UNIVERSITY ASSESSMENT COMMITTEE
Feedback to Academic Departments on Assessment Activities Reported in _2013_ Annual Reports
UNDERGRADUATE PROGRAMS

DEPARTMENT____Chemistry_____DATE_____March 7, 2014____

PROGRAM(S) COVERED IN REVIEW ___B.S. in Chemistry_____

COMMITTEE MEMBER(S) CONDUCTING REVIEW___Joan Hawthorne, Paul Drechsel_____

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 assessment plan shows two goals which articulate major categories of learning in the program: knowledge and comprehension of concepts and techniques, and communication skills needed for describing and interpreting chemistry. Each has objectives, and those objectives quite clearly identify the kinds of learning that are viewed as essential to graduates of the program (critical thinking regarding chemistry, using quantitative and mathematical tools to explain chemical phenomena, etc.).

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")
___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…")
_____ 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:
Four ES outcomes are very clearly addressed within objectives for the undergraduate degree in Chemistry

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:
Faculty have used the ACS standardized tests as a key source of assessment information, along with the Diagnostics of Undergraduate Chemistry Knowledge Test. They also use other assessment methods, including pulling relevant end-of-term questions from the ACS tests to score with UND's ES rubric, tracking points earned (scored using a rubric which is included in the annual report) on specified course products, and scores generated from rubric scorings of communication skills demonstrated in final presentations and papers. This is an impressive mix of standardized and locally-developed assessment strategies. It is especially impressive to see so many different direct assessments used within a single year.

There is no indication that indirect assessments were used in the "methods" section of the report or in the assessment plan. However, there is a comment about findings from a student survey in the "closing the loop" section and that section also includes results from a survey conducted in a senior level class. We were very happy to see that you ask students to comment directly on their achievement of learning outcomes in that survey – departments frequently miss opportunities to include those kinds of questions.

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:
ACS scores are tied back to individual courses rather than to specific goals (although the scores are viewed by departmental faculty as primarily aligned with the critical thinking outcome). In addition, they are quite useful to the department in identifying any possible trouble spots in the curriculum – and they point out two courses where scores were below the results they want to see. In one case, this is described as a pattern and they are investigating further. In the other, this was a finding unique to this year and they will simply monitor. The ACS scores enable the department to keep close track on learning success in each individual class that aligns with one of the major ACS areas.

The locally-developed assessments were designed to explicitly align with intended learning outcomes for the program, so the connection between results and goals is very clear. In students' use of information, for example, they are able to how that 10 of 10 students demonstrated strong skills in "assembling the literature in an accurate and critical way to analyze the problem," while 6 of 10 were equally strong on "making connections between the literature data and research results." Both are aspects of their information objective.

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…")
_____ 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:

A great deal of information regarding scoring information for these four ES goals is included in the annual report. The level of detail makes it very easy to see how Chemistry students are doing – at multiple points – on these outcomes. It should be noted that creative thinking is not specified as a goal but is measured by the department and scores (documenting learning is achieved) are reported.

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:

Given the large amount of information collected, it is not surprising that the department was able to identify a number of changes aimed at improving student learning. Some of these are course level and even directed towards individual faculty, while others are more programmatic (e.g., redesigning Senior Research, adding rubrics, evaluating the success of a previous decision to split a 5-credit course into two 3-credit courses).

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.
_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.
_X___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:

This is an unusually thorough assessment report which demonstrates conclusively the seriousness with which assessment is being taken in the undergraduate degree program. As the summary above demonstrates, it is clearly exemplary. Perhaps this is at least in part a result of the decision (mentioned in the annual report) to leave oversight for assessment in the hands of program directors – a reasonable strategy for distributing workload and ensuring that those most involved in the program are also central to the assessment process.

No recommended changes/improvements.

MATERIALS REVIEWED

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

Reviewer(s):				
	Name	Joan Hawthorne__	_Paul Drechsel___	_____
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Section 1: __Y___ Section 2: __Y___ Section 3: __Y___ Section 4: _Y____

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, this is not done at all, or it is not done in relationship to student learning
- NA = no information reported and it's unclear whether it was done

UNIVERSITY ASSESSMENT COMMITTEE
Feedback to Academic Departments on Assessment Activities Reported in __2013____ Annual Reports
GRADUATE PROGRAMS

DEPARTMENT__Chemistry_____DATE____3-7-14_____

PROGRAM(S) COVERED IN REVIEW ___MS in Chemistry, PhD in Chemistry_____

COMMITTEE MEMBER(S) CONDUCTING REVIEW__Joan Hawthorne, Paul Drechsel_____

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:
Goals are identified for both the MS and PhD programs, although they differ on only a single sub-objective. It seems likely that the two degree programs might have differences in degree of learning to be demonstrated, if not in the naming of the outcome. If so, there would be value in making an attempt to more clearly differentiate. However, the goals themselves are clear, oriented toward learning, and identified both by goal (three) and more focused objectives.

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:
It is interesting to note than a pre-assessment is used for all newly admitted graduate students to identify any incoming deficiency areas (in relation to program goals) and ensure that students with deficiencies in specific content areas (important as part of the first goal) take early action to address those weaknesses in order to keep them on track with their graduate program. PhD students must demonstrate more areas of strength during this pre-assessment than is required for MS students.

Comprehensive exams, research defenses, grading reports, and annual committee assessments are other methods used within the programs. Seminar grading reports (occurring for seminars) involve scoring done, using a rubric, by all departmental faculty. The rubric allows scoring that can be tracked back to communication goals. Chemistry content and thinking goals are tracked using rubrics to assess cumulative exam performance and dissertation/ thesis performance. The OPR (an annual meeting between students and committee members during which the student presents a short paper) is another key assessment strategy for the department. It's unclear if that is also scored using a rubric, although it appears that written faculty comments regarding the student's paper and presentation are generated and reported back to students by individual learning outcome – thus ensuring that each student has a detailed breakdown of their own progress toward program outcomes while also putting the data in a form that can be easily aggregated for use in program assessment.

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:
Results are typically tracked back to individual content areas (aligned with individual courses). Some assessment results are tied to learning outcomes that are not linked to individual courses (e.g., seminar grading reports, in which communication skills are assessed against a rubric).

The report also includes data that is less clearly aligned with assessment of student learning (e.g., summary comments about ACS findings regarding research activities available at UND vs. comparison institutions) that the department uses in considering changes to its graduate programs.

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:

In general, results indicate a graduate program that is helping students meet intended learning outcomes. Some tweaks have been made as called for, e.g., adopting a new format for seminar grading, including rubrics in the assessment plan to increase transparency, updates to rubrics.

SUMMARY

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__X__Results are reported.	____ No results are reported.
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OVERALL SUMMARY AND RECOMMENDATIONS:

Indirect assessment may not be occurring or may not be occurring every year (although the regular meetings between students and faculty likely provide a great deal of opportunity for student commentary on their own learning). Still, there may well be value in purposefully providing anonymous opportunities for students to rate their own learning in relation to the learning outcomes specified for the program.

It would definitely be helpful to consider again whether there are any additional meaningful distinctions between the MS and PhD programs, related to goals or standards that should be indicated in the plan and then tracked for future insights regarding program improvement.

Your program has made a lot of progress on assessment in recent years – nice work!

MATERIALS REVIEWED

__X___ Annual report ___X__ Assessment plan (as posted)

_____ Appendices (cited in annual report) ___X__ Previous assessment review
_____ Other (please describe)

Reviewer(s):	Name	Joan Hawthorne__	Paul Drechsel	_____
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Revision 9/25/13