

Electronics and Communication Engineering (EC)

Curriculum Outline

Electronics and Communication Engineering is among the most challenging fields of study in electrical engineering. The areas of study in electronics and communication engineering are quite diverse. The curriculum is therefore developed to provide fundamental knowledge in several major study areas so that students will be well prepared for work in the highly competitive and fast-moving electronics and communication engineering professions.

The compulsory courses are designed to provide students a broad understanding of the principles, illustrated by current applications, in electronics and communication engineering. The compulsory courses include four laboratory courses, providing hands-on learning of electric circuits, electronics, feedback control, and signal processing and communication.

By the end of the first semester of their fourth year, students will complete the study of most compulsory courses, with a strong emphasis in various communication systems. Through technical elective courses, students can further extend their knowledge in the communications area and/or explore topics in other areas such as electronics or mechatronics.

In the last semester, students can choose from three main options: academic exchange programs abroad, extended training programs with leading local companies, or senior projects with SIIT advisors. The last two options provide a project-based learning opportunity, in which students must integrate and apply the knowledge they have acquired.

Structure and Components

1. General Basic Courses	30	Credits
1.1 Part I	21	Credits
1.1.1 Humanities	2	Credits
1.1.2 Social Sciences	5	Credits
1.1.3 Languages	9	Credits
1.1.4 Science and Mathematics	5	Credits
1.2 Part II	9	Credits
2. Core Courses	114	Credits
2.1 Compulsory Courses	108	Credits
2.2 Technical Elective Courses	6	Credits
3. Free Elective Courses	6	Credits
Total	<u>150</u>	Credits

Details of the Curriculum

1. General Basic Courses	30	Credits
1.1 Part I	21	Credits
1.1.1 Humanities (1 course)	2	Credits
TU110		
1.1.2 Social Sciences (2 courses)	5	Credits
TU100	TU120	
1.1.3 Languages (3 courses)	9	Credits
EL171	EL172	TU140
1.1.4 Science and Mathematics (2 courses)	5	Credits
ITS100	TU130	
1.2 Part II	9	Credits
GTS132	GTS133	GTS202
2. Core Courses	114	Credits
2.1 Compulsory Courses	108	Credits
2.1.1 Science and Mathematics	21	Credits
MAS116	MAS117	MAS210
SCS138	SCS139	SCS176
SCS184		SCS183
2.1.2 Non-EC Courses	17	Credits
GTS302	IES303	MES211
MES351	MES371	MES300
2.1.3 EC Courses (27-29 courses)	70	Credits
ECS210	ECS213	ECS216
ECS218	ECS231	ECS233
ECS281	ECS315	ECS320
ECS332	ECS370	ECS371
ECS381	ECS382	ECS396
ECS450	ECS451	ECS452
ECS462	ECS472	ECS456
((ECS398 and ECS300) or (ECS399) or (ECS496 and ECS497 and ECS300))		
2.2 Technical Elective Courses	6	Credits
Select 6 credits from the list of courses offered by Electronics and Communication Engineering Program, except basic courses.		
ECSxxx	ECSxxx	
3. Free Elective Courses	6	Credits
Students may choose any free elective courses (not less than 6 credits in total) including general basic courses, except:		
1. General basic courses in Science and Mathematics		
2. All general basic TU courses in both part 1 and part 2		
Total Credit Requirement	<u>150</u>	Credits

EC Curriculum : 150 Credits

Course Credits (lecture-practice-self study hrs)

First Year

Semester I

EL171	English Course II	3(3-0-6)
GTS132	Introduction to Biological Science	3(3-0-6)
MAS116	Mathematics I	3(3-0-6)
SCS126	Chemistry for Engineers	3(3-0-6)
SCS138	Applied Physics I	3(3-0-6)
SCS176	Chemistry Laboratory	1(0-3-0)
SCS183	Physics Laboratory I	1(0-3-0)
TU100	Civic Education	3(3-0-6)
TU130	Integrated Sciences and Technology	2(2-0-4)
Sub-Total		22(20-6-40)

Semester II

EL172	English Course III	3(3-0-6)
GTS133	Environmental Studies	3(2-2-5)
ITS100	Introduction to Computers and Programming	3(2-3-4)
MAS117	Mathematics II	3(3-0-6)
SCS139	Applied Physics II	3(3-0-6)
SCS184	Physics Laboratory II	1(0-3-0)
TU140	Thai Studies	3(3-0-6)
Sub-Total		19(16-8-33)

Second Year

Semester I

ECS213	Electrical Engineering Mathematics	3(3-0-6)
ECS216	Circuit Analysis	3(3-0-6)
ECS217	Computer Tools in EE	1(0-3-0)
GTS202	English Language Structures	3(3-0-6)
MAS210	Mathematics III	3(3-0-6)
MES351	Engineering Dynamics	3(3-0-6)
TU120	Integrated Social Sciences	2(2-0-4)
Sub-Total		18(17-3-34)

Semester II

ECS210	Basic Electrical Engineering Laboratory	1(0-3-0)
ECS218	Data Structures, Algorithms, and Object Oriented Programming	3(2-2-5)
ECS231	Electronic Circuits I	3(3-0-6)
ECS233	Electromagnetics	3(3-0-6)
ECS261	Electrical Measurement and Instrumentation	3(3-0-6)
ECS281	Signals and Systems	3(3-0-6)
ECS371	Digital Circuits	3(3-0-6)
GTS302	Technical Writing	2(2-1-3)
Sub-Total		21(19-6-38)

Third Year

Semester I

ECS315	Probability and Random Processes	3(3-0-6)
ECS322	Electronic Circuits II	3(3-0-6)
ECS370	Digital Circuit Laboratory	1(0-3-0)
ECS381	Feedback Control Systems	3(3-0-6)
MES211	Thermofluids	3(3-1-5)
MES300	Engineering Drawing	3(2-3-4)
TU110	Integrated Humanities	2(2-0-4)
Sub-Total		18(16-7-31)

Course Credits (lecture-practice-self study hrs)

Semester II

ECS320	Electronic Circuits Laboratory	1(0-3-0)
ECS332	Principles of Communications	3(3-0-6)
ECS380	Feedback Control Laboratory	1(0-3-0)
ECS382	Microprocessors	3(3-0-6)
ECS451	Data Communications and Networks	3(3-0-6)
ECS472	Digital Signal Processing	3(3-0-6)
ECSxxx	Technical Elective	3(x-x-x)
MES371	Material Science for Engineers	3(3-0-6)
Sub-Total		20(x-x-x)

Summer

Select either Senior Project Track, Foreign Exchange Track, or Extended Training Track.

1. Senior Project Track and Foreign Exchange Track

ECS300	Electronics and Communication Engineering Training	0(0-0-0)
Sub-Total		0(0-0-0)

2. Extended Training Track

XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
Sub-Total		6(x-x-x)

Fourth Year

Semester I

ECS396	Project Development	1(0-3-0)
ECS442	Microwave Principles	3(3-0-6)
ECS450	Signal Processing and Communication Laboratory	1(0-3-0)
ECS452	Digital Communication Systems	3(3-0-6)
ECS456	Optical Communications	3(3-0-6)
ECS462	Antennas	3(3-0-6)
ECSxxx	Technical Elective	3(x-x-x)
IES303	Engineering Management and Cost Analysis	3(3-0-6)
Sub-Total		20(x-x-x)

Semester II

1) Senior Project Track

ECS398	Electrical and Communication Engineering Project	6(0-18-0)
XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
Sub-Total		12(x-x-x)

2) Foreign Exchange Track

ECS496	Special Study in EC I	3(3-0-6)
ECS497	Special Study in EC II	3(3-0-6)
XXXxxx	Free Elective	3(x-x-x)
XXXxxx	Free Elective	3(x-x-x)
Sub-Total		12(x-x-x)

3) Extended Training Track

ECS399	Extended Electronics and Communication Engineering Training	6(0-40-0)
Sub-Total		6(0-40-0)