EE 330L Energy Systems, (3-1) 4 credits, SDSM&T, Spring 2008

**Laboratory Room & Day:** Meet in EP341 on Thursdays (as scheduled).

**Laboratory Times:** Section -51 meets from 9-10:50am, section meets -52 from 12-1:50pm, and section -53 meets from 2-3:50pm

**Instructor:** Dr. Thomas Montoya, EP325, Tel: 394-2459, e-mail: Thomas.Montoya@sdsmt.edu

**Office Hours:** 10-11am MWF, or by appointment.

**WWW:** See link from [http://montoya.sdsmt.edu](http://montoya.sdsmt.edu). The course web page will be heavily utilized for posting assignments, examples, solutions, ... E-mail will be utilized to notify students of course-related information and events (check daily). Your first.last@Mines.sdsmt.edu address will be used.

**Catalog Description:** Production, transmission, and utilization of energy in systems with major electrical subsystems, with particular emphasis on electromagnetic and electromechanical systems and devices.

**Prerequisites:** EE221


**Lab Policies:**

- In this course, safety is a big issue. You will, perhaps for the first time, be exposed to currents and voltages capable of inflicting severe harm (potentially fatal). Therefore, the instructor and TAs will be militant about safety lapses/violations. Deliberate, repeated, or irresponsible violations of safety measures/policies by individuals/teams will result in expulsion from lab and a grade of zero for all associated work.
- Read and comply with lab safety document posted to course web page.
- Each individual/team will keep and use a bound laboratory logbook for all in laboratory work. NO spiral bound notebooks.
- Teams of ~3 people will be assigned/allowed for labs due to limited amount or equipment/room.
- Before the first lab, the lab safety document should be printed out, inserted in the logbook, and every page initialed by each team member.
- Students are encouraged to discuss lab assignments with team and can discuss lab in general terms with other teams. However, copying, plagiarism, … (without proper referencing) of other teams is not acceptable and will be penalized.
- Complete preliminary laboratory work in your logbook prior to the scheduled laboratory session.
- Get professor or TA (teaching assistant) to initial your logbook both after the preliminary section (i.e., at the beginning of the lab period) and after the experimental section. This allows us to check your values and spot any problems early, when you can still fix them.
- Laboratory/Project reports are to be typed in Times New Roman or Arial/Helvetica fonts, 11pt or 12 pt, 1.25 or 1.5 line spacing. Pages should be numbered at the bottom of the pages.
- Late assignments entail a 15% per week penalty.
Laboratory logbook guidelines:

a) All entries should be in ink (black and blue preferred) on fronts of pages only.

b) On cover, put EE 330L-xx (appropriate section #), Spring 2008, and your name(s). While not required, it is a good idea to put some contact information on the cover or inside the front cover in case the logbook is misplaced.

c) Make a Table of Contents on the first page including the lab number, title, date(s), and pages (both start-finish).

d) All pages should be consecutively numbered, e.g., top right hand corner or center of bottom.

e) Start each lab by inserting the laboratory assignment from the instructor.

f) Goal- another person should be able to duplicate the work done in the lab without outside references. For example, individual(s) present, equipment list (brand & model #s), dates ... should be included, as applicable. Also, the circuit and test instrument being used for each measurement should be specified (if necessary).

g) Writing/figures/graphs must be legible and of a readable size- if we cannot read your work, you will not receive credit. As applicable, they should be titled, labeled (i.e., names / units on axes), scaled (i.e., numbers on axes), and clearly drawn.

h) Figures, graphs, printouts ... can be attached/pasted into logbook. The bottom of a figure/graph should be oriented toward the bottom or right hand side of the page.

i) Answers should be boxed/double-underlined/tabulated/graphed as appropriate, with the variables, values (if any) and units (if any), included.

j) Where applicable, use conventional engineering units such as microfarads, millivolts, picoseconds, gigahertz, … Answers without applicable units are incomplete.

k) These are not supposed to be a mystery, just ask if you have questions.

Assignments: The laboratory assignments will be posted on the course web page (follow link(s) from http://montoya.sdsmt.edu). See attached table for tentative schedule of labs.

Grading: The lab grades will be based on a combination of logbooks, reports, and a practical exam near the end of the semester. Expect to turn-in logbooks with reports.

Tentative Lab Schedule (subject to change)

<table>
<thead>
<tr>
<th>Lab</th>
<th>Date(s)</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1/24</td>
<td>Lab overview &amp; introduction/review of use of logbooks</td>
</tr>
<tr>
<td>1</td>
<td>2/7</td>
<td>Three-phase load</td>
</tr>
<tr>
<td>2</td>
<td>2/28</td>
<td>Single-phase transformer parameters</td>
</tr>
<tr>
<td>3</td>
<td>3/13</td>
<td>Synchronous generator</td>
</tr>
<tr>
<td>4</td>
<td>4/3</td>
<td>Three-phase induction machine</td>
</tr>
<tr>
<td>5</td>
<td>4/17</td>
<td>Performance characteristics of DC generator</td>
</tr>
<tr>
<td>6</td>
<td>5/1</td>
<td>Load characteristics of DC shunt &amp; series motors</td>
</tr>
<tr>
<td>TBD</td>
<td></td>
<td>Practical Exam</td>
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