Study Plan for Bachelor Program - Study Plan Development and Updating Procedures/ Electrical Engineering/ Smart Systems and Communications Program	QF09/0407-4.0E

Course Plan for Electrical Engineering/ Smart Systems and Communications (Bachelor Program) No.: ( )
Approved by Deans Council by decision ( ) dated ( )

(160) Credit Hours

Type of specialty ☐ **Humanitarian** ✓ **Scientific / technical** ☐ **Medical Sciences**

Study system / hybrid program

Teaching style	Percentage of study plan hours / number	Model used (synchronous: asynchronous)
Complete e-learning courses	17% / 27 CH	1:1 (For THUR. SAT.)
Blended Learning courses (For Humanity)	40% - 60% Maximum / number( ) C h	1:1 (For SUN. TUE.) or (MON. WED.)
Blended learning courses (for scientific and medical)	31% / 50 CH	1:1 (For SUN. TUE.) or (MON. WED.)
Traditional learning courses (for humanity)	20% Minimum / number ( ) C h	2:0 For all academic divisions
Traditional learning courses (for scientific and medical)	52% / 83 CH	2:0 For all academic divisions

Important note: (The teaching patterns of the subjects are distributed at all academic levels in the program)

Program vision: Towards a competitive faculty committed to excellence in teaching, innovative research, entrepreneurship and .community service

Program mission and objectives:

1. Implement technical, collaborative, and communication skills with leadership principles, to pursue careers in Smart Systems and Communications Engineering.
2. Seek higher degrees in Smart Systems and Communications Engineering and embark on continuing education.
3. Seek professional membership, discharge their professional skills ethically, and being conscious of the impact of Smart Systems and Communications Engineering projects on society as well as environment.

Program learning outcomes (*(MK= Main Knowledge, MS= Main Skills, MC= Main Competences)*

Main knowledge	
MK1	Understand the basic scientifical principles and mathematical theories related to electrical engineering (Smart Systems and Communications)
MK2	Possess general scientifical knowledge and various engineering tools to build successful pioneering engineering projects in the field of electrical engineering (Smart Systems and Communications)
MK3	Familiarity with new sources of knowledge and findings of science in the field of electrical engineering (Smart Systems and Communications)
Basic skills	
MS1	Ability to solve complex engineering problems by applying principal methods of engineering, science and mathematics
MS2	Ability to produce engineering designs within determinants to find specialized engineering solutions
MS3	Ability to analyze data and results using appropriate engineering experiments
MS4	Ability to evaluate and supervise technical design plans
General competencies	
MC1	Ability to assume ethical and professional responsibilities
MC2	Ability to apply leadership and communication skills within a team in the work environment
MC3	Ability to identify and address learning needs and engage in continuous learning
MC4	Ability to express and apply creative skills
MC5	Ability to manage electrical engineering projects (Smart Systems and Communications) and realize their impact on society

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Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	Prerequisite Co-requisite	Indicative	
Fully electronic learning	Blended learning	Traditional learning							Semester	year
1. Requirements (27) Credit Hours										
1.1 Mandatory requirement (21 credit hour)										
•			0420101	Military Sciences	3	3	0	-	1	5
•			0420115	Communication Skills in Arabic Language	3	3	0	Remedial Arabic Language	1	1
•			0420123	Communication Skills in English Language	3	3	0	Remedial English Language	2	1
•			0420151	National Education	3	3	0	-	2	5
•			0420171	Life Skills	3	3	0	-	2	3
•			0420000	Community Service	0	0	0	-	1	1
•			0420261	Entrepreneurship and innovation	3	3	0	-	1	5
•			0420241	Leadership and social responsibility	3	3	0	-	2	5
1.2 University elective requirements(06 credit hour)										
•			0420142	Human Civilization	3	3	0	-	1	1
•			0420253	Development and environment	3	3	0	-	1	2
•			0420172	Digital skills	3	3	0	Remedial computer skills	2	1
•			0420201	first aid	3	3	0	-	2	2
•			0420134	Sports and health	3	3	0	-	1	1
•			0420112	Islamic culture	3	3	0	-	1	2
•			0420341	Principles of German Language	3	3	0	-	1	2
•			0420392	Principles of Psychology	3	3	0	-	1	2

Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	Prerequisite Co-requisite	Indicative	
Fully electronic learning	Blended learning	Traditional learning							Semester	year
2. Faculty Requirements (23) Credit Hours										
		•	0101101	Calculus I	3	3	0	-	1	1
		•	0150111	General Physics I	3	3	0	-	1	1
		•	0150101	General Physics Lab I	1	0	3	Co. General Physics I	1	1
		•	0911101	Engineering Workshops	2	1	3	-	1	1
		•	0905111	Principles of Electrical Circuits	3	3	0	General Physics I	2	1
	•		0909101	Computer Engineering Applications	3	3	0	Remedial computer Skills (0120001)	2	1

		•	0911102	Engineering Drawing	3	0	6	-	2	1
	•		0908201	Technical Writing & Professional Ethics	2	2	0	Communication skills in English Language	1	4
	•		0909404	Engineering Economics	3	3	0	4th Year Level	1	4

Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	Prerequisite Co-requisite	Indicative	
Fully electronic learning	Blended learning	Traditional learning							Semester	year
3. Major requirements (110) Credit Hours										
3.1 **Mandatory requirements (79) credit hours**										
		•	0912116	Applied Physics and Electromagnetics	3	3	0	General Physics I	2	1
		•	0912221	Introduction to Linear Systems	3	3	0	Calculus II for Engineering Students	1	2
		•	0912217	Applied Physics and Electromagnetics Lab.	1	0	3	Applied Physics and Electromagnetics	1	2
		•	0912242	Digital Logic Design	3	3	0	Calculus I	1	2
	•		0912218	Electronics	3	3	0	Principles of Electrical Circuits	1	2
		•	0912223	Signals & Systems Analysis	3	3	0	Calculus I	1	2
		•	0912141	Mathematical Analysis and Optimization	3	3	0	Introduction to Linear Systems	2	2
		•	0912243	Digital Logic Design Lab.	1	0	3	Digital Logic Design	2	2
		•	0912224	Probability and Random Signal Analysis	3	3	0	Signals & Systems Analysis	2	2
		•	0912256	Object-Oriented Programming Lab.	1	0	3	Computer Engineering Applications	2	2
	•		0912219	Electromagnetics and Wave Propagation	3	3	0	Applied Physics and Electromagnetics	1	3
		•	0912315	Electronics Lab	1	0	3	Electronics	1	3
		•	0912326	Communications Systems and Optical Fibers	3	3	0	Probability and Random Signal Analysis	1	3
	•		0912248	High Performance Microprocessors	3	3	0	Digital Logic Design	2	2
		•	0912325	Digital Signal Processing	3	2	3	Signals & Systems Analysis	1	3
		•	0912362	Networks Protocols Programming	3	2	3	Object-Oriented Programming Lab	1	3
		•	0912341	Computer Networks	3	3	0	High Performance Microprocessors	2	3
		•	0912327	Digital Communications	3	3	0	Communications Systems and Optical Fibers	2	3
	•		0912350	Smart Embedded Systems	3	3	0	High Performance Microprocessors	2	3
		•	0912401	Engineering Training	3	0	9	Passing (115) Credit Hours (Training Period: 280 hours)		4
	•		0912444	Wireless Communications	3	3	0	Digital Communications	1	4
		•	0912358	Artificial Intelligence and Machine Learning	3	3	0	Mathematical Analysis and Optimization	2	3
		•	0912463	Computer Networks Lab.	1	0	3	Computer Networks	1	4
		•	0912441	Communications Systems Lab	1	0	3	Digital Communications	1	4

	•		0912442	IoT and Wireless Sensors	3	3	0	Smart Embedded Systems + Computer Networks	1	4
	•		0912546	Cloud Computing and Database Systems	3	3	0	Computer Networks	1	5
	•		0912450	Unsupervised and Deep Learning	3	3	0	Artificial Intelligence and Machine Learning	1	4
		•	0912451	Smart Embedded System Lab.	1	0	3	Smart Embedded System	2	4
	•		0912432	Wireless Networks Communication	3	3	0	Wireless Communications	2	4
		•	0912460	IoT Programming	3	2	3	IoT and Wireless Sensors	2	4
		•	0912501	Graduation Project I	1	0	3	Passing Engineering Training	1	5
		•	0912502	Graduation Project II	2	0	6	Graduation Project I	2	5
3.2 Electives requirements (9) credit hours										
	•		0912545	Very Large Scale Integrated (VLSI) Circuit Design	3	3	0	Digital Logic Design		5
	•		0912504	Special Topics in Communications Engineering	3	3	0	5th year level		5
	•		0912505	Special Topics in Smart Systems	3	3	0	5th year level		5
	•		0912521	Fundamental of Cyber Security	3	3	0	Computer Networks		5
	•		0912551	Natural Language Processing	3	3	0	Unsupervised and Deep Learning		5
	•		0912555	Computer Vision	3	3	0	Digital signal Processing		5
	•		0912552	Mobile Application Programming	3	3	0	Object-Oriented Programming Lab.		5
	•		0912524	5G Future Networks and Beyond	3	3	0	Wireless Communications		5
	•		0912522	Satellite Communications	3	3	0	Wireless Communications		5
3.3 Supporting requirements (22) credit hours										
		•	0101104	Calculus II for Engineering Students	3	3	0	Calculus I	2	1
		•	0101273	Ordinary Differential Equations (1)	3	3	0	Calculus I	2	2
		•	0905212	Electrical Circuits Lab	1	0	3	Principles of Electrical Circuits	1	2
	•		0905342	Control Systems	3	3	0	Signals & Systems Analysis	2	3
		•	0905334	Electrical Machines and Power	3	3	0	Advanced Electric Circuits	2	4
		•	0905213	Advanced Electric Circuits	3	3	0	Principles of Electrical Circuits	1	2
	•		0911363	Numerical Analysis	3	3	0	Calculus II for Engineering Students	1	3
		•	0201102	General Chemistry	3	3	0	-	1	1

The end of the study plan for the major students

Subjects taught in the major for students of other majors (university requirements, college requirements, major family requirements, support requirements)

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Teaching style			Course No.	Course name	Credit hour	Theory Hours	Practical Hours	The type of requirement and the recipient
Fully electronic learning	Blended learning	Traditional learning						
		•	0912116	Applied Physics and Electromagnetics	3	3	0	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912217	Applied Physics and Electromagnetics Lab.	1	0	3	Supporting Requirements/Electrical Engineering / Power and Control
	•		0912218	Electronics	3	3	0	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912315	Electronics Lab.	1	0	3	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912221	Introduction to Linear Systems	3	3	0	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912223	Signals and Systems Analysis	3	3	0	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912242	Digital Logic Design	3	3	0	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912243	Digital Logic Design Lab.	1	0	3	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912224	Probability and Random Signal Analysis	3	3	0	Supporting Requirements/Electrical Engineering / Power and Control
		•	0912326	Communications Systems and Optical Fibers	3	3	0	Supporting Requirements/Electrical Engineering / Power and Control