### Section 1. Course Title and Description

<table>
<thead>
<tr>
<th>Prefix &amp; No.</th>
<th>Course Title</th>
<th>Credits</th>
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<tbody>
<tr>
<td>EE 703</td>
<td>Synthesis and Characterization of Nanomaterials</td>
<td>3</td>
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</table>

Course Description: A survey and analysis of synthetic materials and characterization techniques for nano-structured materials will be presented. The classes of materials that will be studied include: inorganic nanocrystals (metals, semiconductors, metal oxides), nano-wires, porous materials, carbon nanostructures, and higher order materials, such as supported catalysts. Solution-phase synthetic routes will be emphasized, including sol-gel synthesis, non-hydrolytic molecular decomposition, and micelle-templated synthesis, with lesser emphasis on solid state and gas-phase reactions. Methods of characterization will be discussed, including: transmission electron microscopy (TEM), scanning electron microscopy (SEM), powder X-ray diffraction (XRD), UV-visible absorption/fluorescence, X-ray absorption spectroscopy, gas sorption analysis, atomic force microscopy (AFM), scanning tunneling microscopy (STM), and photoelectron spectroscopy.

### 2. Universities currently offering this course:

*Indicate universities that are proposing this common course:*

<table>
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<tr>
<th></th>
<th>BHSU</th>
<th>DSU</th>
<th>NSU</th>
<th>SDSMT</th>
<th>SDSU</th>
<th>USD</th>
</tr>
</thead>
</table>

### 3. FTE Implication

**X** No, schedule management. Explain: This course will be taught at SDSM&T Fall 2013.

### 4. Existing program in which course will be offered:

Electrical Engineering Ph.D.

### 5. CIP code for the common course

141001

### 6. Proposed Instructional Method by this university:

R-Lecture

### 7. Proposed delivery method by this university:

001-Face to face & 099 Emerging Technologies

*Provide a brief justification: Oral presentation is the main content delivery method for this class. Students at SDSM&T will receive face-to-face instruction in their classroom. Meanwhile, the instructor delivers the course content using large format multimedia displays, such as audio and video, to students at SDSU. The new advanced technology allows collaboration between faculty and students in SDSU, SDSM&T, and USD. They can have two-way communication and presentation simultaneously.*

### 8. University Dept. Code

SEE

### 9. Authority to offer effective beginning in what term?

2013 Spring

### 10. Section Restriction:

20