**Outcome E.** An ability to identify, formulate, and solve engineering problems.

<table>
<thead>
<tr>
<th>Course</th>
<th>Performance indicators</th>
</tr>
</thead>
<tbody>
<tr>
<td>CE 321, CE 332, CE 351, CE 361, CE 411, CE 415, CE 431, CE 447, CE 451, CE 453, CE 462, CE 463, CE 464, CE 479</td>
<td>Use knowledge, information and skills to identify and formulate a solution to an engineering problem.</td>
</tr>
<tr>
<td></td>
<td>Solve a problem using engineering methods, tools and instruments.</td>
</tr>
</tbody>
</table>

**Tools used:**
- Course assessment rubrics by faculty, graduating student survey

**Data Collection:**
- The data are collected every semester based on the course offerings.

**Frequency of data collection:**
- The data are collected every time courses are taught.

**Data Analysis:**
- The data obtained are analyzed every year.

**Closing the loop:**
- This outcome is subject to review every year based on performance criteria and metrics and specific action items are developed, if necessary, to revise the content of the courses. The analyzed data are presented separately to the following groups in meetings.
  - a) Faculty
  - b) Advisory Board
Performance criteria:

Student performance was evaluated at three levels with associated criteria:

- Below expectation – student’s mastery of subject matter was insufficient. A student performing at this level should not be allowed to take a course that has the evaluated course as a prerequisite.
- Meets expectation – student showed sufficient mastery of the subject that he/she met the prerequisite expectations for any follow on course.
- Exceeds expectation – student mastery of the subject exceeded the minimum expectations for the course.

Metrics:

a) Sophomore Classes, 200 level classes, at least 70 percent of the students should meet or exceed expectations.

b) Junior classes, 300 level classes, at least 80 percent of the students should meet or exceed expectations.

c) Senior Classes, 400 level classes, at least 90 percent of the students should meet or exceed expectations.
Assessment Tool:

Course Assessment Rubric by Faculty
Assessment Rubric for Homework Assignments, Reports, Projects, and Exams

Use one form for each student outcome being evaluated for a class.

Course Name: _______________________________ Course Number: ___________________ Date ____________

Instructor: ______________________ Semester: ___________________ Class Size: _____________________

Brief Description of Assignment: ________________________________________________________________

Circle Student Outcome Being Assessed:   a        b        c        d        e        f        g        h        i        j        k

Indicate an overall class performance for the performance indicator based on the percent of students performing below, meeting or exceeding expectations for each performance indicator. The overall class performance identifies the percent of students meeting or exceeding expectations for the student outcomes.

<table>
<thead>
<tr>
<th>Performance Indicator</th>
<th>Below Expectation</th>
<th>Meets Expectation</th>
<th>Exceeds Expectation</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI-1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PI-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall Class Performance</td>
<td>[gray]</td>
<td>[gray]</td>
<td></td>
<td>[gray]</td>
</tr>
</tbody>
</table>

Comments: (use additional sheets if needed)

Areas for Continuous Program Improvement (use additional sheets if needed)
Assessment Tool:

Graduating Student Survey
This portion of the survey asks for contact information regarding alumni events and news. Information from this part will be kept separate from the rest of the survey.

**Personal Information:**

Name ______________________________________________

New Mailing Address ______________________________________________

Permanent Address (if different) ______________________________________________

Email address (permanent) ______________________________________________

Phone number ______________________________________________

Degree Earned ______________________________________________

Department ______________________________________________

**Employer Information:**

Name of Employer ______________________________________________

Job Title ______________________________________________

Address ______________________________________________

Country ______________________________________________

Phone Number ______________________________________________

Additional Information ______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________

______________________________________________
WVU Benjamin M. Statler College of Engineering and Mineral Resources
Graduating Senior Survey 2014/15

Please provide the following information. All responses in this part of the survey will be kept confidential, and only aggregate data is used in reporting.

Graduation Month: Dec / May / Aug

Major (check all that apply):
- __ Aerospace Engineering
- __ Computer Science
- __ Petroleum and Natural Gas Engineering
- __ Biometric Systems
- __ Electrical Engineering
- __ Geology
- __ Chemical Engineering
- __ Industrial Engineering
- __ Other:
- __ Civil Engineering
- __ Mechanical Engineering
- __ Other:
- __ Computer Engineering
- __ Mining Engineering

Overall GPA: ______ / 4.0  Gender: M / F  Home State/Country: ____________________________

Race/Ethnicity: __ African-American  __ Hispanic  __ Caucasian  __ Other
- __ Asian-American  __ Native American  __ Foreign National

For Race/Ethnicity, please select all that apply. If you are an international student, please select Foreign National.

1. Please mark each program(s) that you participated in during you undergraduate studies.
   a. ___Co-op;  b. ___Internship;  c. ___Study abroad;  d. ___Service Learning;  e. ___Undergraduate Research

2. If you’ve participated in any of the above activities in question 1, please list the organization(s) and location(s):

   __________________________________________________________________________________________
   __________________________________________________________________________________________
   __________________________________________________________________________________________

3. How long ago did you begin the job/graduate school search process?
   __ <3 months;  __ 3-6 months;  __ 6-9 months;  __ >9 months

4. Which of the following best describes your immediate employment/education status following graduation?
   __ a. I do not plan to work in my field or continue my education.  
   __ Please complete the other side of this form
   __ b. I am still interviewing/searching for a job or graduate school.  
   __ Please complete the other side of this form
   __ c. I have a job offer(s) but have not yet accepted.  
   __ Please complete the other side of this form
   __ d. I have been accepted into graduate school.  
   __ Please go to question 5
   __ e. I have accepted a job position in my professional area.  
   __ Please go to questions 6 through 10

5. University Name: ____________________________________________;
   a. Program: ___ MS ;   ___ Ph.D.;   ___ MBA;   ___ MD;   ___ DDS;   ___ Law
   b. Were you offered an assistantship/fellowship/etc?   ___ Yes;   ___ No;
   c. If you have an assistantship, my monthly stipend is: __ $1,000   $1,000-1,500  $1,500-2,000
      $2,000-2,500  $2,500+

Please complete the other side of this form

6. My employer’s name is ________________________________

7. My employer’s business is best described as __________
   F. Government/military  G. Healthcare  H. Manufacturing  I. Service  J. Other

8. My employment is located in:   WV;   MD;   NJ;   NC;   OH;   PA;   VA;   Other
   If other, please specify where: __________________________

9. My starting annual salary is approximately (in units rounded to the nearest $1000):
   __ < $30k;   ___ $30-34k;   ___ $35-39k;   ___ $40-44k;   ___ $45-49k;   ___ $50-54k;   ___ $55-59k;
   ___ $60-64k;   ___ $65-69k;   ___ $70-74k;   ___ $75-79k;   ___ $80-84k;   ___ $85-89k;
   ___ $90-94k;   ___ $95-99k;   ___ $100k+

Please complete the other side of this form
To help the assessment activities of the college and your major we ask that you take a few minutes to provide us feedback on your perception of how your undergraduate program prepared you in a number of important educational outcome areas. *All entries will be treated as confidential.*

Please give your assessment for items “a” through “q” and “r”, if it applies, using the following rating scale.

5 - strongly agree; 4 - agree; 3 - neutral; 2 - disagree; 1 - strongly disagree; N/A - not applicable (for r. i. & ii.)

10. Through the education and training I attained with my baccalaureate degree I have acquired the knowledge, skill or ability to:

a. ___ Use the basic principles and practices of my engineering discipline
b. ___ Recognize available opportunities and need to pursue continuing education and lifelong learning
c. ___ Apply knowledge of mathematics to solve equations or systems of equations necessary for the solution of engineering problems
d. ___ Apply knowledge of chemistry and physics effectively in solution of engineering problems
e. ___ Design and conduct experiments relevant to the needs of my engineering discipline
f. ___ Acquire, analyze and interpret data and information relevant to the needs of my engineering discipline
g. ___ Design a component, system, or process to meet desired engineering outcomes and needs
h. ___ Function on multidisciplinary teams to manage engineering projects
i. ___ Translate a general problem description into a specific engineering approach
j. ___ Understand professional and ethical responsibilities of a professional engineer
k. ___ Effectively communicate my ideas, recommendations, etc. to others verbally
l. ___ Effectively communicate my ideas, recommendations, etc. in memos, reports, etc.
m. ___ Appreciate the impact of engineering from multi-cultural and global perspectives
n. ___ Appreciate my engineering discipline’s impact on contemporary environmental and societal issues
o. ___ Conduct economic evaluation of importance cost factors in engineering designs
p. ___ Recognize the impact of engineering design on worker or public safety
q. ___ Utilize software to solve problems relevant to the needs of engineers practicing my discipline in industry
r. ___ If you transferred to WVU from another institution or department how would you agree with the following statements:
   i. ___ The procedure for accepting my transfer was relatively seamless and straight forward
   ii. ___ The procedure for validating credit for courses taken elsewhere was efficient

**COMMENTS:**

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Note: If you’ve indicated that you are still searching for a job or graduate school, would you be willing to participate in a follow up survey? If so, could you please provide an email address we may use to contact you with the survey? Thanks!

**e-mail:** ____________________________________