

UNIVERSITY ASSESSMENT COMMITTEE
Feedback to Academic Departments on Assessment Activities Reported in 14 (Academic year)

UNDERGRADUATE PROGRAMS

DEPARTMENT Electrical Engineering **DATE** 4/21/15

PROGRAM(S) COVERED IN REVIEW Electrical Engineering BS (BSEE)

COMMITTEE MEMBER(S) CONDUCTING REVIEW Shari Nelson and James Casler

1. STUDENT LEARNING GOALS

- | | | | |
|---------------------------------------|--------------|----------------|---------------------------|
| • Were any goals referenced? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |
| • If so, were goals well articulated? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |
| • Do goals address student learning? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |

Comments:

The Assessment Plan (dated 2004) identifies eleven desired outcomes for the BSEE program. These outcomes are largely aligned with ABET criteria. Note: the 2014 Annual Report mentions a 2007 revision to the assessment plan, however, that revision was not found.

In addition to the program goals, please also consider UND's institutional and Essential Studies goals for student learning (shown in alignment within parentheses) and identify which goals are similar to program goals.

- 8_ 1 Communication – written or oral (“able to write and speak in various settings with a sense of purpose/audience”)
 6_ 2 Thinking and reasoning – critical thinking (or “be intellectually curious”; analyze, synthesize, evaluate)
 5_ 3 Thinking and reasoning – creative thinking (or “be intellectually creative”; explore, discover, engage)
 1,2,3,4_ 4 Thinking and reasoning – quantitative reasoning (“apply empirical data...analyze graphical information”)
 7,10_ 5 Information literacy (“be able to access and evaluate...for effective, efficient, and ethical use”)
 9_ 6 Diversity (“demonstrate understanding of diversity and use that understanding...”)
 11_ 7 Lifelong learning (“commit themselves to lifelong learning”)
 11_ 8 Service/citizenship (“share responsibility both for their communities and for the world”)

Comments regarding program goals and alignment with institutional and Essential Studies goals:

The eleven learning outcomes generally align with the above Institutional and Essential Studies goals, as indicated with relevant outcomes shown associated with the goals satisfied.

2. ASSESSMENT METHODS

- | | | | |
|--|-----------------|----------------|---------------------------|
| Were any specific assessment methods referenced? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |
| • If so, were specifically chosen assessment methods appropriately aligned with individual goals? | YES <u> </u> | NO <u>X</u> | QUALIFIED Y/N <u> </u> |
| • Were both direct and indirect assessment methods used as components of a “multiple measures” approach? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |

Comments:

Both quantitative and qualitative data are gathered through ten instruments. These instruments are: placement, exit interviews, student/faculty meetings, senior design, alumni meetings, alumni surveys, co-op employer surveys, exams, lab reports, and Fundamentals of Engineering (FE) exam results. These instruments comprise both direct and indirect assessment methods. However, no clear rubric is presented and means to distinguish levels of performance in student work products are not clearly associated with specific outcomes.

3. ASSESSMENT RESULTS

Were any assessment results reported?	YES__X__	NO___	QUALIFIED Y/N ___
• If so, were the results clear in terms of how they specifically affirm achievement of goals?	YES___	NO___	QUALIFIED Y/N __X__
• If so, were the results clear in terms of how they indicate need for improvement?	YES__X__	NO___	QUALIFIED Y/N ___
• Were the results tied to goals for student learning?	YES__X__	NO___	QUALIFIED Y/N ___

Comments:

The 2014 report indicates that six instruments were used. With respect to course outcomes, six courses were selected and assessed as part to the ABET outcome assessment. No data are presented, but rather department interpretations and suggested corrective actions are identified. Placement data are presented, with placements well-exceeding the desired 85%. Additionally, data from the Graduating Senior Interviews and Graduating Senior Survey are presented. Although generally difficult to read, for the instruments reported, discussion relates the outcomes to all eleven goals and clearly identified areas for improvement. For example, the Graduating Senior Survey indicated only one outcome (understanding of engineering solutions in a global context) below the desired threshold. Although interpretations are made, the absence of clearly-defined levels of student performance for the reported instruments weakens the conclusions drawn.

In addition to program goals, some assessment results may be applicable to institutional and Essential Studies goals. Indicate any goals for which the program presents findings, and, for indicated items, describe findings below.

- ☒ 1 Communication – written or oral (“able to write and speak in various settings with a sense of purpose/audience”)
- ☒ 2 Thinking and reasoning – critical thinking (or “be intellectually curious”; analyze, synthesize, evaluate)
- ☒ 3 Thinking and reasoning – creative thinking (or “be intellectually creative”; explore, discover, engage)
- ☒ 4 Thinking and reasoning – quantitative reasoning (“apply empirical data...analyze graphical information”)
- ☒ 5 Information literacy (“be able to access and evaluate...for effective, efficient, and ethical use”)
- ☒ 6 Diversity (“demonstrate understanding of diversity and use that understanding...”)
- ☒ 7 Lifelong learning (“commit themselves to lifelong learning”)
- ☒ 8 Service/citizenship (“share responsibility both for their communities and for the world”)

Comments regarding results and the application of results to program, institutional, and Essential Studies goals:

The results can be applied to all Institutional and Essential Studies goals. Unfortunately, the department does not specifically relate results to these goals. It is not clear that the department recognizes that connection.

4. CLOSING THE LOOP

Were any actions taken on the basis of assessment results reported?	YES__X__	NO___	QUALIFIED Y/N ___
• If so, do curricular or other improvements/ changes arising from assessment results directly address goals for student learning?	YES__X__	NO___	QUALIFIED Y/N ___

Comments:

While the majority of continuous improvement actions were simple to “encourage” faculty or students in various areas, several specific and tangible curriculum actions were taken, to include:

- *Addition of laboratory examinations to EE 308 and EE 309*
- *Development of courses in Entrepreneurship, Information Security Policy and Practice for Engineers, and Technology and Innovation Case Studies.*

SUMMARY

Strengths

- ☒ A specific plan for assessment is in place.
- ☒ Student learning goals are well-articulated.
- ☐ Assessment methods are clearly described.
- ☐ Assessment methods are appropriately selected.
- ☐ Assessment methods are well-implemented.
- ☒ Direct and indirect methods are implemented.
- ☐ Results are reported.
- ☒ Results are tied to closing the loop.
(Decision-making is tied to evidence.)

Areas for Improvement

- ☐ No specific plan for assessment is in place.
- ☐ Student learning goals are not well-articulated.
- ☒ Assessment methods are not clearly described.
- ☐ Assessment methods are not appropriately selected.
- ☐ Assessment methods are not well-implemented.
- ☐ A single type of assessment methods predominates.
- ☐ No results are reported.
- ☐ Results are not clearly tied to closing the loop.
(Decision-making is not directly tied to evidence.)

OVERALL SUMMARY AND RECOMMENDATIONS:

Overall, this is an extensively documented assessment program oriented primarily to ensure satisfaction of ABET accreditation criteria. However, despite numerous assessment methods, the absence of clearly-defined measures of student performance directly aligned with specific student learning goals obfuscates the decision-making process.

MATERIALS REVIEWED

- ☐ Annual assessment report
- ☒ Annual Report (2013, 2014)
- ☒ Assessment plan (as posted) (2004)
- ☐ Previous assessment review
- ☐ Other (please describe)

Reviewer(s):	Name	James Casler	Shari Nelson
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Section 1: ☐ Y ☐ Q ☐ N Section 2: ☐ Y ☐ Q ☐ N Section 3: ☐ Y ☐ Q ☐ N Section 4: ☐ Y ☐ Q ☐ N

Coding Key:

- Y = yes, this is done appropriately and well (bearing in mind the kind of program(s) reviewed and recognizing that assessment is a cyclical process, i.e., with additional kinds of data to be collected and analyzed in other years)
- Q = qualified yes as action or progress is apparent; however, evidence is lacking that this is completely and appropriately done
- N = no, it is unclear whether it was done at all, or it is not done in relationship to student learning

Revised Sept 24, 2014

UNIVERSITY ASSESSMENT COMMITTEE
Feedback to Academic Departments on Assessment Activities Reported in 14 *(Academic year)*

GRADUATE PROGRAMS

DEPARTMENT Electrical Engineering **DATE** 4/21/15

PROGRAM(S) COVERED IN REVIEW Electrical Engineering MS

COMMITTEE MEMBER(S) CONDUCTING REVIEW Shari Nelson & James Casler

1. STUDENT LEARNING GOALS

- | | | | |
|---------------------------------------|-----------------|----------------|---------------------------|
| • Were any goals referenced? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |
| • If so, were goals well-articulated? | YES <u> </u> | NO <u>X</u> | QUALIFIED Y/N <u> </u> |
| • Do goals address student learning? | YES <u> </u> | NO <u> </u> | QUALIFIED Y/N <u>X</u> |

Comments:

Three learning goals and associated objectives are presented. In general, these goals are not well-articulated. For example, Goal 1 simply calls for the student to complete the graduate program – such a goal is overly simplistic and not helpful in discriminating strengths or weaknesses in the program. While student learning is ostensibly addressed, the ambiguity of the objectives will make it difficult to gain useful insight into program performance.

2. ASSESSMENT METHODS

- | | | | |
|--|-----------------|----------------|---------------------------|
| Were any specific assessment methods referenced? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |
| • If so, were specifically chosen assessment methods appropriately aligned with individual goals? | YES <u> </u> | NO <u> </u> | QUALIFIED Y/N <u>X</u> |
| • Were both direct and indirect assessment methods used as components of a “multiple measures” approach? | YES <u> </u> | NO <u> </u> | QUALIFIED Y/N <u>X</u> |

Comments:

Assessment methods are identified in a matrix form. However, the methods do not indicate specific levels of student performance and, consequently, offer little by which to determine changes in program performance. While the assessment plan identifies only direct methods, the annual assessment report suggests that a graduate student exit interview is also used. Other indirect methods may also be in use – the assessment report alludes to consideration of graduate student seminar, meetings with Chair and Grad Director, as well as other sources.

3. ASSESSMENT RESULTS

- | | | | |
|--|-----------------|----------------|---------------------------|
| Were any assessment results reported? | YES <u>X</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |
| • If so, were the results clear in terms of how they specifically affirm achievement of goals? | YES <u> </u> | NO <u>X</u> | QUALIFIED Y/N <u> </u> |
| • If so, were the results clear in terms of how they indicate need for improvement? | YES <u> </u> | NO <u>X</u> | QUALIFIED Y/N <u> </u> |
| • Were the results tied to goals for student learning? | YES <u> </u> | NO <u>X</u> | QUALIFIED Y/N <u> </u> |

Comments:

While quantitative data are reported and the assessment plan associates methods, e.g., Thesis/Project Report Evaluation Form, with various objectives, there is no evidence in the annual/assessment report that these data and desired student learning goals are linked. Although this may be a current weakness, it has been recognized by the department and corrective action appears to be considered. The FY2014 report states “In the future, we will develop a system to map the graduate course outcomes to our graduate program goals and assess selected courses. This assessment is not being done currently.”

4. CLOSING THE LOOP

Were any actions taken on the basis of assessment results reported?

YES _____ NO X QUALIFIED Y/N _____

- If so, do curricular or other improvements/ changes arising from assessment results directly address goals for student learning?

YES _____ NO _____ QUALIFIED Y/N _____

Comments:

The 2013 report acknowledges that no loop-closing activities were undertaken. And, the 2014 report likewise does not indicate such actions. Rather, as indicated in the above quote, the assessment plan does not yet provide adequate means for closure.

SUMMARY

Strengths

- _____ A specific plan for assessment is in place.
- _____ Student learning goals are well-articulated.
- _____ Assessment methods are clearly described.
- _____ Assessment methods are appropriately selected.
- _____ Assessment methods are well-implemented.
- _____ Direct and indirect methods are implemented.
- _____ Results are reported.
- _____ Results are tied to closing the loop.
(Decision-making is tied to evidence.)

Areas for Improvement

- _____ No specific plan for assessment is in place.
- X Student learning goals are not well-articulated.
- X Assessment methods are not clearly described.
- X Assessment methods are not appropriately selected.
- _____ Assessment methods are not well-implemented.
- _____ A single type of assessment methods predominates.
- _____ No results are reported.
- X Results are not clearly tied to closing the loop.
(Decision-making is not directly tied to evidence.)

OVERALL SUMMARY AND RECOMMENDATIONS:

The central issue for this department appears to be the absence of clear, well-articulated, measurable student learning goals which would provide a basis for decisions regarding continuous program improvement. More and better thorough-going approaches to measure or distinguish levels of student performance should be devised to reflect those revised student learning goals. Further, the indirect methods that currently appear to be applied informally should be incorporated explicitly into the assessment plan.

MATERIALS REVIEWED

- _____ Annual assessment report
- X Annual report 2013, 2014
- X Assessment plan (as posted)
- _____ Previous assessment review
- _____ Other (please describe)

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Section 1: Q Section 2: Q Section 3: N Section 4: N

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