UNIVERSITY ASSESSMENT COMMITTEE
Feedback to Academic Departments on Assessment Activities Reported in 2008 - 2010 Annual Reports
GRADUATE PROGRAMS

DEPARTMENT **Mathematics** **DATE** **4/21/2011**

COMMITTEE MEMBER(S) CONDUCTING REVIEW: **Fred Remer & Roxanne Hurley**

1. STUDENT LEARNING GOALS

• Were any goals referenced?	YES__X__	NO____	QUALIFIED Y/N ___
• If so, were goals well articulated?	YES____	NO____	QUALIFIED Y/N _X__
• Do goals address student learning?	YES__X__	NO____	QUALIFIED Y/N _ __

Comments:

Two goals were listed in the graduate assessment program (revised Feb. 1, 2011). Both goals use the phrases "develop an understanding." The phrase is abstract and makes it difficult to quantify their success in achieving their goals. The goals could be better worded to address skills or knowledge that they expect their students to obtain.

Only two goals were listed for their graduate program. The assessment plan does not appear to be very comprehensive.

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_X__	NO____	QUALIFIED Y/N ____
• Were both direct and indirect assessment methods used as components of a "multiple measures" approach?	YES_____	NO__X__	QUALIFIED Y/N ____

Comments:

Goal 1 (develop an understanding of at least two areas of modern mathematics) was assessed using the comprehensive exam. Goal 2 (develop the ability to independently learn significant mathematics, and to communicate what they learn to others) was assessed through independent study projects, reports, and talks.

Only two methods were used to assess the program. No details were provided on how an objective assessment was performed using the data collected for either goal. Other methods should be developed to provide additional data for assessment. Rubrics are commonly used to assess written and oral communication skills and would be a powerful assessment tool for independent study projects, reports and talks (Goal 2).

3. ASSESSMENT RESULTS

Were any assessment results reported?	YES___	NO____	QUALIFIED Y/N _X__
• If so, were the results clear in terms of how they specifically affirm achievement of goals?	YES____	NO_X__	QUALIFIED Y/N ___
• If so, were the results clear in terms of how they indicate need for improvement?	YES____	NO_X__	QUALIFIED Y/N __
• Were the results tied to goals for student learning?	YES____	NO_X___	QUALIFIED Y/N ____

Comments:

The 2010 annual report only stated that the assessment methods affirmed that they had met their student learning goals. No data was presented in the report. Annual reports from previous years are more specific in providing additional data. Regardless, the assessment of both Goal 1 and 2 appear to be rather subjective. No details are provided on how the assessment is performed.

The graduate assessment plan could be revised to include more detail on how these methods are employed. The assessment report could elaborate on the details of the assessment results and provide more information.

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 assessment results affirmed that the graduate program is achieving success. However, no results were given to confirm this conclusion and the limited scope of the assessment did not provide a complete picture of the graduate program. Further assessment is needed.

SUMMARY

Strengths	***Areas for Improvement***
__**X**__ A specific plan for assessment is in place.	____ No specific plan for assessment is in place.
____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.
____Direct and indirect methods are implemented.	____ A single type of assessment methods predominates.
____Results are reported.	____ No results are reported.
____Results are tied to closing the loop. (Decision-making is tied to evidence.)	____ Results are not clearly tied to closing the loop. (Decision-making is not directly tied to evidence.)

OVERALL SUMMARY AND RECOMMENDATIONS:

The graduate programs assessment appears to be done more intuitively than systematically. The goals of the program are few and vague. Assessment methods are also limited and rely on faculty perceptions. A well thought out assessment plan with the use of rubrics could make the assessment more quantitative and objective. A rigorous assessment may uncover areas that may need improvement.

MATERIALS REVIEWED

__X___ Annual report	__X___ Assessment plan (as posted)
_____ Appendices (cited in annual report)	__X___ Previous assessment review
_____ Other (please describe)	

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Section 1: __?___ Section 2: __?___ Section 3: __?___ Section 4: __N___

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

UNIVERSITY ASSESSMENT COMMITTEE

Feedback to Academic Departments on Assessment Activities Reported in 2008 - 2010 Annual Reports

UNDERGRADUATE PROGRAMS

DEPARTMENT Mathematics DATE 4/21/2011.

COMMITTEE MEMBER(S) CONDUCTING REVIEW Fred Remer / Roxanne Hurley

1. STUDENT LEARNING GOALS

- Were any goals referenced? YES **X** NO___ QUALIFIED Y/N ____
- If so, were goals well articulated? YES____ NO___ QUALIFIED Y/N **X** .
- Do goals address student learning? YES **X** NO___ QUALIFIED Y/N ____

Comments:

Six student learning goals were listed in the annual report. The goals used the phrases "develop an awareness" and "develop an appreciation" in all but one of the learning goals. The phrases are abstract and make it difficult to quantify their success in achieving their goals.

The revised assessment plan posted at the UAC website (dated Feb. 1, 2011) is more specific, listing objectives for two of the six learning goals. It also lists four learning goals for courses that have been approved for Essential Studies.

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) to identify UND/Essential Studies goals which are similar to the referenced departmental goals.

U 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)
_____ 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")
_____ 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 departmental goals and alignment of departmental goals with institutional and Essential Studies goals:

The undergraduate assessment plan classifies their Essential Studies courses into two groups:

- Group 1: Breadth of Knowledge Courses and Quantitative Reasoning Courses
- Group 2: The Senior Capstone Course

The assessment plan has specific student learning goals for each of these groups.

The Mathematics undergraduate program offers seven courses that have been validated as Essential Studies courses.

- Six of the courses are listed in the Mathematics, Science and Technology Breath of Knowledge category, of which four of those courses fulfill the Special Emphasis requirement for Quantitative Reasoning (Q).
- One of the courses fulfills the Essential Studies Capstone requirement and is validated in the Special Emphasis areas of Advanced Communication and Thinking and Reasoning.

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 __X__ NO____ QUALIFIED Y/N ____
- Were both direct and indirect assessment methods used as components of a "multiple measures" approach? YES __X__ NO____ QUALIFIED Y/N ____

Comments:

Assessment methods exist for five of the student learning goals. The assessment plan states that they are still looking for good assessment method for the last goal.

The assessment methods were longitudinal in that they looked a several courses in the sequence from freshman to senior year. The assessment methods used both direct methods (such as embedded test questions, samples of student solutions graded using a rubric, and success rates) and indirect methods (surveys of students).

Additional assessment methods were used for Essential Studies courses. The methods used both direct (embedded test questions, student paper and presentation, and course success rates) and indirect (USAT and faculty insight) methods.

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:

Mathematics runs its undergraduate assessment on a three year cycle. It collects data for two years and then performs a self study. This year was their third year of the cycle and no data was collected. This year's annual report summarized assessment results from the previous two years.

Annual reports over the three years of the assessment cycle show that data was collected for five of the student learning goals.

They had satisfactory results on Goal 1(elementary computational techniques) with the exception of linear algebra. Results also showed progress in achieving Goal 2 (mathematical proofs) in core theoretical courses. Assessment showed that faculty were using a variety of methods to meet Goal 3 (central role of examples) but not much detail was given. Goals 4 and 5 were measured by the type of courses in which students enrolled and it was discovered that students gravitated towards all theoretical or all applied mathematics. No results were given for Goal 6.

In addition to departmental goals, some assessment results may be applicable to institutional and Essential Studies goals. Use 'U' (undergraduate) 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:

No results were shown for the goals that were tied to Essential Studies. The courses that meet the Essential Studies criteria were revalidated this past year. It was noted that the requirement for special emphasis for quantitative reasoning was narrowly defined and that math majors had difficulty meeting it!

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:

The annual report indicated changes that have been made (or plan to be made) as a result of assessment. Specifically, they changed Math 327 Applied Linear Algebra into Math 207 to emphasize computational skills (Goal 1). A program change that requires a breath of knowledge for applied and theoretical mathematics was implemented based on the assessment results for Goals 4 and 5. The program also instituted a capstone course.

SUMMARY

Strengths	***Areas for Improvement***
_X_ A specific plan for assessment is in place.	____ No specific plan for assessment is in place.
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_X_ Assessment methods are clearly described.	____ Assessment methods are not clearly described.
_X__Assessment methods are appropriately selected.	____ Assessment methods are not appropriately selected.
_X__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.
____Results are reported.	____ No results are reported.
_X_ Results are tied to closing the loop. (Decision-making is tied to evidence.)	____ Results are not clearly tied to closing the loop. (Decision-making is not directly tied to evidence.)

OVERALL SUMMARY AND RECOMMENDATIONS:

It is clear that assessment is being performed in the undergraduate program. However, there is some room for improvement.

The student learning goals are abstract and hard to quantify. The goals should use language that is active and focus on student skills and knowledge. The student learning goals of the Essential Studies portion of the assessment plan are better articulated.

The assessment methods for Goals 1, 2, 3, 4 and 5 used a balance of direct and indirect methods and are well implemented. Assessment methods for Goal 6 have yet to be determined. Future assessments should address this goal.

Results are reported for Goals 1 through 5. No results were reported for Goal 6 nor for the Essential Studies goals. Future reports should be more specific on data and results.

MATERIALS REVIEWED

__X__ Annual reports (2008, 2009, 2010)
_____ Appendices (cited in annual report)
_____ Other (please describe)
__X__ Assessment plan (as posted)
__X__ Previous assessment review

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Section 1: __Y___ Section 2: __Y___ Section 3: __Y___ Section 4: __Y___

Coding Key:

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