

ASSESSMENT CERTIFICATE PROGRAM: CULMINATING PROJECT

Timothy French, Department of Chemistry

M.S. Chemistry Learning Outcomes

- MS Thesis and Non-Thesis students upon graduation will be able to
 - 1) perform statistical calculations related to analytical techniques
 - 2) use discipline-specific computer tools, such as ChemDraw
 - 3) use primary literature databases to research a topic in any of the sub-disciplines of chemistry, specifically, to be able to
 - choose relevant and higher impact published work on a topic
 - critically evaluate and extract the major findings of a paper
 - summarize the major findings and conclusions of selected papers concisely accurately and effectively in written form and effectively present the summary orally

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General Plan

- Collecting materials
 - How many graded assignments contain mathematical analysis?
 - How many graded assignments contain *statistical* analysis?
- Creating the rubric
 - How are we going to define “statistical calculations related to analytical techniques”?
 - How are we going to define “successful performance”?
- Interpreting and acting on the results
 - How many graduate courses use statistical analysis?
 - Do all students meet this learning outcome based on our curriculum?
 - Does the curriculum and/or learning outcome need to change?

Requests for Information

- “We will be asking instructors of graduate classes during this academic year to provide the committee with syllabi and examples of student work, specifically final exams, final papers, final projects, and final presentations.”
- “It is important that instructors not alter their courses just to try to meet this learning outcome. We are interested in an accurate view of the current state of the graduate program.”

Graduate Courses Offered AY 15-16

- Autumn Quarter 2015
 - ▣ CHE444—Advanced Topics in Protein Biochemistry
 - ▣ CHE450—Advanced Mechanistic Organic Chemistry
- Winter Quarter 2016
 - ▣ CHE424—Group Theory
 - ▣ CHE474—Advanced Quantum Mechanics
 - ▣ CHE486—Special Topics in Organic Chemistry
- Spring Quarter 2016
 - ▣ CHE376—Computational Chemistry
 - ▣ CHE482—Special Topics in Biochemistry
 - ▣ CHE494—Scientific Writing and Communication

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What Now?

- It became clear that our students were unable to even attempt achieving this learning outcome, let alone satisfactory mastery of it.
- Where do we go from here?
 - ▣ We need to rewrite our learning outcomes for the graduate program, in general
 - What do we want to accomplish?
 - We had a departmental retreat regarding this last month.
 - ▣ We need to assess a different learning outcome for our departmental assessment project.

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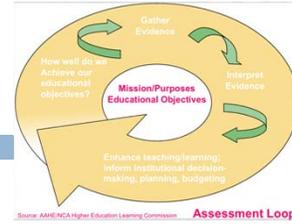
Current Status

- Surveying faculty for “discipline-specific” software
 - ChemDraw, Gaussian, PyMOL,
 - Origin? Excel?
- Collecting materials from this quarter’s classes
 - CHE376—Computational Chemistry
 - CHE482—Special Topics in Biochemistry
 - CHE494—Scientific Writing and Communication
- Formulating new rubrics for this new project
 - What is the best way to assess “use of a ... computer tool”?
 - What might the categories be?

Current Status

| Course | Computer Tools | Assignments | Quarter |
|--------|--|-----------------------------|---------|
| CHE450 | Excel | HW, Take Home Exam | AQ15 |
| CHE444 | N/A [Equation Editor] | N/A | AQ15 |
| CHE482 | ChemDraw | Presentations, Papers | SQ16 |
| CHE376 | Gaussian09, Gaussview5, ChemDraw, Excel/Origin | Project | SQ16 |
| CHE494 | ChemDraw | Paper, Poster, Presentation | SQ16 |
| CHE452 | ChemDraw | Presentations | SQ16 |
| CHE486 | ChemDraw | Presentations | WQ16 |
| CHE474 | Equation Editor, Origin/Excel | HW | WQ16 |
| CHE424 | N/A | N/A | WQ16 |

Reflection



- What did we learn?
 - ▣ Our graduate program needs overhauling: learning outcomes, curriculum
- What did I learn?
 - ▣ Assessment is turning into a major theme in my career at DePaul
 - Teaching, research, and service
 - ▣ I am more prepared to serve as chair of our assessment committee
- What do I want to learn?
 - ▣ Learning more advanced statistical techniques would be useful, especially for my research interests

Connections to Workshops

- Service goal was to chair our assessment committee
 - ▣ Focused on workshops that would help me in that role
- Workshops I attended
 - ▣ Direct Assessment of Student Learning
 - Learn the difference between direct and indirect (e.g., grades)
 - Write better interview prompts for my research
 - Learn to write rubrics
 - ▣ Quantitative Analysis
 - Review types and categories of data

Connections to Workshops

- Workshops I attended
 - Writing Effective Reports
 - Learn what to focus on for our annual assessment report and its audience
 - Assessment Planning Workshop
 - Learn how to better organize our committee and annual assessment project

- Both of these provide a checklist of things to keep aware of when working and leading assessment projects