Engineering Faculty Document No. 18-07
May 16, 2007

TO: The Faculty of the College of Engineering
FROM: The Faculty of the School of Electrical and Computer Engineering
RE: ECE 532 Changes in Description and Content

The faculty of the School of Electrical and Computer Engineering has approved the following changes in ECE 532. This action is now submitted to the Engineering Faculty with a recommendation for approval.

From: **ECE 532 Computational Methods For Power System Analysis**
Sem. 1. Class 3, cr. 3.
Prerequisite: ECE 432. Authorized equivalent courses or consent of instructor may be used in satisfying course pre- and co-requisites.

System modeling and matrix analysis of three-phase power networks. Applications of numerical methods and computers to the solution of a variety of problems related to the planning, design, and operation of electric power systems.

To: **ECE 532 Computational Methods For Power System Analysis**
Sem. 1. Class 3, cr. 3
Prerequisite: ECE 432 or consent of instructor.

System modeling of three-phase power networks. Computational methods and problem formulation related to load flow and fault studies, and economic dispatch of electric power systems. Assigned projects will involve implementing some of the methods and conducting simple studies.

Reason: The course content and description have been changed to reflect the updated content of the course.

M. J. T. Smith
Head, School of Electrical and Computer Engineering

Supporting Documentation

ECE 532 – Computational Methods For Power System Analysis

Required Text: None. Class notes and technical journal papers.

Recommended References:

Power System Analysis, 4th Ed. by J. Grainger & W. Stevenson. McGraw-Hill, 1994. ISBN No: 0-07-061293-5.

Weeks	*Principal Topics*
1	Introduction, network models
5	Load flow formulations, solution methods and techniques: Gauss Seidel, Newton's, Fast Decoupled methods; factorization and ordering techniques. Load flow studies
6	Fault calculations and power system protection, fault studies
3	Optimization techniques: economic dispatch and optimal power flow formulation

Course Outcomes: A student who successfully fulfills the course requirements will have demonstrated:

1) A knowledge of formulation and solution techniques applied to normal operation of large power systems [c,e,g,k];
2) A knowledge of calculations methods and protection applied to abnormal power systems operation[c,e,g,k];
3) A knowledge of optimization methods applied to power system operations: economic dispatch, optimal power flow [c,eg,k]