# Course Change Proposal

## Form A

<table>
<thead>
<tr>
<th>Academic Group (College):</th>
<th>Academic Organization (Department):</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Engineering and Computer Science</td>
<td>Electrical &amp; Electronic Engineering</td>
<td>10-27-2009</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Course Proposal:</th>
<th>Department Chair:</th>
<th>Submitted by:</th>
</tr>
</thead>
<tbody>
<tr>
<td>New __ Change <em>X</em> Deletion ___</td>
<td>Suresh Vadhva</td>
<td>Turan Gonen</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Does this course fulfill a requirement for single-subject or multiple subject credential students?</th>
<th>For Catalog Copy:</th>
<th>Semester Effective:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes ___ No <em>X</em></td>
<td>Yes <em>X</em> No ___</td>
<td>Fall <em>X</em> Spring ___2010</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>CCE:</th>
<th></th>
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<tbody>
<tr>
<td>Yes ___ No <em>X</em></td>
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</table>

This course replaces experimental course Subject Area (prefix) and Catalog Number (course number):

If changing an existing course, should new version be considered a repeat of the original version? If so, the same Course ID will be maintained. If not, a new Course ID will be assigned. Note: in PeopleSoft terminology, the Course ID is the unique system identifier, not the Catalog No.  

Yes _X_ No ___

## Change from:

<table>
<thead>
<tr>
<th>Subject Area (prefix) &amp; Catalog No. (course no.):</th>
<th>Title:</th>
<th>Units:</th>
</tr>
</thead>
<tbody>
<tr>
<td>EEE 250</td>
<td>Advanced Analysis of Faulted Power Systems</td>
<td>3</td>
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</table>

## Change to:

<table>
<thead>
<tr>
<th>Subject Area (prefix) &amp; Catalog No. (course no.):</th>
<th>Title:</th>
<th>Units:</th>
</tr>
</thead>
<tbody>
<tr>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
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</tbody>
</table>

## JUSTIFICATION:

In order to provide a proper background, EEE 141 is replacing EEE 130 as the prerequisite for EEE 250. EEE 250 is Advanced Analysis of Faulted Power Systems. Since fault analysis and power system engineering topics is first covered in EEE 141, those students taking EEE 250 need the background information given in EEE 141 to be successful.

## NEW COURSE DESCRIPTION: (Not to exceed 80 words, and language should conform to catalog copy. See http://www.csus.edu/acaf/univmanual/crspstl.htm - Guidelines for Catalog Course Description)

Note:

Prerequisite: EEE 141  
Enforced at Registration: Yes _X_ No ___

Corequisite:

CAN (California Articulation Number):

<table>
<thead>
<tr>
<th>Graded:</th>
<th>Instructor Approval Required?</th>
<th></th>
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</thead>
<tbody>
<tr>
<td>Letter <em>X</em> Credit/No Credit ___</td>
<td>Yes ___ No ___</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Classification (e.g., lecture, lab, seminar, discussion):</th>
<th>Title for SIS+/CMS (not more than 30 characters):</th>
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</thead>
<tbody>
<tr>
<td>Lecture</td>
<td>Analysis of Faulted Power Systems</td>
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</table>

Cross Listed?

Yes ___ No _X_  

If yes, do they meet together and fulfill the same requirement, and what is the other course.

How Many Times Can This Course be Taken for Credit? _1_

Can the course be taken for Credit more than once during the same term? Yes ___ No _X_
FOR NEW COURSE PROPOSALS OR SUBSTANTIVE CHANGES ONLY:

**Description of the Expected Learning Outcomes:** Describe outcomes using the following format: "Students will be able to: 1), 2), etc." See the example at http://www.csus.edu/academic/assessment.htm

**Attach a list of the required/recommended course readings and activities [Note: it is understood that these are updated and modified as needed by the instructor(s).] This attachment should be forwarded only to your Dean's office, not Academic Affairs.

**Assessment Strategies:** A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.

**For whom is this course being developed?**
 Majors in the Dept _X_ Majors of other Depts _ _ Minors in the Dept _ _ General Education _ _ Other _ _
 Is this course required in a degree program (major, minor, graduate degree, certificate)? Yes _ No _
 If yes, identify program(s):

Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer facilities, faculty, etc.)? Yes _ No _
 If yes, attach a description of resources needed and verify that resources are available.

Indicate which department or programs will be affected by the proposed course (if any). None _

*The Department Chair's signature below indicates that affected programs have been sent a copy of this proposal form.*

**Approvals:** If proposed change, new course or deletion is approved, sign and date below. If not approved, forward without signing to the next reviewing authority, and attach an explanatory memorandum to the original copy.

<table>
<thead>
<tr>
<th>Signatures:</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department Chair:</td>
<td>11/6/2007</td>
</tr>
<tr>
<td>College Dean or Associate Dean:</td>
<td>11/6/2009</td>
</tr>
<tr>
<td>CPSP (for school personnel courses ONLY)</td>
<td></td>
</tr>
<tr>
<td>Associate Vice President and Dean for Academic Programs</td>
<td></td>
</tr>
</tbody>
</table>

Distribution: Academic Affairs (original), Department Chair and College Dean. Dean's office to send original after approval to Academic Affairs, at mail zip 6016. An electronic copy must also be sent.
4. Sequence Impedance of Transmission Lines
   4.1 Positive and Negative Sequence Impedances of Lines
   4.2 Mutual Coupling
   4.3 Self and Mutual Inductances of Parallel Cylindrical Wires
   4.4 Carson's Line
   4.5 Three-Phase Line Impedances
   4.6 Transpositions and Twists of Line Conductors
   4.7 Completely Transposed Lines
   4.8 Circuit Unbalance Due to Incomplete Transposition
   4.9 Sequence Impedance of Lines with Bundled Conductors
   4.10 Sequence Impedance of Lines with One Ground Wire
   4.11 Sequence Impedance of Lines with Two Ground Wires
   4.12 Sequence Impedance of Lines with n Ground Wires
   4.13 Zero Sequence Impedance of Transposed Lines with Ground Wires
   4.14 Computations Involving Steel Conductors
   4.15 Parallel Transposed and Untransposed Multicircuit Lines
   4.16 Optimizing a Parallel Circuit for Minimum Unbalance

5. Sequence Capacitance of Transmission Lines
   5.1 Positive and Negative Sequence Capacitance of Transposed Lines
   5.2 Zero Sequence Capacitance of Transposed Lines
   5.3 Mutual Capacitance of Transmission Lines
   5.4 Mutual Capacitance of Three-Phase Lines without Ground Wires
   5.5 Sequence Capacitance of a Transposed Line without Ground Wires
   5.6 Mutual Capacitance of Three-Phase Lines with Ground Wires
   5.7 Capacitance of Double Circuit Lines
   5.8 Electrostatic Unbalance of Untransposed Lines

6. Sequence Impedance of Machines
   6.1 General Considerations
   6.2 Positive Sequence Impedance
   6.3 Negative Sequence Impedance
   6.4 Zero Sequence Impedance
   6.5 Time Constants
   6.6 Synchronous Generator Equivalent Circuits
   6.7 Phasor Diagram of a Synchronous Generator
   6.8 Subtransient Phasor Diagram and Equivalent Circuit
   6.9 Armature Current Envelope
   6.10 Momentary Currents
   6.11 General Considerations
   6.12 Induction Motor Equivalent Circuit
   6.13 Induction Motor Subtransient Fault Contribution
   6.14 Operation with One Phase Open

7. Sequence Impedance of Transformers
   7.1 Single-Phase Transformer Equivalents
   7.2 Transformer Impedances
   7.3 Transformer Polarity and Terminal Markings
   7.4 Three-Winding Transformers
   7.5 Autotransformer Equivalents
   7.6 Three-Phase Banks of Single-Phase Units
   7.7 Three-Phase Transformer Terminal Markings
   7.8 Phase Shift in Y-Δ Transformers
   7.9 Zero Sequence Impedance of Three-Phase Transformers
   7.10 Grounding Transformers
   7.11 The Zigzag- Power Transformer