Expected Outcome 1: Civil Engineering Student Outcome A.4
Auburn University Civil Engineering (AUCE) graduates will have an ability to apply knowledge of at least four major civil engineering technical areas.

Assessment Method 1: NCEES Fundamentals of Engineering Exam
Assessment Method Description
The Fundamentals of Engineering (FE) Exam is a national exam that is the first step to licensure as a professional engineer. These nationally-normed exam results are the backbone of the civil engineering assessment processes. Approximately eighty AUCE students choose to take this exam each year. The 8-hour exam is broken into morning and afternoon sessions with the morning focusing on general science, mathematics, and engineering topics. The afternoon is focused specifically on subject matter in civil engineering specialty areas. The seven specialty areas introduced to all AUCE undergraduates are

- Hydraulic Engineering
- Geotechnical Engineering (Soil Mechanics and Foundations)
- Environmental Engineering
- Transportation Engineering
- Structural Engineering
- Construction Engineering and Management
- Pavements and Materials Engineering

Findings
The FE Exam results for the seven specialty areas taught in the AU Department of Civil Engineering are summarized below. During the 2011-2013 period, AU students performed above the national average in 6 of the 7 specialty areas. In Hydraulics & Hydrologic Systems,
students performed slightly (less than 0.05 standard deviations) below the national average. However, this represented a significant improvement (0.25 standard deviations) from the previous assessment period. Sizeable improvement also occurred in the Environmental, Structural, and Construction areas. The areas that did not exhibit improvement were areas that are already well above the national average.

Fundamentals of Engineering Exam Results—

Auburn University Department of Civil Engineering

Student Outcome A.4

<table>
<thead>
<tr>
<th>Subject</th>
<th>Standard Deviations above National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AY 2010-11 (102 Exams)</td>
</tr>
<tr>
<td>Hydraulics &amp; Hydrologic Sys</td>
<td>-0.30</td>
</tr>
<tr>
<td>Soil Mechanics &amp; Foundations</td>
<td>+0.29</td>
</tr>
<tr>
<td>Environmental Engineering</td>
<td>-0.27</td>
</tr>
<tr>
<td>Transportation</td>
<td>+0.16</td>
</tr>
<tr>
<td>Structural Analysis</td>
<td>-0.03</td>
</tr>
<tr>
<td>Construction Management</td>
<td>+0.11</td>
</tr>
<tr>
<td>Materials</td>
<td>+0.55</td>
</tr>
</tbody>
</table>

How did you use findings for improvement?
The AUCE Undergraduate Program Committee continues to review FE Exam results to look for areas of weakness. The current results do not warrant major changes at this time.

Additional Comments

Expected Outcome 2: Civil Engineering Student Outcomes C.1 and D.1

Auburn University Civil Engineering (AUCE) graduates will be able to explain basic concepts in business and management and understand professional and ethical responsibilities of a civil engineer.

Assessment Method 1: NCEES Fundamentals of Engineering Exam
Assessment Method Description
The Fundamentals of Engineering (FE) Exam is a national exam that is
the first step to licensure as a professional engineer. These nationally-normed exam results are the backbone of the civil engineering assessment processes. Approximately eighty AUCE students choose to take this exam each year. The 8-hour exam is broken into morning and afternoon sessions with the morning focusing on general science, mathematics, and engineering topics. The afternoon is focused specifically on subject matter in civil engineering specialty areas. There are two morning exam topics that are relevant to the Student Outcomes listed:

- Ethics and Business Practices
- Engineering Economics

**Findings**

The FE Exam results for the relevant topics (Ethics and Business Practices, and Engineering Economics) are summarized below. During the 2011-2013 period, AUCE students improved on average in both of these categories. The average student performance is now at or above the national average for civil engineering students.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Standard Deviations above National Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AY 2010-11</td>
</tr>
<tr>
<td>Ethics &amp; Business Practices</td>
<td>-0.06</td>
</tr>
<tr>
<td>Engineering Economics</td>
<td>-0.17</td>
</tr>
</tbody>
</table>

**Fundamentals of Engineering Exam Results—**

**Auburn University Department of Civil Engineering**

**Student Outcomes C.1 and D.1**

**How did you use findings for improvement?**

The AUCE Undergraduate Program Committee continues to review FE Exam results to look for areas of weakness. As discussed in the 2011 assessment report, the AUCE curriculum was changed to encourage students to take PHIL 1040 Business Ethics instead of PHIL 1020 Introduction to Ethics. The committee will continue to evaluate the effectiveness of this change as more students take the Business Ethics course.

**Additional Comments**