



SEATTLE CENTRAL COLLEGE

One of the Seattle Colleges

CHEMISTRY Program Review Committee Curriculum Coordinating Council

Date of Review: October 29, 2014

Faculty representing the program: Doug Wick (program coordinator), Marie Villarba and Esmaeel Naeemi

Faculty representing the committee: Katie Chenu (chair), Chris Conley, Marina Halverson

Next scheduled review: fall, 2017

Narrative:

The chemistry department at Seattle Central College (SCC) positively responds to the STEM curriculum needs of both transfer and allied health students. The department currently has 3 full-time (FT) faculty, 3 priority-hire (PH)/part-time (PT) faculty, and 4 PT faculty. Chemistry enrollment continues to grow steadily (20% over 6 years, 11% over 3 years). The Chemistry faculty are meeting demand for more allied health courses (CHEM 121, +42% since 2008) and General Chemistry courses (CHEM 161 and CHEM 162, +20% since 2008), and the Organic Chemistry sequence serves more students than in previous years (+38% since 2008).

The chemistry faculty are active members of the SCC community; serve in campus leadership positions, obtain professional development and curriculum development grants, tutor in the Chemistry Learning Center, advise student clubs, mentor RST students, and advise students in basic research. The department has strong relationships with faculty within the district, other community colleges, and state schools and universities. Their students are prepared for taking the next steps to build careers in nursing, respiratory care, dental hygiene, medicine, pharmacy, engineering, academia, and basic research.

Commendations:

The Chemistry program has responded to the recommendations in their 2010 program review, which were to update master course outlines and to revise syllabi to include learning outcomes and have consistent grading scales and ADA statements.

Chemistry has recently (2014) updated CHEM 139, 161, 162 and 163 and either submitted this to the Automated Course Approval or has it in draft form on the ACA website. These changes are not yet reflected on their course outline table. These updated courses have strong learning outcomes that were written in collaboration with Bellevue College and are in concurrence with North and South Seattle Colleges. These courses have a large number of learning outcomes but are the result of a collaborative process and are in use at BC. Because these classes have the highest enrollment, the program started updating curriculum there but they plan to update CHEM 241, 242 and 243 (and support lab classes, 251 and 252) within the next year. The learning outcomes of CHEM 139, 161, 162 and 163 align very clearly with college level learning outcomes.

Syllabi are, in general, thorough and student centered. ADA statements were consistently listed, which was a recommendation from the 2010 program review.

Faculty, despite their high workload, spend 2-4 hours per week on top of office hours in the Chemistry Learning Support Network, where students can go for tutoring. This resource is organized and run by the full-time chemistry faculty.

The Chemistry program has strong relationships within and outside of the college. They have had informal discussions with the instructors of prerequisite courses on how to best prepare students to succeed in chemistry courses. They have relationships with Expanding Your Horizons, a program at Seattle University to introduce middle school girls to chemistry and Do It Yourself Science Zone. Doug and Marie attend the WCCTAC chemistry teachers in Washington conference each year. Esmaeel organizes the Biomaterials Symposium with faculty and graduate students from the University of Washington each spring. Tom Schultz, part-time faculty in chemistry, organizes the annual Science Olympiad with hundreds of students competing in a variety of science fields.

The Chemistry program is highly active in improving teaching and learning. The Chemistry program has collected interesting data on productive persistence of students (2013). They are also collecting data on the number of students who pass the first year ACS chemistry exam at Central compared to other schools as well as the impact of enforcing prerequisites on student completion rates. [83% of SCC chemistry students scored at or above the national mean on the ACS general chemistry exam]. Other interesting projects include the Open Course Library Faculty Course Designer grant in 2010, a grant for Program Learning Outcomes Assessment, Marie Villarba chairs the Instructional Assessment Committee, a grant for developing curriculum for an Interdisciplinary Science course SCI 133, a curriculum development grant for General Chemistry online assessments, a faculty learning community grant with Bellevue, Cascadia and Pierce Colleges in 2011, another such grant in 2012 for using Canvas to improve and assess chemistry labs, and a grant proposal to the Bill and Melinda Gates Foundation for waste water treatment in developing countries (\$300,000 for two years). Faculty are also mentors for undergraduate research and Ready-Set-Transfer students pursuing STEM related majors.

Concerns/Issues:

Some syllabi were not submitted for this program review though they are currently taught (CHEM 241, 242 and 243). For these same courses, the master course outline from 1988 was submitted to program review though the course outline table states there was a 2005 revision. Therefore, there remain some differences between the master course outlines that are on file at the district level, college level and those that are utilized within the Chemistry program. When the remaining courses (courses other than CHEM 139, 161, 162 and 163) are updated on the course approval website, this should clear up inconsistencies as well as strengthen course learning outcomes. Finding and updating the master course outlines for these courses should be a priority in the next year, as it sounds like it already is for this program. Updates to master course outlines in general have understandably been slow as this program provides 53 full and part-time class sections but is only supported by three full-time faculty members (a part-time to full-time faculty ratio of 1.4).

CHEM 110 and 122 syllabi had no stated learning outcomes. CHEM 110, 121 and 122 are taught by part-time faculty or only occasionally taught by full-time faculty and have not been updated at the college or district level. These syllabi are weaker: missing course descriptions, 122 has no learning outcomes on the syllabus and has different grading scales in different sections.

CHEM 191 and 192 (an accelerated version of the chemistry series) were last offered in 1993 in the district. These courses could be removed from the catalog as the program does not plan to teach them again.

There are some differences in the chemistry series sequence at Bellevue, North and South Seattle Colleges. Faculty advise students on completing the series at one school in order to avoid different content covered in different series.

Despite the concurrence process, CHEM 261, 262 and 263 were recently revised at South Seattle College but the SCC faculty did not hear about those changes until after the courses were approved.

Chemistry faculty would like there to be a method at the college level for adding new positions. This program is in need of a new full-time position and has not had a new position in 26 years. Part-time faculty often work at Central for a few quarters and then move on to full-time positions elsewhere. This places a heavy burden on the chemistry faculty to hire and train new instructors as well as ensure they have Canvas training in time for their course. They have written multiple versions of lab manuals in case someone has the training or does not have the training. Enrollment data shows an increasing number of FTE's and part-time sections. In particular, with the expansion of the Allied Health program, chemistry is being asked to teach new sections. Just this fall quarter they have added four sections at the last minute: 1 section each of 121 and 161 and 2 sections of 139. They are responding to student needs and plan to offer a chemistry section in the evening, though this also adds to the workload of the three full-time faculty. The faculty would like to offer a learning community as has been done at North Seattle College and Bellevue College as well as update CHEM 110 but they do not have the resources at this time.

The laptops in the chemistry lab are not as useful as they could be due to the fact that they cannot print to the lab computer and often the wireless network in the building is overtaxed so students cannot get onto Canvas (a similar problem experienced in other SAM lab rooms). After repeated attempts at fixing this problem they plan to someday write a grant for more up-to-date, faster and easier to use computers that can be linked to classroom printers and the Internet.

The faculty recently lost a lab support position. Currently, there is one lab technician position and the other positions are supported on an hourly basis by student lab breakage fees. They worry about these students moving on though they have a large amount of experience in the lab already.

The storage room in the lab has poor ventilation. This has been an ongoing issue. Chemicals in the storage room are ventilated through hoods in the lab rather than directly from the storage room. Exposure should be low but is unmeasured and students go by whether or not they can smell chemicals. There is an OSHA inspection twice per quarter but this hasn't come up. There has also been a malfunction of two hoods that, despite there being no fire, have sprayed fire retardant into the lab room. There are unknown hazards to lab staff and facilities personnel cleaning these fine particulates.

The program would like a way to track where students matriculate such as an alumni association. They have anecdotal information from students who contact them after getting into pharmacy and biochemistry programs at UW. Also, Steve Simeona and Phil Reid at UW say that SCC chemistry students have an excellent reputation at UW but there is no data to support this.

Additional committee/VP of Instruction questions and program responses:

Committee recommendations and due dates for recommended action:

- Continue to update master course outlines, particularly for the most popular courses: CHEM 110, 121 and 122
 - Recommended completion date: winter, 2016

Report prepared by: Katie Chenu

Date: October 29, 2014

Two year follow-up action:

Follow-up prepared by:

Date: