

**ABET COURSE SYLLABUS**

**ECSE 2660: Computer Architecture, Networks and Operating Systems**

**Course Catalog Description:** Quantitative basis of modern computer architecture, processor design, memory hierarchy, and input/output methods. Layered operating system structures, process and storage management. Layered network organization, network protocols, switching, local and wide area networks. Examples from Unix and the Internet. Spring term annually. *4 credit hours, 6 contact hours*

**Pre-Requisite Courses:** ECSE-2610

**Co-Requisite Courses:** None

**Prerequisites by Topic:**

1. Combinational & Sequential Logic Design.
2. Basic concepts such as Datapath Unit, Control Unit, Instruction Cycle etc.
3. Instruction set of a simple CPU such as the Motorola 6811.

**Textbook:** (and/or other required material)

1. "Computer Organization and Design - The Hardware /Software Interface", 3rd Edition, by David A. Patterson and John L. Hennessy, Morgan Kaufmann Publishers.
2. "Operating System Concepts", 7th Edition, by Abraham Silberschatz, Peter B. Galvin and Greg Gagne, John Wiley & Sons.

**References:** "Computer Networks: A Systems Approach", 2nd Edition, by Larry L. Peterson and Bruce S. Davie, Morgan Kaufman Publishers.

**Course Coordinator:** Koushik Kar

**Overall Educational Objective:** To gain an understanding of the basic concepts in computer architecture, operating systems and computer networks.

**Course Learning Outcomes:**

1. Understand a modern 32-bit pipelined processor architecture
2. Understand how multilevel memory systems and I/O systems work
3. Understand the fundamental concepts in a multitasking operating system, with examples from Unix
4. Understand the layered Internet architecture and basic concepts in computer networking

**How Course Outcomes are Assessed:** In-class Activities: 10%  
Homeworks: 20%  
2 Mid-term exams: 20% each  
Final exam: 30%

**Relation to EE/CSE/EPE Outcomes**

**N = none**  
**M = moderate**  
**H = high**

Outcome	Level	Demonstrate Proficiency
	N, M, H	e.g. Exams, projects, HW
Mathematics, science and engineering	M	Exams, HW, Activities
Basic disciplines in Electrical Engineering	N	
Depth in Electrical Engineering	M	Exams, HW, Activities
Basic disciplines in Computer & Sys. Eng.	H	Exams, HW, Activities
Depth in Computer and Systems Eng.	N	
Electromagnetics, electromechanics, power semiconductors	N	
Power system behavior	N	
Electrical energy conversion	N	
Conduct experiments and interpret data	N	
Identify, formulate and solve problems	H	Exams, HW, Activities

Design a system, component or process	N	
Communicate in written and oral form	N	
Function as part of a multi-disciplinary team	N	
Preparation for life-long learning	N	
Ethical issues; safety, health, public welfare	N	
Humanities and social sciences	N	
Laboratory equipment and software tools	N	
Variety of instruction formats	M	Regular lectures, In-class activities and Q&A sessions

**Topics Covered:**  
**(number of hours or classes for each)**

1. Computer architecture: 14 classes
2. Operating systems: 7 classes
3. Networks: 6 classes

**Computer Usage:** Small amount of programming in Unix

**Laboratory Experiences:** None

**Design Experiences:** None

**Independent Learning Experiences:** None

**Class/Lab Schedule:** T, W, F : 10am-12pm

**Contribution to the Professional Component:**

(a) College-level mathematics and basic sciences:	0 credit hours
(b) Engineering Topics (Science and/or Design):	4 credit hours
(c) General Education:	0 credit hours

<b>Prepared by:</b>	Koushik Kar
<b>Date:</b>	10/20/06