

## Bachelor of Science in Electrical Engineering Program - Plan of Study in Trimesters

First Year (Preparatory) Level (1)								
#	Course Code		Title	Credits	Contact Hours	Requisites		T Hr
						Pre	Co	
1	ENGL1210		Reading Skills	5	(2,3,0)			
2	ENGL1220		Writing Skills	5	(2,3,0)			
3	MATH1050		Differential Calculus	4	(2,2,0)			
4	IC101		Entrance to Islamic Education	2	(2,0,0)			
<b>Total</b>				<b>16</b>	<b>(8,8,0)</b>			<b>16</b>

  

First Year (Preparatory) Level (2)								
#	Course Code		Title	Credits	Contact Hours	Requisites		T
						Pre	Co	
1	MATH1060		Integral Calculus	4	(2,2,0)	MATH1050		
2	CT1400		Computer Skills	3	(2,0,1)			
3	ENGL1230		Listening and conservation Skills	5	(2,3,0)			
4	ARAB101		Arabic Language Skills	2	(2,0,0)			
<b>Total</b>				<b>14</b>	<b>(8,5,1)</b>			<b>14</b>

  

First Year (Preparatory) Level (3)								
#	Course Code		Title	Credits	Contact Hours	Requisites		T
						Pre	Co	
1	MC1400		Communication Skills	2	(2,0,0)			
2	ENGL1604		English for Technical Purposes	5	(4,0,1)			
3	PHYS1010		General Physics I	5	(3,1,1)			
4	ENGL1605		English for Academic Purposes	4	(2,2,0)			
<b>Total</b>				<b>16</b>	<b>(11,3,2)</b>			<b>16</b>

  

Second Year Level (4)								
#	Course Code		Title	Credits	Contact Hours	Requisites		T
						Pre	Co	
1	GEU1011		Introduction to Engineering	3	(3,1,0)			
2	GEU1090		Computer Programming in Engineering	4	(3,0,3)			
3	CHEM1010		General Chemistry I	5	(4,1,3)			
4	MATH1070		Algebra and Analytical Geometry	4	(4,1,0)	MATH1060		
5	IC 102		Islam and Building of Society	2	(2,0,0)			
<b>Total</b>				<b>18</b>	<b>(16,4,6)</b>			<b>26</b>

  

Second Year Level (5)								
#	Course Code		Title	Credits	Contact Hours	Requisites		T
						Pre	Co	
1	GEU3201		Engineering Statistics	5	(5,1,0)	MATH1060		
2	MATH2030		Differential and Integral Calculus	4	(4,1,0)	MATH1060 MATH1070		
3	PHYS1040		General Physics II	5	(4,1,3)	PHYS1010		
4	ARAB103		Arabic Editing	2	(2,0,0)			
<b>Total</b>				<b>16</b>	<b>(15,3,3)</b>			<b>21</b>

  

Second Year Level (6)								
#	Course Code		Title	Credits	Contact Hours	Requisites		T
						Pre	Co	
1	GEU2100		Engineering Mechanics	5	(5,1,0)	MATH1060 MATH1070 PHYS1040		
2	GEU2610		Engineering Professional Communications	3	(2,0,3)	ENGL1210		
3	MATH2040		Differential Equations	5	(5,1,0)	MATH2030		
4	EE 2440		Applied Linear Algebra	4	(4,1,0)	MATH1060 MATH1070		
<b>Total</b>				<b>17</b>	<b>(16,3,3)</b>			<b>22</b>

**Third Year Level (7)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	IC 103	Economic System in Islam	2	(2,0,0)			
	IC 104	Principles of Political System in Islam	2	(2,0,0)			
2	EE 2010	Electric Circuits I	5	(4,1,3)	MATH1060		
3	EE 3561	Computational Methods for Elec. Eng.	4	(3,1,3)	MATH2040 GEU1090		
4	EE 3040	Introduction to Artificial Intelligence	4	(4,1,0)	EE 2440		
<b>Total</b>			<b>17</b>	<b>(15,3,6)</b>			<b>24</b>

**Third Year Level (8)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	EE 2020	Electric Circuit II	5	(4,1,3)	EE 2010		
2	EE 2030	Electromagnetic I	5	(5,1,0)	MATH2030 PHYS1040		
3	EE 2111	Logic Design	5	(4,1,3)	GEU1090		
4	EE3570	Engineering Drawing and Standards	3	(3,1,0)	EE 2010	EE2020	
<b>Total</b>			<b>18</b>	<b>(16,4,6)</b>			<b>26</b>

**Third Year Level (9)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	EE 3010	Signals and Systems Analysis	5	(5,1,0)	EE 2020		
2	EE 3350	Electromechanical Energy Conversion	5	(4,1,3)	EE 2020 EE 2030		
3	EE 3540	Microprocessors and Microcontrollers	5	(4,1,3)	EE 2111		
4	EE 3050	Electrical Material	3	(3,1,0)	EE 2020 EE 2030		
<b>Total</b>			<b>18</b>	<b>(16,4,6)</b>			<b>26</b>

**Fourth Year Level (10)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	EE 3121	Electronic Circuits I	5	(4,1,3)	EE 2020		
2	EE 3400	Fundamental of Power System	5	(4,1,3)	EE 2020		
3	EE 3200	Communications Principles	5	(4,1,3)	EE 3010		
4	EE 9990	Practical Training (8 weeks)	0		180 Cr. Hr.		
<b>Total</b>			<b>15</b>	<b>(12,3,9)</b>			<b>24</b>

**Fourth Year Level (11)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	EE 4010	Seminars in Electrical Engineering	1	(0,0,3)	GEU2610		
2	EE 3171	Electronic Circuits II	5	(4,1,3)	EE 3121		
3	EE 3511	Automatic Control Systems	5	(5,1,0)	EE 3010		
4	EE 2040	Electromagnetic II	5	(5,1,0)	EE 2030		
<b>Total</b>			<b>16</b>	<b>(14,3,6)</b>			<b>23</b>

**Fourth Year Level (12)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	EE 4190	Industrial Instrumentation	4	(3,1,3)	EE 3171		
2	EE 4191	Electronic Systems	4	(4,1,0)	EE 3171		
3	EE 3240	Digital Signal Processing	5	(5,1,0)	EE 3010		
4	EE xxxx	Elective Course	5	(4,1,3)			
<b>Total</b>			<b>18</b>	<b>(16,4,6)</b>			<b>26</b>

**Fifth Year Level (13)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	EE 4192	Electrical Engineering Design and Innovation	5	(4,1,3)	EE 3121 EE 3540		
2	EE 4511	Digital Control Systems	5	(4,1,3)	EE 3511		
3	EE xxxx	Elective Course	5	(4,1,3)			
4	GEU 4010	Engineering Economy	3	(3,1,0)			
<b>Total</b>			<b>18</b>	<b>(16,4,6)</b>			<b>26</b>

#### Fifth Year Level (14)

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	GEU 4020	Engineering Project Management	3	(3,1,0)			
2	EE xxxx	Elective Course	5	(4,1,3)			
3	EE xxxx	Elective Course	5	(4,1,3)			
4	EE4980	Senior Design Project I	4	(3,0,3)	213 Cr. Hr.		
<b>Total</b>			<b>17</b>	<b>(15,3,6)</b>			<b>24</b>

#### Fifth Year Level (15)

#	Course Code	Title	Credits	Contact Hours	Requisites		T
					Pre	Co	
1	EE xxxx	Elective Course	5	(4,1,3)			
2	EE xxxx	Elective Course	5	(4,1,3)			
3	EE 4990	Senior Design Project II	4	(3,0,3)	EE4980		
<b>Total</b>			<b>14</b>	<b>(12,2,6)</b>			<b>20</b>

The Total Number of Credit Hours for EE Program: 248. Hr.

### Colors Meaning

Arabic and Islamic Courses

Mathematics and Basic Science Courses

General Engineering Courses

Electrical Engineering Courses

General Education Courses in Preparatory Year

### Notes:

#### Details of Contact Hours Cell (L,T,P) According to Higher Education Regulations

Contact Hours (L,T,P)	Contact Hours	Credit
Lecture (L)	1 (50 min)	1
Tutorial (T)	1 (50 min)	0
Practical Lab (P)	3 (150 min) – max.	1

**EE Elective Courses (30 Cr. Hr)**

**Elective Courses (30 Cr. Hr.): Electrical Power, Machines and Control Track**

**Each student is required to take: 30 Cr. Hr. (6 Courses)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T Hr
					Pre	Co	
1	EE 4420	Power Electronics	5	(4,1,3)	EE 3171		
2	EE 4430	Electrical Machines	5	(4,1,3)	EE 3350		
3	EE 4410	Power Systems Analysis	5	(4,1,3)	EE 3400		
4	EE 4440	Power System Protection	5	(4,1,3)	EE 4410		
5	EE 4450	Renewable Energy Systems	5	(4,1,3)	EE 4410		
6	EE 4460	Electric Drives and Control	5	(4,1,3)	EE 4430 EE 4420		
7	EE 4470	Power Distribution Systems	5	(4,1,3)	EE 4410		
8	EE 4480	Power System Operation and Control	5	(4,1,3)	EE 4410		
9	EE 4490	Industrial Electronics	5	(4,1,3)	EE 4420		
10	EE 4432	Power System Planning	5	(4,1,3)	EE 4410 GEU3201		
11	EE 4433	High Voltage Engineering	5	(4,1,3)	EE 4410		
12	EE 4435	Electricity Market and Energy Transactions	5	(4,1,3)	EE 4410		
13	EE 4436	Power System Grounding	5	(4,1,3)	EE 4410		
14	EE 4438	Utilization of Electric Energy	5	(4,1,3)	EE 4410 EE 4430		
15	EE 4434	Power Quality	5	(4,1,3)	EE 4410		
16	EE 4431	Electrical Machines Dynamics	5	(4,1,3)	EE 4430		
17	EE 4437	Special Machines	5	(4,1,3)	EE 4430		
18	EE 4551	Control System Design and Simulation	5	(4,1,3)	EE 4511		
19	EE 4510	Advanced Control Systems	5	(4,1,3)	EE 4511		
20	EE 4570	Real-time Embedded Systems	5	(4,1,3)	EE 4511		
21	EE 4530	Embedded Control System Design	5	(4,1,3)	EE 4511		
22	EE 4521	Industrial Control Systems	5	(4,1,3)	EE 4511		
23	EE 4561	Mechatronics	5	(4,1,3)	EE 4430 EE 4420		
24	EE 4541	Applications of AI in Power Systems	5	(4,1,3)	EE 4410		
25	EE 4531	Energy Harvesting Circuits and Systems	5	(4,1,3)	EE 4450		
26	EE 4610	Selected Topics in Electrical Machines	5	(4,1,3)	EE 4430		
27	EE 4620	Selected Topics in Power Electronics	5	(4,1,3)	EE 4420		
28	EE 4630	Selected Topics in Electrical Power Systems	5	(4,1,3)	EE 4410		
29	EE 4640	Selected Topics in Renewable Energy	5	(4,1,3)	EE 4450		
30	EE 4650	Selected Topics in Electric Drive Applications	5	(4,1,3)	EE 4460		
31	EE 4660	Selected Topics in High Voltage Engineering	5	(4,1,3)	EE 4433		
32	EE 4670	Selected Topics in Artificial Intelligence	5	(4,1,3)	EE 4541		
33	EE 4680	Selected Topics in Control Engineering	5	(4,1,3)	EE 4511		

**The Total Number of Credit Hours for EE Program: 248. Hr.**

**EE Elective Courses (30 Cr. Hr)**

**Elective Courses (30 Cr. Hr.): Communications, Electromagnetics and Electronics Track**  
**Each student is required to take: 30 Cr. Hr. (6 Courses)**

#	Course Code	Title	Credits	Contact Hours	Requisites		T Hr
					Pre	Co	
1	EE 4210	Digital Communications	5	(4,1,3)	EE 3200		
2	EE 4310	Antennas Theory and Applications	5	(4,1,3)	EE 2030 EE 3200		
3	EE 4320	Microwave Engineering	5	(4,1,3)	EE 2030 EE 2041		
4	EE 4260	Wireless Communications	5	(4,1,3)	EE 4210 EE 2030		
5	EE 4271	Optical Fiber Communications	5	(4,1,3)	EE 4210 EE 2030		
6	EE 4220	Communications Systems	5	(4,1,3)	EE 4310 EE 2030		
7	EE 4230	Wave Propagation and Antennas	5	(4,1,3)	EE 4310 EE 4260		
8	EE 4240	Communications Networks	5	(4,1,3)	EE 4310 EE 3240		
9	EE 4110	Introduction to Biomedical Engineering	5	(4,1,3)	EE 3121		
10	EE 4250	Coding Theory and Applications	5	(4,1,3)	EE 4210		
11	EE 4120	Digital Image Processing	5	(4,1,3)	EE 3240		
12	EE 4270	Error Correcting Coding for Communication Systems	5	(4,1,3)	EE 4210		
13	EE 4280	Information Theory	5	(4,1,3)	EE 4210		
14	EE 4330	Introduction to Cybersecurity	5	(4,1,3)	EE 3040		
15	EE 4130	Real-Time Signal Processing Systems	5	(4,1,3)	EE 3240		
16	EE 4290	Satellite Communications	5	(4,1,3)	EE 4210		
17	EE 4151	Communication Electronics	5	(4,1,3)	EE 3171		
18	EE 4160	Microwave Circuits and Devices	5	(4,1,3)	EE 3171		
19	EE 4170	Optoelectronic Devices and Systems	5	(4,1,3)	EE 3171		
20	EE 4180	Low Power VLSI Design	5	(4,1,3)	EE 3171		
21	EE 4390	Advanced Robotics	5	(4,1,3)	EE 4511 EE 3240		
22	EE 4190	3D Imaging	5	(4,1,3)	EE 3240		
23	EE 4380	Computing Systems for Engineering	5	(4,1,3)	EE 3561		
24	EE 4382	Emerging Technologies in Electrical Engineering Applications	5	(4,1,3)	EE 3240		
25	EE 4384	Electrical Engineering in Sustainability	5	(4,1,3)	EE 3240		
26	EE 4386	Financial Engineering	5	(4,1,3)	EE 3240		
27	EE 4388	Object-Oriented Modelling and Design	5	(4,1,3)	EE 3561		
28	EE 4332	Virtual and Augmented Reality	5	(4,1,3)	EE 3240		
29	EE 4334	Engineering Entrepreneurship	5	(4,1,3)	EE 3240		
30	EE 4340	Selected Topics in Communications	5	(4,1,3)	EE 4210		
31	EE 4350	Selected Topics in Engineering Electromagnetics	5	(4,1,3)	EE 4320		
32	EE 4360	Selected Topics in Electronics	5	(4,1,3)	EE 4170		
33	EE 4370	Selected Topics in Signal Processing	5	(4,1,3)	EE 3240		

**Required Credit Hours for EE Elective Courses (30 Cr. Hr)**