

**UNIVERSITY ASSESSMENT COMMITTEE**  
**Feedback to Academic Departments on Assessment Activities Reported in 2013-2014 (Academic year)**

**UNDERGRADUATE PROGRAMS**

**DEPARTMENT** Mechanical Engineering **DATE** May 5, 2015

**PROGRAM(S) COVERED IN REVIEW** Bachelor of Science (B.S.) in Mechanical Engineering / Combined B.S. and Master of Science (M.S.) in Mechanical Engineering

**COMMITTEE MEMBER(S) CONDUCTING REVIEW** Kevin Buettner, Casey Ozaki, Deborah Worley

**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:**

*Student learning outcomes are specified in the 2012-2013 and the 2014-2015 Assessment Plans for the Bachelor of Science (BS) in Mechanical Engineering degree and the combined BS and Master of Science (MS) in Mechanical Engineering degree (there is no distinction in outcomes for the two programs). There are 11 well-articulated learning outcomes that are in line with what is required for ABET accreditation and they directly address student learning (e.g., ability to apply mathematics, science, and engineering principles, ability to design and conduct experiments, analyze and interpret data, ability to design a system, component, or process to meet desired needs.)*

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.

- X   1 Communication – written or oral (“able to write and speak in various settings with a sense of purpose/audience”)  
  X   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)  
  X   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...”)  
  X   7 Lifelong learning (“commit themselves to lifelong learning”)  
  X   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 BS and BS/MS in Mechanical Engineering student learning outcome specifically address communication (“ability to communicate effectively”), quantitative reasoning (“ability to apply mathematics, science and engineering principles”), critical thinking (“ability to design and conduct experiments, analyze and interpret data” and “ability to identify, formulate, and solve engineering problems”), lifelong learning (“recognition of the need for and an ability to engage in life-long learning”), and service/citizenship (“The broad education necessary to understand the impact of engineering solutions in a global and societal context”).*

**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>X</u> | NO <u>    </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:**

*There are specific assessment methods that reference the 11 student learning outcomes. Not all learning outcomes are assessed every year. Rather, there is an established rotation of outcomes that are assessed (on a three-year cycle). The assessment plan makes specific mention of using an assessment survey, collection and review of student work, and exit interviews to determine if student learning outcomes are being met. The department also uses results from the Fundamentals of Engineering (FE) exam to "compare the performance of our students with engineering students across the nation."*

**3. ASSESSMENT RESULTS**

Were any assessment results reported?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	QUALIFIED Y/N <input type="checkbox"/>
• If so, were the results clear in terms of how they specifically affirm achievement of goals?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	QUALIFIED Y/N <input checked="" type="checkbox"/>
• If so, were the results clear in terms of how they indicate need for improvement?	YES <input type="checkbox"/>	NO <input type="checkbox"/>	QUALIFIED Y/N <input checked="" type="checkbox"/>
• Were the results tied to goals for student learning?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	QUALIFIED Y/N <input type="checkbox"/>

**Comments:**

*The five outcomes were assessed in the 2013-2014 academic year: ability to design and conduct experiments, analyze and interpret data; ability to function on multidisciplinary teams; understanding of professional and ethical responsibility; the broad education necessary to understand the impact of engineering solutions in a global and societal context; and knowledge of contemporary issues. The Assessment Report included an example of a course report with data points in all five areas. Assessment data were not reported across all courses.*

*The Department reported pass rates of their students who took the Fundamentals of Engineering (FE) exam. The goal for the ME Department is to match the national pass rate on the FE exam. In October 2013, the UND student pass rate was 57% (n=21). The national pass rate was 79%. In April 2014, the UND student pass rate was 100% (n=3). The national pass rate was 85%.*

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.

<input type="checkbox"/>	1 Communication – written or oral (“able to write and speak in various settings with a sense of purpose/audience”)
<input checked="" type="checkbox"/>	2 Thinking and reasoning – critical thinking (or “be intellectually curious”; analyze, synthesize, evaluate)
<input type="checkbox"/>	3 Thinking and reasoning – creative thinking (or “be intellectually creative”; explore, discover, engage)
<input type="checkbox"/>	4 Thinking and reasoning – quantitative reasoning (“apply empirical data...analyze graphical information”)
<input type="checkbox"/>	5 Information literacy (“be able to access and evaluate...for effective, efficient, and ethical use”)
<input type="checkbox"/>	6 Diversity (“demonstrate understanding of diversity and use that understanding...”)
<input type="checkbox"/>	7 Lifelong learning (“commit themselves to lifelong learning”)
<input checked="" type="checkbox"/>	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:**

*Two of the student learning outcomes that were assessed in the 2013-2014 academic year align with Essential Studies goals of critical thinking and service/citizenship. In the sample course results that were presented, critical thinking was measured by evaluation of student work and a performance criteria survey. Service/citizenship was measured by a Student Outcomes Survey.*

**4. CLOSING THE LOOP**

Were any actions taken on the basis of assessment results reported?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	QUALIFIED Y/N <input type="checkbox"/>
• If so, do curricular or other improvements/changes arising from assessment results directly address goals for student learning?	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>	QUALIFIED Y/N <input type="checkbox"/>

**Comments:**

*The Assessment Plan stipulates that the faculty discuss assessment results at an annual faculty retreat that is held each August. They use the assessment results to make appropriate and necessary changes to specific courses or “educational activities”. In*

the Assessment Report, one sample course's "closing the loop" activities were presented. In the sample, ME 301, three items were mentioned as areas for course improvement based on assessment results.

## 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:

*The Assessment Plan for the BS and BS/MS program is clear, concise, and easy to follow. Student learning outcomes are informed by ABET; they are specific and measurable. Assessment methods are diverse and seem to be appropriately aligned with student learning outcomes. Also, the three-year review cycle for the student learning outcomes is logical. Assessment results were included in the annual Assessment Report, but only for one course (ME 301). We hope that you periodically aggregate the results and report them across courses. Finally, there seems to be no distinction between the BS in Mechanical Engineering degree program assessment plan and the BS/MS in Mechanical Engineering combined degree program assessment plan. We encourage the department to think about any diversions that these two programs have from one another and highlight these differences in the assessment process.*

## MATERIALS REVIEWED

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

Reviewer(s):	Name	Kevin Buettner	Casey Ozaki	Deborah Worley
	Department	Nursing	Teaching & Learning	Ed Leadership
	Phone Number	7-4509	7-4256	7-3140
	e-mail	Kevin.buettner@und.edu	Carolyn.ozaki@und.edu	Deborah.worley@und.edu

Section 1: ☒ Y ☐ N    Section 2: ☒ Y ☐ N    Section 3: ☐ Q ☐ N    Section 4: ☒ Y ☐ 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 2013-2014** (Academic year)

**GRADUATE PROGRAMS**

**DEPARTMENT** Mechanical Engineering **DATE** May 5, 2015

**PROGRAM(S) COVERED IN REVIEW** Master of Engineering in Mechanical Engineering

**COMMITTEE MEMBER(S) CONDUCTING REVIEW** Kevin Buettner, Casey Ozaki, Deborah Worley

**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>   </u> | QUALIFIED Y/N <u>X</u>   |
| • Do goals address student learning?  | YES <u>   </u> | NO <u>   </u> | QUALIFIED Y/N <u>X</u>   |

**Comments:**

The most current Assessment Plan for the Mechanical Engineering Master of Engineering degree program is dated 2006-2007. The plan includes two student learning goals: "Graduates will demonstrate a mastery of the practical implementation of engineering concepts by identifying a substantial need, formulating a design or process to meet the need and implementing their solution to meet that need." and "Graduates will be well prepared for a career in industry in mechanical engineering or a related field." The first goal has two aligned objectives. The second goal has four aligned objectives. Several of the objectives focused on actions rather than specific student learning; such as "create a well-written summary report of their design process and results", "present research at a professional venue", and "gain admission to a quality industrial position in their area of interest".

**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>X</u>   | NO <u>   </u> | QUALIFIED Y/N <u>   </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:**

Although no specific assessment methods were written for the Master of Engineering degree program in the 2006-2007 Assessment Plan or in the 2013-2014 Assessment Report, the 2006-2007 Assessment Plan does include a checklist (but with no narrative or explanation) where the department records when the student reaches milestones, such as writing a topic proposal, advancing to candidacy, and fulfilling graduation requirements. There is also an indication that the student's coursework and final design project is reviewed using a five-item set that accompanies the checklist. These five items align with student learning goals and are scored on a 5-point Likert-type scale. Examples of the items are: "Demonstrated an understanding of fundamentals of mechanical engineering beyond the B.S. M.E. level"; "Demonstrated a breadth of knowledge appropriate individual goals, competencies and selected research"; "Demonstrated the ability to write in clear academic prose"; "Demonstrated a mastery of scholarly tools"; and "Implemented working prototype".

**3. ASSESSMENT RESULTS**

- |  |                |               |                          |
|--|----------------|---------------|--------------------------|
| Were any assessment results reported?  | YES <u>   </u> | NO <u>X</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>   </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>   </u> | QUALIFIED Y/N <u>   </u> |
| • Were the results tied to goals for student learning?   | YES <u>   </u> | NO <u>   </u> | QUALIFIED Y/N <u>   </u> |

**Comments:**

The 2013-2014 Assessment Report stated that there were no graduates from the Master of Engineering degree program during the period that was covered by the report. Therefore, no assessment results were reported for the Master of Engineering degree program in Mechanical Engineering.

**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:**

No assessment results were reported for the Master of Engineering degree program in Mechanical Engineering.

**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.
- X 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.
- X 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:**

The Assessment Plan for the Mechanical Engineering Master of Engineering degree program stipulates student learning goals. The goals are specific, but not all of them address student learning. It would be helpful if all goals and objectives can be written from a student learning perspective. We also recommend that assessment methods be diversified for the Master of Engineering degree program and that the methods be both formative and summative. If both forms of assessment are included, then the program can report assessment results and any "closing the loop" activities even if no students are graduating in a given year.

**MATERIALS REVIEWED**

- X Annual assessment report
- \_\_\_\_\_ Annual report
- X Assessment plan (as posted)
- X Previous assessment review
- \_\_\_\_\_ Other (please describe)

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Section 1: Q Section 2: Q Section 3: N Section 4: 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 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 2013-2014 (Academic year)**

**GRADUATE PROGRAMS**

**DEPARTMENT** Mechanical Engineering **DATE** May 5, 2015

**PROGRAM(S) COVERED IN REVIEW** Master of Science (Thesis option) in Mechanical Engineering

**COMMITTEE MEMBER(S) CONDUCTING REVIEW** Kevin Buettner, Casey Ozaki, Deborah Worley

**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>    </u> | QUALIFIED Y/N <u>X</u>    |
| • Do goals address student learning?  | YES <u>    </u> | NO <u>    </u> | QUALIFIED Y/N <u>X</u>    |

**Comments:**

The most current Assessment Plan for the Mechanical Engineering Master of Science degree program (thesis option) is dated 2006-2007. The plan includes two student learning goals: "Graduates will demonstrate a mastery of scientific research by formulating, assessing, and documenting a scientific hypothesis" and "Graduates will be well prepared for a career in government/industry and/or doctoral studies in mechanical engineering or a related field." The first goal has two aligned objectives. The second goal has four aligned objectives. Several of the objectives focused on actions rather than specific student learning; such as "present ... research findings in at least one professional venue", "publish a thesis documenting their research results", and "gain admission to a quality doctoral program or an industrial/governmental position in their area of interest".

**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>X</u>    | NO <u>    </u> | QUALIFIED Y/N <u>    </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:**

The 2013-2014 Assessment Report indicates that the "primary means of assessment for most objectives was direct assessment by the student's faculty committee during the final thesis defense." The 2006-2007 Assessment Plan includes a checklist (with no narrative or explanation) where the department records when the student reaches milestones, such as writing a topic proposal, advancing to candidacy, and passing the comprehensive exam. There is also an indication that coursework is reviewed and that the student's thesis committee reviews and scores the thesis using a set of four items that accompany the checklist. These four items align with student learning goals and are scored on a 5-point Likert-type scale. Examples of the items are: "Demonstrated an understanding of fundamentals of mechanical engineering beyond the B.S. M.E. level"; "Demonstrated a breadth of knowledge appropriate individual goals, competencies and selected research"; "Demonstrated the ability to write in clear academic prose"; and "Demonstrated a mastery of scholarly tools". An additional five items are scored at the thesis defense on the same 5-point Likert-type scale. These items are an assessment of a student's ability to demonstrate the ability to plan and develop the project; the ability to carry out the project; the mastery of scholarly Tools; the ability in oral expression; and effective use of visual aids.

**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>X</u>    | NO <u>    </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>    </u> | QUALIFIED Y/N <u>X</u>    |
| • Were the results tied to goals for student learning?   | YES <u>X</u>    | NO <u>    </u> | QUALIFIED Y/N <u>    </u> |

**Comments:**

*In the 2013-2014 Assessment Report, the Mechanical Engineering department reports three- and five-year average mean scores for five objectives (two aligned with student learning goal #1 and three aligned with student learning goal #2): 1) design and execution of a research plan; 2) production of a quality thesis; 3) fundamental understanding of mechanical engineering; 4) breadth of knowledge in course of study; 5) written and oral communication skill development. They summarize that student performance on each of the measured objectives is acceptable and has been stable over time (3-5 years).*

**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 2013-2014 Assessment Report does not make any mention of actions taken or decisions made on the basis of reported assessment results.*

**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.  
X Results are not clearly tied to closing the loop.  
 (Decision-making is not directly tied to evidence.)

**OVERALL SUMMARY AND RECOMMENDATIONS:**

*The Assessment Plan for the Mechanical Engineering Master of Science degree program stipulates learning goals for students who are pursuing the Thesis option. The goals are specific, but not all of them address student learning. It would be helpful if all goals and objectives can be written from a student learning perspective. We also recommend that the description of assessment methods be explicit in the Assessment Plan and the overall approach to assessment of student learning be diversified. Are there other opportunities for data collection beyond evaluation of the thesis? Finally, provide examples in future annual Assessment Reports as to how the assessment results are used to promote change and improve student learning.*

**MATERIALS REVIEWED**

- X Annual assessment report  
 \_\_\_\_\_ Annual report  
X Assessment plan (as posted)  
X Previous assessment review  
 \_\_\_\_\_ Other (please describe)

Reviewer(s):	Name	Kevin Buettner	Casey Ozaki	Deborah Worley
	Department	Nursing	Teaching & Learning	Ed Leadership
	Phone Number	7-4509	7-4256	7-3140
	e-mail	Kevin.buettner@und.edu	Carolyn.ozaki@und.edu	Deborah.worley@und.edu

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Section 1: Q Section 2: Q Section 3: Q Section 4: 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 in other years)
- Q = qualified yes as action or progress is apparent; however, evidence is lacking that this is completely and appropriately done
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*Revised Sept 24, 2014*



**UNIVERSITY ASSESSMENT COMMITTEE**  
**Feedback to Academic Departments on Assessment Activities Reported in 2013-2014 (Academic year)**

**GRADUATE PROGRAMS**

**DEPARTMENT** Mechanical Engineering **DATE** May 5, 2015

**PROGRAM(S) COVERED IN REVIEW** Master of Science (Non-Thesis option) in Mechanical Engineering

**COMMITTEE MEMBER(S) CONDUCTING REVIEW** Kevin Buettner, Casey Ozaki, Deborah Worley

**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>    </u> | QUALIFIED Y/N <u>X</u>    |
| • Do goals address student learning?  | YES <u>    </u> | NO <u>    </u> | QUALIFIED Y/N <u>X</u>    |

**Comments:**

*The most current Assessment Plan for the Mechanical Engineering Master of Science degree program (non-thesis option) is dated 2006-2007. The plan includes two student learning goals: "Graduates will demonstrate a mastery of scientific investigation by researching and preparing a scholarly report on a topic related to mechanical engineering" and "Graduates will be well prepared for a career in government/industry in mechanical engineering or a related field". The first goal has two aligned objectives. The second goal has four aligned objectives. Several of the objectives focused on actions rather than specific student learning; such as present research at a professional venue, obtain a professional position in industry or government after degree completion, and pass a comprehensive exam.*

**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>X</u>    | NO <u>    </u> | QUALIFIED Y/N <u>    </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:**

*Although no specific assessment methods were written for the Master of Science degree program (non-thesis option) in the 2006-2007 Assessment Plan or in the 2013-2014 Assessment Report, the 2006-2007 Assessment Plan does include a checklist (but with no narrative or explanation) where the department records when the student reaches milestones, such as writing a topic proposal, advancing to candidacy, and passing the comprehensive exam. There is also an indication that the student's coursework and final report is reviewed using a four-item set that accompanies the checklist. These four items align with student learning goals and are scored on a 5-point Likert-type scale. Examples of the items are: "Demonstrated an understanding of fundamentals of mechanical engineering beyond the B.S. M.E. level"; "Demonstrated a breadth of knowledge appropriate individual goals, competencies and selected research"; "Demonstrated the ability to write in clear academic prose"; and "Demonstrated a mastery of scholarly tools".*

**3. ASSESSMENT RESULTS**

- |  |                 |                |                           |
|--|-----------------|----------------|---------------------------|
| Were any assessment results reported?  | YES <u>    </u> | NO <u>X</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>    </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>    </u> | QUALIFIED Y/N <u>    </u> |
| • Were the results tied to goals for student learning?   | YES <u>    </u> | NO <u>    </u> | QUALIFIED Y/N <u>    </u> |

**Comments:**

No assessment results were reported for the Master of Science degree program (non-thesis option).

**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:**

No assessment results were reported for the Master of Science degree program (non-thesis option).

**SUMMARY****Strengths****Areas for Improvement**

\_\_\_\_\_ 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.)

\_\_\_\_\_ No specific plan for assessment is in place.  
 \_\_\_\_\_ Student learning goals are not well-articulated.  
X 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.  
X 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:**

The Assessment Plan for the Mechanical Engineering Master of Science degree program stipulates learning goals for students who are pursuing the Non-Thesis option. The goals are specific, but not all of them address student learning. It would be helpful if all goals and objectives can be written from a student learning perspective. We also recommend that assessment methods be added to the assessment plan for the Master of Science degree program (non-thesis option). Specifying these assessment methods then facilitates reporting of assessment results in the annual assessment plan as well as subsequent "closing the loop" activities.

**MATERIALS REVIEWED**

X Annual assessment report  
 \_\_\_\_\_ Annual report  
X Assessment plan (as posted)  
X Previous assessment review  
 \_\_\_\_\_ Other (please describe)

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