DEPARTMENT____Civil Engineering (CE)_____DATE__March 24, 2009____

COMMITTEE MEMBER(S) CONDUCTING REVIEW__ Mary Askim-Lovseth, Joan Hawthorne_____

1. STUDENT LEARNING GOALS

- Were any goals referenced? YES_U,G_ NO____ QUALIFIED Y/N ___
- If so, were goals well articulated? YES____ NO____ QUALIFIED Y/N _U,G_
- Do goals address student learning? YES_U__ NO_G__ QUALIFIED Y/N ___

Comments:

Undergraduate: The Assessment Plan posted on the University website is dated Fall 2004 and includes a three-year assessment cycle for the program; the three academic years noted begin with 2000-01. This document should be updated for consistency and currency (CE noted the Assessment Plan was revised in its report). Three program objectives were identified in the assessment annual report but were not found in the Assessment Plan, only program outcomes. Program objective 1 relates to student learning (identified as program outcomes) while the other two program objectives relate to the diversity of professional settings civil engineers work in and the type of work they do. Some of the program outcomes would be difficult to assess as written; for example, "the broad education necessary to understand the impact of engineering solutions in a global, societal, and economic context" and "a recognition of the need for, and an ability to engage in life-long learning."

Graduate: The Civil Engineering Department has two graduate programs, the Master of Science (MS) and the Master of Engineering (ME). Each program has a Departmental Plan for Assessment of Student Learning that was dated November 2005. The only difference between the two programs is the final project, a research project (MS) or a design project (ME). The three goals identified for each program do not address any competency level for student learning. One relates to 'performing' a project, another to career preparation in the field, and the focus of the third is for students to "build on knowledge gained in their undergraduate program of study." The subsequent objectives for each are mainly task-oriented, such as completion of credit hours, submission of a report, participation in an experience, and "communicating with engineering professionals." A recommendation would be to place emphasis on what students should be learning as a result of completion of the program rather than what experiences each program offers. (E.g., "Students will perform a detailed research project in a specific focus area related to civil engineering" might be rewritten as "Students will be able to design a research project that answers an engineering question, to carry out that project, and to prepare a thorough and comprehensible written report." You'll note that the emphasis, in the rewritten version, is on what students **will have learned to do** rather than the experiences you provide for them within the program.)

In addition to the Departmental goals, please also consider UND's Institutional and Essential Studies goals for student learning (shown in alignment within parentheses). Use 'U' (undergraduate) or 'G' (graduate) to identify UND/Essential Studies goals which are similar to the referenced departmental goals.
__U,G__ 1 Communication – written or oral ("able to write and speak in various settings with a sense of purpose/audience")
__U____ 2 Thinking and reasoning – critical thinking (or "be intellectually curious"; analyze, synthesize, evaluate)
__U____ 3 Thinking and reasoning – creative thinking (or "be intellectually creative"; explore, discover, engage)
__U____ 4 Thinking and reasoning – quantitative reasoning ("apply empirical data…analyze graphical information")
__U____ 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…")
__U____ 7 Lifelong learning ("commit themselves to lifelong learning")
_____ 8 Service/citizenship ("share responsibility both for their communities and for the world")

Comments regarding departmental goals and alignment of departmental goals with institutional and Essential Studies goals:

Undergraduate: Several of the Civil Engineering outcomes for the program are directed toward the three thinking and reasoning goals (critical and creative thinking, quantitative reasoning) of the University and Essential Studies. Communication and lifelong learning are also aligned, but the latter has wording that relates to recognizing the need for and

having the skills necessary to do so. This is entirely different than the UND/ES focus. Information literacy is assumed to be a goal as it would be inherent to accomplishing many of the outcomes successfully. The CE Department may consider identifying an explicit goal related to information literacy.

   Graduate: The goals for the graduate programs are less explicit in their alignment with the UND/ES goals. Only the communication goal is expressly stated. There is a reference for students to "gain an appreciation for the collection and/or interpretation of data," but gaining an appreciation does not correlate to skills in critical thinking, creative thinking, or quantitative reasoning.

2. ASSESSMENT METHODS

Were any specific assessment methods referenced?   YES_*U*__   NO_*G*__   QUALIFIED Y/N ____
- If so, were specifically chosen assessment methods appropriately aligned with individual goals?   YES_ ___   NO_ __   QUALIFIED Y/N _*U*___
- Were both direct and indirect assessment methods used as components of a "multiple measures" approach?   YES_____   NO_*U* _   QUALIFIED Y/N ____

Comments:

   Undergraduate: The 2004 CE Assessment Plan identified eight direct and indirect assessment methods of which three that were most appropriate, were selected to assess each *program outcome*. The annual report stated faculty evaluated four program outcomes, five courses, and the three program objectives for AY 2007-08. The four program outcomes assessed were "(b) an ability to design and conduct experiments, as well as analyze and interpret engineering data; (d) an ability to function on multi-disciplinary teams; (e) an ability to identify, formulate, and solve engineering problems; and (h) the broad education necessary to understand the impact of engineering solutions in a global, societal, and economic context." According to the Assessment Plan with respect to the specific courses being evaluated and their aligned outcomes, this would have necessitated use of six of the eight assessment tools—alumni surveys, course surveys, senior exit surveys, locally developed exams, fundamentals of engineering exam data, and instructor course evaluations. Only an alumni survey was reported. It should be reiterated that *program objectives* (identified only in the report and not in the plan) were assessed and that the *program outcomes* (those that were previously aligned with the UND/ES goals) were embedded in program objective 1. It would be helpful to see evidence that the direct assessment methods as well as the indirect assessments have occurred, and that information from direct assessments was considered in departmental discussions of findings.

   Graduate: Though four methods were listed for assessing the program goals, no assessment was completed. Within the Assessment Plan, it would be good to align assessment methods with specific learning goals once they are better articulated.

3. ASSESSMENT RESULTS

Were any assessment results reported?   YES_*U*__   NO__*G*__   QUALIFIED Y/N ____
- If so, were the results clear in terms of how they specifically affirm achievement of goals?   YES____   NO_*U* __   QUALIFIED Y/N ____
- If so, were the results clear in terms of how they indicate need for improvement?   YES____   NO_*U* __   QUALIFIED Y/N ____
- Were the results tied to goals for student learning?   YES____   NO_*U* __   QUALIFIED Y/N ____

Comments:

   Undergraduate: Data from the alumni survey were reported for all of the program outcomes. There was no data regarding the four program outcomes and five courses that were reportedly assessed during the year.

   Graduate: No assessment was completed.

In addition to departmental goals, some assessment results may be applicable to institutional and Essential Studies goals. Use 'U' (undergraduate) or 'G' (graduate) to identify those results which are applicable to institutional/Essential Studies goal achievement. For indicated items, please describe findings in the appropriate section 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 departmental, institutional and Essential Studies goals:

    Undergraduate:

    Graduate:

4. CLOSING THE LOOP

Were any actions taken on the basis of assessment
results reported? YES_____ NO__*G*__ QUALIFIED Y/N _*U*___

- If so, do curricular or other improvements/ changes arising from assessment results directly address goals for student learning? YES_____ NO____ QUALIFIED Y/N _*U*___

Comments:

    Undergraduate: Though changes were made to the Civil Engineering program as a result of the alumni survey, those changes related to two program outcomes that were not identified to be assessed during 2007-08.

    Graduate: No assessment was completed.

SUMMARY

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

OVERALL SUMMARY AND RECOMMENDATIONS:

The Civil Engineering undergraduate program needs an updated Assessment Plan that would more appropriately provide guidance for the faculty in their assessment. There should also be follow-through with what is noted was assessed (as per the annual report). It appears the alumni survey is a convenient assessment measure.

Though initial Assessment Plans for the graduate programs have been developed, they lack a focus on student learning. Once this has been established, there should be a commitment to assessing the MS and ME graduate programs.

In the case of Civil Engineering, we note that assessment plans identify a wide range of methods and a large number of goals, and these choices may be mandated by ABET. In terms of maximizing the usefulness of assessment, we find that it is sometimes helpful if faculty are able to focus on a more limited number of methods particularly so that faculty are not stretched too thin – but that direct assessments of one sort or another should be part of the mix every year.

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Section 1: __Y(*U,G*)___   Section 2: __?(*U*), N(*G*)___   Section 3: __NA/?(*U*), N(*G*)__   Section 4: __?(*U*), N(*G*) __

Coding Key:
        Y   = yes, this is done appropriately and well
        N   = no, this is not done at all, or it is not done in relationship to student learning
        NA = no information available
        ?   = action or progress is apparent; however, evidence is lacking that this is completely and appropriately done