

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
2. Major Courses	114 Credits
2.1 Basic Courses	38 Credits
2.1.1 Basic Mathematics and Science Courses	21 Credits
2.1.2 Basic Engineering Courses	17 Credits
2.2 Specialized Courses	76 Credits
2.2.1 Compulsory Engineering Courses	63 Credits
2.2.2 Elective Engineering Courses	13 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) TU110	2 Credits
1.1.2 Social Sciences (2 courses) TU100 TU120	5 Credits
1.1.3 Languages (3 courses) EL171 EL172 TU140	9 Credits
1.1.4 Science and Mathematics (2 courses) ITS100 TU130	5 Credits
1.2 Part II	9 Credits
GTS132 GTS133 GTS202	
2. Major Courses	114 Credits
2.1 Basic Courses	38 Credits
2.1.1 Basic Mathematics and Science Courses	21 Credits
MAS116 MAS117 MAS210 SCS126	
SCS138 SCS139 SCS176 SCS183	
SCS184	
2.1.2 Basic Engineering Courses	17 Credits
GTS302 IES303 MES211 MES300	
MES351 MES371	
2.2 Specialized Courses	76 Credits
2.2.1 Compulsory Engineering Courses	63 Credits
2.2.1.1 Basic Electrical Engineering	
ECS210 ECS213 ECS216 ECS217	
ECS218 ECS231 ECS233 ECS261	
ECS281 ECS315 ECS320 ECS322	
ECS370 ECS371 ECS380 ECS381	
ECS382	
2.2.1.2 Communications Theory	
ECS 332	
2.2.1.3 Signal Processing	
ECS450 ECS 472	
2.2.1.4 Communication Devices and Transmission Lines	
ECS442 ECS456 ECS462	
2.2.1.5 Communication systems and Networks	
ECS451 ECS452	
2.2.2 Elective Engineering Courses	13 Credits
2.2.2.1 Special Study	7 Credits
((ECS 300, ECS 396 and ECS398)	
or (ECS 396 and ECS399)	
or(ECS300, ECS 396, ECS496 and ECS497))	
2.2.2.2 Technical Elective courses	6 Credits
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

<i>Course</i>	<i>Credits (lecture-practice-self study hours)</i>	<i>Course</i>	<i>Credits (lecture-practice-self study hours)</i>
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)	
ECS451	Data Communications and Networks	3(3-0-6)	
MES211	Thermofluids	3(3-0-6)	
	Sub-Total	19(18-3-36)	
Semester II			
ECS320	Electronic Circuits Laboratory	1(0-3-0)	
ECS380	Feedback Control Laboratory	1(0-3-0)	
ECS382	Microprocessors	3(3-0-6)	
ECS452	Digital Communication Systems	3(3-0-6)	
ECS462	Antennas	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)	
ECS442	Microwave Principles	3(3-0-6)	
ECS450	Signal Processing and Communication Laboratory	1(0-3-0)	
ECS456	Optical Communications	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)	