

KING SAUD UNIVERSITY
COLLEGE OF ENGINEERING
ELECTRICAL ENGINEERING DEPARTMENT
ACADEMIC PLAN
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING PROGRAM

Table 1: SUMMARY OF B.S. DEGREE REQUIREMENTS IN ELECTRICAL ENGINEERING

Requirements	Cr. Hr.	Description
Common First Year	32	General Chemistry (4) Differential Calculus (3) Statistics (3) English (12) Writing Skills (2) University Skills (3) IT Skills (3) Entrepreneurship (1) Health and Fitness (1)
University	8	Islamic Studies: Compulsory (2) Complementary (6)
College	48	Common (40) Additional (6) Free Elective Course (2)
Department	77	Core (42) Electrical Electives (30) Projects (4) Practical Training (1, NP) Research Project (0, NP)
Total	165	

Table 2: Common First Year (32 credit hours)

Level 1				Level 2			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite	Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ENGS 100	English language	6(6,9,0)		ENGS 110	English	6(6,9,0)	
MATH 101	Differential Calculus	3(3,1,0)		CUR 101	University Skills	3(3,0,0)	
ENT 101	Entrepreneurship	1(1,0,0)		CT 101	IT skills	3(0,0,6)	
CHEM 101	General Chemistry	4(3,0,2)		STAT 101	Introduction to Statistics	3(2,2,0)	
ARAB 100	Writing Skills	2(2,0,0)		EPH 101	Health Education & Fitness	1(1,1,0)	
Total		16		Total		16	

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

Table 3: UNIVERSITY REQUIREMENTS (TOTAL 8 CREDIT HOURS)

Table 3A: Compulsory University Requirements (2 Credit Hours)

Course Code	Course Title	Cr. Hr.	Nature
IC 107	Ethics of the Profession	2	Compulsory
Total		2	

Table 3B: Elective University Requirements

Student chooses 6 credit hours from this table

Course Code	Course Title	Cr. Hr.	Nature
IC 100	Studies in Prophet Biography	2	Elective
IC 101	Origins of Islamic Culture	2	Elective
IC 102	Family in Islam	2	Elective
IC 103	The Economic System in Islam	2	Elective
IC 104	The Political System in Islam	2	Elective
IC 105	Human Rights	2	Elective
IC 106	Medical Jurisprudence	2	Elective
IC 108	Contemporary Issues	2	Elective
IC 109	Role of Women in Development	2	Elective
QURN 100	Quran Kareem	2	Elective
Total		6	

Table 4: COLLEGE REQUIREMENTS

Table 3A COLLEGE COMPULSORY COURSES (40 CREDIT HOURS)

Course Code	Course Title	Cr. Hr. (X,Y,L)	Prerequisites
MATH 106	Integral Calculus	3 (3,2,0)	MATH 101
MATH 107	Vectors and Matrices	3 (3,2,0)	MATH 101
MATH 203	Differential & Integral Calculus	3 (3,2,0)	MATH 106; MATH 107
MATH 204	Differential Equations	3 (3,2,0)	MATH 203
PHYS 103	General Physics (1)	4 (3,0,2)	
PHYS 104	General Physics (2)	4 (3,0,2)	PHYS 103
ENGL 109	Language & Communication	2 (2,1,0)	
ENGL 110	Technical Writing	2 (2,1,0)	ENGL 109
GE 201	Statics	3 (3,1,0)	MATH 106; MATH 107
GE 104	Basics of Engineering Drawing	3 (2,0,2)	
GE 106	Introduction to Engineering Design	3 (2,1,2)	GE 104
GE 203	Engineering and Environment	2 (2,0,0)	CHEM 101; MATH 101
GE 402	Engineering Projects Management	3 (3,1,0)	
GE 403	Engineering Economy	2 (2,1,0)	
Total		40	

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

**Table 4B: COLLEGE ADDITIONAL COURSES FOR ELECTRICAL ENGINEERING PROGRAM
(6 CREDIT HOURS)**

Course Code	Course Title	Cr. Hr. (X,Y,L)	Prerequisites
GE 211	Computer Programming in “C++”	3(2,0,2)	
MATH 254	Numerical Methods	3(3,2,0)	<i>MATH 107</i>
Total		6	

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

Table 4C: COLLEGE FREE COURSE (2 CREDIT HOURS)

Course Code	Course Title	Cr. Hr.	Prerequisites
XXX	Free Elective Course	2	
Total		2	

Table 5: ELECTRICAL ENGINEERING REQUIREMENTS

Table 5A: CORE COURSES

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites	
			Pre-	Co-
EE 201	Fundamentals of Electric Circuits	3(3,1,0)	MATH 106	
EE 202	Electric Circuit Analysis	3(3,1,0)	EE 201 MATH 107	
EE 203	Engineering Electromagnetics (1)	3(3,1,0)	MATH 203 PHYS 104	
EE 204	Engineering Electromagnetics (2)	3(3,1,0)	EE 203	
EE 205	Electric Circuits Laboratory	1(0,0,2)		EE 202
EE 208	Logic Design	3(3,1,0)		
EE 210	Logic Design Laboratory	1(0,0,2)		EE 208
EE 301	Signals and Systems Analysis	3(3,1,0)	EE 201	
EE 302	Modeling and Simulation Laboratory	1(0,0,2)	EE 301	
EE 310	Microelectronic Devices and Circuits	3(3,1,0)	EE 201	
EE 312	Basic Electronics Laboratory	1(0,0,2)		EE 310
EE 320	Communications Principles	3(3,1,0)	EE 301	
EE 330	Electromechanical Energy Conversion (1)	3(3,1,0)	EE 202 EE 203	
EE 340	Fundamentals of Power Systems	3(3,1,0)	EE 202	
EE 351	Automatic Control	3(3,1,0)	EE 301	
EE 353	Introduction to Microprocessors	3(3,1,0)	EE 208	
EE 356	Control and Instrumentation Laboratory	1(0,0,2)		EE 351
EE 357	Microprocessor and Microcontroller Laboratory	1(0,0,2)		EE 353
Total		42		

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab. NP= No grade (Pass or Fail)

Table 5B: SENIOR DESIGN PROJECTS (4 CREDIT HOURS)

Course Code	Course Title	Cr. Hr. (X,Y,L)	Prerequisites
EE 496	Graduation Project -1	2(2,0,0)	Complete successfully 129 credits hours and pass all courses in levels 1-7.
EE 497	Graduation Project -2	2(2,0,0)	EE 496
Total		4	

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

Table 5C: ELECTIVE COURSES REQUIREMENTS

Elective Module	Cr. Hr.	Notes
Elective Laboratories	3	Table 5E
Electrical Engineering Elective Courses	27	Table 5F
Optional Elective Course	0	Table 5G
Total	30	

(NP): No grade-Pass

Table 5D: PRACTICAL TRAINING

Course Code	Course Title	Cr. Hr. (X,Y,L)	Prerequisites
EE 999	Practical Training	1 (NP)	Successful Completion of 110 credit hours
Total		1	

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

Table 5E: ELECTIVE LABORATORIES

Student chooses 3 credit hours from the following table

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites	
			Pre-	Co-
EE 402	Electronic Circuits Laboratory	1(0,0,2)		<i>EE 400</i>
EE 406	VLSI Design Laboratory	1(0,0,2)		<i>EE405</i>
EE 421	Communications Laboratory	2(0,0,4)	<i>EE 320</i>	<i>EE 423</i>
EE 433	Electromechanical Energy Conversion Laboratory	1(0,0,2)		<i>EE 430</i>
EE 445	Electrical Power Laboratory	2(0,0,4)		<i>EE 441</i>
EE 457	Applied Control Laboratory	1(0,0,2)		<i>EE 456</i>
EE 459	Advanced Logic Design Laboratory	1(0,0,2)		<i>EE 458</i>
Total		3		

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

Table 5F: ELECTRICAL ENGINEERING ELECTIVE COURSES

Student chooses 27 credit hours from the following table. Student can also choose the course EE 998 as an optional course

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites	
			Pre-	Co-
EE 400	Digital and Analog Electronic Circuits	3(3,1,0)	EE 310	
EE 403	Semiconductor Devices	3(3,1,0)	EE 310	
EE 404	Solar Cells and Photovoltaic Systems	3(3,1,0)	EE 310	
EE 405	VLSI Circuit Design	3(3,1,0)	EE 310	
EE 407	Electronic Communication Circuits	3(3,1,0)	EE 310 EE 320	
EE 408	VLSI Technology and Fabrication	3(3,1,0)	EE 310	
EE 409	Electronic Instrumentation	3(3,1,0)	EE 310	
EE 410	Optoelectronic Devices and Systems	3(3,1,0)	EE 310	
EE 412	Low Power VLSI Design	3(3,1,0)	EE 405	
EE 415	Principles of Nanoelectronics	3(3,1,0)	EE 310	
EE 419	Introduction to Electronic Warfare	3(3,1,0)	EE 310	
EE 420	Digital Signal Processing	3(3,1,0)	EE 301	
EE 422	Digital Communications	3(3,1,0)	EE 320	
EE 423	Wave Propagation and Antennas	3(3,1,0)	EE 204	
EE 425	Satellite Communications	3(3,1,0)	EE 423	
EE 426	Microwave Engineering	3(3,1,0)	EE 204	
EE 430	Electromechanical Energy Conversion (2)	3(3,1,0)	EE 330	
EE 432	Power Electronics	3(3,1,0)	EE 310	
EE 435	Electric Drives	3(3,1,0)	EE 330 EE 432	
EE 436	Electrical Machine Dynamics and Stability	3(3,1,0)	EE 330	
EE 441	Power System Analysis	3(3,1,0)	EE 340	
EE 443	Power System Operation and Control	3(3,1,0)	EE 441	
EE 444	Power System Planning	3(3,1,0)	EE 340	
EE 446	High Voltage Engineering	3(3,1,0)	EE 340	
EE 448	Power Distribution Systems	3(3,1,0)	EE 340	
EE 449	Power System Protection	3(3,1,0)	EE 441	
EE 450	Computer Architecture Organization	3(3,1,0)	EE 353	
EE 453	Microprocessor and Embedded System Design	3(3,1,0)	EE 353	
EE 454	Advanced Control Systems	3(3,1,0)	EE 351	
EE 456	Automatic Control Applications	3(3,1,0)	EE 351	
EE 458	Advanced Logic Design	3(3,1,0)	EE 210	
EE 463	Wireless Communications	3(3,1,0)	EE 422	
EE 464	Optical Communications	3(3,1,0)	EE 204, EE 310, EE 320	
EE 465	Probability Theory with Engineering Applications	3(3,1,0)	STAT 101	
EE 466	Cryptography and Network Security	3(3,1,0)	EE320	
EE 468	Selected Topics in Communications and Signal Processing	3(3,1,0)	EE 301 EE 320	
EE 469	Selected Topics in Engineering Electromagnetics	3(3,1,0)	EE 204	
EE 470	Renewable Energy Engineering	3(3,1,0)	EE 310 EE 340	
EE 479	Selected Topics in Electrical Power Engineering	3(3,1,0)	EE 340	
EE 480	Introduction to Artificial Intelligence	3(3,1,0)	EE 351	
EE 481	Real Time System Design	3(3,1,0)	EE 353	
EE 482	Communication Networks	3(3,1,0)	EE 320	
EE 483	Digital Control Systems	3(3,1,0)	EE 351	
Total Elected			27	

(X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

Approved by: Chairman: Dean:

Table 5G: ELECTIVE DEPARTMENT OPTIONAL COURSES WITHOUT CREDIT HOURS

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
EE 998	Research Project	0 (NP)	Successful completion of 129 cr. hr.	

NP=No grade (Pass or Fail)

Table 6 RECOMMENDED SEMESTER SCHEDULE – ELECTRICAL ENGINEERING PROGRAM*

Level 1			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ENGS 100	English language	6(6,9,0)	
MATH 101	Differential Calculus	3(3,1,0)	
ENT 101	Entrepreneurship	1(1,0,0)	
CHEM 101	General Chemistry	4(3,0,2)	
ARAB 100	Writing Skills	2(2,0,0)	
Total		16	

Level 2			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ENGS 110	English	6(6,9,0)	
CUR 101	University Skills	3(3,0,0)	
CT 101	IT skills	3(0,0,6)	
STAT 101	Introduction to Statistics	3(2,2,0)	
EPH 101	Health Education & fitness	1(1,1,0)	
Total		16	

Level 3			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
IC 1xx	Optional IC course	2(2,0,0)	
PHYS 103	General Physics (1)	4(3,0,2)	
MATH 106	Integral Calculus	3(3,2,0)	MATH 101
MATH 107	Vectors & Matrices	3(3,2,0)	MATH 101
ENGL 109	Language & Communication	2(2,1,0)	
GE 104	Basics of Engineering Drawing	3(2,0,2)	
Total		17	

Level 4			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
PHYS 104	General Physics (2)	4(3,0,2)	PHYS 103
ENGL 110	Technical Writing	2(2,1,0)	ENGL 109
MATH 203	Differential and Integral Calculus	3(3,2,0)	MATH 106 MATH 107
GE 106	Introduction to Engineering Design	3(2,1,2)	GE 104
GE 201	Statics	3(3,1,0)	MATH 106 MATH 107
GE 203	Engineering and Environment	2(2,0,0)	CHEM 101 MATH 101
Total		17	

Level 5			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre- (Co-) requisite
EE 201	Fundamentals of Electric Circuits	3(3,1,0)	MATH 106
EE 203	Engineering Electromagnetics (1)	3(3,1,0)	MATH 203 PHYS 104
GE 211	Computer Programming in C++	3(2,0,2)	
MATH 204	Differential Equations	3(3,2,0)	MATH 203
EE 208	Logic Design	3(3,1,0)	
EE 210	Logic Design Laboratory	1(0,0,2)	EE 208 ^C
Total		16	

Level 6			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre- (Co-) requisite
EE 202	Electric Circuit Analysis	3(3,1,0)	EE 201 MATH 107
EE 204	Engineering Electromagnetics (2)	3(3,1,0)	EE 203
EE 205	Electric Circuits Laboratory	1(0,0,2)	EE 202 ^C
EE 301	Signals and Systems Analysis	3(3,1,0)	EE 201
EE 310	Microelectronic Devices and Circuits	3(3,1,0)	EE 201
EE 312	Basic Electronics Laboratory	1(0,0,2)	EE 310 ^C
IC xx	2 nd Elective Islamic Culture Course	2(2,0,0)	
Total		16	

Level 7			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre- (Co-) requisite
Math 254	Numerical Techniques	3(3,2,0)	MATH 107
EE 302	Modeling and Simulation Lab	1(0,0,2)	EE301
EE 320	Communications Principles	3(3,1,0)	EE 301
EE 330	Electromechanical Energy Conversion (1)	3(3,1,0)	EE 202 EE 203
EE 340	Fundamentals of Power Systems	3(3,1,0)	EE 202
EE 353	Introduction to Microprocessors	3(3,1,0)	EE 208
EE 357	Microprocessor and Microcontroller Lab	1(0,0,2)	EE 353 ^c
Total		17	

Level 8			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre- (Co-) requisite
EE 351	Automatic Control	3(3,1,0)	EE 301
EE 356	Control and Instrumentation Laboratory	1(0,0,2)	EE 351 ^c
EE4xx	EE Specialized Elective Course	10 (10,0,0)	Refer to Table 5
IC 107	Ethics of the Profession	2(2,0,0)	
	Free Elective Course	2(2,0,0)	
Total		18	

Level 9			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
EE 4xx	Specialized Elective Courses	11(11,0,0)	Refer to Table 5
EE 496	Graduation Project (1)	2(2,0,0)	Complete successfully 129 credits hours and pass all courses in levels 1-7.
GE 403	Engineering Economy	2(2,1,0)	
IC 1xx	3 rd Elective Islamic Culture Course	2(2,0,0)	
Total		17	

Level 10			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
EE 4xx	EE Specialized Elective Course	9(9,0,0)	Refer to Table 5
EE 497	Graduation Project (2)	2(2,0,0)	EE 496
GE 402	Engineering Projects Management	3(3,1,0)	
EE 998	Research Project	0 (NP)	Complete successfully 129 credit hours
EE 999	Practical Training	1 (NP)	Successful completion of 110 credit hours
Total		15	

^c CO-REQUISITE , NP: No grade (Pass or Fail)
 (X,Y,L) X = Lectures; Y = Tutorials; L = Lab.