WILLIAM WOODS
UNIVERSITY

Chemistry Annual Assessment 2020-2021

Contents

Annual Assessment 2020-2021

Chemistry Minor

Program Profile

Program Mission Statement
Please insert your program mission statement here

The purpose of the Chemistry minor is to furnish students with the broad array of fundamental chemical concepts, techniques, and interdisciplinary insights most pertinent to young scientists.

Program Data

Delivery Method

Traditional On Campus (selected)
Online
Hybrid

Students Majors 2019-2020

Student Minors 2019-20

21

Student Majors 2020-2021

Student Minors 2020-2021

19

Concentrations 2019-2020
If your program contains concentrations, please list the concentrations and the number of students identified within each concentration.

Concentrations 2020-2021
If your program contains concentrations, please list the concentrations and the number of students identified with each concentration.

Student Demographics
What are the program goals for student retention, persistence and degree completion? What do the persistence numbers mean to the faculty in the program? Are your persistence numbers what you expected? If not, how could the numbers be improved?

One goal for the chemistry minor is to deliver consistent education from main faculty in support of other degree programs. The chemistry minor is one that is expected to grow with consistency and advising. Biology students within the pre-med concentration are usually one class away from obtaining the minor, but many of them do not realize this. With consistent messaging and course offerings, more students will understand and see the advantage to this minor program. With the covid year, I think that much of this messaging was lost as some classes were hybrid and no courses were offered in their

regular location. The laboratory is still lacking and until this can be brought to a workable condition, we cannot really stand to be much larger than we already are.

Optimal Enrollment
Considering current human and physical resources, what is the optimal enrollment for the program?
20

Is the Program Externally Accredited

Yes
No (selected)

External Accreditation
Name the Accrediting Agency or entity including the last review/approval. Is there an accrediting body for the field of study? If yes, what is the name of the group? Is the program seeking accreditation? If no, why?

We would have to have 2 full time chemistry faculty to obtain external accreditation.

Marketing Materials
Please reflect on the current marketing materials used for the program. Detail what documents you are reviewing and attach a screenshot of any webpages or materials that you cannot include as a document. What changes, if any should be made to the material? Are there recommendations for how or where to market the program?

We have no marketing materials. I would like to have a half page (long wise) handout with one side discussing how minors can help set you apart on medical/dental/graduate school applications and on the back side specifics about the chemistry minor.

Marketing Material

Program Assessment

Standard/Outcome

Identifier	Description
WWU2016.1	Major Field Competence: Students will demonstrate excellence in an academic or professional discipline, and engage in the process of academic discovery.
WWU2016.2	Ethics: Students will exhibit values and behaviors that address self- respect and respect for others that will enable success and participation in the larger society.
WWU2016.3	Self-Liberation: Students will develop an honest understanding and appreciation of themselves and others resulting in an ability to make individual decisions.
WWU2016.4	Lifelong Education: Students will possess an intellectual curiosity and desire for continual learning both within and beyond formal education in preparation for participation in a global society.

Additional Standards/Outcomes

Identifier	Description
CHM.1	Demonstrate a fundamental understanding of chemical concepts relating to all branches of chemistry, including analytical, organic, physical, inorganic, and biochemistry.

CHM.2	Demonstrate a thorough understanding of the periodic table of elements and how it can be used to determine trends in chemical reactivity and stability.
CHM.3	Logically apply the scientific method to everyday situations in order to facilitate an understanding of the world around us.
CHM.4	Integrate empirical evidence with experimental data, such that solid conclusions can be formulated.

Alignment to the University Objectives
Please discuss the program alignment to the University Objectives. We do not need an artifact for each objective, but a discussion on how the program uses the Institutional Objectives as an anchor for their program curriculum.

As stated in the William Woods University mission statement, "William Woods University promotes a student-centered learning environment valuing inclusion, creativity, and intellectual inquiry. Focused on professions-oriented education, we prepare learners for success." The chemistry minor aligns with this statement in all regards but focuses on the student-centered learning environment where students are active participants in their learning.

General Education Alignment to Program
How do the General Education criteria align with the Program Objectives? What courses within your program build upon skills learned in general education courses (please list the program course and the general education criteria). The General Education clusters are: Critical Analysis, Creative Expression, Quantitative Inquiry, and Society & the Individual. See attached for more detailed breakdown.

Students who complete the Chemistry minor are typically better-versed as critical analysts and practitioners of quantitative inquiry; these skills are vital to successful completion of the courses and lab work. Successful students will also exercise creative expression and a focus on society & the individual via their small-scale research on topics relevant to chemistry in the wider world. Typically such research is presented in the form of essays.

GE_Cluster_Descriptions_FINAL_Version_Approved.docx

NSSE Objectives Discussed Fall 2019

Program Alignment to NSSE Objectives
How did your program integrate the three NSSE objectives determined by the faculty this fall. The objectives were to 1) integrate more interdisciplinary work within the curriculum, 2) to connect learning to societal problems or issues, and 3) to examine the strengths and weaknesses of their (students) own views on a topic or issue. Please articulate which courses, and what assignments were assigned and how the work was assessed. Were the assignments successful? What could have made them more successful?

Each lecture class (Chm 114, 124, 314 and 324) was assigned a paper where topics from chemical and engineering news had to be discussed. The students spent a class period flipping through 5 years of C&EN journals to select their topic. They were asked to review the article and write a "blog post" about the article, including updates to the research, debate, issues and recent news. The blog post idea allows for the cross over to journalism and science communication. The news articles allowed the students to think outside of the textbook and see real societal issues within the given topic.

The first assignment given to meet NSSE objectives was a great success with all students completing the assignment and nearly all of them scoring high on the rubric.

Curriculum Map

A - Assessed
R - Reinforced
I - Introduced
M - Master

Standard Chemistry Minor Curriculum Map

	CHM 114	CHM 115	CHM 116	CHM 124	CHM 125	CHM 314	CHM 315	CHM 324	CHM 325	CHM 440	CHM 441
CHM.1 Demonstrate a fundamental understanding of chemical concepts relating to all branches of chemistry, including analytical, organic, physical, inorganic, and biochemistry.	I	I		A, R		R		R, A	M		
CHM.2 Demonstrate a thorough understanding of the periodic table of elements and how it can be used to determine trends in chemical reactivity and stability.	I	I		R, A		R		R, A	M		
CHM.3 Logically apply the scientific method to everyday situations in order to facilitate an understanding of the world around us.	I	I		R, A		R		R, A	M		
CHM.4 Integrate empirical evidence with experimental data, such that solid conclusions can be formulated.	I	I		R, A		R		R, A	M		

Changes to Curriculum
Are there any changes made to the curriculum map for this academic year? If so, please describe the program changes made along with the rationale for why and the impact the change should have on student learning?

We are not making changes from last year. I do not think we have had time to analyze regularity during the covid year. No changes will be made until after the next academic term.

Assessment Findings

Assessment Findings for the Assessment Measure level for Standard Chemistry Minor Curriculum Map

~No Assessment Findings Submitted

Analysis of the Assessment Process
Describe your assessment process; clearly articulate how the program is using course work and or assessment day activities for program assessment. Note any changes that occurred to that process since the previous year. Discuss what activities were successful at assessment and which ones were not as helpful and why. Please include who met to discuss the changes (unless you are a program of one person) and when you met. – Include a discussion on the process for collection and analysis of program data.

The chemistry minor uses course work for program assessment and does not participate in performance days. Students have 3 assignments that serve as assessment tools. A PowerPoint presentation, essay (blog post) and form worksheet. The PowerPoint presentation had been given orally previously but transitioned to an online submission. The student not only has to organize slides that present their data and information effectively but now has to fill in the note section, like they were preparing to give it. I found transitioning to this type of assignment gave drastically better performance from students with more information covered. Because I was analyzing their notes as well now, the students stepped up their work. All PowerPoints were posted to a discussion forum for other students to review. We will keep this new type of PowerPoint assignment as standard moving forward.

Improvement Narrative List

Program Activities

Student Performance Review
Describe the department assessment day activities if not already described previously. Please articulate the nature of the assessments are conducted, explain the process for assessment that happens on these two days. Include the schedule of assessment day for your program. What does the data and outcomes tell you? What changes will you make as a result of the data? What areas are successful for the program?

As chemistry is a minor, there were no program activities for assessment day. All declared chemistry minors are currently working towards a degree in a program that has these activities and they participate with their majors.

Student Performance Review Schedule
Upload the program schedule for students during Performance Reviews.

Senior Showcase
Describe program Senior Showcase activities if not detailed previously in the report? What benefit does the program gain from the activities? What if any assessment of students happens during this event? What changes if any will occur due to what is learned by faculty on Senior Showcase?

I have no senior students

Assessment Rubrics
Upload rubrics used for Senior Showcase or Student Performance Reviews for student assessment.

Service Learning
Does the Program include projects/ course content that uses the philosophy of service learning?
Yes
No (selected)

Service Learning Component
If so, how is service learning infused in the coursework within your department? Is service or community engagement in the program mission? Describe the Service Learning Activities that your students and department engaged in this past year. How did the activities improve student learning? How did the activities benefit the community?

LEAD Events
Highlight lead events sponsored by program faculty that are connected to program or general education objectives for the past academic year. Include a total number of lead events program faculty sponsored.

While these events are not assessed to meet objectives, they fall in line with all many chemistry objectives and are well attended.

Monday, April 5, 2021

11:30:00 AM - Beyond the Elements - Complete anytime during the week of April 5th - Just about every solid, liquid, or gas in the world as we know it begins with reactions between individual atoms and molecules. Host David Pogue dives into the transformative world of chemical reactions, from the complex formula that produces cement to the single reaction that's allowed farmers to feed a global population by the billions—a reaction that when reversed, unleashes the powerful chemistry of high explosives.

Monday, April 12, 2021

11:30:00 AM - The Art and Science of Play - podcast - Podcast with reflection form: For humans and creatures of all sorts, play goes beyond having fun. Cognitive scientist Junyi Chu shares about the motives behind play, from showing off one's fitness to practicing skills, and she shares about her research studying children, play and cognition. Game designer Holly Gramazio comes at play from the perspective of an artist. She talks about how games, such as Pokemon Go or others that originated during the pandemic, can change how players perceive a place and connect to other people

Student Accomplishments
Highlight special examples of student successes in the field (academic: mentor-mentee, conference presentations, competitive internship, journal acceptance; extra-curricular: horse show championship, art exhibit). This is for any accomplishments that a student achieved outside of course work or the normal expectations of student success.

Student Riley Alton will be a student chemistry researcher next year under the Cox Distinguished Professor of Science award. 2021 graduate Kylie Zamboni-Cutter will start medical school in July.

Alumni Accomplishments
Please highlight special examples of any successes of recent graduated alumni (acceptance or graduation graduate school, employment or professional milestones. Include recent graduates.

Having completed my second year, I have only a few students that have graduated. I have quite a few students that will graduate next year that I plan to track after graduation. I will continue working with Biology Faculty to reach other alumni.

Faculty Accomplishments
Highlight special examples of faculty success in the profession/field/content area. This is for any accomplishment of a faculty activity/research/professional nature.
,I wrote all new lab experiments for all chemistry courses to better incorporate what they will see in professional life or graduate school while also offering many “real life” labs. This task not only required time to dive into the literature but also actively testing all experiments for their usability and time constraints. The newest lab experiment that students really enjoyed was making soap in general chemistry 2.
I also volunteer with science communication and outreach, which I hope to bring to a LEAD event in the future.
I participated in the New Faculty Workshop put on by the American Chemical Society in June. This was supposed to be in D.C. but due to COVID, moved to a digital platform.

Assessment Rubric

	3.000 Exceeds	2.000 Meets	1.000 Falls Below Expectations	N/A
Mission Statement Clearly Articulated weight: 1.000	The mission statement for the program is insightful and forward thinking. It aligns with the University Mission and learning objectives showing a clear alignment between the University and the program.	The mission statement for the program clearly articulated and aligned with the University mission.	✓ The mission statement is minimal at best.	N/A
Comment:				
Reflection on Retention weight: 1.000	The program provides a detailed description on the retention numbers. The program provides new ideas on how to improve retention of their program students or articulates what they are currently doing to keep students in their program.	The program provides a basic reflection on the retention data provided.	✓ The program does not reflect on retention data in a detailed way.	N/A
Comment:	I appreciate the way this question is addressed, but it doesn't address the question of retention.			
Defines External Accreditation Standards weight: 1.000	The program provides a detailed explanation of the accreditation organizations within the field along with all the timeline and supplemental information required for accreditation.	The program provides a basic explanation of the accreditation organizations in the field.	✓ The program fails to provide any accreditation information.	N/A
Comment:	Here, we'd like to know what the accrediting board is, or that achieving accreditation is not a goal at this time. Maybe this should be a two?			
General Education alignment clearly explained weight: 1.000	The program provides a detailed explanation of the General Education criterial and how the basic skills learned are expanded upon in the program. Details include but are not limited to: specific courses, or activities that stretch the knowledge of the specific areas.	✓ The program provides a basic explanation of the General Education curriculum and how the skills learned are expanded in program courses.	The program provides a minimal explanation of the General Education curriculum and how the skills learned are expanded in program courses.	N/A
Comment:	A little underdeveloped, but some nice ideas here. Maybe more specifics about which classes some of these skills are practiced. Naming assignments would be even better.			
Curriculum Map alignment weight: 1.000	The curriculum map is detailed and complete.	✓ The curriculum map is complete	The curriculum map is not complete	N/A
Comment:				
Assessment of Objectives weight: 1.000	Assessment of objectives are spread out across the curriculum with a variety of assessment measures and each program objective is assessed a minimum of twice a year.	Each objective is assessed a minimum of 2 times a year or an assessment rotation is explained so that all objectives are assessed. The assessments are not concentrated in one class.	✓ The assessment map is not complete or much of the assessment happens in only one course. Not all objectives are assessed annually, nor is a plan provided on assessment.	N/A
Comment:	Objectives are assessed only in two courses, 124 and 324. This makes it like a pre-test, post-test vibe, which doesn't help you to understand where the problems might be coming up, in those courses where students are mastering and the objectives are reinforced.			
Data Driven Decision-making is explained weight: 1.000	Curricular and assessment changes are articulated and validated through data based decisions. Faculty discuss the data that lead to curricular decisions being made.	Curricular and assessment decisions are made based on data provided in assessment, but detailed alignment is not provided as justification for the change.	Changes are proposed and brought forth with little explanation on the data included in the decision, if data was included in the decision.	✓ N/A
Comment:	No assessment details, but there is a reflection on assessment. It's not obviously based on assessment data, but maybe?			

Documentation provided on assessment findings weight: 1.000	The program uploads all rubric and support information to support the claims in the assessment findings along with detailed instructions on the assessment process and data analysis.	The program uploads all rubric and support information to support the claims in assessment findings.	✓ The program did not upload the data to support assessment claims in the assessment findings.	N/A
Comment:				
Analysis of Assessment is complete weight: 1.000	The program completed assessment findings for each component identified, and provided a comprehensive summary of each assessment measure identified in the report.	The program completed the assessment findings for each component and provided a summary for each assessment measure.	✓ The program did not provide a completed assessment findings for each component, nor did they complete the summary for each measure.	N/A
Comment:				
Improvement narratives are selected with intentionality weight: 1.000	The program identified Improvement Narratives that appear to move the program forward and see the bigger picture than only the specific program curriculum options	The program used the provided Improvement Narratives and selected options that made sense to the objectives and issues within the assessment.	✓ The program did not use any improvement narratives, or the ones chosen are not aligned with assessment results.	N/A
Comment:				
Student Performance Review weight: 1.000	The program described and provided a detailed account of Student performance Review activities. Data evidence provided and detailed.	The program provided the schedule and a brief description of Student Performance Review with data of the results.	The program did not provide complete explanation on Student Performance Review nor did they provide data results.	✓ N/A
Comment:				
Senior Showcase weight: 1.000	The program had all senior students participate in Senior Showcase and provided a detailed explanation of their expectation and the presentations presented.	The program described the Senior showcase activities and provided some evidence of what was presented.	Little to no content of Senior showcase was provided.	✓ N/A
Comment:				
Co Curricular activities weight: 1.000	The program detailed the activities of LEAD and other co-curricular programing that was provided throughout the year. They provided numerous events for students.	✓ The program provided a listing of LEAD events and activities provided.	The program provided little to no description of the Co-curricular activities provided throughout the year.	N/A
Comment:				
Faculty, alumni, and Student accomplishments weight: 1.000	The program provided detail updates on successes on Students, Alumni and Faculty with added information explaining the kinds of success that were experienced.	✓ The program provided a listing of information on Students, Alumni, and faculty accomplishments.	The program provided little to no data on students, alumni, faculty accomplishments.	N/A
Comment:				