

# **COE ABET COMMITTEE**

## **CURRICULUM CHANGES DURING**

## THE ACCREDITATION PERIOD

Term T112

### **COMPUTER ENGINEERING**

Program

at

### King Fahd University of Petroleum & Minerals DHAHRAN, SAUDI ARABIA

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#### CONFIDENTIAL

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#### New BSc. Program in Computer Engineering Meets ABET Minimum Requirments

To cope with local and international challenges in the discipline, the Computer Engineering Department developed a new BSc Program in computer Engineering. The new COE program implements an education in science, mathematics, engineering science, engineering design and general studies that meets or exceeds the expectations of the ABET criteria. The minimum total number of credits for a B.Sc. in Computer Engineering with COOP is 133 while it is 132 for a B.Sc. in Computer Engineering without COOP:

1. The requirements for a Bachelor of Science degree in Computer Engineering With No Coop Option are summarized below:

TOTALS-ABET BAS	SIC-LEVEL REQUIREMENTS		32	53	12	35
OVERALL TOTAL DEGREE ( <b>With No (</b>	CREDIT HOURS FOR THE Coop)	132				
PERCENT OF TOTA	L		24	40	9	27
Total must satisfy	Minimum Semester Credit Hours		32 Hours	48 Hours		
percentage	Minimum Percentage		25%	37.5 %		

2. The requirements for a Bachelor of Science degree in Computer Engineering With Coop Option are summarized below:

TOTALS-ABET BA	ASIC-LEVEL REQUIREMENTS		32	50	18	33
OVERALL TOTA DEGREE ( <b>With Co</b>	AL CREDIT HOURS FOR THE Dodp)	133				
PERCENT OF TOT	TAL		24	38	14	25
Total must satisfy either credit hours		32 Hours	48 Hours			
or percentage	Minimum Percentage		25%	37.5 %		

# It is clear that the BSc Degree Program in Computer Engineering with either of the options "With No Coop" or "With Coop" satisfies ABET Minimum requirements.

The detailed (Semester based) program requirements for a Bachelor of Science degree in Computer Engineering are summarized below in Table 1 (With No Coop Option) and Table 2 (With Coop Option). The ABET Credits Hour Distribution over the Curricular Areas of each of the above options are shown in Tables 3 and 4, respectively.

Table 1 – Computer Engineering C	Curriculum (No Coop Option)
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COURS	SE	TITLE	LT	LB	CR	COURS	SE	TITLE	LT	LB	CR
Prepara	atory Year										
ENGL	001	Prep. English I	15	5	8	ENGL	002	Prep. English II	15	5	8
MATH	001	Prep. Math I	3	1	4	MATH	002	Prep. Math II	3	1	4
PYP	001	Prep. Physical Science	2	0	2	РҮР	002	Prep. Computer Science	0	2	1
PYP	003	University Study Skills	0	2	1	ME	003	Prep. Eng. Technology	0	2	1
PE	001	Prep. Health and Physical Educ. I	0	2	1	PE	002	Prep. Health and Physical Educ. II	0	2	1
		·	20	10	16				18	12	15
		Total c	redi	t hours 1	required i	n Prepar	atory Prog	ram:			
First Y	ear (Freshman)			-	_	_		-			
MATH	101	Calculus I	4	0	4	MATH	102	Calculus II	4	0	4
PHYS	101	General Physics I	3	3	4	PHYS	102	General Physics II	3	3	4
ENGL	101	An Intro to Academic Discourse	3	0	3	ENGL	102	Intro to Report Writing	3	0	3
CHEM	101	General Chemistry I	3	4	4	ICS	102	Intro. To Computing I	2	3	3
IAS	111	Belief & its Consequences	2	0	2	IAS	101	Practical Grammar	2	0	2
PE	101	Physical Education I	0	2	1	PE	102	Physical Education II	0	2	1
			15	9	18				14	8	17
Second	Year (Sophomore)		-	-		_					
COE	202	Digital Logic Design	3	0	3	ICS	202	Data Structures	3	3	4
COE	203	Lab	0	3	1	EE	203	Electronics I	3	3	4
ICS	201	Intro. To Computing II	3	3	4	IAS	212	Professional Ethics	2	0	2
EE	201	Electric Circuits I	3	3	4	COE	241	Communications	3	0	3
MATH	201	Calculus III	3	0	3	STAT	319	Prob.& Stat. for Engineers	3	0	3
IAS	201	Objective Writing	2	0	2						
			14	9	17				14	6	16
Third Y	Year (Junior)	I	1		1			T		1	<del></del>
MATH	260	Differential Eqs. & Lin. Algebra	3	0	3	COE	306	Introduction to Embedded Systems	3	3	4
ICS	253	Discrete Structures I	3	0	3	IAS	301	Language Comm. Skills	2	0	2
ENGL	214	Academic & Professional Comm.	3	0	3	D.E.		COE 444 or COE 405	3	0	3
COE	301	Computer Organization	3	3	4	T.E.		Technical Elective 1	3	0	3
COE	344	Computer Networks	3	3	4	COE	300	Principles of Comp. Eng. Design	1	3	2
						SE	307	Eng. Economy Analysis	3	0	3
			15	6	17				15	6	17
		Summer Session				COE	399	Summer Training	0	0	0
Fourth	Year (Senior)										
ICS	431	Operating Systems	3	3	4	COE	485	Senior Design Project	1	6	3
COE	4xx	COE Elective 1	3	0	3	IAS	322	Human Rights in Islam2	2	0	2

COE	4xx	COE Elective 2	3	0	3	COE	4xx	COE Elective 3	3	0	3		
T.E.		Technical Elective 2	3	0	3	COE	4xx	COE Elective 4	3	0	3		
GS	XXX	GS Elective 1	3	0	3	GS	XXX	GS Elective 2	3	0	3		
			15	3	16				12	6	14		
	Total credit hours required in Degree Program : 132												

### Table 2 – Computer Engineering Curriculum (With Coop Option)

COURS	SE	TITLE	LT	LB	CR	COURS	SE	TITLE	LT	LB	CR
Prepara	atory Yea	r							•		
ENGL	001	Prep. English I	15	5	8	ENGL	002	Prep. English II	15	5	8
MATH	001	Prep. Math I	3	1	4	MATH	002	Prep. Math II	3	1	4
РҮР	001	Prep. Physical Science	2	0	2	PYP	002	Prep. Computer Science	0	2	1
РҮР	003	University Study Skills	0	2	1	ME	003	Prep. Eng. Technology	0	2	1
PE	001	Prep. Health and Physical Educ. I	0	2	1	PE	002	Prep. Health and Physical Educ. II	0	2	1
			20	10	16				18	12	15
		Total cr	edit ho	ours re	quired	in Prepa	rator	y Program:			L
First Ye	ear (Fresl	hman)									
MATH	101	Calculus I	4	0	4	MATH	102	Calculus II	4	0	4
PHYS	101	General Physics I	3	3	4	PHYS	102	General Physics II	3	3	4
ENGL	101	An Intro to Academic Discourse	3	0	3	ENGL	102	Intro to Report Writing	3	0	3
CHEM	101	General Chemistry I	3	4	4	ICS	102	Intro. To Computing I	2	3	3
IAS	111	Belief & its Consequences	2	0	2	IAS	101	Practical Grammar	2	0	2
PE	101	Physical Education I	0	2	1	PE	102	Physical Education II	0	2	1
		· · ·	15	9	18			<u> </u>	14	8	17
Second	Year (So	phomore)									<u> </u>
COE	202	Digital Logic Design	3	0	3	ICS	202	Data Structures	3	3	4
COE	203	Digital Logic Design Lab	0	3	1	ICS	253	Discrete Structures I	3	0	3
ICS	201	Intro. To Computing II	3	3	4	EE	203	Electronics I	3	3	4
EE	201	Electric Circuits I	3	3	4	IAS	212	Professional Ethics	2	0	2
MATH	201	Calculus III	3	0	3	COE	241	Data & Computer Communications	3	0	3
IAS	201	Objective Writing	2	0	2	STAT	319	Prob.& Stat. for Engineers	3	0	3
			14	9	17				17	6	19
Third Y	ear (Jun	ior)									
MATH	260	Differential Eqs. & Lin. Algebra	3	0	3	COE	306	Introduction to Embedded Systems	3	3	4
ENGL	214	Academic & Professional Comm.	3	0	3	D.E.		COE 444 or COE 405	3	0	3
IAS	301	Language Comm. Skills	2	0	2	GS	xxx	GS Elective 1	3	0	3
COE	301	Computer Organization	3	3	4	COE	300	Principles of Comp. Eng. Design	1	3	2
COE	344	Computer Networks	3	3	4	ICS	324	Database	3	3	4
SE	307	Eng. Economy Analysis	3	0	3	IAS	322	Human Rights in Islam	2	0	2
		<u> </u>	17	6	19	1			15	9	18
		Summer Session				COE	350	Start of COOP	0	0	0

Fourth	Year (Se	nior)									
COE	351	COOP	9	0	9	COE	485	Senior Design Project	1	6	3
						ICS	431	Operating Systems	3	3	4
						COE	4xx	COE Elective 1	3	0	3
						COE	4xx	COE Elective 2	3	0	3
						GS	XXX	GS Elective 2	3	0	3
			9	0	9				13	9	16
		Total cr	edit h	ours r	equired	in Degi	ree Pro	gram : 133			

Course epartment, Number, Title) In the program by term starting with first ear and ending with the last term of the final year. Calculus I General Physics I An Intro to Academic Discourse General Chemistry I Belief & its Consequences Physical Education I	Course is Required, Elective or a Selected Elective by an R, an E or an SE. <sup>2</sup> R R R R R R R R	Math & Basic Sciences 4 4 4	Engineering Topics Check if Contains Significant Design (√)	General Education	Other3
Calculus I General Physics I An Intro to Academic Discourse General Chemistry I Belief & its Consequences Physical Education I	R R R R R R R	4 4 4		2	3
Calculus I General Physics I An Intro to Academic Discourse General Chemistry I Belief & its Consequences Physical Education I	R R R R R R	4 4 4		2	3
General Physics I An Intro to Academic Discourse General Chemistry I Belief & its Consequences Physical Education I	R R R R R	4		2	3
An Intro to Academic Discourse General Chemistry I Belief & its Consequences Physical Education I	R R R R	4		2	3
General Chemistry I Belief & its Consequences Physical Education I	R R R	4		2	
Belief & its Consequences Physical Education I	R R			2	
Physical Education I	R				
					1
Calculus II	R	4			
General Physics II	R	4			
Intro to Report Writing	R				3
Intro. To Computing I	R				3
Practical Grammar	R			2	
Physical Education II	R				1
Digital Logic Design	R		3 (√)		
Digital Logic Design Lab	R		1 (√)		
Intro. To Computing II	R				4
Electric Circuits I	R		4 (v)		
	R	3			
Calculus III				2	
	Physical Education II Digital Logic Design Digital Logic Design Lab Intro. To Computing II Electric Circuits I Calculus III	Physical Education II       R         Digital Logic Design       R         Digital Logic Design Lab       R         Intro. To Computing II       R         Electric Circuits I       R         Calculus III       R	Physical Education IIRDigital Logic DesignRDigital Logic Design LabRIntro. To Computing IIRElectric Circuits IRCalculus IIIRObjective WritingP	Physical Education II       R         Digital Logic Design       R       3 (√)         Digital Logic Design Lab       R       1 (√)         Intro. To Computing II       R       2         Electric Circuits I       R       4 (√)         Calculus III       R       3	Physical Education IIRIDigital Logic DesignR3 ( $$ )Digital Logic Design LabR1 ( $$ )Intro. To Computing IIR2Electric Circuits IR4 ( $$ )Calculus IIIR3Objective WritingR2

### Table 3 – COE Curriculum with No Coop Option

2-SPRI	ING						
ICS	202	Data Structures	R				4
EE	203	Electronics I	R		<b>4</b> (√)		
IAS	212	Professional Ethics	R			2	
COE	241	Data & Computer Communications	R		3 (1)		
STAT	319	Prob.& Stat. for Engineers	R	3			
3-FAL	L 3-S	PRING					
MATH	260	Differential Eqs. & Lin. Algebra	R	3			
ICS	253	Discrete Structures I	R	3			
ENGL	214	Academic & Professional Comm.	R				3
COE	301	Computer Organization	R		4 (v)		
COE	344	Computer Networks	R		4 (√)		
3-SPRI	ING						
COE	306	Introduction to Embedded Systems	R		4		
IAS	301	Language Comm. Skills	R			2	
D.E.		COE 444 or COE 405	SE		3 (1)		
T.E.		Technical Elective 1	Е		3 (1)		
COE	300	Principles of Comp. Eng. Design	R		2 (√)		
SE	307	Eng. Economy Analysis	R				3
Summe	er Sessi	ion					
COE	399	Summer Training	R		0 (√)		
4-FAL	L		R				
ICS	431	Operating Systems	R				4
COE	4xx	COE Elective 1	R		3 (1)		
COE	4xx	COE Elective 2	R		3 (1)		
T.E.		Technical Elective 2	Е		3 (1)		

GS xxx GS	Elective 1	Е				3
4-SPRING		R				
COE 485 Sen	ior Design Project	R		3 (1)		
IAS 322 Hui	man Rights in Islam2	R			2	
COE 4xx CO	E Elective 3	Е		3 (1)		
COE 4xx CO	E Elective 4	Е		3 (1)		
GS xxx GS	Elective 2	Е				3
TOTALS-ABET BAS	SIC-LEVEL REQUIREMENTS		32	53	12	35
OVERALL TOTAL DEGREE ( <b>With No (</b>	CREDIT HOURS FOR THE Coop)	132				
PERCENT OF TOTA	L		24	40	9	27
Total must satisfy	Minimum Semester Credit Hours		32 Hours	48 Hours		
percentage	Minimum Percentage		25%	37.5 %		

 Table 4 – COE Curriculum with Coop Option

	Indicate Whether	Си	rricular Area	(Credit Hou	rs)
Course (Department, Number, Title) List all courses in the program by term starting with first term of first year and ending with the last term of the final year.	Course is Required, Elective or a Selected Elective by an R, an E or an SE. <sup>2</sup>	Math & Basic Sciences	Engineering Topics Check if Contains Significant Design (√)	General Education	Other
1-Fall					
MATH 101 Calculus I	R	4			
PHYS 101 General Physics I	R	4			
ENGL 101 An Intro to Academic Discourse	R				3
CHEM 101 General Chemistry I	R	4			

IAS 111 Belief & its Consequences	R			2	
PE 101 Physical Education I	R				1
1-Spring					
MATH 102 Calculus II	R	4			
PHYS 102 General Physics II	R	4			
ENGL 102 Intro. To Report Writing	R				3
ICS 102 Intro. To Computer Programming	R				3
IAS 101 Practical Grammar	R			2	
PE 102 Physical Education II	R				1
2-Fall					
COE 202 Digital Logic Design	R		$\mathcal{J}(\sqrt{)}$		
COE 203 Digital Logic Design Lab	R		l()		
ICS 201 Intro to Computing II	R				4
EE 201 Electric Circuit	R		$4(\sqrt{)}$		
MATH 201 Calculus III	R	3			
IAS 201 Objective Writing	R			2	
2-Spring					
ICS 202 Data Structure	R				4
ICS 253 Discrete Mathematics I	R	3			
EE 203 Electronic I	R		$4(\sqrt{)}$		
IAS 212 Professional Ethics	R			2	
COE 241 Data & Computer Communication	R		$\mathcal{J}(\sqrt{)}$		
STAT 319 Prob& stat. for Engineering	R	3			
3-Fall					
MATH 260 Differential Equ. & Linear Algebra	R	3			
ENGL 214 Academic and Professional Comm.	R				3
IAS 301 Language and Comm. Skills	R			2	
COE 301 Computer Organization	R		$4(\sqrt{)}$		
COE 34\$ Computer Networks	R		$4(\sqrt{)}$		
SE 307 Eng. Economy Analysis	R				3
3-Spring				]	

COE 306 Introd	uction to Embedded Systems	R		$4(\sqrt{)}$		
D.E COE 444 or COE 405		SE		$\mathcal{J}(\sqrt{)}$		
G.S General Studies Elective		E			3	
COE 300 Principal of Comp. Eng. Design		R		$2(\sqrt{)}$		
ICS 324 Database		R				4
IAS 322 Human Rights in Islam		R			2	
4-Fall						
COE 351 COOP		R		<i>9</i> (√)		
4-Spring						
COE 485 Senior Design Project		R		$\mathcal{J}(\sqrt{)}$		
ICS 431 Operating Systems.		R				4
COE 4xx COE Elective 1		Е		$\mathcal{J}(\sqrt{)}$		
COE 4xxCOE Elective 2E		Е		$\mathcal{J}(\sqrt{)}$		
GS xxx General Studies Elective 2		SE			3	
TOTALS-ABET BAS	SIC-LEVEL REQUIREMENTS		32	.50	18	33
OVERALL TOTAL CREDIT HOURS FOR THE DEGREE       133         (With Coop)       133						
PERCENT OF TOTAL		24	38	14	25	
Total must satisfy	Minimum Semester Credit Hours		32 Hours	48 Hours		
percentage	Minimum Percentage		25%	37.5 %		