TO: The Faculty of the College of Engineering
FROM: The Faculty of the School of Electrical and Computer Engineering
RE: ECE 666 Changes in Title, Prerequisite, Description, and Content

The faculty of the School of Electrical and Computer Engineering has approved the following changes in ECE 666. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: **ECE 666 – Advanced Computer Systems**
Sem. 2. Class 3, cr. 3.
Prerequisite: <u>ECE 565</u>, <u>608</u>. Authorized equivalent courses or consent of instructor may be used in satisfying course pre- and co-requisites

The study of theoretical aspects of advanced computer systems where multiprocessing is used. Topics include the design, architecture, and performance evaluation of multiprocessor memories, interconnection networks, and computational pipelines. Also included are the topics of scheduling, synchronization, resource allocation, load-balancing, partitioning and deadlock avoidance in multiprocessors. Also covered are the design and analysis of parallel algorithms, programming languages and automatic approaches to parallelism detection/exploitation for concurrent computation.

To: **ECE 666 – Parallel Computer Architecture**
Sem. 2. Class 3, cr. 3
Prerequisite: Parallel Computer Architecture

This course studies parallel computer architectures including architectures of bus-based symmetric multiprocessors and general-interconnection network based multiprocessor systems. Topics include programming models (with emphasis on shared memory and message passing) partitioning, load balancing, scheduling, synchronization, cache coherence and memory consistency models.

Reason: The course description has been updated to reflect the updated content of the source and to include 15 weeks of lectures in the outline. Also, the course title has been updated to mirror the title of the textbook which is a more precise description of the scope of the course.

ECE 666 – Parallel Computer Architecture

Required Text: P*arallel Computer Architecture, A Hardware/Software Approach*, D. Culler, J. Singh and A. Gupta, Morgan Kaufman, ISBN No. 1-55860-343-3.

Weeks	*Principal Topics*
1	Introduction to parallel computing, Motivation.
2	Programming models, Programming for performance
1	Workload characteristics, Performance Evaluation
3	Bus-based Symmetric Multiprocessor Design (including snoop-based coherence protocols.)
3	Scalable Multiprocessor Design (including directory-based coherence protocols.)
2	Communication issues, Interconnection networks
1	Hardware/software tradeoffs, Computation/communication tradeoffs
1	Advanced topics
1	Project presentation/discussion