

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	150 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 SCS126	
SCS138 SCS139 SCS176 SCS183	
SCS184	
2.1.2 Non-EC Courses	17 Credits
GTS302 IES303 MES211 MES300	
MES351 MES371	
2.1.3 EC Courses (27-29 courses)	70 Credits
ECS210 ECS213 ECS216 ECS217	
ECS218 ECS231 ECS233 ECS261	
ECS281 ECS315 ECS320 ECS322	
ECS332 ECS370 ECS371 ECS380	
ECS381 ECS382 ECS396 ECS442	
ECS450 ECS451 ECS452 ECS456	
ECS462 ECS472	
((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	150 Credits

EC Curriculum : 150 Credits**Course Credits (lecture-practice-self study hours)****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)
MES300	Engineering Drawing	3(2-3-4)
MES351	Engineering Dynamics	3(3-0-6)
Sub-Total		19(17-6-34)

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)
ECS332	Principles of Communications	3(3-0-6)
ECS370	Digital Circuit Laboratory	1(0-3-0)
ECS381	Feedback Control Systems	3(3-0-6)
ECS442	Microwave Principles	3(3-0-6)
MES211	Thermofluids	3(3-0-6)
Sub-Total		19(18-3-36)

Course Credits (lecture-practice-self study hours)**Semester II**

ECS320	Electronic Circuits Laboratory	1(0-3-0)
ECS380	Feedback Control Laboratory	1(0-3-0)
ECS382	Microprocessors	3(3-0-6)
ECS451	Data Communications and Networks	3(3-0-6)
ECS452	Digital Communication Systems	3(3-0-6)
ECS472	Digital Signal Processing	3(3-0-6)
ECSxxx	Technical Elective	3(x-x-x)
TU110	Integrated Humanities	2(2-0-4)
Sub-Total		19(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)
ECS450	Signal Processing and Communication Laboratory	1(0-3-0)
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)
MES371	Material Science for Engineers	3(3-0-6)
TU120	Integrated Social Sciences	2(2-0-4)
Sub-Total		19(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)