

University of North Dakota
Department of Electrical Engineering
EE523 – Power Systems II
Spring Semester 2007

MWF 11:00 - 11:50 AM
HH204

Course WWW Site: <http://power.ee.und.nodak.edu>

General Course Information:

Prerequisites: EE423-Power Systems I or Equivalent.

Co-requisites: None.

Goal: The goal of this course is to offer senior and graduate students in electrical engineering an overview of some of the principles involved in the planning, design, operation, and control of electric power systems. Typical power system industry problems are presented and their solutions are examined.

Textbook: Hadi Saadat, *Power System Analysis* - Second Edition, ISBN: 0-07-284869-3, New York: McGraw-Hill, 2002.

References: Some of the relevant course references are:

IEEE Transactions on Powers Systems - Published by IEEE and available on-line to UND students.

IEEE Transactions on Energy Conversion - Published by IEEE and available on-line to UND students.

Power System Restructuring and Deregulation - ISBN 0-471-49500-X. Edited by: Loi Lei Lai, John Wiley & Sons, 2001.

Power System Economics - ISBN 0-471-15040-1. By: Steven Stoft, John Wiley & Sons, 2002.

Instructor: Hossein Salehfar, Professor of Electrical Engineering

Office: Room 160-D, Upson II

Office Phone: (701) 777-4432

Email: hsalehfar@und.nodak.edu

Office Hours: MWF 1:00 - 2:00 p.m. (Tentative) and other times by appointment.

Course Requirements and Policy:

The course requirements and evaluation policy are as follows.

Attendance: Students are strongly encouraged to actively attend and participate in class discussions and presentations.

Assignments: Each of the students will present a book chapter (as listed on the next page), prepare handouts and presentation materials, and lecture notes. The students will present their assigned topic(s) to the rest of the class as if they are the instructor teaching the class. The materials provided by the students will be compiled and posted on the course's web site on regular basis. The materials provided by the students must be as, detailed, quantitative, and analytical as possible. The students will provide questions and answers on the materials they are providing. A number of these questions will be used to design a mid-term and a final exam for the course.

There will be several homework assignments throughout the course. Each assignment will be due a few days after a corresponding chapter presentation is completed. At least a week will be given to complete each assignment. The exact due dates will be announced in class and posted on the course's web page when necessary. However, it is recommended that students keep on working on their assignments as progress is made in class discussing various relevant chapters or sections of the textbook. Each assignment will be graded on a scale of 0 to 100. Copies of the solutions to all homework problems will be made available on the course's WWW internet site at <http://power.ee.und.nodak.edu> after the due dates. Late homework, without reasonable excuses, will not be accepted.

Software: *MATLAB* Program (Student or Pro version 5.3 or higher) from MathWorks, Inc. This software is available directly through the publisher at <http://www.mathworks.com> or through the University bookstore. **This is required software.**

Software: *PowerWorld* program from PowerWorld Corp. A limited educational version of this excellent software program is available to students for free at <http://www.powerworld.com>. The full version of the program will be installed on the computers in the power electronics and electric drives laboratory, Harrington Hall room 109. **This is optional software.**

Exams: There will be **one mid-term and a final exam** during the semester.

Grading:

Final letter grades will be assigned based on the student's participation, interaction with the class, contribution to the course materials, quality of the presentation, and the exams. The assignment of final grades and the grade distribution policy are as follows. Depending on the overall class performance, the instructor reserves the right to change the percentages from those listed in the following Table.

A	90%-100%
B	80%-89%
C	70%-79%
D	60%-69%
F	< 59%

Type of Work	Course Percentage
Homework	25%
Lecture Presentations	25%
Mid-term Exam	25%
Final Exam	25%
Total	100%

Discussion Topics, Assignments, Exams, and Dates:

A list of book topics that will be discussed in class is shown in the following Table.

Chapter	Discussion Topic
4	Transmission Line Parameters
8	Synchronous Machine Transient Analysis
10	Symmetrical Components and Unbalanced Fault
11	Stability
12	Power System Control
-	Power System Economics
-	Electric power system restructuring and deregulation
-	Power System State Estimation

Exam Dates:

The following Table shows the exam times and their location. The date for the mid-term will be decided and announced at least a week before the actual date of the test in order to give students enough time to prepare themselves.

Exam	Date	Time	Place
Mid-Term	TBA	11:00-11:50 am	HH204
Final	Wednesday, May 9	10:15am - 12:15pm	HH204

Prepared by: H. Salehfar