COMPUTER ENGINEERING CURRICULUM 2007

Each student majoring in Computer Engineering must satisfactorily complete a minimum of 144 credits, which are divided into four components:

1. GENERAL EDUCATION REQUIREMENT	(21 credits)
2. MATHEMATICS AND BASIC SCIENCE REQUIREMENT	(27 credits)
3. COLLEGE OF ENGINEERING REQUIREMENT	(21 credits)
4. COMPUTER ENGINEERING REQUIREMENT	(75 credits)
a) Core Requirement	(50 credits)
b) Electrical Engineering Requirements	(13 credits)
c) Technical Electives	(12 credits)

GENERAL EDUCATION COURSES			**(21 Credits)**
a) Compulsory			**(12 Credits)**
3crd, 5hrs	9988-123	Intermediate Writing Skills	9988-098
3crd, 5hrs	9988-221	Technical Writing	9988-123, 50 credits
3 (3-0-3)	0330-100	Modern and Contemporary History of Kuwait	None
3 (3-0-3)	0330-102	History of Arab and Islamic Civilization (or equivalent)	None
b) Elective			**c) (9 Credits)**

Free Elective: Select any 9 credits from the following list of courses

The student selects free electives from the list approved by the college of Engineering and Petroleum

MATHEMATICS AND BASIC SCIENCE REQUIREMENT			**(27 Credits)**
3 (3-0-3)	0410-101	Calculus I	0410-091
3 (3-0-3)	0410-102	Calculus II	0410-101
3 (3-0-3)	0410-111	Linear Algebra	
3 (3-0-3)	0410-211	Calculus III	0410-102, 0410-111
3 (3-0-3)	0410-240	Ordinary Differential Equations	0410-111, Co-req: 0410-211
3 (3-0-3)	0420-101	General Chemistry I	0420-092
1 (0-3-1)	0420-105	General Chemistry I Laboratory	0420-092, Co-req: 0420-101
3 (3-0-3)	0430-101	Physics I	9988-090, Co-req: 0410-101
1 (0-3-1)	0430-105	Physics Laboratory I	Co-req: 0430-101
3 (3-0-3)	0430-102	Physics II	0430-101
1 (0-3-1)	0430-107	Physics Laboratory II	0430-105, Co-req:0430-102
COLLEGE OF ENGINEERING REQUIREMENT			**(21 Credits)**
2 (1-3-2)	0600-104	Engineering Graphics	None
3 (3-2-3)	0600-200	Computer Programming for Engineers	0410-101, 0410-111
3 (3-0-3)	0600-205	Electrical Engineering Fundamentals	0430-102, Co-req: 0410-240, 0600-207
1 (0-3-1)	0600-207	Electrical Eng. Fundamentals Laboratory	0430-107, Co-req: 0600-205
3(3-0-3)	0600-208	Engineering Thermodynamics	0410-102, 0430-102
3 (3-0-3)	0600-209	Engineering Economy	0410-211
3 (3-0-3)	0600-304	Engineering Probability and Statistics	0410-211
3 (3-0-3)	0600-308	Numerical Methods in Engineering	0410-240, 0600-200
CORE REQUIREMENT			**(75 Credits)**
a) Compulsory Courses			**(50 Credits)**
3 (3-2-3)	0612-201	Object-Oriented Paradigm	0600-200
3 (3-0-3)	0612-203	Discrete Structures	0410-102, 0410-111
3 (3-2-3)	0612-207	Data Structures	600-200, 0612-201, 0612-203
3 (2-0-2)	0612-210	Computer Ethics and Professional Practice	0600-200
3 (3-2-3)	0612-221	Introduction to Software Engineering	0612-201, Co-req: 9988-221
3 (3-0-3)	0612-262	Fundamentals of Digital Logic	0600-200, 0600-205, 0600-207, Co-req: 0612-264
1 (0-3-1)	0612-264	Fundamentals of Digital Logic Laboratory	Co-req: 0612-262
3 (3-0-3)	0612-300	Design & Analysis of Algorithms	0612-207
3 (3-0-3)	0612-325	Human-Computer Interaction	0612-221

3 (3-0-3)	0612-356	Computer Networks I	0612-207, 0600-304
3 (3-0-3)	0612-363	Introduction to Embedded Systems	0612-262, 0612-264, Co-req: 0612-364
1 (0-3-1)	0612-364	Introduction to Embedded Systems Laboratory	Co-req: 0612-363
3 (3-0-3)	0612-368	Computer Organization	0612-363, 0612-364
3 (3-0-3)	0612-395	Computer Systems Engineering	0600-209, 0612-210, 0612-221, 0612-363
3 (3-0-3)	0612-445	Operating Systems Principles	0612-207, 0612-363
3 (3-2-3)	0612-456	Computer Networks II	0612-356 or 0612-466
3 (3-0-3)	0612-453	Cryptography and Network Security	0612-300, 0612-356, 0612-357
3 (3-0-3)	0612-468	Computer Architecture	0612-368
1 (0-3-1)	0612-469	Computer Architecture Laboratory	Co-req: 0612-468
3 (3-0-3)	0612-495	Capstone Design	0612-395, 0612-368, 0612-356
b) Compulsory Non-Dept. Courses			**(13 Credits)**
3 (3-0-3)	0610-213	Linear Circuit Analysis	0600-205, 0600-207
3 (3-0-3)	0610-233	Electronics I	0600-205, 0600-207, Co-req: 0610-234
1 (0-3-1)	0610-234	Electronics I Laboratory	0600-207, Co-req: 0610-233
3 (3-0-3)	0610-312	Signals and Systems	0610-213, 9988-221
3(3-0-3)	0610-433	Electronics III - Digital Integrated Electronics	0610-233, 0610-234, 0612, 262
c) Electives Courses			**(12 Credits)**
Students should choose (12) credits from the list of elective courses provided by the department. The list contains two categories, and the students should choose at least one CpE course from each of the two categories.			
Category I			
3 (3-0-3)	0612-320	Software Construction	0612-207
3 (3-0-3)	0612-321	Software Quality Assurance	0612-221
3 (3-3-4)	0612-322	Software Requirements Analysis	0612-221
3 (3-0-3)	0612-333	Intelligent Systems	Co-req 0612-300
3 (3-2-3)	0612-341	Database Systems I	0612- 207
3 (0-10-3)	0612-399	Engineering Training	Pre-req: Completion of 90 credit hours and consent of the Department & the Engineering Training Centre
3 (3-0-3)	0612-402	Introduction to Internet Technologies	0612-356 or 0612-466
3 (3-0-3)	0612-404	Principles of Compiler Design	0612-207, 0612-363
3 (3-0-3)	0612-406	Simulation Systems	0600-304, 0612-363
3 (3-0-3)	0612-410	Programming Languages and Automata Theory	0612-300
3 (3-0-3)	0612-413	Distributed Computing	0612-300
3 (3-2-3)	0612-414	Quantum Computing	0612-363
3 (3-0-3)	0612-424	Value Engineering Applications	0600-209, 0600-304)
3 (3-2-3)	0612-434	Robotics	0612-363
3 (3-0-3)	0612-435	Expert Systems	0612-333, 0600-304
3 (3-0-3)	0612-436	Machine Learning	0612-333, 0600-304
3 (3-0-3)	0612-437	Intelligent Algorithms	0612-300
3 (3-0-3)	0612-438	Computer Graphics	0612-207
3 (3-0-3)	0612-441	Database Systems II	0612-341 or 0612-401
3 (3-0-3)	0612-442	Distributed Database Systems	0612-341 or 0612-401
3 (3-0-3)	0612-443	Multimedia Systems and Applications	0612-207
3(3-0-3)	0612-447	Implementation of Operating Systems	0612-201, 0612-445
3 (3-0-3)	0612-458	Network Programming	0612-356 or 0612-466
3 (3-0-3)	0612-491	Undergraduate Research	0612-368
3 (3-0-3)	0612-493	Special Topics in Computer Engineering	0612-300
3 (3-0-3)	0640-304	Introduction to Environmental Engineering	0612-207, 0612-262
3 (3-0-3)	0660-325	Safety and Health for Engineers	0600-304, 0612-368
3(3-0-3)	0660-372	Project Management and Control	0600-304, 0612-363
Category II			
3 (3-0-3)	0612-451	Wireless and Mobile Networking	0612-356 or 0612-466
3 (3-0-3)	0612-453	Cryptography and Network Security	0612-356 or 0612-466
3 (3-0-3)	0612-454	Performance Evaluation of Computer Networks	0600-304, (0612-356 or 0612-466)

3 (3-0-3)	0612-461	Design of Digital Systems	0612-262, 0612-264
3 (3-0-3)	0612-462	Computer Arithmetic	0612-368
3 (3-0-3)	0612-463	Real Time Systems	0612-363, (0612-445 or 0612-405))
3 (3-2-3)	0612-464	Testing of Digital Systems	0612-368
3 (3-0-3	0612-465	Design Automation of Digital Systems	0612 -207, 0612-262
3 (3-0-3)	0612-471	Fault Tolerant Computing	0612-368, 0600-304
3 (3-0-3)	0612-472	Logic for Computer Engineers	0612-203, 0612-363
3 (3-0-3)	0612-474	ASIC Design	0610-233, 0612-368
3 (3-0-3)	0612-477	Hardware Description Language Based Design	0612-207, 0612-368
3 (3-0-3)	0612-491	Undergraduate Research	Completion of 100 credit hours and consent of the department)
3(3-0-3)	0612-499	Advanced Topics in Computer Applications	0612-207, 0612-363
3 (3-0-3)	0610-318	Introduction to Digital Signal Processing	0612-453
3 (3-0-3)	0610-370	Control Theory I	0612-368
3 (3-0-3)	0610-381	Communication Theory	0612-368
3 (3-0-3)	0610-437	Introduction to VLSI Design	0612-207, 0612-262
3 (3-0-3)	0610-485	Advanced Digital Signal Processing	0600-304, 0612-368
3(3-0-3)	0660-488	Digital Image Processing	0600-304, 0612-363