

KING SAUD UNIVERSITY
COLLEGE OF ENGINEERING
ELECTRICAL ENGINEERING DEPARTMENT
ACADEMIC PLAN 2008-2016
BACHELOR OF SCIENCE IN ELECTRICAL ENGINEERING PROGRAM

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

Requirements	Cr. Hr.	Description
Preparatory Year	31	
University	12	Islamic (8) and Arabic (4) Studies
College	51	Compulsory (41), Complementary (10)
Department	69	Core (42), Projects (4) and Electives (23)
Total	163	

Table 2 UNIVERSITY REQUIREMENTS

Course Code	Course Title	Cr. Hr.	Notes
ARAB 101	Language Skills	2(2,0,0)	Compulsory
ARAB 103	Arabic Basic Writing	2(2,0,0)	Compulsory
IC 107	Ethics of the Profession in Islam	2(2,0,0)	Compulsory
IC 100	Studies in Prophet Biography	2(2,0,0)	Optional
IC 101	Origins of Islamic Culture	2(2,0,0)	Optional
IC 102	Islam and Society Development	2(2,0,0)	Optional
IC 103	The Economic System in Islam	2(2,0,0)	Optional
IC 104	Basics of Political System in Islam	2(2,0,0)	Optional
IC 105	Human Rights	2(2,0,0)	Optional
IC 106	Medical Jurisprudence	2(2,0,0)	Optional
IC 108	Contemporary Issues	2(2,0,0)	Optional
IC 109	Woman and Her Developmental Role	2(2,0,0)	Optional
Total		12	

Table 3 COLLEGE REQUIREMENTS

Table 3A COMPULSORY COURSES

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites	
			Pre-	Co-
MATH 106	Integral Calculus	3(3,2,0)	MATH 150	
MATH 107	Vectors and Matrices	3(3,2,0)	MATH 150	
MATH 203	Differential and Integral Calculus	3(3,2,0)	MATH 106 MATH 107	
MATH 204	Differential Equations	3(3,2,0)	MATH 203	
STAT 324	Engineering Probability and Statistics	3(2,2,0)		
PHYS 103	General Physics (1)	4(3,0,2)		
PHYS 104	General Physics (2)	4(3,0,2)		
CHEM 101	General Chemistry (1)	4(3,0,2)		
ENGL 107	Technical Writing	3(3,0,0)		
ENGL 108	Communication Skills for Engineers	3(3,0,0)		
GE 104	Basics of Engineering Drawing	3(2,0,2)		
GE 201	Statics	3(3,1,0)	MATH 106 MATH 107	
GE 404	Engineering Management	2(2,1,0)		
Total		41		

Table 3B COMPLEMENTARY COURSES

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites	
			Pre-	Co-
GE 105	Introduction to Engineering Design	2(1,1,2)	GE 104	
GE 211	Computer Programming in "C++"	3(2,0,2)		
GE 403	Engineering Economy	2(2,1,0)		
MATH 244	Linear Algebra	3(3,2,0)	MATH 107	
Total		10		

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

Table 4: ELECTRICAL ENGINEERING REQUIREMENTS
Table 4A: 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 205	Electric Circuits Laboratory	1(0,0,2)		EE 212
EE 208	Logic Design	3(3,1,0)		
EE 210	Logic Design Laboratory	1(0,0,2)	EE 208	
EE 211	Computational Techniques in Electrical Eng.	3(2,0,2)	GE 211	MATH 244
EE 212	Electric Circuit Analysis	2(2,1,0)	EE 201 MATH 107	
EE 213	Engineering Electromagnetics (1)	3(3,1,0)	MATH 203 PHYS 104	
EE 214	Engineering Electromagnetics (2)	2(2,1,0)	EE 213	
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
EE 320	Communications Principles	3(3,1,0)	EE 301	
EE 330	Electromechanical Energy Conversion (1)	3(3,1,0)	EE 212 EE 213	
EE 340	Fundamentals of Power Systems	3(3,1,0)	EE 212	
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.

Table 4B: SENIOR DESIGN PROJECTS

Course Code	Course Title	Cr. Hr.	Requisites	
			Pre-	Co-
EE 496	Graduation Project -1	2	Complete 131 credits	
EE 497	Graduation Project -2	2	EE 496	
Total		4		

Table 4C: ELECTIVE COURSES

Each student is required to take 17 cr. hr. from ONE of the four Specialized Areas (Depth) in addition to 6 cr. hr. from TWO other areas (Breadth)

Elective Module	Cr. Hr.
Specialized Area Elective Module (Depth)	17
Other Areas Elective Courses (Breadth)	6
Total	23

Table 5: ELECTIVE COURSES OF SPECIALIZED AREAS

Each student is required to take 17 cr. hr. from ONE of the four Specialized Areas (Depth)
in addition to 6 cr. hr. from TWO other areas (Breadth)

Table 5A: ELECTRONICS

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites		Notes
			Pre-	Co-	
EE 401	Introduction to Electronic Circuits	3(3,1,0)	EE 310		Compulsory for Depth Students
EE 402	Electronic Circuits Laboratory	1(0,0,2)		EE 401	Compulsory for Depth Students
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		Compulsory for Depth Students
EE 406	VLSI Design Laboratory	1(0,0,2)		EE405	Compulsory for Depth Students
EE 407	Electronic Communication Circuits	3(3,1,0)	EE 401		
EE 408	VLSI Technology and Fabrication	3(3,1,0)	EE 310		
EE 409	Electronic Instrumentation	3(3,1,0)	EE 401		
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 403		
EE 419	Introduction to Electronic Warfare	3(3,1,0)	EE 401		

Table 5B: COMMUNICATION SYSTEMS

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites		Notes
			Pre-	Co-	
EE 420	Digital Signal Processing	3(3,1,0)	EE 301		
EE 421	Communications Laboratory	2(0,0,4)	EE 214 EE 320		Compulsory for Depth Students
EE 422	Digital Communications	3(3,1,0)	EE 320		Compulsory for Depth Students
EE 423	Wave Propagation and Antennas	3(3,1,0)	EE 214		Compulsory for Depth Students
EE 425	Satellite Communications	3(3,1,0)	EE 423		
EE 426	Microwave Engineering	3(3,1,0)	EE 214		
EE 427	Information Theory	3(3,1,0)	STAT 324		
EE 428	Error Correcting Coding for Communication Systems	3(3,1,0)	EE 422		
EE 463	Wireless Communications	3(3,1,0)	EE 422 EE 423		
EE 464	Optical Communications	3(3,1,0)	EE 423		
EE 468	Selected Topics in Communications and Signal Processing	3(3,1,0)	Instructor and Department Approval		
EE 469	Selected Topics in Engineering Electromagnetics	3(3,1,0)	Instructor and Department Approval		

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

Table 5C: ELECTRICAL POWER ENGINEERING

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites		Notes
			Pre-	Co-	
EE 431	Electromechanical Energy Conversion (2)	2(2,1,0)	EE 330		Compulsory for Depth Students
EE 432	Power Electronics	3(3,1,0)	EE 310		
EE 433	Electromechanical Energy Conversion Laboratory	1(0,0,2)		EE 431	Compulsory for Depth Students
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		Compulsory for Depth Students
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 445	Electrical Power Laboratory	2(0,0,4)		EE 441	Compulsory for Depth Students
EE 446	High Voltage Engineering	3(3,1,0)	EE 340		
EE 447	Electricity Market and Energy Transactions	3(3,1,0)	EE 441		
EE 448	Power Distribution Systems	3(3,1,0)	EE 340		
EE 449	Power System Protection	3(3,1,0)	EE 441		
EE 470	Renewable Energy Engineering	3(3,1,0)	EE 310 EE 340		
EE 475	Power System Grounding	3(3,1,0)	EE 340		
EE 479	Selected Topics in Electrical Power Engineering	3(3,1,0)	Instructor and Department Approval		

Table 5D: AUTOMATION AND INTELLIGENT SYSTEMS

Course Code	Course Title	Cr. Hr. (X,Y,L)	Requisites		Notes
			Pre-	Co-	
EE 450	Computer Architecture Organization	3(3,1,0)	EE 357		
EE 453	Microprocessor and Embedded System Design	3(3,1,0)	EE 357		
EE 454	Advanced Control Systems	3(3,1,0)	EE 351		
EE 456	Automatic Control Applications	3(3,1,0)	EE 351		Compulsory for Depth Students
EE 457	Applied Control Laboratory	1(0,0,2)		EE 456	Compulsory for Depth Students
EE 458	Advanced Logic Design	3(3,1,0)	EE 210		Compulsory for Depth Students
EE 459	Advanced Logic Design Laboratory	1(0,0,2)		EE 458	Compulsory for Depth Students
EE 480	Introduction to Artificial Intelligence	3(3,1,0)	EE 351		
EE 481	Real Time System Design	3(3,1,0)	EE 357		
EE 482	Communication Networks	3(3,1,0)	EE 320		
EE 483	Digital Control Systems	3(3,1,0)	EE 351		

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

Table 6: RECOMMENDED SEMESTER SCHEDULE - ELECTRICAL ENGINEERING PROGRAM*

Level 1		
Course Code	Course Title	Hr.
MATH 140	Introduction to Mathematics	2(2-1-0)
ENGL 140	English Language (1)	8(20-0-0)
Health 150	Health & Fitness	1(1-1-0)
CI 140	Learning, Thinking and Research Skills	3(3-1-0)
ENT 101	Entrepreneurship	1(1-1-0)
Total		15

Level 2		
Course Code	Course Title	Hr.
MATH 150	Differential Calculus	3(3-1-0)
ENGL 150	English Language (2)	8(20-0-0)
IT 140	Computer Skills	3(0-0-6)
SCS 140	Communication Skills	2(2-1-0)
Total		16

Level 3*			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
CHEM 101	General Chemistry (1)	4(3,0,2)	
ENGL 107	Technical Writing	3(3,0,0)	
MATH 106	Integral Calculus	3(3,2,0)	MATH 150
MATH 107	Vectors and Matrices	3(3,2,0)	MATH 150
PHYS 103	General Physics (1)	4(3,0,2)	
Total		17	

Level 4			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ARAB 101	Language Skills	2(2,0,0)	
ENGL 108	Communication Skills for Engineers	3(3,0,0)	
GE 104	Basics of Engineering Drawing	3(2,0,2)	
IC 107	Ethics of the Profession in	2(2,0,0)	
MATH 203	Differential and Integral Calculus	3(3,2,0)	MATH 106 MATH 107
PHYS 104	General Physics (2)	4(3,0,2)	
Total		17	

Level 5			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
EE 201	Fundamentals of Electric Circuits	3(3,1,0)	MATH 106
EE 213	Engineering Electromagnetics (1)	3(3,1,0)	MATH 203 PHYS 104
GE 105	Introduction to Engineering Design	2(1,1,2)	GE 104
GE 201	Statics	3(3,1,0)	MATH 106 MATH 107
GE 211	Computer Programming in "C++"	3(2,0,2)	
MATH 204	Differential Equations	3(3,2,0)	MATH 203
Total		17	

Level 6			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
EE 205	Electric Circuits Laboratory	1(0,0,2)	EE 212 ^c
EE 208	Logic Design	3(3,1,0)	
EE 211	Computational Techniques in EE	3(2,0,2)	GE 211 MATH 244 ^c
EE 212	Electric Circuit Analysis	2(2,1,0)	EE 201 MATH 107
EE 214	Engineering Electromagnetics (2)	2(2,1,0)	EE 213
IC 1xx	Optional Islamic Course	2(2,0,0)	
MATH 244	Linear Algebra	3(3,2,0)	MATH 107
Total		16	

Level 7			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
ARAB 103	Expository Writing	2(2,0,0)	
EE 210	Logic Design Laboratory	1(0,0,2)	EE 208
EE 301	Signals and Systems Analysis	3(3,1,0)	EE 201
EE 310	Microelectronic Devices and Circuits	3(3,1,0)	EE 201
EE 312	Basic Electronics Laboratory	1(0,0,2)	EE 310 ^c
EE 330	Electromechanical Energy Conversion (1)	3(3,1,0)	EE 212 EE 213
EE 353	Introduction to Microprocessors	3(3,1,0)	EE 208
1 Total		16	

Level 8			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
EE 320	Communications Principles	3(3,1,0)	EE 301
EE 340	Fundamentals of Power Systems	3(3,1,0)	EE 212
EE 351	Automatic Control	3(3,1,0)	EE 301
EE 356	Control and Instrumentation Laboratory	1(0,0,2)	EE 351 ^c
EE 357	Microprocessor and Microcontroller Lab	1(0,0,2)	EE 353
IC 1xx	Optional Islamic Course	2(2,0,0)	
STAT 324	Engineering Probability and Statistics	3(2,2,0)	
2 Total		16	

Level 9			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
EE 496	Graduation Project-1	2	Comp. 131 credits
EE 4xx	Specialized Elective Courses	13	Refer to Table 5
GE 403	Engineering Economy	2(2,1,0)	
Total		17	

Level 10			
Course Code	Course Title	Cr. Hr. (X,Y,L)	Pre-requisite
EE 497	Graduation Project-2	2	EE 496
EE 4xx	EE Specialized Elective Course	10	Refer to Table 5
GE 404	Engineering Management	2(2,1,0)	
IC 1xx	Optional Islamic Course	2(2,0,0)	
EE 999	Summer Training	0	Complete 96 credits
Total		16	

^c Co-requisite

* This program is preceded by a two-semester preparatory year (X,Y,L) X = Lectures; Y = Tutorials; L = Lab.

