)</b>		52	52	38%
<b>General Education (GE) Elective Courses</b>			10	7%
<b>Major Foundational Courses</b>	432	24	24	17%
<b>Major Core Courses</b>	480	22	22	164%
<b>Major Elective Courses</b>	5240	234.5	19	14%
<b>Research Projects, Internship and Undergraduate Thesis/Projects</b>	384	45	12	8%
<b>Total (not including English courses)</b>	7342	353.5	139	100%

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

## Curriculum Structure of Microelectronics Science and Engineering



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