

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

DEPARTMENT Chemistry **DATE** 4/7/2011

COMMITTEE MEMBER(S) CONDUCTING REVIEW Perkins/Yearwood

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:

Listed goals are:

Students will . . .

- 1.1 increase their knowledge of chemistry facts and relationships, both theoretical and practical.
- 1.2 improve their logical and critical thinking skills, including the design and interpretation of experiments.
- 1.3 take responsibility for continuing self-education (lifelong learning). This will include learning to use multiple sources of information, especially the chemical literature.
- 2.1 communicate (chemistry) effectively in writing.
- 2.2 communicate (chemistry) effectively in oral presentations.
- 3.1 determine the most appropriate way to get a job done.
- 3.2 learn how to act ethically as a professional.
- 3.3 become capable of independent operation (PhD only).

Many/most of these goals match undergraduate learning goals.

As with the undergraduate goals, the language used is somewhat vague and may be confusing. Some are not measurable, which may be worth considering. Clarification, perhaps by adding specific objectives under each goal, would make assessment easier.

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>x</u> | QUALIFIED Y/N <u> </u> |

Comments:

Assessment data includes

- Student performance on cumulative exams and course exams
- Student research grades
- Annual oral progress reports, reports of research proposal defenses, evaluation and defense of theses and dissertations
- Seminar grading reports

All of these are excellent sources of data, but clarification re. criteria used would be helpful. (They list criteria for seminar grading, but not the others.)

Overall, they have plenty of data – but perhaps could improve the way they analyze and use it.

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 checked="" type="checkbox"/>	QUALIFIED Y/N <input 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 type="checkbox"/>	NO <input checked="" type="checkbox"/>	QUALIFIED Y/N <input type="checkbox"/>

Comments:

Results are given and trends are discussed. But, there is no discussion re. whether learning results are adequate and appropriate. Perhaps this is because there are no criteria used to evaluate the results – we can't tell. This may change in the future because until now the grad program assessment was done by the Chair; in the future it will be done by the graduate committee. This is likely to be a positive change.

4. CLOSING THE LOOP

Were any actions taken on the basis of assessment results reported?	YES <input type="checkbox"/>	NO <input checked="" 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 type="checkbox"/>	NO <input type="checkbox"/>	QUALIFIED Y/N <input type="checkbox"/>

Comments:

There were no clear changes to be made. More specific goals and analysis might allow the department to identify key things that they could do to improve student learning.

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 Chem department collects a lot of data that could be used for assessment, but mostly because the data evolves naturally from activities they routinely do. Instead it might be helpful to first identify learning goals and objectives and then to figure out what metrics they need to measure progress toward those goals/objectives.

So, the department might be able to strengthen assessment by:

- Making learning goals more specific
- Developing rubrics and/or benchmarks to allow consistent evaluation of data that are collected
- Tying the data and assessments more clearly to learning goals

MATERIALS REVIEWED

☒ Annual report
☐ Appendices (cited in annual report)
☐ Other (please describe)

☒ Assessment plan (as posted)
☐ Previous assessment review

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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 2010 Annual Reports
UNDERGRADUATE PROGRAMS

DEPARTMENT Chemistry DATE 4/7/2011

COMMITTEE MEMBER(S) CONDUCTING REVIEW Perkins/Yearwood

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>x</u> | NO <u> </u> | QUALIFIED Y/N <u> </u> |

Comments:

The goals listed in the departmental assessment plan (dated 2005-2006) available on the assessment website are not the same as the goals listed in the annual report for FY2010. It appears there is a more recent version of the plan that should be uploaded.

The goals in the annual report are:

Students will . . .

- 1 . . . attain a factual knowledge of concepts of chemistry.*
- 2 . . . understand the design and interpretation of chemical experiments.*
- 3 . . . understand the communication of chemical information.*
- 4 . . . understand the use of multiple sources of chemical information.*
- 5 . . . gain an understanding of the scientific method and the relationship among different facts.*
- 6 . . . understand connections between chemical ideas and society.*

These 6 goals seem quite vague and may be hard to interpret. Attaining facts and understanding is good, but better is to gain knowledge and skills that can be used to do something. Presumably the department knows what they want but we suggest that they clarify (e.g., what sort of relationships exists between the scientific method and different facts; what is a “chemical idea”, etc.) and consider rewriting the goals in terms of what they want students to be able to do. Perhaps they should consider listing specific (measurable) objectives under each goal? This will make assessment and analysis of learning results easier and more straightforward.

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”)
- 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 departmental goals and alignment of departmental goals with institutional and Essential Studies goals:

Neither the assessment plan nor the annual report addresses ES goals specifically. However, some departmental goals contribute to the ES goals in a general sense:

- 1. Communication: departmental goal #3*

- 2. Thinking and reasoning – critical thinking: departmental goal #2
- 3. Thinking and reasoning – creative thinking: departmental goal #2
- 4. Thinking and reasoning – quantitative reasoning: departmental goal #2
- 5. Information literacy – departmental goal #4
- 8. Service/citizenship – departmental goal #6

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 NO x QUALIFIED Y/N

Comments: *In the (out-of-date) assessment plan goals and metrics are very well aligned and in an easy- to-read matrix. In the annual report, they are not as clearly matched up (and do not seem as adequate) but some of the same information is there.*

Goal	Source of data
1. attain a factual knowledge of concepts of chemistry.	Standardized ACS tests
2. understand the design and interpretation of chemical experiments.	Instructor grading of lab notebooks and reports
3. understand the communication of chemical information.	Instructor grading of lab notebooks and reports
4. understand the use of multiple sources of chemical information.	Instructor grading of bibliographies of reports
5. gain an understanding of the scientific method and the relationship among different facts.	Standardized ACS tests
6. understand connections between chemical ideas and society.	No specifics given

- *The standardized tests are good direct measures that allow comparisons to be made to other institutions and national averages.*
- *Relying on instructor grading without specific rubrics is usually problematic because different instructors may have different expectations.*
- *Other sources of data, both direct and indirect, would be very valuable.*

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 NO QUALIFIED Y/N x
 - Were the results tied to goals for student learning? YES x NO QUALIFIED Y/N

Comments:

Meaningful assessment results compare results on standardized tests over the past several years. Mostly, UND students are doing about as well as average students nationally. The few exceptions are analyzed and explained.

Less meaningful are statements that say things like “instructors are generally pleased . . .” without any explanation of why they are pleased or what the unpleasing aspects are.

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 data are supplied that reveals anything re. ES goals.

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:

It appears that because “. . . instructors are generally pleased. . .” the department has not proposed or implemented any changes.

SUMMARY

Strengths

- ___?___ A specific plan for assessment is in place.
 ___ Student learning goals are well-articulated.
 ___x___ Assessment methods are clearly described.
 ___ Assessment methods are appropriately selected.
 ___ Assessment methods are well-implemented.
 ___ Direct and indirect methods are implemented.
 ___x___ Results are reported.
 ___ Results are tied to closing the loop.

Areas for Improvement

- ___ No specific plan for assessment is in place.
 ___x___ 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.
 ___x___ A single type of assessment methods predominates.
 ___ No results are reported.
 ___x___ Results are not clearly tied to closing the loop.

(Decision-making is tied to evidence.)
evidence.)

(Decision-making is not directly tied to

OVERALL SUMMARY AND RECOMMENDATIONS:

The assessment plan might be strengthened if the department developed specific and measurable learning goals. Standardized test are one very useful way to measure learning, but there are many other methods that could also reveal valuable information. Additionally, the department might wish to consider ways to improve students' learning where opportunity exists.

MATERIALS REVIEWED

<input checked="" type="checkbox"/> Annual report	<input checked="" type="checkbox"/> Assessment plan (as posted)
<input type="checkbox"/> Appendices (cited in annual report)	<input type="checkbox"/> Previous assessment review
<input type="checkbox"/> Other (please describe)	

Reviewer(s):	Name	Dexter Perkins	JoAnne Yearwood
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Section 1: ☐? Section 2: ☐? Section 3: ☐? Section 4: ☐N

Coding Key:

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