TO: The Engineering Faculty

FROM: The Faculty of the School of Electrical Engineering

RE: Change in EE 565

The Faculty of the School of Electrical Engineering has approved the following course changes in EE 565. This action is now submitted to the Engineering Faculty with a recommendation for approval.

FROM:

EE 565. COMPUTER ARCHITECTURE
Sem. 1, class 3, credits 3.
Prerequisite: EE 465 or graduate standing

An introduction to the problems involved in designing and analyzing current machine architectures. Major topics include: hierarchical memory design, pipeline processing, vector machines and numerical applications, and multiprocessor architectures and parallel algorithm design techniques. Evaluation methods for the performance of computer systems to enable the architect to determine the relation between a computer design and the design goals are also explored. Some programming experience is assumed.

Text: Patterson and J. Hennessy, *Computer Architecture - A Quantitative Approach*, Morgan Kaufmann (1-55-880-069-8).

Outline:

	Weeks
Introduction	5.0
Memory System Design	3.0
Program Characteristics	
Cache Design	
Virtual Memory	
Pipeline Design Techniques	2.0
Memory Requirements	
Performance Evaluation	
Pipeline Control Issues	
Examples	
Vector Computers	2.0
Case Study	
Generic Example	
Numerical Application	
Data Structures	
Examples	
Multiprocessors	3.0
Models	

Interconnection Techniques
Memory Design Considerations

Numerical Applications and Multiprocessor Algorithms
Numerical Example Case Study   2.0
Continuum Model
Parallel Algorithm Constructs
Synchronisation Techniques
Algorithm Mapping and Transformation

Performance Evaluation Techniques   2.0
Measures and Parameters of Performance
Stochastic Models and Queueing Theory
Simulation Models

Tests   0.5

<u>TO</u>:

EE 565.   COMPUTER ARCHITECTURE
Sem. 1, class 3, credits 3.
Prerequisite: EE 365 or graduate standing

An introduction to the problems involved in designing and
analyzing current machine architectures. Major topics
include performance and cost analysis, pipeline processing,
vector machines and numerical applications, hierarchical
memory design, and multiprocessor architectures. A
quantitative approach allowing a computer system designer
to determine the extent to which a design meets design
goals is emphasized.

<u>Text</u>:   *Computer Architecture A Quantitative Approach*, Second
Edition, David A. Patterson and John L. Hennessy, Morgan
Kaufmann Publishers, Inc., 1995, ISBN 1-55860-329-8

<u>Outline</u>:

	Weeks
Introduction	.5
Performance and Cost	1
Pipelining Implementation Hazards Performance Evaluation Advanced Techniques	3
Vector Processors Fundamentals Case Study	2
Memory Hierarchy Program Characteristics Cache Design Main Memory Virtual Memory	3

Input/Output   2
   Performance Prediction
   I/O Devices

Multiprocessors   2.5
   Models
   Interconnection Techniques

Tests   1

REASON: The proposed changes reflect the change in prerequisite course number, the updated course description and the current outline.

Richard J. Schwartz
Professor and Head