**Assessment: Assessment Plan**

### Degree Program - ENG - Chemical Engineering (PHD)

**CIP Code:** 14.0701.00  
**Degree Program Coordinator:** Gerri Botte  
**Degree Program Coordinator Email:** gerri.botte@ttu.edu; jeffrey.rammage@ttu.edu

**Program Purpose Statement:** The Graduate Program (PhD) in Texas Tech's Department of Chemical Engineering is dynamic and internationally visible. The purpose of the PhD program is to graduate very high quality PhD students who can think independently on a research topic and carry out research supported by federal, state and industrially funded research in diverse fields such as polymers and soft matter, complex fluids, bioengineering, computational chemical engineering, biofuels, process system engineering, and nano-science and engineering. Major objectives of the department during the next decade will be: (1) to provide students with a high quality education at both the undergraduate and graduate levels to enable them to adapt to a rapidly changing technical environment, (2) to produce graduates who will be productive throughout their careers in a wide range of industrial, professional, and academic environments, and (3) to develop graduates with a strong sense of ethics and professionalism and the ability to succeed as both individual and team contributors.

**Assessment Coordinator:** Jeff Rammage  
**Modality:** Face-to-Face

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**Student Learning Outcome: Program Outcome PhD 1**

Graduates have advanced knowledge of the field and are able to effectively apply this knowledge.  
**Outcome Status:** Active  
**Outcome Type:** Student Learning  
**Start Date:** 09/01/2013

**Assessment Methods**

<table>
<thead>
<tr>
<th>Student Transcript Evaluation</th>
<th>Mastery of ChE core concepts in coursework (Active)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criterion:</strong></td>
<td>All students pass required core curriculum with GPA of 3.0 or higher.</td>
</tr>
<tr>
<td><strong>Schedule:</strong></td>
<td>Annually</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructor Course Evaluation</th>
<th>Mastery of ChE core concepts in coursework (Active)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criterion:</strong></td>
<td>Learning outcomes associated with concept mastery in core courses ChE 5312, 5321, and 5343 are met according to instructor self-evaluations of the courses.</td>
</tr>
<tr>
<td><strong>Schedule:</strong></td>
<td>Annually</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructor Course Evaluation</th>
<th>Ability to use computational and modeling tools to solve ChE problems (Active)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Criterion:</strong></td>
<td>Learning outcomes associated with computational and modeling tools in core courses ChE 5310 and 5323 are met according to the instructor self-evaluation of the courses.</td>
</tr>
<tr>
<td><strong>Schedule:</strong></td>
<td>Annually</td>
</tr>
</tbody>
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**Student Learning Outcome: Program Outcome PhD 2**

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**Generated by Nuventive Improve**
Graduates are able to perform state-of-the-art research and use literature to creatively solve problems.

**Outcome Status:** Active  
**Outcome Type:** Student Learning  
**Start Date:** 09/01/2013

### Assessment Methods

- **Portfolio Review** - Performance in dissertation research  
  (Active)  
  **Criterion:** Students publish at least four refereed journal articles from their dissertation research and at least three first-author publications (Web of Science)  
  **Schedule:** Annually

- **Student Exit Survey** - Placement of students (Active)  
  **Criterion:** 100% of students are placed within six months of graduation  
  **Schedule:** Yearly

### Student Learning Outcome: Program Outcome PhD 3

Graduates are able to effectively communicate technical information.

**Outcome Status:** Active  
**Outcome Type:** Student Learning  
**Start Date:** 09/01/2013

### Assessment Methods

- **Student Exit Survey** - Student presentations (Active)  
  **Criterion:** 100% of the graduating students presented their work at regional or national meetings  
  **Schedule:** Yearly

- **Student Exit Survey** - Student awards for research (Active)  
  **Criterion:** 40% of the graduating students received local or national awards for presentations  
  **Schedule:** Yearly

### Student Learning Outcome: Program Outcome PhD 4

Graduates have a strong sense of professionalism and a good understanding of research safety and ethics

**Outcome Status:** Active  
**Outcome Type:** Student Learning  
**Start Date:** 05/01/2014

### Assessment Methods

- **Student Projects** - Safe conduct of research (Active)  
  **Criterion:** Reported safety incidents (EHS)  
  **Schedule:** Yearly

- **Student Projects** - Understanding of research ethics (Active)  
  **Criterion:** 100% completed TTU RCR training or took a professional ethics course (VPR)
### Degree Program - ENG - Chemical Engineering (PHD)

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<tr>
<th>Schedule: Yearly</th>
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</table>

**Student Exit Survey** - Membership or participation in professional and student organizations (Active)

**Criterion:** 100% of graduating students are members of professional organizations

**Schedule:** Yearly