ENGR 431   Electromechanical Energy Conversion   WINTER 2010
Tentative Syllabus

TEXT: *Electric Drives, and Integrated Approach,* by Ned Mohan, Lecture Notes and the Class Wiki

	Date	Study (see page 2 for key)	Topic
M	Jan 4	Wiki	Publish or Perish
T	5		Lab Prep.
W	6	1,3	Magnetic Circuits
F	8		
M	11	1,3	Magnetic Circuits (Non-Linear Example)
T	12	1,3	Eddy Currents and Hysteresis Losses
W	13	1,4,5,6	Ideal Transformer
F	15	1,4,5,6	Transformer Model Development
M	18	1,4,5,6	"
T	19		Lab Prep
W	20	7,8	AC Generators (Motivation for Three Phase Power)
F	22	7,8	Three Phase Calculations
M	25	9,10	Three Phase Transformers
T	26		Lab Prep
W	27	11	Synchronous Machines
F	29	11	Synchronous Generator Circuit Model
M	Feb 1	11	Load Angle and Rotating Magnetic Field
T	2		Lab Prep
W	3	11	Synchronous Motor, Circuit and Load Angle
F	5		Exam 1
M	8		Review Exam 1 (and Key Project Introduction)
T	9		Lab Prep
W	10	Wiki	Key Design Project (Description & Design Tips)
F	12	"	Tips for Key Design Project (Biot Savart Law, etc.)
M	15		Snow Frolic
T	16		Lab Prep
W	17	11	Synchronous Capacitors
F	19	11	Synchronous Capacitor Example (HW assigned)
M	22	2	Induction Motors
T	23		Lab Prep
W	24	2	Induction Motors
F	26		Exam 2
M	Mar 1	2	DC Machines
T	2		Lab Prep
W	3		Exam 1 Redo
F	Mar 5	2	DC Machines
M	8	1	Speed Control with Drive Circuitry
T	9		Chad Rhynard (Lab will be a fill in the blank type.)
W	10	1	Drive Circuitry
F	12		Review

M   15   10:00 a.m.   Final Exam

References Used by the Professor (Links are on the Wiki http://fweb.wallawalla.edu)

1. Our text, by Mohan.
   1. I used the chapter on transformers and magnetic circuits.
   2. I did NOT use the chapter on synchronous machines. See the references below for that.
   3. I did NOT use much on three phase. See the references below for that.
2. Notes from Rod Heisler's Class
3. Magnetic Circuits
4. Transformer Model
5. Transformer notes and some problems
6. Notes from a Transformer Lecture in Sydney
7. Three Phase Power
8. Generator Animations
9. The class handout on three phase transformer types from Glenn Masden. (I still have a couple of these that didn't get picked up in class.)
10. Harmonics in Transformers
11. Synchronous Machines
12. Notes on Induction Motors
13. An Application Note on Induction Motors
14. Some Questions Relevant to EMEC.

➢ This schedule is subject to change as announced in class or on the wiki.
➢ Whenever you are absent from class, you are responsible to obtain information that you have missed. Attendance may be graded.
➢ Notes should be available on the web at http://people.wallawalla.edu/~rob.frohne/ClassNotes/.
➢ Wiki at http://fweb.wallawalla.edu/class-wiki/
➢ If you need assistance because of any physical or learning disability, please contact the instructor or the Special Services offices at 527-2366.

Item	Description	Deadline	Percent of Grade
Lab	Your lab reports	Every week	25
Wiki	Posting of items and evaluation of them	Completed	3
Exam 1	Magnetic Circuits, Three Phase, and Transformers	Completed or March 3	17
Project	Generator design project Proposed design assignment Final report	February 22 March 11	Exam Insurance* 1/4 of project 3/4 of project
Homework	Problem set 1	February 26	2
Homework	Problem set 2	March 6	2
Exam 2	Synchronous Machines	March 3	17
Final	Comprehensive final exam	March 15	34

Grades: 90-100   A
         80-89   B
         70-79   C
         60-69   D
These cutoffs may be moved down at the instructors discretion.
100% on the final => A in the class.

* Exam insurance for up to one exam. You can assign up to 100 points of insurance on your exams. Those points will be replaced with your project grade. For example, if you don't know how to do problem 1 on the next exam, worth 10/100 points. You can assign 10% of your insurance to it, and you will get 10% of your project grade on that problem. You will have 90% of your project to use for a later exam problem.