NRE 4770 Nuclear Chemical Engineering (Elective)

**Catalog Description:** NRE 4770 Nuclear Chemical Engineering (3-0-3)  
Prerequisite: None  
This course surveys the chemical engineering aspects of nuclear power. Topics include nuclear reactions, fuel cycles, solvent extraction of metals, the properties of actinides and other irradiated fuel materials, fuel reprocessing, and radioactive waste management.


**Topics Covered:**

1. Nuclear reactions  
2. Fuel cycles  
3. Solvent extraction of metals  
4. Properties of actinides  
5. Properties of other irradiated fuel materials  
6. Fuel reprocessing  
7. Radioactive waste management

**Course Outcomes:**

Outcome 1: To introduce students to the chemical engineering aspects of nuclear power at an undergraduate level.

1.1 The student will acquire a working understanding of the range of technical topics that constitute the chemical engineering aspects of nuclear power.

**Correlation between Course Outcomes and Program Educational Outcomes:**

<table>
<thead>
<tr>
<th>NRE 4770 Nuclear Chemical Engineering</th>
<th>Outcome a</th>
<th>Outcome b</th>
<th>Outcome c</th>
<th>Outcome d</th>
<th>Outcome e</th>
<th>Outcome f</th>
<th>Outcome g</th>
<th>Outcome h</th>
<th>Outcome i</th>
<th>Outcome j</th>
<th>Outcome k</th>
</tr>
</thead>
<tbody>
<tr>
<td>Course Outcomes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Course Outcome 1.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Prepared by: Dwayne Blaylock, Daniel Tedder (ChBE)  
Revised: June 2008