UNIVERSITY ASSESSMENT COMMITTEE
Feedback to Academic Departments on Assessment Activities Reported in __*2013-14*_____

UNDERGRADUATE PROGRAMS

DEPARTMENT____*Geology & Geological Engineering*_____**DATE___***2/5/15*_____

PROGRAM(S) COVERED IN REVIEW ____*B.S. in Geological Engineering*_____

COMMITTEE MEMBER(S) CONDUCTING REVIEW__ *Mary K. Askim-Lovseth and Surojit Gupta*_____

1. STUDENT LEARNING GOALS

- Were any goals referenced? YES__*X*_ NO____ QUALIFIED Y/N ___
- If so, were goals well articulated? YES__*X*_ NO____ QUALIFIED Y/N ___
- Do goals address student learning? YES__*X*_ NO____ QUALIFIED Y/N ___

Comments:

The B.S. in Geological Engineering program has two broad Program Educational Objectives, but these two are not the same between the Assessment Plan and Annual Report. The most recent Assessment Plan posted (2010) indicated one of the objectives to be, "As professionals, program graduates shall enhance productivity through technical innovations, improve communication skills, and acquire new knowledge, including licensure if it is required to accomplish their goals." The Annual Report indicated the second objective to be, "Program graduates shall be successful and contributing members of society." The 11 learning outcomes related to these objectives are very specific. All outcomes are well articulated and relate directly to student learning. Performance criteria are also identified for the 11 outcomes. All outcomes were assessed during the past year.

The program is accredited by ABET (the Accreditation Board for Engineering and Technology). The Department is currently going through the reaccreditation process.

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)
___*X*___ 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")
___*X*___ 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")
_____ 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:

Several of the student learning outcomes are directly aligned with the institutional and Essential Studies goals as represented in the language of the outcomes—"solve engineering problems," "design and conduct experiments," "collect and interpret experimental data," "design an engineering system, system component or process," and "communicate effectively."

Though an outcome related to lifelong learning is identified, it would be difficult to assess its competency. The outcome states, "Students will demonstrate an understanding of the importance of life-long learning and continuing education."

2. ASSESSMENT METHODS

Were any specific assessment methods referenced?	YES__*X*__	NO____	QUALIFIED Y/N ____
• If so, were specifically chosen assessment methods appropriately aligned with individual goals?	YES____	NO____	QUALIFIED Y/N __*X*_
• Were both direct and indirect assessment methods used as components of a "multiple measures" approach?	YES__*X*__	NO____	QUALIFIED Y/N ____

Comments:

The Department's methodology for collecting assessment data included direct and indirect measures. The broad objectives that have a career focus are assessed using an alumni survey. The program outcomes have more direct assessment measures, along with some indirect. The Assessment Plan indicated a portfolio is required for students during their two years in the program. Assessment measures noted in the Annual Report that were used during the period under review included exams, papers, presentations, field camp, exit interviews, employer and student self-evaluation from co-op experiences.

A scoring sheet identifying the student learning outcomes is used for the design course sequence (summative evaluation of the student's abilities) and advising. The advisor is asked to evaluate the student's learning after completing the geological engineering curriculum; that appears problematic as to how the advisor can assess the student's learning just from course completion. A performance scale of 0 to 10 (10 being the best) is applied with a mean calculated.

A similar scoring sheet is used for the students' self-evaluations during the last semester of the program. Students use the same 10-point scale to assess "the degree to which your UND geological engineering education has developed your ability to: …" A specific question follows regarding, "Which courses or experiences were most influential in developing this ability?" Using the instrument in this manner seems to be more of a program evaluation than a self-analysis of the students' learning.

Assessment data are converted to percentage values and the following four levels—90% and higher, exemplary; 75-90%, accomplished; 60-75%, developing; and below 60%, beginning. The benchmark is 70% with less than 10% at the beginning level.

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__*X*_	NO____	QUALIFIED Y/N ____
• 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:

Means, ranges, and/or minimum percentages were reported for some of the specific competencies for the outcomes. The small number of students, in particular classes or graduates (3 to 13), provided limitations. All six individuals who took the Fundamental of Engineering (FE) NCEES licensure exam passed; five on the first attempt. In comparison with peer institutions, performance was generally above average noting improvement could be made in non-engineering courses. More complete data were provided in the ABET Self Study Report (June, 2014).

Indirect data provided some suggestions for improvement—"more hands-on and practical class work;" and finding better ways to connect with students to help them in "understanding the importance of being involved in national organizations and professional groups, recognizing the importance of professional licensure, recognizing the important of lifelong learning, and understanding societal effects of engineering." The few co-op surveys (student and employer) indicated standards being met or exceeded.

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.

___*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)
___*X*___ 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")
___*X*___ 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…")
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Comments regarding results and the application of results to program, institutional, and Essential Studies goals:

Data appeared to be collected for several of the institutional and Essential Studies goals with the comment being that the results were "all very positive and do not indicate the need for major changes or improvements."

4. CLOSING THE LOOP

Were any actions taken on the basis of assessment results reported? YES_____ NO____ QUALIFIED Y/N __*X*_

- 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:

No actions were noted based on the most recent assessment data. Based on prior assessment, recent changes have involved the emphasis on improving the oral and written communication skills of the students. Developing common writing guidelines, increasing the writing component in lower level courses, and promoting more presentations in the courses. A senior research project has also been added.

SUMMARY

Strengths	***Areas for Improvement***
__*X*_ A specific plan for assessment is in place.	____ No specific plan for assessment is in place.
__*X*_Student learning goals are well-articulated.	____ Student learning goals are not well-articulated.
____Assessment methods are clearly described.	____ Assessment methods are not clearly described.
____Assessment methods are appropriately selected.	____ Assessment methods are not appropriately selected.
____Assessment methods are well-implemented.	____ Assessment methods are not well-implemented.
__*X*_Direct and indirect methods are implemented.	____ A single type of assessment methods predominates.
__*X*_Results are reported.	____ No results are reported.
____Results are tied to closing the loop. (Decision-making is tied to evidence.)	__*X*_ Results are not clearly tied to closing the loop. (Decision-making is not directly tied to evidence.)

OVERALL SUMMARY AND RECOMMENDATIONS:

Over the last several years, there has been a concerted effort to continual improve the program's assessment plan. The Department indicated it had shifted the focus to assessing students as they neared the end of their program, using senior level courses and the field camp. Enhancing critical thinking skills is currently one of its priority areas, along with communication skills.

It is recommended to rethink how the Design Course Summary Memo and Advisee Summary Memo are used. Limited specific information is available that would help faculty in making decisions about closing the loop activities.

MATERIALS REVIEWED

__*X*__ Annual assessment report
_____ Annual Report
__*X*__ Assessment plan (as posted)
__*X*__ Previous assessment review
__*X*__ Other (please describe)
(ABET Self Study Report, Geological Engineering Program, 2014-2014 Review Cycle, June 2014)

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Section 1: __*Y*__ Section 2: __*Y*__ Section 3: __*Y*__ Section 4: __*Q*__

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