COMPUTER ENGINEERING DEPARTMENT

MINOR MODIFICATION IN THE CURRENT COE CURRICULUM AND WILL BE IMPLEMENTED FROM THE NEXT SPRING SEMESTER 2005-06 (TERM 052)

1. **Splitting COE 200 (3-3-4) course "Fundamentals of Computer Engineering" into Lecture and Lab as:**

    a. COE 202 Lecture (3-0-3) "Fundamentals of Computer Engineering" and
    b. COE 203 Lab (0-3-1) "Digital Design Laboratory" <Pre-requisite: COE 202>

    Justification: Due to the advancement in digital design technology, the Logic Design laboratory had to go through a long-overdue (at least 10 years) upgrade to FPGA-based designs. The FPGA based technology eliminates the wiring overhead and allows the students to efficiently implement fairly complex digital systems. This has made it very difficult to synchronize with the lectures while having a meaningful set of experiments that take full advantage of the FPGA technology. It has also become difficult for students to digest the lecture material and conduct the lab experiments at the same time. The most suitable solution is to split the course into a lecture section and a lab section with the former being a prerequisite for the latter. This will significantly enhance the quality of the lab and increase the gained benefits of the application of the studied concepts with no or very little impact on the degree plan.

    Course Description

    COE 202: Digital Logic Design (3-0-3)

    Introduction to information representation and number systems. Boolean algebra and switching theory. Manipulation and minimization of completely and incompletely specified Boolean functions. Physical properties of gates: fan-in, fan-out, propagation delay, timing diagrams and tri-state drivers. Combinational circuits design using multiplexers, decoders, comparators and adders. Sequential circuit analysis and design, basic flip-flops, clocking and timing diagrams. Registers, counters, RAMs, ROMs, PLAs, PLDs, and FPGA's.

    Prerequisite: PHYS 102.

    COE 203: Digital Logic Laboratory (0-3-1)

    The course consists of a set of laboratory experiments for students to gain hands-on experience in digital logic. Use of state-of-the-art CAD tools and boards for the design, simulation, and implementation of digital logic. Combinational and sequential digital systems as well as data and control path design experiments will be conducted.

    Prerequisite: COE 202.

2. <u>Changing Prerequisites of COE courses as:</u>

a. Prerequisite of COE 205 “Computer Organization and Assembly Language” changed from COE 200 and ICS 201 to COE 202 “Fundamentals to Computer Engineering” and ICS 102 ”Introduction to Computing”.
b. Prerequisite of COE 305 “Microcomputer System Design” changed from COE 205 to COE 205 “Computer Organization and Assembly Language” and COE 203 “Digital Design Laboratory”.
c. Prerequisite of COE 308 “Computer Architecture” changed from COE 205 to COE 205 and COE 203.
d. MATH 102 “Calculus II” be made a prerequisite to COE 342 “Data & Computer Communications” (Renumber: COE 341).
e. STAT 319 “Probability and Statistics for Engineers and Scientists” be made a prerequisite to COE 442 (Renumbered: COE 344) “Computer Networks” instead of being a Co-requisite to COE 342 (Renumber: COE 341) “Data and Computer Communications”.
f. COE 444 “Internetwork Design and Management” prerequisite COE 342 (Renumber: COE 341) “Data and Computer Communications”
g. COE 447 “Fundamentals of Optical Networking”: prerequisite COE 444 “Internetwork Design and Management” or Consent of Instructor.
h. COE 449 “Special Topics in Computer Comm. Networking”: prerequisite: prerequisite COE 342 (Renumber: COE 341) “Data and Computer Communications”
i. Adding "Senior Standing or Consent of Instructor" to the prerequisites of the following COE elective courses to enable students from other departments to enroll:

- COE 445 Internet Information Services
- COE 446 Mobile Computing

3. <u>Renumbering the course numbers as.</u>

- Renumbering COE 342 “Data and Computer Communications” to COE 341, and
- Renumbering COE 442 “Computer Networks” to COE 344.

Computer Engineering Curriculum Plan

(I) Regular Program (Non-Coop)

First Year (Preparatory)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
MATH	001	Preparatory Math I	3	1	4	MATH	002	Preparatory Math II	3	1	4
ENGL	001	Preparatory English I	15	5	8	ENGL	002	Prep. English II	15	5	8
PE	001	Prep Physical Educ. I	0	2	1	PE	002	Prep. Physical Educ. II	0	2	1
ME	001	Prep. Shop I	0	2	1	ME	002	Prep. Shop II	0	2	1
Total			**18**	**10**	**14**				**18**	**10**	**14**

Total Credits required in Preparatory Program: 28

Second Year (Freshman)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
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
CHEM	101	General Chemistry I	3	4	4	ICS	102	Introd. to Computing	2	3	3
ENGL	101	English Composition I	3	0	3	ENGL	102	English Composition II	3	0	3
IAS	111	Belief and its Consequences	2	0	2	IAS	101	Practical Grammar	2	0	2
						PE	101	Physical Education I	0	2	1
Total			**15**	**7**	**17**				**14**	**8**	**17**

Third Year (Sophomore)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
COE	202	Fundam. of Comp. Eng.	3	0	3	COE	205	Comp. Org. & Ass. Lang.	3	3	4
EE	201	Electric Circuits I	3	3	4	COE	203	Dig. Design Lab.	0	3	1
ICS	201	Introduction to CS	3	3	4	ICS	202	Data Structures	3	3	4
MATH	201	Calculus III	3	0	3	ICS	252	Discrete Mathematics	3	0	3
IAS	211	Ethics in Islam	2	0	2	MATH	260	Introduction to Linear Algebra & Diff. Equ.	3	0	3
PE	102	Physical Education II	0	2	1	ENGL	214	Tech. Report Writing	3	0	3
Total			**14**	**8**	**17**				**15**	**9**	**18**

Fourth Year (Junior)

Course	Num	Title	LT	LB	CR	Course	Num	Title	LT	LB	CR
COE	305	Microcomp. Syst. Design	3	3	4	COE	308	Computer Architecture	3	0	3
STAT	319	Prob &Stat. For Eng.&Sc.	2	3	3	COE	344	Computer Networks	3	3	4
COE	341	Data & Computer Comm.	3	0	3	COE	390	Seminar	1	0	1
COE/ICS/ SWE	Xxx	**IT Elective**	3	0	3	EE	203	Electronics I	3	3	4
						yyy	yyy	Free Elective	3	0	3
IAS	201	Objective Writing	2	0	2	IAS	311	Islamic Shareah	2	0	2
Total			**13**	**6**	**15**				**15**	**6**	**17**

COE	399	COE Summer Training	0	0	0

Fifth Year (Senior)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
COE	485	Senior Design Project	1	6	3	COE	400	System Design Lab	1	6	3
COE	4xx	COE Elective	3	0	3	COE	4xx	COE Elective	3	0	3
ICS	431	Operating Systems	3	3	4	zzz	zzz	Free Elective	3	0	3
COE	360	Principles of VLSI Desg.	3	0	3	xxx	xxx	General Elective	3	0	3
IAS	301	Literary Styles	2	0	2	IAS	4xx	IAS Elective	2	0	2
Total			**15**	**9**	**15**				**12**	**6**	**14**

Total Credits required in COE B.S. Degree Program is: 130

(II) COOP Program

First Year (Preparatory)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
MATH	001	Preparatory Math I	3	1	4	MATH	002	Preparatory Math II	3	1	4
ENGL	001	Preparatory English I	15	5	8	ENGL	002	Prep. English II	15	5	8
PE	001	Prep Physical Educ. I	0	2	1	PE	002	Prep. Physical Educ. II	0	2	1
ME	001	Prep. Shop I	0	2	1	ME	002	Prep. Shop II	0	2	1
Total			**18**	**10**	**14**				**18**	**10**	**14**

Total Credits required in Preparatory Program: 28

Second Year (Freshman)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
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
CHEM	101	General Chemistry I	3	4	4	ICS	102	Introd. to Computing	2	3	3
ENGL	101	English Composition I	3	0	3	ENGL	102	English Composition II	3	0	3
IAS	111	Belief and its Consequences	2	0	2	IAS	101	Practical Grammar	2	0	2
						PE	101	Physical Education I	0	2	1
Total			**15**	**7**	**17**				**14**	**8**	**17**

Third Year (Sophomore)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
COE	202	Fundam. of Comp. Eng.	3	0	3	COE	205	Comp. Org. & Ass. Lang.	3	3	4
EE	201	Electric Circuits I	3	3	4	COE	203	Dig. Design Lab.	0	3	1
ICS	201	Introduction to CS	3	3	4	ICS	202	Data Structures	3	3	4
MATH	201	Calculus III	3	0	3	ICS	252	Discrete Mathematics	3	0	3
IAS	211	Ethics in Islam	2	0	2	MATH	260	Introduction to Linear Algebra & Diff. Equ.	3	0	3
PE	102	Physical Education II	0	2	1	ENGL	214	Tech. Report Writing	3	0	3
Total			**14**	**8**	**17**				**15**	**9**	**18**

Fourth Year (Junior))

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
COE	305	Microcomp. Syst. Design	3	3	4	COE	308	Computer Architecture	3	0	3
STAT	319	Prob &Stat. For Eng.&Sc.	2	3	3	COE	344	Computer Networks	3	3	4
COE	341	Data & Computer Comm.	3	0	3	COE	390	Seminar	1	0	1
COE/ICS /SWE	xxx	IT Elective	3	0	3	COE	360	Principles of VLSI Desg.	3	0	3
EE	203	Electronics I	3	3	4	ICS	324	Data Base Systems	3	3	4
IAS	201	Objective Writing	2	0	2	IAS	311	Islamic Shareah	2	0	2
Total			**16**	**9**	**19**				**15**	**6**	**17**
COE	350	Co-operative work	0	0	0						

Fifth Year (Senior)

Course	Num.	Title	LT	LB	CR	Course	Num.	Title	LT	LB	CR
COE	351	Co-op. Work (cont.)	0	0	9	COE	400	System Design Lab.	1	6	3
						COE	4xx	COE Elective	3	0	3
						ICS	431	Operating Systems	3	3	4
						xxx	xxx	General Elective	3	0	3
						IAS	301	Literary Styles	2	0	2
						IAS	4xx	IAS Elective	2	0	2
Total			**0**	**0**	**9**				**14**	**9**	**17**

Total Credits required in COE B.S. Degree Program with co-op is: 131