Part 2

2011

اللائحة الداخلية لكلية الهندسة

الباب الرابع

البرامج الدراسية للأقسام الأكاديمية للطلاب الملتحقين بالفصل الدراسي خريف 2010/2009 و الخريجين فى الفصل الدراسي ربيع 2014

عميد الكلية:

أ.د. محمود الجمال

يناير 2014

1.2 البرامج الدراسية لقسم الهندسة الكهربية للطلاب الملتحقين بالفصل الدراسى خريف 2010/2011 و الخريجين فى الفصل الدراسى ربيع 2015:
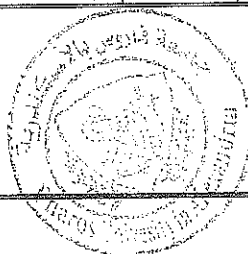
1.1.2 البرامج الدراسية تخصص إتصالات

◘ **Study Programs for Communications Specialization**

First Year *(Semester-1)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 101	Engineering Mathematics (1)	3	3	2	0	None
BE 111	Engineering Mechanics (1)	3	3	2	0	None
BE 121	Engineering Physics (1)	3	3	1	1	None
BE 141	Eng. Drawing & Descriptive Geometry (1)	3	2	4	0	None
UEC 01	Computer Skills & Programming Concepts (1)	2	2	1	1	None
UGE 01	English Language I	2	1	0	2	None
HU 121	History of Engineering & Technology	2	1	0	2	None
	Total semester credit hours	**18**				

First Year *(Semester-2)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 102	Engineering Mathematics (2)	3	3	2	0	BE101
BE 112	Engineering Mechanics (2)	2	2	2	0	BE101
BE 122	Engineering Physics (2)	3	3	1	1	BE101
BE142	Eng. Drawing & Descriptive Geometry (2)	3	2	3	1	BE141
UEC 02E	Computer Skills & Programming Concepts (2)	2	1	1	2	UEC 01
UGE 02	English Language II	2	1	0	2	UGE 01
BE131	General Chemistry	2	2	0	2	None
ME170	Introduction to Manufacturing Processes	2	2	0	2	None
	Total semester credit hours	**19**				

Second Year *(Semester-3)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE291	Electric Circuits	4	4	1	1	BE102 & BE122
EE 271	Energy Systems	3	3	1	1	None
BE 103	Engineering Mathematics (3)	3	3	2	0	BE102
CE 201	Computer Programming	4	3	1	2	UEC02E
BE123	Modern Physics	3	3	1	1	BE122
EGE03	English Language (3)	2	2	0	1	UGE02
HU113	Technical Report Writing	2	2	0	2	None
	Total semester credit hours	**21**				

Second Year *(Semester-4)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE 202	Digital Logic Fundamentals	3	3	1	1	UEC02E
BE 204	Engineering Mathematics (4)	3	3	2	0	BE103
EE 293	Electrical Measurements and Instrumentation (1)	3	3	1	1	EE291
EE 213	Introduction to Electronic Circuits	3	3	1	1	BE122& EE291
EE 211	Electronics Workshop	1	0	0	4	None
UGE03	Arabic Language	2	2	0	0	None
BE104	Linear Algebra	3	3	2	0	None
HU	HU- Elective-1	2	1	0	2	None
	Total semester credit hours	**20**				

Third Year *(Semester 5)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 207	Numerical Analysis using MATLAB	3	2	2	2	BE 102
EE 203	Introduction to Microprocessors	3	3	1	1	EE 202
EE 224	Micro-Electronic Devices and Circuits	3	3	1	1	EE 213
EE 241	Signals and Systems	3	3	1	1	BE 204
EE 260	Electromagnetic Fields	3	3	1	1	BE 204 & BE 122
HU	HU- Elective-2	2	2	0	0	None
	Total semester credit hours	17				

Third Year *(Semester 6)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 205	Probabilities and Random Variables	3	3	2	0	BE 204
EE 261	Electromagnetic Waves and Transmission Media	3	3	1	1	EE 260
EE 251	Analog Communications	3	3	1	1	BE 205 & EE241
EE 228	Analog Integrated Circuits	3	3	1	1	EE 224
EE 225	Solid State Electronics	3	3	1	1	EE213
EE 290	Control Systems (1)	3	3	1	1	BE 204 & EE291
	Total semester credit hours	18				

Fourth Year *(Semesters 7)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 206	Special Functions	3	3	2	0	BE 204
EE 385	Electrical Power and Machines	4	4	1	1	EE271& EE291
EE 262	Microwave Engineering	3	3	1	1	EE 261
EE 252	Communications Laboratory	1	0	0	4	EE 251
EE 255	Digital Communications (1)	3	3	1	1	EE 251
EE 342	Digital Signal Processing	3	3	1	1	EE 241 & BE205
	Total semester credit hours	**17**				

Fourth Year *(Semesters 8)*

Code	Course title	Credit	L	T	P	Pre-requisites
UC 01	Communications Skills	2	2	0	0	None
EE 304	Microprocessor Based System Design	3	3	1	1	EE 202& EE 203
EE 363	Microwave Measurements and Laboratory	2	1	0	4	EE 262
EE 364	Antenna Theory and Design	3	3	1	1	EE 262
EE 256	Digital Communications (2)	3	3	1	1	EE 255
HU 141	Ethics and Human Rights	2	2	0	0	None
ME 237	Thermofluids for Electrical Engineering Students	4	3	2	1	BE112 & BE122
	Total semester credit hours	**19**				

Fifth Year *(Semesters 9)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE 350	Communication Systems	4	3	2	1	EE 256
EE	Communications Elective Course-1 (Table-1.1.6)	3	3	1	1	As per Table
EE	Communications Elective Course-2 (Table-1.1.6)	3	3	1	1	As per Table
EE	Communications Elective Course-3 (Table-1.1.6)	3	3	1	1	As per Table
EE 400-1	Graduation Project (1)	3	3	0	1	Department Approval
	Total semester credit hours	16				

Fifth Year *(Semesters 10)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE	Communications Elective Course-4 (Table-1.1.6)	3	3	1	1	As per Table
EE	Communications Elective Course-5 (Table-1.1.6)	3	3	1	1	As per Table
EE	Communications Elective Course-6 (Table-1.1.6)	3	3	1	1	As per Table
EE	Communications Elective Course-7 (Table-1.1.6)	3	3	1	1	As per Table
EE 354	Mobile Communication Systems	3	3	1	1	EE 256
EE 400-2	Graduation Project (2)	3	3	0	1	None
	Total semester credit hours	18				

TOTAL CREDIT ACHIEVED = 183

2.1.2 البرامج الدراسية تخصص قوى و تحكم

▪ **Study Programs for Power and Control Specialization**

First Year *(Semester-1)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 101	Engineering Mathematics (1)	3	3	2	0	None
BE 111	Engineering Mechanics (1)	3	3	2	0	None
BE 121	Engineering Physics (1)	3	3	1	1	None
BE 141	Eng. Drawing & Descriptive Geometry (1)	3	2	4	0	None
UEC 01	Computer Skills & Programming Concepts (1)	2	2	1	1	None
UGE 01	English Language I	2	1	0	2	None
HU 121	History of Engineering & Technology	2	1	0	2	None
Total semester credit hours		**18**				

First Year *(Semester-2)*

Course	Course title	Credit	L	T	P	Pre-requisites
BE 102	Engineering Mathematics (2)	3	3	2	0	BE101
BE 112	Engineering Mechanics (2)	2	2	2	0	BE101
BE 122	Engineering Physics (2)	3	3	1	1	BE101
BE142	Eng. Drawing & Descriptive Geometry (2)	3	2	3	1	BE141
UEC 02	Computer Skills & Programming Concepts (2)	2	1	1	2	UEC 01
UGE 02	English Language II	2	1	0	2	UGE 01
BE131	General Chemistry	2	2	0	2	None
ME170	Introduction to Manufacturing Processes	2	2	0	2	None
Total semester credit hours		**19**				

Second Year *(Semester-3)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE291	Electric Circuits	4	4	1	1	BE102 & BE122
EE 271	Energy Systems	3	3	1	1	None
BE 103	Engineering Mathematics (3)	3	3	2	0	BE102
CE 201	Computer Programming	4	3	1	2	UEC02E
BE123	Modern Physics	3	3	1	1	BE122
EGE03	English Language (3)	2	2	0	1	UGE02
HU113	Technical Report Writing	2	2	0	2·	None
	Total semester credit hours	**21**				

Second Year *(Semester-4)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE 202	Digital Logic Fundamentals	3	3	1	1	UEC02E
BE 204	Engineering Mathematics (4)	3	3	2	0	BE103
EE 293	Electrical Measurements and Instrumentation (1)	3	3	1	1	EE291
EE 213	Introduction to Electronic Circuits	3	3	1	1	BE122& EE291
EE 211	Electronics Workshop	1	0	0	4	None
UGE03	Arabic Language	2	2	0	0	None
BE104	Linear Algebra	3	3	2	0	None
HU	HU- Elective-1	2	1	0	2	None
	Total semester credit hours	**20**				

Third Year *(Semester 5)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 207	Numerical Analysis using MATLAB	3	2	2	2	BE 102
EE 203	Introduction to Microprocessors	3	3	1	1	EE 202
EE 224	Micro-Electronic Devices and Circuits	3	3	1	1	EE 213
EE 241	Signals and Systems	3	- 3	1	1	BE 204
EE 260	Electromagnetic Fields	3	3	1	1	BE 204 & BE 122
HU	HU- Elective-2	2	2	0	0	None
EE 272	Electrical Power Engineering (1)	3	2	2	1	EE 271
	Total semester credit hours	**20**				

Third Year *(Semester 6)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 205	Probabilities and Random Variables	3	3	2	0	BE 204
EE 261	Electromagnetic Waves and Transmission Media	3	3	1	1	EE 260
EE 273	Electrical Power Engineering (2)	3	3	1	1	EE 272
EE 281	Transformers	3	3	1	1	EE 260 & EE 291
EE 286	Power Electronics (1)	3	3	1	1	EE 213
EE 290	Control Systems (1)	3	3	1	1	BE204 & EE291
	Total semester credit hours	**18**				

Fourth Year *(Semesters 7)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE 282	Electrical machines (1)	3	3	1	1	EE260 & EE291
EE 275	Power System Protection (1)	3	3	1	1	EE 273
EE 274	Electrical Safety Engineering	3	3	1	1	EE 273
EE	Power and Control Elective Course-1 (Table-1.1.8)	3	3	1	1	As per Table
ME 259	Fluid Engineering for Electrical Students	4	3	2	1	BE112 & BE122
HU 141	Ethics & Human Rights	2	2	0	0	None
	Total semester credit hours	**18**				

Fourth Year *(Semesters 8)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE 283	Electrical Machines (2)	3	3	1	1	EE 282
EE 371	Power Systems Analysis	3	3	1	1	EE 273
EE 373	Transmission & Distribution Systems	3	3	1	1	EE 273
EE 254	Communication Technology for Power Engineers	4	4	1	1	EE 241
ME 239	Thermal Engineering for Electrical Students	4	3	2	1	ME 259
	Total semester credit hours	**17**				

Fifth Year *(Semesters 9)*

Code	Course title	Credit	L	T	P	Pre-requisites
BE 206	Special Functions	3	3	2	0	BE 204
EE 380	Electric Machines (3)	3	3	1	1	EE 282
EE 390	Control Systems (2)	3	3	1	1	EE 290
HU151	Industrial safety	2	2	1	0	None
UC 01	Communications Skills	2	2	0	0	None
EE 400-1	Graduation Project (1)	3	2	2	2	None
	Total semester credit hours	**16**				

Fifth Year *(Semesters 10)*

Code	Course title	Credit	L	T	P	Pre-requisites
EE 225	Solid State Electronics	3	3	1	1	EE 213
EE 400-2	Graduation Project (2)	3	3	0	1	None
EE 276	High Voltage Engineering	3	3	1	1	EE 260
CV 251	Introduction to Civil Engineering	3	3	2	0	BE 111
EE	Power and Control Elective Course-2 (Table-1.1.8)	3	3	1	1	As per Table
	Total semester credit hours	**15**				

TOTAL CREDIT ACHIEVED = 182

2.2 البرامج الدراسية لقسم هندسة الحاسب للطلاب الملتحقين بالفصل الدراسى خريف 2010/2011 و الخريجين فى الفصل الدراسى ربيع 2015:

- ### Study Program for Computer Engineering Department

First Year (Semester-1)

Code	Subject	Contact Hours			Credit Hours
		Lecture	Tutorial	Lab.	
UGE01	English (1)*	0	4	2	2
UEC01	Computer Skills & Programming Concepts 1	2	0	2	2
BE 101	Engineering Mathematics (1)	3	2	1	3
BE 111	Engineering Mechanics (1)	3	2	0	3
BE 121	Engineering Physics (1)	2	2	2	3
BE 141	Eng. Drawing & Geometrical Projection (1)	2	4	0	3
HU 121	History of Engineering and Technology (Engineering Perspective)	1	0	2	2
Total		13	14	9	18
		36			

* Some students may study HU 111 (English Language) in old curriculum which is equivalent to the university requirement UGE01 (English Language-1).

First Year (Semester-2)

Code	Subject	Contact Hours			Credit Hours
		Lecture	Tutorial	Lab.	
UGE02	English Language (2)	0	4	2	2
UEC02E	Computer Skills & Programing Concepts (2)	1	0	2	2
BE 102	Engineering Mathematics (2) .	3	2	1	3
BE 112	Engineering Mechanics (2)	2	2	0	2
BE 122	Engineering Physics (2)	3	0	2	3
BE 142	Engineering Drawing & Descriptive Geometry (2)	2	3	1	3
BE 131	General Chemistry	2	1	2	2
ME 170	Introduction to Manufacturing Processes	2	0	2	2
Total		15	12	12	19
		39			

Second Year *(Semesters 3&4)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
II	3	BE 103	Mathematics (3)	3	3-2-0
		EE 215	Electric Circuits and Systems	4	4-1-1
		CE 132	Structured Programming	4	4-1-1
		CE 171	Discrete Mathematics	4	4-2-0
		CE121	Introduction to digital Logic Design	4	4-1-1
	Semester Credit Hours			**19**	
	4	UGE03	English (3)	2	0-4-2
		BE104	Linear Algebra	3	2-2-1
		BE 204	Mathematics (4)	3	3-2-0
		EE 232	Electronics	4	4-1-1
		CE 222	Advanced Digital Logic Design	4	4-1-1
		CE 233	Algorithms and Data Structures	4	4-1-1
	Semester Credit Hours			**20**	

Third Year *(Semesters 5&6)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
III	5	CE 234	Object Oriented Programming	4	4-1-1
		BE 123	Modern Physics	3	3-2-0
		BE 207	Numerical Analysis using MATLAB	3	3-1-2
		BE 208	Applied Probability and Statistics	3	3-2-0
		EE230	Linear Signals and Systems	4	4-1-1
		HU141	*HU Elective Course-1:* Ethics and Human Rights	2	2-0-0
	Semester Credit Hours			**19**	
	6	EE 214	Electro-mechanical Energy Conversion	4	4-1-1
		CE 211	Computer Organization	4	4-1-1
		CE 235	Advanced Algorithms and Data Structures	4	4-1-1
		CE 241	Systems Programming	4	4-1-1
		HU 162	*HU Elective Course-2:* Human Computer Interaction	2	2-0-0
	Semester Credit Hours			**18**	

Fourth Year (Semesters 7&8)

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
IV	7	CE 353	*Elective Course-1 (Table 1.2.5):* Distributed Systems & Web Services	4	4-1-1
		CE 359	Programming Languages & Translators	4	4-1-1
		CE 342	Operating Systems	4	4-1-1
		UGA 03	Arabic Language Skills	2	2-0-0
		CE 383	*Elective Course-2 (Table 1.2.5):* Intelligent Systems	2	2-1-1
		HU 113	Technical Report Writing	2	1-0-2
			Semester Credit Hours	**18**	
	8	CE 313	Computer Architecture	4	4-2-0
		CE 351	Database Management Systems	4	4-1-1
		CE 361	Data and Computer Communications	4	4-2-0
		CE 362	Digital Signal Processing	4	4-1-1
		CE 384	*Elective Course-3 (Table 1.2.5):* Modeling & Simulation	2	2-1-1
			Semester Credit Hours	**18**	

Fifth Year *(Semesters 9&10)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
V	9	CE 352	Software Engineering	4	4-2-0
		CE 363	Communications and Computer Networks	4	4-1-1
		CE 372	*Elective Course-4 (Table 1.2.5):* Computational Models	4	4-1-1
		CE 400-1	Graduating Project (1)	3	2-0-4
		UC 01	Communication Skills	2	1-0-2
	Semester Credit Hours			**17**	
	10	HU 131	*HU Elective Course3:* Project Management	2	2-0-0
		CE 312	Embedded Systems	4	4-1-1
		CE 384	*Elective Course-5 (Table 1.2.5):* Multimedia Systems	4	4-1-1
		CE 385	*Elective Course-6 (Table 1.2.5):* E-Business	2	2-1-1
		CE 400-2	Graduation Project (2)	4	2-0-6
	Semester Credit Hours			**16**	

TOTAL CREDIT ACHIEVED = 182

3.2 البرامج الدراسية لقسم هندسة البتروكيماويات للطلاب الملتحقين بالفصل الدراسى خريف 2011/2010 و الخريجين فى الفصل الدراسى ربيع 2015:

■ Study Program for Petrochemical Engineering Department

First Year (Semester-1)

Code	Subject	Contact Hours			Credit Hours
		Lecture	Tutorial	Lab.	
UGE01	English (1)	1	0	2	2
UEC 01	Computer skills and programming concepts (1)	1	0	2	2
BE 101	Engineering Mathematics (1)	3	2	1	3
BE 111	Engineering Mechanics (1)	3	2	0	3
BE 121	Engineering Physics (1)	3	0	2	3
BE 141	Eng. Drawing & Geometrical Projection (1)	2	4	0	3
HU 121	Engineering Perspective	1	0	2	2
Total		14	8	9	18
		31			

First Year (Semester-2)

Code	Subject	Contact Hours			Credit Hours
		Lecture	Tutorial	Lab.	
UGE02	English (2)	1	0	2	2
UEC 02E	Computer skills and programming concepts (2)	1	0	2	2
BE 102	Engineering Mathematics (2)	3	2	1	3
BE 112	Engineering Mechanics (2)	2	2	0	2
BE 122	Engineering Physics (2)	3	0	2	3
BE 142	Engineering Drawing & Descriptive Geometry (2)	2	3	1	3
BE 131	General Chemistry	2	0	2	2
ME 170	Introduction to Manufacturing Processes	2	0	2	2
Total		16	7	12	19
		35			
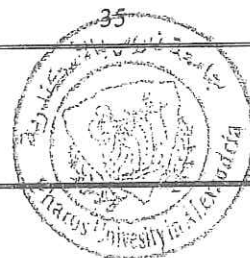
Second Year *(Semesters 3&4)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
	3	BE 103	Engineering Mathematics (3)	3	3-2-0
		ME 251	Fluid Mechanics (1)	3	2-2-1
		PE 210	Organic Chemistry (1)	3	2-0-3
		PE 214	Inorganic & Analytical Chemistry	3	2-0-3
		PE 217	Material Science	3	3-0-2
		HU 113	Technical Reports Writing and Presentation Skills	2	2-0-2
Semester Credit Hours				**17**	
	4	BE 204	Engineering Mathematics (4)	3	3-2-0
		PE 231	Heat Transfer	4	3-2-2
		PE 213	Organic Chemistry (2)	3	2-0-3
		PE 314	Instrumental Analysis	3	2-0-3
		PE 315	Physical Chemistry	3	3-0-2
		HU 141	Ethics & human rights	2	2-0-0
Semester Credit Hours				**18**	
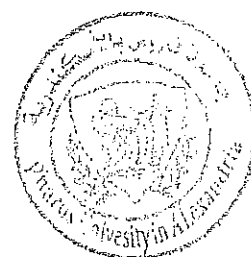
Third Year *(Semesters 5&6)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
III	5	BE 207	Numerical analysis with MATLAB	3	2-2-2
		BE 208	Applied Probability and Statistics	3	3-2-0
		PE 200	Chemical Engineering Thermodynamics (1)	3	3-2-0
		PE 218	Mechanics of Materials and Mechanical Design	3	3-2-0
		PE 327	Chemical Process Principles	4	4-4-0
		EGE03	English (3)	2	2-0-0
			Semester Credit Hours	**18**	
	6	PE 389	Introduction to Environmental Engineering	3	3-0-0
		PE 220	Chemical Engineering Thermodynamics (2)	4	3-2-1
		EE 208	Fundamentals of Electrical Engineering	3	3-1-1
		PE 324	Gas Treatment and Liquefaction	4	4-1-0
		UGA03	Arabic language	2	2-0-0
		HU	*Humanities elective (1)* HU161 Environment and society	2	2-0-0
			Semester Credit Hours	**18**	

Fourth Year *(Semesters 7 & 8)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
IV	7	PE 201	Introduction to Petrochemical Industries	3	3-0-0
		EE 212	Measurement & Interface	3	3-1-1
		PE 313	Mass Transfer	3	3-2-0
		PE 333	Chemical Reaction & Industrial Catalysis	4	3-2-1
		PE 335	Polymer Science and Engineering I	3	3-1-1
		HU 134	*Humanity Elective course-2:* Engineering Economy	2	2-0-0
	Semester Credit Hours			**18**	
	8	UC 01	Communication skills	2	2-0-0
		PE 317	Unit Operation	4	3-2-2
		PE 320	Automatic Process Control	3	3-2-0
		PE	*PE Elective Course-1 (Table 1.3.4D):* PE 330 Energy conservation	3	2-2-0
		PE 321	Computer Applications	2	2-0-2
		PE 362	Petroleum Refining & Evaluation of its Products	4	3-2-2
	Semester Credit Hours			**18**	

Fifth Year (Semesters 9&10)

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
	9	PE 361	Fertilizer Industry	3	3-2-0
		PE 368	Chemical Plant Design I	3	3-2-0
		PE 385	Optimization of Chemical Processes	3	3-2-0
		PE	*PE Elective Course-2 (Table 1.3.4D):* PE 391 Manufacture of rubber	3	3-0-0
		PE 400-1	Graduation project I	4	3-0-3
		HU	*Department Humanity Elective course-* HU 151 Industrial safety	2	2-0-0
Semester Credit Hours				**18**	
	10	PE 318	Industrial Corrosion	3	3-0-1
		PE 369	Chemical Plant design II	3	3-2-0
		PE 390	Industrial Equipment and Material Handling	3	3-2-0
		PE	*PE Elective Course-3 (Table 1.3.4D):* PE 329 industrial Fiber technology	3	3-0-0
		PE 400-2	Graduation Project II	4	3-0-3
		HU 133	*Humanity Elective course-3:* Engineering statistics	2	2-0-0
Semester Credit Hours				**18**	

TOTAL CREDIT ACHIEVED = 180

4.1 البرامج الدراسية لقسم الهندسة الميكانيكية للطلاب الملتحقين بالفصل الدراسي خريف 2010/2011 و الخريجين في الفصل الدراسي ربيع 2015:

1.4.1 البرامج الدراسية لتخصص القوى الميكانيكية

▣ **Study Program for Mechanical Power Specialization**

First Year *(Semester-1)*

Code	Subject	Contact Hours			Credit Hours	Pre-requisites
		Lecture	Tutorial	Lab.		
UGE 01	English language (1)	2	0	2	2	None
UEC 01	Computer Skills and programming concepts (1)	2	1	2	2	None
BE 101	Engineering Mathematics (1)	3	2	0	3	None
BE 111	Engineering Mechanics (1)	3	2	0	3	None
BE 121	Engineering Physics (1)	3	1	1	3	None
BE 141	Engineering Drawing and Descriptive Geometry (1)	2	4	0	3	None
HU 121	History of Engineering and Technology	2	0	2	2	None
Total		17	10	7	**18**	
			34			

First Year *(Semester-2)*

Code	Subject	Contact Hours			Credit Hours	Pre-requisites
		Lecture	Tutorial	Lab.		
BE 102	Engineering Mathematics (2)	3	2	0	3	BE 101
BE 112	Engineering Mechanics (2)	2	2	0	2	BE 111
BE 122	Engineering Physics (2)	3	1	1	3	BE 121
BE 142	Engineering Drawing and Descriptive Geometry (2)	2	3	1	3	BE 141
BE 131	General Chemistry	2	0	2	2	None
ME 170	Introduction to Manufacturing Processes	2	0	2	2	None
UEC 02E	Computer Skills and programming concepts (2)	2	1	2	2	UEC 01
UGE 02	English language (2)	2	0	2	2	UGE 01
Total		18	9	10	**19**	
			37			

1.5 الخطه الدراسية المقترحة لقسم الهندسة الميكانيكية
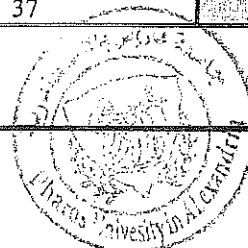
1.5.1 الخطة الدراسية المقترحة (تخصص قوى ميكانيكية)

- Suggested Study Plan (Mechanical Power Specialization)

Second Year *(Semesters 3&4)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P	Pre-requisites
II	3	BE 103	Engineering Mathematics (3)	3	3-2-0	BE 102
		BE 113	Engineering Mechanics (3)	3	3-2-0	BE 112
		ME 203	Mechanical Drawing	2	1-3-0	BE 142
		ME 211	Mechanics of Materials	4	4-1-1	BE 111
		EE 208	Fundamentals of Electrical Engineering	3	3-1-1	BE 102, BE 122
		ME 270	Materials Engineering	2	2-0-2	ME 170
		EGE 03	English language (3)	2	2-0-2	UGE 02
		Semester Credit Hours		**19**		
	4	BE 104	Linear Algebra	3	2-2-1	BE 102
		BE 204	Engineering Mathematics (4)	3	3-2-0	BE 103
		ME 212	Mechanics of Machinery	3	3-1-1	BE 113
		ME 210	Computer Aided Mechanical Drawing	2	1-1-3	ME 203
		ME 251	Fluid Mechanics (1)	3	2-2-1	BE 112
		ME 271	Manufacturing Processes (1)	3	3-0-2	ME 170
		UGA 03	Arabic language	2	2-0-0	None
		Semester Credit Hours		**19**		
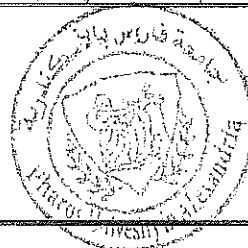
Third Year *(Semesters 5&6)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P	Pre-requisites
	5	BE 207	Numerical Analysis with MATLAB	3	3-1-2	BE 204
		ME 213	Mechanical Design (1)	4	3-2-1	ME 211
		ME 214	Mechanical Vibrations	3	3-1-1	ME 212
		ME 230	Thermodynamics (1)	3	3-1-1	BE 121
		EE 369	Electrical Power for Mechanical Engineers	3	3-1-1	EE 208
		HU 134	Engineering Economy	2	2-1-0	None
Semester Credit Hours				18		
	6	BE 209	Complex Variables	3	3-1-0	BE 204
		ME 215	Mechanical Design (2)	3	3-2-0	ME 213
		ME 221	Automatic Control	4	3-2-1	ME 214
		ME 231	Heat Transfer (1)	3	3-1-1	ME 230
		ME 272	Manufacturing Processes (2)	3	3-0-2	ME 271
		ME 252	Engineering Fluid Mechanics	4	3-2-1	ME 251
Semester Credit Hours				20		

Fourth Year *(Semesters 7&8)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P	Pre-requisites
IV	7	ME 220	Measurement and Sensors	4	3-1-2	BE 122
		ME 232	Thermodynamics (2)	3	3-2-0	ME 230
		ME 234	Heat exchangers	3	3-1-1	ME 231
		ME Elective	*Elective Course 3(Table 1.4.7):* ME 353 Fluid Power Systems	3	3-2-0	ME 252
		ME 233	Heat transfer (2)	3	3-1-1	ME 252
		HU 131	Project Management	2	2-1-0	None
	Semester Credit Hours			**18**		
	8	ME253	Fluid mechanics (2)	3	3-2-0	ME251
		ME 201	Fundamentals of Combustion Engineering	3	3-1-1	ME 230
		ME 331	Thermal Power Plants Equipment	3	3-1-1	ME 230
		ME Elective	*Elective Course-1 (Table 1.4.6):* (ME 333 Renewable Energy and Storage Systems)	3	3-1-1	ME 230
		ME 240	Refrigeration and Air Conditioning (1)	3	3-1-1	ME 232
		HU 113	Technical Report Writing and Presentation Skills	2	2-0-2	None
	Semester Credit Hours			**17**		

Fifth Year (Semesters 9&10)

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P	Pre-requisites
V	9	ME 241	Refrigeration and Air Conditioning (2)	3	3-1-1	ME 240
		ME 343	Air Conditioning Systems	3	3-2-0	ME 240
		ME 341	Controls and Safety of Thermal Systems	3	3-1-1	ME 221
		ME 254	Compressible Flow	3	3-2-0	ME 251
		HU elective	*Humanity Elective-2(Table 1.4.3):* (HU 135 Sales, Marketing and Communication Techniques-)	2	2-1-0	None
		ME 400-1	Graduation Project (1)	4	3-0-3	Department Approval
		Semester Credit Hours		**18**		
	10	ME elective	*Elective Course-2 (Table 1.4.6):* (ME332 Power Plant Operation and Management)	3	3-2-0	ME 230
		UC01	Communication Skills	2	2-0-0	None
		ME 256	Power generation by fluids	3	3-2-0	ME 231
		HU elective	*Humanity Elective-2(Table 1.4.3):* (HU 132 Accounting and Costs for Engineers)	2	2-1-0	None
		HU elective	*Humanity Elective-2(Table 1.4.3):* (HU 141 Ethics & Human Rights)	2	2-0-0	None
		ME 400-2	Graduation Project (2)	4	3-0-3	ME 400-1
		Semester Credit Hours		**16**		

TOTAL CREDIT ACHIEVED = 182

5.2 البرامج الدراسية لقسم الهندسة المعمارية للطلاب الملتحقين بالفصل الدراسى خريف 2010/2011 و الخريجين فى الفصل الدراسى ربيع 2015:

▪ **Study Program for Architectural Engineering Department**

First Year *(Semester-1)*

Code	Subject	Contact Hours			Credit Hours
		Lecture	Tutorial	Lab.	
UEC01	Computer Skills and Programming Concepts (1)	2	1	1	2
UGE01	English (1)*	1	0	2	2
BE 101	Engineering Mathematics (1)	3	2	1	3
BE 111	Engineering Mechanics (1)	3	2	0	3
BE 121	Engineering Physics (1)	3	1	1	3
BE 141	Eng. Drawing & Geometrical Projection (1)	2	4	0	3
HU 121	History of Engineering and Technology (Engineering Perspective)	1	0	2	2
Total		15	10	7	**18**
		32			

First Year *(Semester-2)*

Code	Subject	Contact Hours			Credit Hours
		Lecture	Tutorial	Lab.	
BE 102	Engineering Mathematics (2)	3	2	1	3
BE 112	Engineering Mechanics (2)	2	2	0	2
BE 122	Engineering Physics (2)	3	1	1	3
BE 142	Engineering Drawing & Descriptive Geometry (2)	2	3	1	3
BE 131	General Chemistry	2	1	1	2
ME 170	Introduction to Manufacturing Processes	2	0	2	2
UEC02E	Computer Skills and Programming Concepts (2)	2	1	1	2
UGE02	English (2)*	1	0	2	2
Total		17	10	9	**19**
		36			

Second Year *(Semesters 3&4)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
II	3	EGE 03	English (3)	2	1-0-2
		AE 111	Basic design	4	2-4-0
		AE 121	Building Technology level 1	4	2-4-0
		AE 141	Colours in Built Environment	3	2-2-0
		AE 151	Computer Aided Drafting	2	1-2-0
		AE 131	History and Theories of Architecture1	2	2-0-0
		Semester Credit Hours		**17**	
	4	HU 141	Ethics and Human Rights	2	2-0-0
		AE 210	Architectural Design Level 0	4	2-4-0
		AE 122	Building Technology level 2	4	2-4-0
		AE 142	3D projection and Shadows	3	2-2-0
		AE 152	Computer Aided Drafting 2	2	1-2-0
		AE 246	Environmental Studies**	2	2-0-0
		CV 254	Surveying	2	1-1-2
		Semester Credit Hours		**19**	

Third Year *(Semesters 5&6)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
		AE 211	Architectural Design Level 1	6	2-8-0
		AE 221	Building Technology level 3	4	2-4-0
		AE 132	History and Theories of Architecture 2	2	2-0-0
		AE 331	Theories of City Planning	3	2-2-0
		CV 252	Theory of Structure	2	1-2-0
		HU 113	*Humanity Elective-1 (Table 1.5.3):* Technical Report Writing and Presentation Skills	2	2-2-0
			Semester Credit Hours	**19**	
	6	AE 232	Site Planning	2	2-0-0
		AE 212	Architectural Design Level 2	6	2-8-0
		AE 222	Design Details Level 1	4	2-4-0
		AE 133	History and Theories of Architecture 3	2	2-0-0
		AE 241	Technical Systems in Buildings	3	3-0-0
		CV 255	Material Testing	2	2-0-0
			Semester Credit Hours	**19**	

Fourth Year *(Semesters 7&8)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
IV	7	AE 333	Urban Design	2	2-0-0
		AE 311	Architectural Design level 3	6	2-8-0
		AE 321	Design Details Level 2	4	2-4-0
		AE 348	Theories of Housing	2	2-0-0
		AE 465	*Elective Course-1 (Table 1.5.5B)* Landscape Design	2	2-0-0
		CV 256	Soil Mechanics	2	2-0-0
			Semester Credit Hours	**18**	
	8	AE 312	Design Applications (Architectural Design)	6	2-8-0
		AE 322	Design Details level 3	4	2-4-0
		AE 134	History and Theories of Architecture 4	2	2-0-0
		CV 253	Reinforced Concrete and steel Construction	2	1-2-0
		AE 347	Interior Design	3	2-2-0
		HU 161	Environment and Society	2	2-0-0
			Semester Credit Hours	**19**	

149

Fifth Year *(Semesters 9&10)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
V	9	AE 400-1	Graduation Project Part-1	4	1-6-0
		AE 431	Housing Economics	2	2-0-0
		AE 135	History and Theories of Architecture 5	2	2-0-0
		AE 341	Specifications and Quantities	2	1-2-0
		HU 164	Research Methods &Techniques	2	2-0-0
		AE 345	Building Laws, Regulations and Codes	2	2-0-0
		AE 461	*AE Elective Course-2(Table 1.5.5B):* Digital Architecture	2	2-0-0
		AE 464	*AE Elective Course-3 (Table 1.55B):* Restoration and Conservation	2	2-0-0
	Semester Credit Hours			**18**	
	10	AE400-2	Graduation Project Part-2	8	2-8-0
		AE342	Project Management	2	2-0-0
		AE344	Professional Practice	2	1-2-0
		UC01	Communications Skills	2	3-2-0
		UGE03	Arabic Language	2	2-0-0
	Semester Credit Hours			**16**	

TOTAL CREDIT ACHIEVED = 182
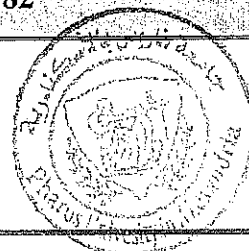
6.4 البرامج الدراسية لقسم هندسة و إدارة التشييد للطلاب الملتحقين بالفصل الدراسى خريف 2011/2010 و الخريجين فى الفصل الدراسى ربيع 2015:

- Study Program for Construction and Engineering Management Department

First Year *(Semester-1)*

Code	Subject	Credit Hours	L-T-P
UEC 01	Engineering Computer Skills (1)	2	2-1-1
BE 101	Engineering Mathematics (1)	3	3-2-1
BE 111	Engineering Mechanics (1)	3	3-2-0
BE 121	Engineering Physics (1)	3	3-0-2
BE 141	Eng. Drawing & Geometrical Projection (1)	3	2-4-0
HU 121	History of Engineering and Technology (Engineering Perspective)	2	1-0-2
UEG01	English (1)	2	1-0-2
Semester Credit Hours		**18**	

First Year *(Semester-2)*

Code	Subject	Credit Hours	L-T-P
BE 102	Engineering Mathematics (2)	3	3-2-1
BE 112	Engineering Mechanics (2)	2	2-2-0
BE 122	Engineering Physics (2)	3	3-0-2
BE 142	Engineering Drawing & Descriptive Geometry (2)	3	2-3-1
BE 131	General Chemistry	2	2-0-2
ME 170	Introduction to Manufacturing Processes	2	2-0-2
UEC 02E	Engineering Computer Skills (2)	2	2-1-1
UEG02	English (2)	2	1-0-2
Semester Credit Hours		**19**	

Second Year *(Semesters 3&4)*

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
II	**3**	HU1131	Technical Writing	2	2-0-2
		BE 103	Engineering Mathematics (3)	3	3-2-0
		BE 114	Statics and Dynamics of Rigid Bodies	3	3-2-0
		CM 101	Engineering Materials	3	2-2-1
		CM 102	Structural Analysis (1)	3	2-2-0
		CM 103	Introduction to CAD Systems	3	2-0-2
		UEG03	English (3)	2	1-0-2
			Semester Credit Hours	**19**	
	4	BE 204	Engineering Mathematics (4)	3	3-2-0
		CM 104	Civil Engineering Drawing	3	2-0-2
		CM 105	Introduction to Construction Engineering.	3	2-2-0
		CM 106	Surveying for Engineers	3	2-1-2
		CM 107	Structural Analysis (2)	3	2-2-0
		CM 113	Strength of Materials	3	2-2-0
		HU 141	*Humanity Elective Course-1 (Table 1.6.3):* Ethics and Human Rights	2	2-0-0
			Semester Credit Hours	**20**	

* Some students may study HU 111 (English Language) in old curriculum which is equivalent to the university requirement UGE01 (English Language-1).

Third Year (Semesters 5&6)

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
	5	BE 208	Applied Probability and Statistics	3	3-2-0
		CM 202	Concrete Materials	3	2-2-2
		CM 203	Construction Project Management	3	2-2-0
		CM 208	Building Technology I	3	2-2-0
		PE 389	Introduction to Environmental Engineering	3	2-2-0
		ME 251	Fluid Mechanics (1)	3	2-2-1
	Semester Credit Hours			**18**	
	6	CM 204	Soil Mechanics (1)	3	2-2-0
		CM 205	Construction Planning and Scheduling	3	2-2-0
		CM 206	Reinforced Concrete Design (1)	3	2-2-0
		CM 207	Open Channels Hydraulics	3	2-2-1
		CM 210	Introduction to Mechanical and Electrical Systems in Construction	3	2-2-0
		UGA03	Arabic Language	2	2-0-0
		UC 01	Communication Skills	2 Cr	2-0-0
	Semester Credit Hours			**19**	

Fourth Year *(Semesters 7&8)*

Year	Semester	Course Code	Course Title	Credit Hours	L–T–P
IV	7	CM 301	Steel Structures Design (1)	3	2-2-0
		CM 302	Reinforced Concrete Design (2)	3	2-2-0
		CM 303	Project Cost Analysis	3	2-2-0
		CM 304	Highway Engineering	3	2-2-1
		HU 142	Legalization and Contracts	2	2-0-0
		CM 413	*CM Elective Course-1 (Table 1.6.6):* Soil Mechanics (2)	3	2-2-0
			Semester Credit Hours	**17**	
	8	CM 315	*CM Elective Course-2 (Table 1.6.6):* Pre-stressed Concrete	3	2-2-0
		CM 305	Steel Structures Design (2)	3	2-2-0
		CM 306	Water and Waste Water Engineering	3	2-2-0
		CM 307	Construction Productivity	3	2-2-0
		HU 131	*Humanity Elective Course-2 (Table 1.6.3):* Project Management	2	2-0-0
		HU 161	*Humanity Elective Course-3 (Table 1.6.3):* Engineering Economy	2	2-0-0
			Semester Credit Hours	**16**	

Fifth Year (Semesters 9&10)

Year	Semester	Course Code	Course Title	Credit Hours	L-T-P
V	9	CM 401	Design of Temporary Structures	3	2-2-0
		CM 402	Engineering Risk and Uncertainty	3	2-2-0
		CM 403	Repair and Maintenance of Buildings	3	2-2-0
		CM 400-1	Graduation project I	4	3-0-3
		CM elective	CM Elective Course-3 (Table 1.6.6): CM 412: Reinforced Concrete Design (3) OR CM 310 : Introduction to Transportation Engineering	3	2-2-0
			Semester Credit Hours	**16**	
	10	CM 404	Construction Methods and Equipment	3	2-2-0
		CM 405	Construction Contracting	3	2-2-0
		CM 410	Quality Control of Construction Materials	3	2-2-0
		CM 400-2	Graduation project II	4	3-0-3
		CM 406	CM Elective Course-4 (Table 1.6.6): Computer Aided Design	3	2-2-0
			Semester Credit Hours	**16**	

TOTAL CREDIT ACHIEVED = 178

اللائحة الداخلية لكلية الهندسة

الباب الخامس

وصف المقررات الدراسية للبرامج الأكاديمية المختلفة

للطلاب الملتحقين بالفصل الدراسي خريف

2010/2009 و الخريجين في الفصل الدراسي ربيع

2014

عميد الكلية:

أ.د. محمود الجمال

يناير 2014

الباب الخامس

وصف المقررات الدراسية للبرامج الأكاديمية المختلفة بلائحة الكلية المعتمدة

للطلاب الملتحقين بالفصل الدراسى خريف 2011/2010 و الخريجين فى الفصل الدراسى ربيع 2015

5/1 قسم العلوم الاساسية الهندسية

5/1/1 وصف مقررات العلوم الأساسية

UGE01 English Language (1)   2 [1-0-2]

This course aims to consolidate the English language skills the students acquired during their primary and secondary education. The course focuses on honing the students' Speaking, Writing, Reading and Listening abilities. These objectives are realized by providing the students with a curriculum that is commensurate with the scientific studies they have chosen to pursue. The curriculum is taught by qualified and experienced lecturers and/or instructors supported by texts, access to computers, and a library, all delivered in state of the art facilities, and a first class learning environment.

Prerequisites: None

UGE02 English Language (2)   2 [1-0-2]

This course aims to consolidate the English language skills the students acquired during their freshmen tertiary education. The course focuses on perfecting the skills acquired during their English 101 studies. These objectives are realized by providing the students with a curriculum that is commensurate with the scientific studies they have chosen to pursue. And again, the curriculum is taught by qualified and experienced lecturers and/or instructors supported by texts, access to computers, and a library, all delivered in state of the art facilities, and a first class learning environment.

Prerequisites: UGE01

EGE02 English Language (3)   2 [1-0-2]

The curriculum framework for English 3 builds on and extends the academic skills taught and practiced in English 1 and 2. The students are required to apply the target skills using materials relevant to the different disciplines at the university. Language continues to develop through the course as the students are engaged in activities which integrate the four language skills.

Prerequisites: UGE02

BE101 Engineering Mathematics (1)   [3-2-1]

This is the first of several math courses which cover most of the basic mathematics needed for engineering degree programmers. This course contains the well recognized elements of classical engineering mathematics which universally underpin the formation of the professional engineer. The main sections are Algebra (Functions, partial fractions, binomial theorem); Calculus (limits and Continuity, differentiation); Applications (Taylor and Maclaurin's series)

Prerequisites: None

BE 102 Engineering Mathematics (2)   3[3-2-1]

This course in the calculus of one variable including. Introduction of integration with applications to area and volumes of revolution, further development of integration, Transcendental functions, inverse trigonometric and logarithmic functions, techniques of integrations, and applications which include Centroids. Other topic covered as introduction to differential equations, Change of axes and conic sections

Prerequisites: BE 101

BE 103 Engineering Mathematics (3)   3[3-2-0]

Techniques of Integration and improper integrals. Infinite series (number series, power series and functional series). Functions of several variables (partial differentiation and multiple integrals) Ordinary differential equations (Higher order equations with constant and variable coefficients) systems of differential equations solution in series.

Prerequisites: BE 102

BE 104 Engineering Linear Algebra   3[2-2-1]

This is a basic subject on matrix theory and linear algebra. Emphasis is given to topics that will be useful in other disciplines, including systems of equations, vector spaces, determinants, eigen values, similarity, and positive definite matrices, Linear Transformations, and Matrix Decomposition

Prerequisites: BE101

BE 204 Engineering Mathematics (4)   3[3-2-0]

Vector analysis (vector functions, operators, Line ,surface and volume integral. Integral theorems). Fourier Series, Laplace Transform. Curvilinear Coordinates

Prerequisites: BE 103

BE 209 Complex Variables   3[3-1-0]

The course covers the basic principles of differentiable complex-valued functions of a single complex variable. Topics include the complex number system, Cauchy-Riemann conditions, analytic functions and their properties, special analytic functions including linear fractional transformations, roots, exponential, Log, trigonometric and hyperbolic functions of a complex variable; Complex integration and line integrals, Cauchy's theorem, conformal mapping, Taylor and Laurent Series expansions; the calculus of residues and various applications.

Prerequisites: BE204

BE 111 Engineering Mechanics (1)   3 [3-2-0]

This is a basic subject on Engineering Statics. Emphasis is given to topics that will be useful in other disciplines, including Statics of Particles, Friction, and Statics of Rigid Body, Centers of Gravity, and Introduction to Analysis of Structures.

Prerequisites: None

BE 112 Engineering Mechanics (2)   2[2-2-0]

This is a basic subject on Engineering Dynamics. Emphasis is given to topics that will be useful in other disciplines, including Kinematics of Particles, Kinetics of Particles, and Energy and momentum methods.

Prerequisites: BE 101

BE 113 Engineering Mechanics (3)   3[3-2-0]

Kinematics of system of particles – kinematics of rigid body. Dynamics of systems of particles. Dynamics of rigid body. Dynamic Equilibrium.

Prerequisites: BE 112

BE121 Engineering Physics (1)   3[3-1-1]

This is the first of several physics courses which cover most of the basic physical knowledge needed for engineering programmes. This course contains the well recognized elements of classical engineering physics which universally underpin the formation of the professional engineer. It involves the study of: Units and Dimensions, Rotational Motion of Rigid Bodies, Moment of Inertia, Torque; Rotational Energy, Work and Power; Angular and Linear velocity and accelerations, Elasticity: Stress; Strain; Modulus of Elasticity; stored Energy in Strained Solids. Fluid mechanics: Equation of Continuity; Bernoulli's Equation. Viscosity, Poiseuille's Law. Wave motion: types of waves, Sound waves: Doppler Effect. Thermal properties and heat transfer techniques: thermal expansion, heat and internal energy, heat capacity and specific heat. Thermal energy transfer mechanisms. Work and heat in thermodynamic processes. The first law of thermo dynamics.
Prerequisites: None

BE122 Engineering Physics (2)   3[3-1-1]

This course is to introduce electricity and further develop fundamental ideas of Electricity and Optics. Lecture topics include: electrical current and resistance, EMF, D.C. circuits and electrical measurements, electric charge, electric field and potential, magnetic fields and their origin, electromagnetic induction. Geometric optics, curved surfaces and Lenses.

Prerequisites: None
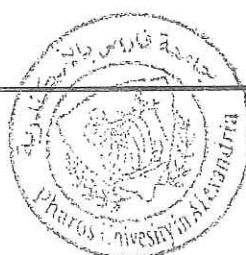
BE 123 Modern Physics (3)   3[3-1-1]

Introduction to special relativity theory. Particles and waves. Introduction to quantum mechanics. Principle of duality. Atomic Physics. Introduction to nuclear Physics and solid-state physics.

Prerequisites: BE 122

BE 131 General Chemistry   2[2-1-1]

The aim of this course is to offer a strong background in General chemistry and its practical applications in industry. This course is a Prerequisite for several subjects, such as, Organic Chemistry I, Inorganic Chemistry , Physical Chemistry, Industrial Corrosion and Chemical process principles I. The course covers Gaseous state, Chemical Equilibrium, Ionic Equilibrium, Liquid State and Solutions. It also covers, Electrochemical Corrosion, Fuels, Combustion, Water Treatment, Cement and Building materials.

Prerequisites: None

BE 141 Engineering Drawing & Descriptive Geometry (1)   3[2-4-0]

Engineering Drawing: Introduction, Type of Lines and Lettering, Drawing Equipments and use of Instruments, Geometric Constructions, Theory of Projection, Multiview Representation, Deduction of Third View. Descriptive Geometry: Introduction, Mongean Projection: Representation of points, lines, planes. Representation of line of intersection of two planes, Representation of point of intersection of a line and a plane, Auxiliary Planes.

Prerequisites: None

BE 142 Engineering Drawing & Descriptive Geometry (2)   3[2-3-1]

Engineering Drawing: Pictorial Drawing, Sectional Views, Structural Drawing, Symbols for drawings of electrical circuits, Use of AutoCAD (Lab Classes). Descriptive Geometry: Representation of Circles, Representation of Surfaces of Revolution: (Sphere, Cylinder, Cone), Intersection of Surfaces of Revolution, Shades and Shadows, Perspective.

Prerequisites: BE 141

BE 205 Probabilities and Random Variables   3[3-2-0]

Introduction to probability (probability space, conditional probability and independence). Random variables and their distributions. Moment generating functions. The law of large numbers. Bivariate random variables and their distributions.

Prerequisites: BE 204

BE 206 Special Functions   3[3-2-0]

Complex Analysis. Special functions (Gamma and Beta functions, Legendre polynomials, chebechiv's polynomial, Bessel functions).

Prerequisites: BE 204
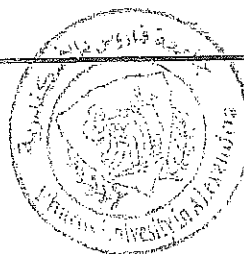
BE 207 Numerical Analysis using MATLAB   3[3-2-1]

Elements of numerical solution of systems of linear equation. Numerical solutions of nonlinear Algebraic equations. Numerical Solution of ordinary differential equations. Error Analysis stability and convergence. Curve Fitting.

Prerequisites: BE 204

BE 208 Applied Probability and Statistics   3[3-2-0]

Introduction to probability theory (probability space, conditional probability and independence, Random variables and their distributions) Sampling. Estimation (Point and interval estimate) Tests of Hypothesis. Regression.

Prerequisites: BE 207

1/1/5 وصف مقررات العلوم الإجتماعية و الإنسانية

HU 113 Technical Reports Writing and Presentation Skills   2[2-0-2]

The course teaches the students the basic skills of writing. The student is introduced to the methods of data collection and its preparation for report writing for projects and industrial purposes. Patterns of writing are presented through the use of formal-informal reports.

Prerequisites: Non

HU 121 History of Engineering and Technology (Engineering Perspective)   2[1-0-2]

This course provides the students with a background on the development of the concept of technical engineering in the modern period. It includes definitions of art, science, technology, engineering, civilizations and their relationship with natural and human sciences. It sheds the light on the pioneers in engineering with its different branches & specializations, and their roles in the development of contemporary and modern technology. The course includes practical training for enhancing and developing the technical skills of freshmen students in the Engineering Perspective lab.

Prerequisites: None

HU 131 Project Management   2[2-1-0]

This course covers definition and different types of modern management and decision making, it covers qualitative & qualitative aspects of management, Planning organizing, staffing, controlling , decision making, man power allocation, basics of project management, project management within constrains of resources, time& cost activity –event networks. Marketing systems, consumer markets and buying behavior, pricing strategy, marketing channels, sales promotion and publicity. The main objective of this course is to study the application of theses methods on different management projects with various levels.

Prerequisites: None

HU 132 Accounting and Costs Analysis for Engineer   2[2-1-0]

Introduction to fundamental of accounting and cost estimation .Interest types, capital and investment costs and reproduction costs, concepts and elements of costing systems of measuring production cost, depreciation expenditure, profitability indicators, optimization, cash flow, project execution, function of stock market, management , balance sheets, and feasibility studies for engineering projects.

Prerequisites: None

HU 133 Engineering Statistics   2 [2-1-0]

Students are introduced to the use of statistics in engineering. Topics include measures of central tendency, dispersion, probability, sampling, hypothesis testing and estimation, and their application on engineering studies.

Prerequisites: None

HU 134 Engineering economics   2[2-1-0]

This is the study of the basic economic concepts from an engineering aspect. It covers the important theories that govern macro economics, micro economics, theory of value, demand and supply and the application of feasibility studies to engineering projects Cost benefits analysis, economic comparison between alternative, present worth method and future worth, taxes, economic life& risk analysis are introduced .

Prerequisites: None

HU 135 Sales, Marketing & Communication Techniques   2[2-1-0]

A three-dimensional course, dealing with sales, marketing, techniques, advertisement and communication with individuals and organizations. It deals with the planning, collection, organization, interpretation and presentation of marketing information and forecasting to aid market decision makers. It includes research methods, types of data, and sources of data and communication techniques in local & international industry.

Prerequisites: None

HU 141 Ethics and Human Rights   2[2-0-0]

The general theory of human rights, definitions of human rights, Egyptian and international laws, Islamic legislature, nature of human rights, recognition of human rights. Resource of human rights, types of human rights, freedom of bodies, freedom of ideas, economical rights, social rights, protection of human rights: legal protection, administration protection, syndicate protection. Constitutional and administrational legacy.

Prerequisites: None

HU 142 Legalization and Contracts   2[2-1-0]

This course includes the different legislative rules associated with employment. It also includes the study of all contracts, their conditions and types in different fields with a special reference to the employment law in Egypt

Prerequisites: None
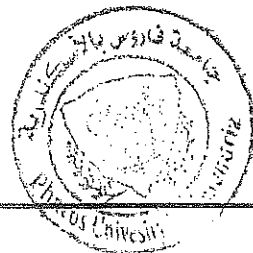
HU 143 Principles of Law 2[2-0-1]

Theory of law: composition, expression, diversity, application, sources, scope and construction of legal rule. Theory of right: Definition, diversity, scope, structure, classification, sources and subjects of right.

Prerequisites: None

HU 144 Communications Laws and Rules 2[2-0-0]

This course covers methods of communications and the laws and agreements that govern them on both the local and international level with emphasis on the great development of the means of communications in modern & cotemporary periods.

Prerequisites: None

HU 151 Industrial Safety 2[2-1-0]

This course introduces the concept of industrial safety to the students. It states the methods and the different systems that an industrial company should apply and follow up in this field, on the levels of groups, individuals and organizations.

Prerequisites: None

HU 161 Environment and Society 2[2-0-0]

This course addresses the green house effect, climatic change, global warming, gases contributing to green house effect, air pollution, water pollution, waste water treatment and disposal, solid pollution, solid waste management control and disposal of hazardous wastes, industry growth, and noise pollution, environmental development: evaluation of environmental impact of projects, role of university in dealing with environmental problems and the development of environment, legal and regulation consideration of protection of the environment.

Prerequisites: None

HU162 Human Computer Interaction 2 [1-0-2]

The main objective of this course is to provide students with knowledge about the main issues involved in the process of interaction between humans and computers. The process of interaction design is discussed as well as ways for evaluating different designs for different software products or devices used in every day life. The course introduces the study of ergonomics , cognition and discusses conceptual models . It also introduces data gathering ways and how to deal with persons

Prerequisites: CE 100

HU 164 Research Methods and Techniques
2[2-0-0]

The course addresses effective methods of research. Students learn how to arrange their ideas and how to present them properly, with emphasis on scientific and technical tools.

Prerequisites: None

HU 170 Risk Managements
2[2-0-0]

Basic risk and reliability concepts; human factors in safety and reliability; safety legalization and role of regulatory bodies; safety, quality and risk management; statistical and probabilistic methods; reliability theory and risk analysis; process control and safety; fire and explosion risks and control reliability analysis of large engineering systems.

Major business risks that caused by changes in economic variables, such as inflation, input prices, wage rates, interest rates, foreign exchange rates, stock prices, and economic growth.

Prerequisites: None

HU 171 Psychology
2[2-0-0]

The course introduces the field of psychology and its basic concepts, theories, research methods, and contributions to the understanding of human behavior. Topics include the nervous system, perception, motivation, learning and memory, social behavior, personality, developmental and clinical psychology. The past and current theories and contributions of major psychologists are explored.

Prerequisites: None

HU 172 Logic
2[2-0-0]

This course provides students with the opportunity to learn logic and basic problem solving skills with an emphasis on negotiation. The course includes an introduction to conflict resolution, self-identification of conflict resolution styles, causes of conflict, good communication and negotiation skills.

Prerequisites: None

2/5 وصف المقررات الدراسية لقسم الهندسة الكهربية بلائحة الكلية المعتمدة للطلاب الملتحقين بالفصل الدراسى خريف 2011/2010 و الخريجين فى الفصل الدراسى ربيع 2015

EE 202 Digital Logic Fundamentals   3Cr [3-1-1]

The objective of this subject is to be able to analyze and design digital logic systems by understanding formal foundations and selected design techniques.

The covered topics are:

Number systems and codes, Boolean algebra, Boolean functions, Karnaugh Maps. Basic logic gates. Combinational logic, adders, comparators, decoders, encoders, multiplexers, parity generators. Latches, edge triggered flip-flops, counters, shift registers. Procedure for design of sequential circuits.

Prerequisites : UEC 02

EE 203 Introduction to Microprocessors   3Cr [3-1-1]

This course aims to introduce students to features and technology of microprocessor systems.Also,to gain experience in assembly language programming of microproessor peripherals and interrupt service routines, as well as data processing tasks.

The course content is:

Introducing Intel 80x86 microprocessor family. Architecture and programmer's model, registers, addressing modes. Hardware model, processor pinot, pin functions. Connection to the external program and data memory. Software design techniques, instruction set, programming in assembly language, programmable ports, and serial communication.

Prerequisites: EE 202

EE 205 Fundamentals of Computer Architecture   3Cr [3-1-1]

This course aims to make the student familiar with the hardware and software components of the PC to make its usage easier which is very important to our graduated engineer. The main topics are: Computer arithmetic, logical operations, floating point number representations. ALU construction, instruction set architecture, addressing modes. CPU Design, data path design, control path design. Hardwired control unit, Micro-programmed control unit. Memory system design, primary memories, secondary memories, virtual memory system, cache memory. Input/Output operations, memory-mapped I/O, interrupt-driven I/O, direct memory access (DMA), and I/O processors. Introduction to advanced computer architecture.

Prerequisites: EE 202
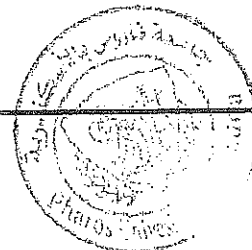
EE 206 Microprocessor Interfacing
3Cr [3-1-1]

The objective of this course is learning low level programming on standard microprocessors using many assembly language practices.

The main studied components are: Intel family assembly language, addressing modes. Parallel interfacing: input output ports, handshaking, interfacing to ADC and DAC, using 8255 chip. Timer interfacing, using 8254 programmable timer/counter. Keyboard interfacing using 8279 chip. Interrupts, software and hardware interrupts, vectored interrupts, using 8259 interrupt controller. Serial communication, RS232 protocol, using 8251 UART, adjusting baud rate. Direct memory access, bus sharing, multiprocessor systems, using 8237 DMA controller. Advanced applications.

Prerequisites: EE 203

EE 207 Digital System Design with Hardware Description Languages
3Cr [3-1-1]

this course aims to develop ability to use a hardware description language, simulation, and a logic synthesis tool in the design and verification of digital circuits also to understand design in a contemporary environment resulting from the use of deep-submicrometer implementation technologies and design reuse.

The main topics are: Computer-aided design tools for digital systems. Hardware description languages. Introduction to VHDL, assignments, array and loops, packages, libraries, concurrent statements. Combinational circuit design, multiplexers, encoders, decoders, code converters, comparators. Sequential circuit design, shift registers, counters. Design of microcomputer, basic components of a computer, specifications, architecture of a simple Microcomputer system. Programmable logic devices, ROM, PLAs, GALs, CPLDs and FPGAs.

Prerequisites: EE 216

EE 208 Fundamentals of Electrical Engineering*
3Cr [3-1-1]

this course helps any student from any departments to understand the basic concepts of electrical circuits,to recognize its components and their responses, this course includes:

Elements of electrical circuits. DC circuits, network theorems. AC circuits, phasors, impedance, power, power factor. Fundamentals of electronics. Diodes. Transistors. Amplifiers.

Prerequisites: BE 102, BE 122

* Not Accredited For Electrical Engineering Students.

EE 209 Digital Systems*
3Cr [3-1-1]

This course tends to be able to analyze and design digital logic systems by understanding formal foundations and selected design techniques.the main contents are:
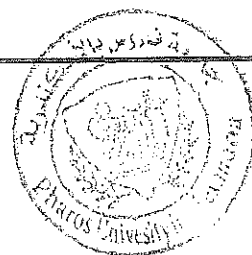
Digital representation. Design of logic networks. Sequential logic. Flip flops. Binary and decade counters. Schmitt trigger. Timers. Integrated circuit design. A/D and D/A converters. Multiplexers and demultiplexers.

Prerequisites: BE 102, BE 122

* Not Accredited For Electrical Engineering Students.

EE 210 Microprocessors and Interface*   3Cr [3-1-1]

This course Introduce students to features and technology of microprocessor systems. Gain experience in assembly language programming of microproessor peripherals and interrupt service routines, as well as data processing tasks.

Contents are: Architecture & Microprocessor hardware. Memory organization. Assembly language and programming. I/O techniques. Timers and counters. Interrupts. Serial communications. Real world interfacing to instruments, sensors, motors and data acquisition.

Prerequisites: BE 102, BE 122

EE 211 Electronics Workshop   1Cr [0-0-4]

This course tends to understand the usage of simple physical explanations, with reference to examples from actual devices, the physics of low-dimensional semiconductors will be introduced, such as field-effect transistors and quantum wells.

The main topics are:

Soldering techniques, PCB fabrication, component testing and mounting. Using different measuring instruments, voltmeter and current probes, electronic millimeters, digital instruments. Using oscilloscopes. Using frequency meters.

EE 212 Measurements & Sensors*   3Cr [3-1-1]

The aim of this course is to provide the students with the fundamentals of electrical measurements, concept of measurement systems, field of applications of measurement systems, methods of measurements and different types of measuring instruments for non-electrical engineering students. The course also aims at covering methods of mesaurements of physical quantities using sensors and transducers. Fundamentals of data acquisition are also included. The course focus on different practical application of electrical measurents and instrumentation in petro-chemical systems.

The course covers fundamentals of electrical measurements: accuracy, sensitivity, resolution, random erros and loading effect errors. It also covers different types of analog measuring instruments: PMMC, iron, dynamometer and induction types for measurements of dc and ac voltage, current and electric power. Measurements of accurate and sensitive frequency and phase shift of ac voltage and cuurent signals using CRO are also included in this course. It also covers
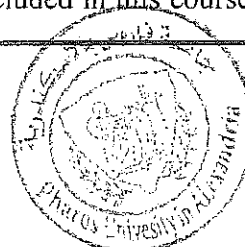
measurements of low and high resistance measurements as well as measurements of inductance and capacitance parameters at different quality factors using bridge circuits. Measurements of physical quantities using sensors or transducers and fundamentals of data acquisition in instrumentation systems are also included in this course.

* Not Accredited for Electrical Engineering Students.

Prerequisites: EE 208

EE 213 Introduction to Electronic Circuits   3Cr [3-1-1]

The course objectives are:

- Mastery of component level models of bipolar and field effect transistors.

- Ability to design differential and multi-stage transistor amplifier circuits.

- Knowledge of and design skills for non-ideal op-amp circuits.

The main topics are: Semiconductor materials. Fundamentals of diode operation, zener diode, clippers, clampers, rectifiers, voltage regulator. Field effect transistors (fundamentals, characteristics of JFET and MOSFET, biasing configurations). FET amplifiers (common source- common drain- common gate). Bipolar junction transistor (circuits, analysis, biasing). BJT amplifiers (common emitter- common collector- common base). Multistage amplifiers.

Prerequisites: BE 122, EE291

EE 214 Electro-mechanical Energy Conversion*   4Cr [3-1-1]

The aim of this course is to provide the students with the principles of electro-mechanical energy conversion for non-electrical engineering students. It also covers special types of transformers and motors for special industrial applications.

The course covers a review article for electrostatic and electro-magnetic principles and principle of electro-mechanical energy conversion. It also covers transformers, pulse transformers, stepper motors, switch reluctance motors, commutator dc motors, permanent magnet motors, brushless dc motors.

Prerequisites: BE 102, BE 122

*Not accredited for Electrical Engineering Students

EE 215 Electric Circuits and Systems   4Cr [4-1-1]

DC circuits. Network laws. Reduction methods. Voltage, current, power and energy. Loop analysis. Norton and Thevenin's theorems. Elements of energy storage. electric charge and magnetic fields. First order transient. AC circuit analysis. Two-port networks.

Prerequisites: BE 102, BE 122
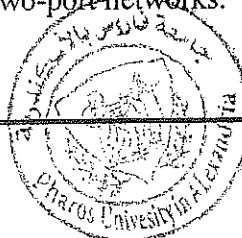
EE 216 Applications of Digital Systems   3Cr [3-1-1]

this course tends to experience the full spectrum of tasks involved in a large, realistic, group-based digital design project - architecture development, organization design, logic design, placement and routing, construction, subsystem and system debugging, and software design and debugging.

Topics covered:

TTL and CMOS logic families. Practical combinational circuit design, block diagrams, timing analysis, PALs, PLAs, GALs, device programming. Decoders, encoders, multiplexers, comparators, adders, subtractors, multipliers. Combinational circuit case studies, Barrel shifter, floating point encoder, tic tac toc. Practical sequential circuit design, state machine description, counter, shift registers, memory: static RAM, synchronous RAM, dynamic RAM, synchronous DRAM. High density devices, complex programmable logic devices (CPLDs) and field programmable logic arrays (FPGAs)

Prerequisites: EE 202

EE 220 Introductory Electronic Transducers   3Cr [3-1-1]

- To aid the student in the application of basic physical laws in the context of linear and rotating electromagnetic machines.
- To develop student understanding of magnetic equivalent circuits and the analogy between magnetic and electrical variables.
- To transfer to students a basic knowledge of AC-DC, DC-DC, AC-AC, and DC-AC power electronic circuits.

Topics covered

Transducers principles, ultrasonic, optical and infrared sensors. Inductive, capacitive and resistive transducers for measurements of length, thickness, displacement, velocity, torque, temperature, flow, humidity, moisture, and pH. Displacement transducer, strain gauge, linear variable differential transformer, capacitive, inductive, piezoelectric. Pressure transducers. Temperature transducers, resistance temperature detectors, Thermistors, Thermocouples. Digital transducers, disc type encoder, incremental shaft encoder. Using various sensors in data acquisition systems. Signal conditioning, instrumentation Amplifier, isolation amplifier.

Prerequisites: EE 213

EE 221 Microwave Devices   3Cr [3-1-1]

The aim of this subject is to give students an understanding of basic microwave devices and the necessary background to perform simple design of microwave circuits.
The covered topics are: Principle of linear beam amplifier and oscillator, velocity modulation, bunching process in Klystron. Crossed field tube devices, TWT, microwave fast wave electron
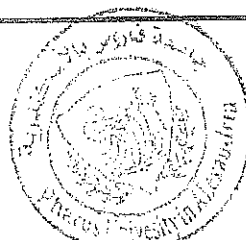
tubes. Magnetron oscillator. Microwave Semiconductor devices, PIN diodes, varactor diodes, IMPATT and TRAPATT devices, transferred electron devices, Gunn diode, Tunnel diode. Microwave BJTs and GaAs FETs. Introduction to microwave integrated circuits, active and passive components. Wave guides, resonators. Passive devices, couplers, attenuators, circulator. Microwave antennas. Microwave measurements.

Prerequisites: EE 220

EE 223 Electronics Laboratory   1Cr [0-0-4]

This course exposes students to the design, fabrication and testing of a semiconductor chip in one semester. The students are responsible for all phases of the project, work in a group with a defined goal, draw on their entire technical background and produce an end result.

The main topics are:

Using and understanding electronics laboratory equipments. Oscilloscopes, function generators, power supplies, multimeters, curve tracers. Diode I-V characteristics. Zener diode Characteristics and voltage regulators. Double diode clipping and clamping circuits. BJT transistor DC analysis, BJT amplifier (CE, CC, CB configuration), frequency response of amplifiers. BJT power amplifiers (classes: A, B, and push pull). MOSFET DC and AC characterization. Design and measurements of op-amp circuits. Active filters analysis. Tuned amplifiers.

Prerequisites: EE 213

EE 224 Micro-Electronics Devices and Circuits   3Cr [3-1-1]

The main goal is to provide the students with an understanding of the relation between physical structure and circuit behavior of semiconductor active devices. The emphasis is on simple models of the semiconductor, the discussion of the properties of potential barriers and field effect, with the MOSFET as the centerpiece of the course. Simple one-device circuits are used to introduce non-linear behavior, and make the connection to the device physics. The students will learn the relation between external circuit parameters (as used in SPICE) and the device internal structure. At the end of the course the students will know the basic mechanism of rectification, amplification and switching and their implementation with various types of semiconductor devices.

The covered topics are: Operational Amplifier circuits (fundamentals- frequency response- inverting- non inverting- summing- integrators- differentiators- voltage follower amplifier configurations- IC operational amplifier). Amplifiers frequency response (transistor amplifier- Bipolar- FET). High frequency response. Photo transistor. Feedback Amplifiers (current and voltage amplifiers- positive and negative feedback). Power amplifier (Class A- Class AB).

Prerequisites: EE 213
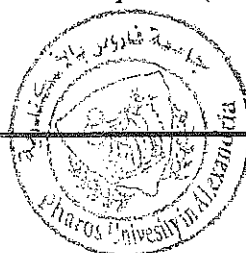
EE 225 Solid State Electronics   3Cr [3-1-1]

This course aims to gain understanding of the quantum physics underlying the operation of semiconductor devices. Emphasis is on the electronic band structure of zinc blende semiconductors, as well as on scattering of electrons in these crystals with phonons, impurities etc., and the ways these microscopic properties affect device output characteristics.

Topics covered :

Review of quantum mechanical principles, Solid-state structure. Atomic bonds. Crystal structure, reciprocal space, brillouin zones. Theory of solids, dynamics of electron motion. Free-electron theory in metals, Fermi-Dirac statistics. Energy band theory. Effective mass. Statistics of electronic state population. Semi-conductor, metal, insulator. Electronic motion. Conductivity in solids, resistivity. Intrinsic and extrinsic semi-conductor. Diffusion and drift. Hall effect. Dielectric and magnetic properties. Device applications.

Prerequisites: EE 213

B. Streetman, "Solid State Electronic Devices", 5th Ed., Printice Hall, 2000.

EE 226 Integrated Circuit Devices   3Cr [3-1-1]

This course provides a link between semiconductor device physics and integrated circuit fabrication technology. In this course students become familiar with the working principles of bipolar (BJT) and MOS devices that are used in monolithic integrated circuits (IC). Basics of CMOS integration technologies are covered, too. The course is designed for electrical engineering students to be able to design simple process flow and to tailor the manufacturing process in order to achieve desired device characteristics. Specially designed projects will be assigned for students to learn process design and device design using industry standard simulation tools. Preliminary knowledge of monolithic integrated circuit design will be instructed in this course. the main topics are:

Overview of electronic properties of semiconductors. Metal semiconductor contacts, PN junction, bipolar transistor and MOS field effect transistors. Properties which are significant to device operation for integrated circuits. Device fabrication technologies.

Prerequisites: EE 225

EE228 Analog Integrated Circuits   3Cr [3-1-1]

This course tends to provide background material to understand and carry out detailed analysis, modeling, fabrication, and application of advanced MOS and bipolar analog and mixed-signal integrated circuits.

The covered topics are: Operational amplifier circuits (dc and ac characteristics of CMOS OPAMP- dc and ac characteristics of BiCMOS OPAMP). Multistage amplifiers. Offset error