San José State University
College of Engineering
Department of Electrical Engineering
EE239 Smart Grid, Fall 2013

Instructor: Vitaly Spitsa
Office Location: ENG-363
Telephone: (408) 924-3910
Email: vitaly.spitsa@sjsu.edu
Office Hours: TR 2:00-4:00 p.m.
Class Days/Time: TR 6:00-7:15 p.m.
Classroom: ENG-303
Prerequisites: Solid knowledge of MATLAB

Course Web Page:
URL: https://sjsu.instructure.com
Username is your 9 digit SJSU ID number
Copies of the course materials such as the syllabus, major assignment
handouts, etc. will be posted there.
You are responsible for checking the course web page on a regular basis.
For more info, see http://www.sjsu.edu/at/ec/canvas/

Course Description
Smart grid architecture. Smart grid communication and measurement technology.
Performance analysis tools. Stability analysis tools. Computational tools. Smart grid
automation. Renewable energy and storage. Distributed generation. Microgrids. Demand
side management. Smart grid standards.

Course Goals and Student Learning Objectives
Upon successful completion of this course, students will be able to:

  LO1. Perform power flow calculations numerically and using software
  LO2. Estimate power system phasors using data from phasor measurement units
  LO3. Perform static state estimation in power systems
  LO4. Assess voltage stability limits using different stability indices
  LO5. Perform transient stability analysis numerically and using software
  LO6. Perform static security assessment
  LO7. Perform simplified analysis of wind energy systems
  LO8. Perform simplified analysis of solar energy systems
Required Texts/Readings

Textbook (Required)


Other Readings (Optional)

3. Selected lecture notes posted on the course webpage
4. Journal papers and other references mentioned in the class

Other equipment / material requirements


Installation notes, users’ guides, on-line help files and simulation test cases are also available at [http://www.powerworld.com/download-purchase/download-help-files](http://www.powerworld.com/download-purchase/download-help-files)

On-line training videos are available at [http://www.powerworld.com/training/online-training](http://www.powerworld.com/training/online-training)


Classroom Protocol

Students are expected to participate actively in class. Students will turn their phones off or put them on silent mode while in class. They will not answer their phones in class.

Dropping and Adding

Students are responsible for understanding the policies and procedures about add/drop, grade forgiveness, etc. Refer to the current semester’s Catalog Policies section at [http://info.sjsu.edu/static/catalog/policies.html](http://info.sjsu.edu/static/catalog/policies.html). Add/drop deadlines can be found on the current academic calendar web page at [http://www.sjsu.edu/provost/Academic_Calendar/](http://www.sjsu.edu/provost/Academic_Calendar/). The Late Drop Policy is available at [http://www.sjsu.edu/aars/policies/laplacedrops/policy/](http://www.sjsu.edu/aars/policies/laplacedrops/policy/). Students should be aware of the current deadlines and penalties for dropping classes.
Information about the latest changes and news is available at the Advising Hub at http://www.sjsu.edu/advising/.

Assignments and Grading Policy

1. Course grade components:
   - Homework assignment including computer simulations 40%
   - One midterm examination 20%
   - Final exam 40%

2. Grade % Breakdown

<table>
<thead>
<tr>
<th>Grade % Range</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>94% and above</td>
<td>A</td>
</tr>
<tr>
<td>93% - 90%</td>
<td>A-</td>
</tr>
<tr>
<td>89% - 87%</td>
<td>B+</td>
</tr>
<tr>
<td>86% - 84%</td>
<td>B</td>
</tr>
<tr>
<td>83% - 80%</td>
<td>B-</td>
</tr>
<tr>
<td>79% - 77%</td>
<td>C+</td>
</tr>
<tr>
<td>76% - 74%</td>
<td>C</td>
</tr>
<tr>
<td>73% - 70%</td>
<td>C-</td>
</tr>
<tr>
<td>69% - 67%</td>
<td>D+</td>
</tr>
<tr>
<td>66% - 64%</td>
<td>D</td>
</tr>
<tr>
<td>63% - 60%</td>
<td>D-</td>
</tr>
<tr>
<td>below 60%</td>
<td>F</td>
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</tbody>
</table>

3. Homework submission policies
   - No late submissions will be allowed.
   - No electronic submissions will be allowed.

University Policies

Academic integrity

Your commitment as a student to learning is evidenced by your enrollment at San Jose State University. The University’s Academic Integrity policy, located at http://www.sjsu.edu/senate/S07-2.htm, requires you to be honest in all your academic course work. Faculty members are required to report all infractions to the office of Student Conduct and Ethical Development. The Student Conduct and Ethical Development website is available at http://www.sjsu.edu/studentconduct/.

Instances of academic dishonesty will not be tolerated. Cheating on exams or plagiarism (presenting the work of another as your own, or the use of another person’s ideas without giving proper credit) will result in a failing grade and sanctions by the University. For this class, all assignments are to be completed by the individual student unless otherwise specified. If you would like to include your assignment or any material you have
submitted, or plan to submit for another class, please note that SJSU’s Academic Integrity Policy S07-2 requires approval of instructors.

**Campus Policy in Compliance with the American Disabilities Act**

If you need course adaptations or accommodations because of a disability, or if you need to make special arrangements in case the building must be evacuated, please make an appointment with me as soon as possible, or see me during office hours. Presidential Directive 97-03 at [http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf](http://www.sjsu.edu/president/docs/directives/PD_1997-03.pdf) requires that students with disabilities requesting accommodations must register with the [Disability Resource Center](http://www.drc.sjsu.edu/) (DRC) at [http://www.drc.sjsu.edu/](http://www.drc.sjsu.edu/) to establish a record of their disability.

**Student Technology Resources**

Computer labs for student use are available in the [Academic Success Center](http://www.at.sjsu.edu/asc/) located on the 1st floor of Clark Hall and in the Associated Students Lab on the 2nd floor of the Student Union. Additional computer labs may be available in your department/college. Computers are also available in the Martin Luther King Library.

A wide variety of audio-visual equipment is available for student checkout from Media Services located in IRC 112. These items include DV and HD digital camcorders; digital still cameras; video, slide and overhead projectors; DVD, CD, and audiotape players; sound systems, wireless microphones, projection screens and monitors.
The Electrical Engineering Department will enforce the following Honor Code that must be read and accepted by all students.

“I have read the Honor Code and agree with its provisions. My continued enrollment in this course constitutes full acceptance of this code. I will NOT:

- Take an exam in place of someone else, or have someone take an exam in my place
- Give information or receive information from another person during an exam
- Use more reference material during an exam than is allowed by the instructor
- Obtain a copy of an exam prior to the time it is given
- Alter an exam after it has been graded and then return it to the instructor for re-grading
- Leave the exam room without returning the exam to the instructor.”

Measures Dealing with Occurrences of Cheating

- Department policy mandates that the student or students involved in cheating will receive an “F” on that evaluation instrument (paper, exam, project, homework, etc.) and will be reported to the Department and the University.
- A student’s second offense in any course will result in a Department recommendation of suspension from the University.
The schedule is for reference only.
The dates and topics are subject to change with fair notice.
All updates will be posted on the course webpage

Table 1 Course Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Date</th>
<th>Topics, Readings, Assignments, Deadlines</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>Smart grid architecture.</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>Smart grid communication and measurement technology.</td>
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<tr>
<td>5</td>
<td></td>
<td>Stability analysis tools.</td>
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<tr>
<td>7</td>
<td></td>
<td>Computational tools for smart grid design. Part 2.</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>Review and midterm examination.</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>Smart grid automation.</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>Renewable energy and storage.</td>
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<tr>
<td>11</td>
<td></td>
<td>Distributed generation.</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>Microgrids.</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>Demand side management.</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>Smart grid standards.</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Review</td>
</tr>
<tr>
<td>Final Exam</td>
<td></td>
<td>Thursday, December 12, 5:15 p.m.- 7:30 p.m.</td>
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</tbody>
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