Washington State University
School of EECS
Electrical Engineering Course Assessment Report

Course Number  EE 361
Course Title    Electrical Power Systems
Semester Offered Spring 2006
Instructor      Aleksandar Dimitrovski
10^th Day Enrollment 66  Number Completing Successfully (C grade or better)  54

I. Assessment Outcomes from the Course Syllabus

✓ (A) Ability to apply knowledge of mathematics, science and engineering.
✓ (B) Ability to design and conduct experiments as well as analyze and interpret data.
✓ (C) Ability to design a system, component, or process to meet desired needs.
✓ (D) Ability to function on multidisciplinary teams.
✓ (E) Ability to identify, formulate, and solve engineering problems.
✓ (F) An understanding of professional and ethical responsibility.

☐ (G) Ability to communicate effectively in written and oral formats.
☐ (H) A broad education necessary to understand the impact of engineering solutions in global, economic, and societal context.
☐ (I) Recognize the need for, and have the ability to engage in life long learning.
☐ (J) Have a broad education and knowledge of contemporary issues.
☐ (K) Ability to use techniques, skills and modern engineering tools necessary for engineering practices.

II. List of Course Topics from the Course Syllabus

Introduction and overview
  1. single phase and three-phase ac circuits
  2. phasors and complex power
Magnetic circuits and transformers
  3. magnetic circuits
  4. transformers
Rotating machines
  5. generalized rotating machines principles
  6. induction machines
  7. synchronous machines
  8. dc machines
Transmission of electric power
  9. transmission line parameters
  10. transmission line modeling and power transfer capacity
  11. power flow calculations
Power system operations
12. power plant controls, generation scheduling
13. open transmission and electricity markets

III. Course Assessment Summary Table: one row of the table should be devoted to each of the checked outcomes in part I.

<table>
<thead>
<tr>
<th>Outcome</th>
<th>Topics</th>
<th>Specific Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A) Ability to apply knowledge of mathematics, science and engineering.</td>
<td>1-13</td>
<td>Homeworks 1-12</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Midterm exams 1-3</td>
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<tr>
<td></td>
<td></td>
<td>Quizzes 1-8</td>
</tr>
</tbody>
</table>

IV. Using the table as a guide, for each outcome summarize your evaluation of the students' achievement of that outcome; cite student performance on the identified measures as evidence to support your conclusions.

(A) Ability to apply knowledge of mathematics, science and engineering.

After completion of all assignments and quizzes it appeared that the students were able to apply basic mathematical and engineering techniques learned in the course to solve practical problems related to energy systems. A measure of this performance was reflected in the scores on assignments (Av. 81%) which gradually improved during the semester. The quiz scores were lower despite the usual easy grading of these questions.

V. Qualitative Assessment of Student Performance: using the arguments above and other data support the claim that students who completed this course with a grade of C or better have achieved each of the intended outcomes of this course.

The positive aspect of the continuous pace of exams and quizzes is that all students took the course seriously and tried to understand the basic concepts and their applications as they were developed in the class. As a result, the students were better prepared for the exams. There was some very active student participation in the class. Many times questions were raised to clarify issues that further led to discussions on practice and operation of electrical energy systems.

VI. Concerns: state any concerns you may hold about this class – were the students adequately prepared coming into it? Are there topics or outcomes where (some) students were weak after completing the course? Other concerns? Were there any comments on students’ course evaluations that should be addressed in future instances of the course? This section is very important for improving our program: it provides critical input to the curriculum committee for identifying areas requiring attention.
The course material is intense, especially the rotating machinery part. There has been a recent effort, sponsored by NSF, in redesigning fundamental power courses. The goal was to cover ‘twice the material in half the time.’ It should be checked for possible redesign of EE 361.

Signature ___________________________ Date: ___________________________

Please email a copy of the completed form to Patricia Arnold, patricia@eeecs.wsu.edu and deliver a signed hardcopy to her mailbox.