



Chemistry [CHEM]

Cycles included in this report:
Jun 1, 2022 to May 31, 2023

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Program Name: Chemistry [CHEM]

Reporting Cycle: Jun 1, 2022 to May 31, 2023

1 Is this program offered via Distance Learning?

100% Traditional or less than 50% Distance/Traditional

2 Is this program offered at an off-site location?

No

2.1 If yes to previous, provide addresses for each location where 50% or more of program credits may be earned.

3 Example of Program Improvement

2018-2019:

The first example is that the department finally bought a desktop NMR for the students to use. This is vital for ACS accreditation. Another major and potentially important improvement is the purchase of three very important instruments, UCP-MS, HPLC, GS-MS with the help of Drew Foundation. These instruments are due to arrive by the end of 2019. These set of instruments vitalize the department, in not only attracting more students, but also in their training, and finding a placement and last but not least boost the retention of the faculty.

2019-2020:

Program improvement started with the arrival of the instruments listed in the 2018-2019 section. Along with this we also had multiple faculty working on these instruments to get them up and functioning. However, with the COVID-19 pandemic in the Spring 2020 semester they didn't get much use.

2020-2021:

This year the department faced many different issues from the continuation of the COVID-19 pandemic, as well as multiple hurricanes hitting the campus. This forced all instruction online and has possibly skewed the data for the 2020-21 academic year, since the student's didn't get the hands-on experience with this equipment.

The ICP-MS, HPLC, and GC-MS were delivered and commissioned for use in 2020.

Unfortunately, Hurricane Laura severely damaged the building and the equipment was impacted. We anticipate a return to the building and access to test the equipment in the summer of 2021.

2021-2022:

The program will be getting a new general chemistry lab and organic chemistry lab.

2022-2023:

4 Program Highlights from the Reporting Year

2018-2019:

The department is still in the process of stabilizing. This year four faculty, one tenured, two tenure track and one instructor had left the department. We could replace only two positions so far. On the positive side, the purchase of new desktop NMR is complete and another large grant from foundation nearing the total of \$370,000 worth of equipment has been approved, which really transforms the department.

Students were assessed continuously throughout their senior year from various upper-level classes. Our results indicate that there is a marked increase in the understanding of the core chemical concepts from sophomore to senior year.

Next year onwards we will start assessing the outgoing students through a standardized exam.

2019-2020:

The department received new equipment that could be very useful to helping with the forensic and analytical side of chemistry (this shows up in Chem 303 as well as Chem 442). However, this equipment didn't see much use due to the COVID-19 pandemic that hit in March of 2020.

2020-2021:

The highlights from the 2020-21 academic year are difficult to identify because the department continued to go through the COVID-19 pandemic mixed with two hurricanes damaging Kirkman Hall, which has led to all instruction being online or hybrid.

2021-2022:

Due to the low enrollment of the program, the highlights are rather small for chemistry education. For the department as a whole, a student did go present at the ACS national conference.

2022-2023:

5 Program Mission

The mission of the Department of Chemistry & Physics includes the following components: (a) offering a quality educational program for all students enrolled in courses presented by the department, (b) providing an atmosphere conducive to (i) academic inquiry, (ii) the exchange of knowledge, and (iii) the advancement of knowledge through scientific research and/or other scholarly activities, and (c) providing service to the College of Science, the University, and the community. The department seeks to broaden and enhance the educational experiences for all students enrolled in chemistry courses, to optimize the productivity of the faculty and staff, and to provide service to the academic and industrial communities and to the citizens of Southwest Louisiana.

6 Institutional Mission Reference

The department's mission mirrors that of the University in the provision of educational opportunities to students seeking a B.S. in Chemistry, and in providing support courses for students from other disciplines across the campus. In conjunction with the Department of Agricultural Sciences, we offer a M.S. in Environmental & Chemical Sciences. We conduct faculty-led research at both the undergraduate and graduate levels and interface many of our research efforts with local industries. The B.S program is approved by the American Chemical Society (ACS) and our program has received laudable reviews from them and from the Louisiana Board of Regents. Students are encouraged to present their research findings in oral or poster form in local, regional, and national meetings and student publication in scientific peer-reviewed journals is a departmental priority. Faculty serve as ad hoc consultants for a number of local industries, leveraging our technical expertise for the solution of industrial problems. In association with the Southwest Louisiana Crime Laboratory and SASOL North America we offer opportunities for students to intern in and conduct research in practical workplaces prior to graduation. Additionally, through collaboration with the Science Coordinator for Calcasieu Parish, we have a vibrant outreach program to local high schools and elementary schools aimed at sparking and sustaining student interest in science.

7 Assessment and Benchmark CHEM 301L Lab Report Grades

Assessment: Chemistry majors will demonstrate competence in the full range of classical experimental methodologies and techniques as demonstrated by lab report grades.

Student Learning Outcomes: At the completion of this course students should be able to:

- Predict and account for the physicochemical properties of organic compounds based upon their structures.
- Account for the behavior of organic compounds and the fates of organic reactions in terms of electronic, steric and orbital interactions.
- Describe preparative routes to the non-aromatic hydrocarbons, haloalkanes and alcohols /ethers.
- Discuss reaction pathways of the classes of organic compounds above.
- Draw reasonable curved arrow mechanisms for reactions profile and detail the SN and E reactions.

Benchmark: 70% of students will earn an average score of 80% on CHEM 301L Lab reports.

Outcome Links

Lab Techniques and Methodologies [Program]

Graduates demonstrate competence in lab techniques and methodologies of experimental chemistry.

7.1 Data

| Academic Year | Students with 80% | | Benchmark met? |
|---------------|-------------------|-------|----------------|
| | # | % | |
| 2017-2018 | 69/96 | 71% | Yes |
| 2018-2019 | 77/91 | 82% | Yes |
| 2019-2020 | 55/90 | 61.1% | No |
| 2020-2021 | 139/149 | 93.3% | Yes |
| 2021-2022 | 81/90 | 90% | Yes |
| 2022-2023 | | | |

7.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

There is a significant improvement in the grades and only 11 students out of 91 (12%) got 'C' grade.

Next plan is to improve the writing standards and create a rubric.

2019-2020:

The students didn't meet the benchmark.

To improve it might be necessary for students to go to the write for excellence center to receive help with this.

2020-2021:

The students meant the benchmark. This could be due to the online teaching of the labs due to COVID-19 pandemic and the hurricanes that hit the area.

Plan for improvement, gather more data to see if this was a one time spike.

2021-2022:

The students met the benchmark. This shows that the 93.3% from last cycle wasn't necessarily a one time spike. However, the department wants one more year of data before making any major changes to the assessment. This is due to the fact that labs are being updated for Fall 2022 and might make more experiments possible.

2022-2023:

8 Assessment and Benchmark CHEM 361 Lab Report Grades

Assessment: Chemistry majors will demonstrate competence in the full range of classical experimental methodologies and techniques as demonstrated by lab report grades.

Student Learning Outcomes have been measured as follows:

After completing this course, the student will:

1. Have the ability to use most laboratory techniques useful in the inorganic laboratory.
2. Have a working knowledge of synthesis separation, purification, and identification methods.
3. Demonstrate a working knowledge of Infrared Spectroscopy (IR).
4. Have the ability to interpret IR spectra.

Benchmark for CHEM 361 lab report score will be established after sufficient data is collected.

Outcome Links

Lab Techniques and Methodologies [Program]

Graduates demonstrate competence in lab techniques and methodologies of experimental chemistry.

8.1 Data

| Academic Year | Students with 80% | | Benchmark met? |
|---------------|-------------------|------|----------------|
| | # | % | |
| 2017-2018 | 9/9 | 100% | Yes |
| 2018-2019 | 8/8 | 100% | Yes |
| 2019-2020 | 9/9 | 100% | Yes |
| 2020-2021 | 4/5 | 80% | Yes |
| 2021-2022 | 9/11 | 82% | Yes |
| 2022-2023 | | | |

8.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

The department is on the verge of getting instruments. These new instruments will be used in the next cycle for this lab.

2019-2020:

All student's met the benchmark. This could have been due to the COVID-19 pandemic and all courses being moved online. Will need to have 361L in-person to see how the new instruments work.

2020-2021:

The student's met the benchmark. This again was a completely online course, due to hurricanes Laura and Delta damaging Kirkman Hall. In spring 2022 we will look at data to see how students do in a fully in-person lab.

2021-2022:

Most of the students met the benchmark. It was up just shy of 2% from the previous lab that was completely online. The department is going to see how next spring's section of CHEM 361L does and evaluate the benchmark to see if it needs to be updated.

2022-2023:

9 Assessment and Benchmark CHEM 303 Final Examination

Assessment: Chemistry majors will demonstrate competence in sample preparation & analysis, data acquisition & analysis, chromatographic separations, optical atomic spectroscopy, and optical mass spectrometry as demonstrated by CHEM 303 Final Examination.

Student Learning Objectives for CHEM 303:

1. Understanding gravimetric and potentiometric analyses.
2. Understanding how chemical reactions are utilized for quantitative measurements of analytes.
3. Using relevant chemical equilibria (solubility, acid-base, complexation, redox) for solving chemical problems.
4. Assessing the accuracy, precision, and uncertainty of experimental data.
5. Performing and properly interpreting basic statistical tests.
6. Understanding and applying calibration strategies and their limitations.
7. Understanding of Mass Spectra, Chromatography, and Separation Techniques.
8. Understanding- FTIR, NMR, UV-Visible Spectroscopy, and Thermogravimetric Analysis Techniques.

Benchmark for CHEM 303 final examination score will be established after sufficient data is collected.

Outcome Links

Chemical Instrumentation [Program]

Graduates demonstrate competence in the use of chemical instrumentation.

9.1 Data

| Academic Year | Students with 70% | | Benchmark met? |
|---------------|-------------------|------|----------------|
| | # | % | |
| 2017-2018 | — | 100% | Yes |
| 2018-2019 | 0 | 0 | No |
| 2019-2020 | 11/17 | 65% | No |
| 2020-2021 | 5/9 | 60% | No |
| 2021-2022 | 10/12 | 83% | Yes |
| 2022-2023 | | | |

9.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

303 has not been offered in the year 2018-2019 due to the lack of instrumentation. The good news is, the department has acquired new instruments, HPLC, GC-S, ICP-MS, and NMR. Therefore 303 course will be offered in the coming spring.

2019-2020:

The students did not meet the benchmark this year. This could be do to multiple factors such as the course going completely online after March of 2020 due to the COVID-19 Pandemic.

2020-2021:

The students failed to meet the benchmark during the 2021 offering of the CHEM 303 course, due to Hurricanes Laura and delta doing damage to the buildings and forcing the course to be taught online completely. This course requires a lot of hands on learning to understand the instrumentation.

2021-2022:

As noted in last years assessment analysis, CHEM 303 was taught completely online, which effected the students knowledge. This year Dr. Vaughan had a small group of students that got hands on experience with most of the equipment in the department through this course and students benefited from this. To continue the success of this course benchmark the department is looking into adding a certification along with a course that will either be hosted in this course or this course will be part of the sequence to obtain the certification.

2022-2023:

10 Assessment and Benchmark CHEM 441 and 442 Oral Presentation Score

Assessment: CHEM 441 and 442 oral presentation score from rubric.

Student Learning Objectives:

At the completion of this course, students should be able to:

1. Write an informative abstract describing and referencing their presentation topic.
2. Organize a coherent, audio-visual (PowerPoint) presentation based on laboratory and/or literature research.
3. Present a comprehensive, well-paced scientific seminar to an audience of their peers.
4. Answer questions from a scientific audience based upon the presentation.
5. Write concise critiques of a seminar topic.
6. Evaluate and critique speakers.

Benchmark for CHEM 441 and 442 oral presentations will be established after sufficient data is collected.

Outcome Links

Scientific Methodology [Program]

Graduates demonstrate competence in conducting scientific methodology.

10.1 Data

| Academic Year | Students with 80% | | Benchmark met? |
|---------------|-------------------|------|----------------|
| | # | % | |
| 2017-2018 | 14/14 | 100% | Yes |
| 2018-2019 | 15/15 | 100% | Yes |
| 2019-2020 | 3/3 | 100% | Yes |
| 2020-2021 | 6/8 | 75% | No |
| 2021-2022 | 7/7 | 100% | Yes |
| 2022-2023 | | | |

10.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

Students have been doing a great job in their presentations at McNeese. Next plan is to finalize the rubric and further improve the presentation standards.

2019-2020:

The primary plan is to offer this course more often to get a bigger pool for statistical data.

2020-2021:

To improve the course, we will need to let the students present in a face-to-face environment where the instructor can give better feedback.

2021-2022:

The seminar students did very well this year, especially being back in a face-to-face environment where they got to learn from several professionals about how to make their presentations better. It's important to note that many students in the spring session were set to take CHEM 442, however with the professor leaving suddenly they had to take seminar.

To improve the course the department is thinking about getting freshman and sophomore students to attend the seminar so that the speakers can have a bigger audience with more questions.

2022-2023:

11 Assessment and Benchmark CHEM 451 Research Paper

Assessment: Students will demonstrate ability to perform laboratory/computing research as well as literature research in their research project papers in CHEM 451.

Benchmark: 80% of program graduates will earn an average score of 80% or higher in CHEM 451. As well, 33.3% of program graduates will present their research findings at a state/regional /national scientific meeting and/or publish in a peer-reviewed journal.

Outcome Links

Scientific Methodology [Program]

Graduates demonstrate competence in conducting scientific methodology.

11.1 Data

| Academic Year | Students with 80% | Benchmark | Students that presented findings | Benchmark |
|---------------|-------------------|-----------|----------------------------------|-----------|
| | | | | |

| | # | % | met? | # | % | met? |
|-----------|-------|------|------|-------|------|------|
| 2016-2017 | — | 100% | Yes | — | 100% | Yes |
| 2017-2018 | 27/27 | 100% | Yes | 14/14 | 100% | Yes |
| 2018-2019 | 29/29 | 100% | Yes | 12/12 | 100% | Yes |
| 2019-2020 | — | — | — | — | — | — |
| 2020-2021 | 13/13 | 100% | Yes | 1/13 | 7.7% | No |
| 2021-2022 | 21/21 | 100% | Yes | 1/21 | 4.7% | No |
| 2022-2023 | | | | | | |

11.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

Research is mandatory in chemistry. All the students will have to take this course. Most of them present their results in a seminar or other avenues. All the students had fulfilled the above SLOs.

We plan to streamline the reports and develop a digital repository in the future.

2019-2020:

2020-2021:

The benchmark was made for all students in 451 on conducting research and one student did present results of their work. Presenting was very difficult with COVID-19 pandemic and multiple hurricanes in the local area.

2021-2022:

The benchmark was made for all students who conducted research with their advisors in CHEM 451. However, the benchmark wasn't made in presenting their results, however it is good to note that the one student who did present was at the ACS national conference in San Diego, California. To improve on the student presentation of their findings, the department is looking into making that part of their overall grade for the course.

2022-2023:

12 Assessment and Benchmark Enrollment and Completers

Assessment: Enrollment numbers are based on the number of candidates that have declared Chemistry Education as their major and have turned in an EDUC 200 packet.

Benchmark: The EPP has set a goal to increase enrollment by 7% across programs each year from fall 2017 to fall 2021 to coincide with the MSU Strategic Plan goal concerning enrollment and recruitment.

12.1 Data

Chemistry Education - Enrollment and Completer Data:

| Academic Year | # officially enrolled with an EDUC 200 packet | # of completers in fall semester | # of completers in spring semester | Total # of completers |
|---------------|---|----------------------------------|------------------------------------|-----------------------|
| 2017-2018 | 1 | 1 | 0 | 1 |
| 2018-2019 | 0 | 0 | 0 | 0 |
| 2019-2020 | 0 | 0 | 0 | 0 |
| 2020-2021 | 0 | 0 | 0 | 0 |
| 2021-2022 | 1 | 0 | 0 | 0 |
| 2022-2023 | | | | |

12.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

Data Analysis:

The benchmark was not met. There was a decrease from 1 to 0 students enrolled in the program from the previous year. The one candidate enrolled from the previous year completed the program within the 2017-2018 AY.

Plan for Continuous Improvement:

The goal for the 2019-2020 AY will be to increase student enrollment by 7%.

Recommendation for Successful Implementation of Plan for Improvement:

- Secondary and Chemistry faculty will participate in the Education Professions Advising Session after the 14th day of each semester to make connections with candidates and provide guidance for official acceptance into the program.
- Faculty will attend recruitment events such as recruitment fairs, the Sulphur Career Fair, Geaux Teach- Unlock Education, and will visit at least two local high schools with the purpose of recruiting for education programs.
- Promote Ed Rising in the local school districts to recruit to the education profession. Complete process to give credit for two education courses within the program for participation and completion of assessments in the Ed Rising High School Program.

2019-2020:

Data Analysis:

The benchmark was not met. There was no change in the number of students officially enrolled in the program from the previous year.

Plan for Continuous Improvement:

The goal for the 2019-2020 AY will be to increase student enrollment to at least one student officially enrolled in the program.

Recommendation for Successful Implementation of Plan for Improvement:

- Secondary and Chemistry faculty will participate in the Education Professions Advising Session after the 14th day of each semester to make connections with candidates and provide guidance for official acceptance into the program.
- Faculty will attend recruitment events such as recruitment fairs, the Sulphur Career Fair, Geaux Teach- Unlock Education, and will visit at least two local high schools with the purpose of recruiting for education programs.
- Promote Ed Rising in the local school districts to recruit to the education profession. Complete process to give credit for two education courses within the program for participation and completion of assessments in the Ed Rising High School Program.

2021-2022:

2020-2021:

The benchmark was not met. The number of candidates enrolled in the program has remained at zero for the past three academic years. Currently, there are two candidates enrolling in preliminary coursework for the chemistry education curriculum. However, neither of these candidates has an approved EDUC 200 packet and therefore is not considered to be officially enrolled in the program.

EPP faculty are working on additional avenues to recruit students. Educators Rising was implemented in two local high schools to assist high school students in learning more about the education profession. Unlock Education has also expanded to include additional high schools in the area to recruit students to MSU and particularly into education programs. Dr. Ogea has visited local schools to recruit for our education programs. In the 2021-2022 academic year, both DEP and Content faculty will reach out to local high school students to promote Ed Rising and to recruit students into education programs.

2021-2022:

After 4 years with no candidates officially enrolled in the Chemistry Education concentration, 2021-2022 has 1 candidate enrolled. There were no completers in the program for the academic year.

The Burton College of Education and particularly the Department of Education Professions has made intentional efforts to recruit candidates into teacher-education programs and has focused particular attention on those from diverse backgrounds and within high needs areas. In addition to traditional attendance at parish career fairs and expos, the following are part of the MSU Department of Education Professions (EDPR) Recruitment and Retention Plan: Unlock Education, Call Me MISTER, Educators Rising, and minors.

Although the efforts are strong and we are committed to recruiting candidates from diverse backgrounds, results of these efforts are not immediate as these students are juniors or seniors in high school and the data reported in the Performance Profile for education provider programs is on completers. We will track the data for program admission to monitor new students and make adjustments as needed to attract a diverse group of candidates interested in the field of education.

2022-2023:

13 Assessment and Benchmark Field Experience Evaluation III (FEE Content)

Assessment: The Field Experience Evaluation Domain 5 measures the Content Specific Components related to teaching observations.

The FEE Scoring Scale is as follows: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4- Highly Effective.

Benchmark: 90% of the candidates will score a 3.00 or higher on each element of Domain 5 (Content Specific Components) on the Field Experience Evaluation (FEE) Rubric.

Prior to 2017-2018, the benchmark was 100% of students will meet or exceed the benchmark of 2.00. The state of Louisiana sets the benchmark.

13.1 Data

Chemistry Education - Content specific components on FEE III:

| Component | Fall 2017 | | | Spring 2018 | | | Fall 2018 | | | Spring 2019 | | |
|-----------|-----------|------|-------|-------------|------|-------|-----------|------|-------|-------------|------|-------|
| | # | Mean | Range | # | Mean | Range | # | Mean | Range | # | Mean | Range |
| 5.1 | 1 | 3.63 | 3.63 | 0 | — | — | 0 | — | — | 0 | — | — |
| 5.2 | 1 | 3.88 | 3.88 | 0 | — | — | 0 | — | — | 0 | — | — |
| 5.3 | 1 | 3.75 | 3.75 | 0 | — | — | 0 | — | — | 0 | — | — |
| 5.4 | 1 | 3.50 | 3.50 | 0 | — | — | 0 | — | — | 0 | — | — |
| 5.5 | 1 | 3.63 | 3.63 | 0 | — | — | 0 | — | — | 0 | — | — |
| 5.6 | 1 | 4.00 | 4.00 | 0 | — | — | 0 | — | — | 0 | — | — |
| 5.7 | 1 | 4.00 | 4.00 | 0 | — | — | 0 | — | — | 0 | — | — |
| 5.8 | 1 | 3.63 | 3.63 | 0 | — | — | 0 | — | — | 0 | — | — |

2019-2020:

There were no completers in the 2019-2020 academic year and, therefore, no new data to report.

2020-2021:

There were no completers in the 2020-2021 academic year and, therefore, no new data to report.

2021-2022:

There were no completers in the 2021-2022 academic year and, therefore, no new data to report.

Chemistry Education - Content specific components on FEE III:

| Component | Fall 2022 | | | Spring 2023 | | | Fall 2023 | | | Spring 2024 | | |
|-----------|-----------|------|-------|-------------|------|-------|-----------|------|-------|-------------|------|-------|
| | # | Mean | Range | # | Mean | Range | # | Mean | Range | # | Mean | Range |
| 5.1 | | | | | | | | | | | | |
| 5.2 | | | | | | | | | | | | |
| 5.3 | | | | | | | | | | | | |
| 5.4 | | | | | | | | | | | | |
| 5.5 | | | | | | | | | | | | |
| 5.6 | | | | | | | | | | | | |
| 5.7 | | | | | | | | | | | | |
| 5.8 | | | | | | | | | | | | |

13.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

There were no completers in the 2018-2019 AY, therefore there is no new data to analyze.

Plan for Continuous Improvement: Chemistry Education and Secondary Education faculty will review the items in Domain 5 to ensure alignment to current standards.

2019-2020:

2020-2021:

There were no completers in the 2020-2021 academic year and therefore no new data to report. The POP Cycle will be implemented for the observations in each of the teacher residency semesters. Data driven professional development sessions for the candidates will be delivered each week. Additionally, the EPP faculty will update the FEE domain 5 to the current content standards in summer 2021.

2021-2022:

There were no completers in the 2021-2022 academic year with a concentration in Chemistry Education therefore no new data was reported.

Faculty representing Chemistry on EPAC will be reviewing the content covered in the Praxis content exam and aligning it to the coursework. The content portion of the field experience evaluation is also being reviewed. Additionally content faculty will assist in the evaluation of candidates as they teach content in the residency semester.

2022-2023:

14 Assessment and Benchmark Lesson Planning

Assessment: Lesson plan elements are aligned to InTASC Standards.

Lesson Plan Rubric scoring scale: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4- Highly Effective.

Benchmark: 100% of the candidates will score a 3.00 or higher on each element of the Lesson Plan Rubric.

14.1 Data

2018-2019:

There were no completers in the 2018-2019 academic year and, therefore, no new data to report.

2019-2020:

There were no completers in the 2019-2020 academic year and, therefore, no new data to report.

2020-2021:

There were no completers in the 2020-2021 academic year and, therefore, no new data to report.

2021-2022:

There were no completers in the 2021-2022 academic year and, therefore, no new data to report.

Chemistry Education - Lesson Plan Data from EDUC 333:

| | InTASC Standard | | Fall 2022 N= | Spring 2023 N= | Fall 2023 N= | Spring 2024 N= | Fall 2024 N= | Spring 2025 N= |
|-----------------------|-----------------|------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|
| Essential Questions | | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Content Standards | | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Student Outcomes | 4n | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Technology | 5l | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Educational Materials | | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Procedures | 3k | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Lesson "Hook" | 8j | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| | | Mean | | | | | | |

| | | | | | | | | |
|--|----|------------------------|--|--|--|--|--|--|
| Pre-Planned (SEED) Questions | 8i | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Modeled, Guided, Collaborative, and Independent Practice | 7k | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Closure | | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Formative/ Summative Assessment | 6j | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Relevance and Rationale | 2j | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Exploration, Extension, Supplemental | 1e | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |
| Differentiation | 7j | Mean | | | | | | |
| | | Range | | | | | | |
| | | % Proficient or Higher | | | | | | |

14.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

Data Analysis:

There were no completers in the 2018-2019 AY, therefore there is no new data to report.

Plan for Continuous Improvement:

- A revised version of the lesson plan is being implemented across programs to include specific elements related to differentiation.
- Faculty are working with U.S. Prep to determine strategies for guiding candidates in the process of differentiating for students.

2019-2020:

2020-2021:

There were no completers during the 2020-2021 academic year and therefore no new data to report. EDUC 318 was added as a requirement to the Secondary programs to provide candidates with a foundation to implement lesson planning throughout their methods

coursework. Faculty will continue to evaluate lesson plan data within their courses at the end of each semester. Each summer semester, faculty make recommendations for edits to the Lesson Plan Template and Rubric and/or to the methods for instructing lesson plan activities based on the analysis of the data collected. The plan is revised and an updated version is put in to place for the following fall semester. During the summer 2021 semester, course progressions will be reviewed to determine best practices for implementing the lesson plan.

2021-2022:

There were no completers in the 2021-2022 academic year with a concentration in Chemistry Education therefore no new data was reported.

All major assessments, including the lesson plan, are being realigned to the 2022 Danielson Framework for Teaching Model in preparation for the Fall 2024 CAEP accreditation visit therefore a new assessment will be implemented in Fall 2022.

2022-2023:

15 Assessment and Benchmark Field Experience Evaluation

Assessment: The Field Experience Evaluation (FEE) measures the following elements: Domain 1: Planning and Preparation; Domain 2: Classroom Environment; Domain 3: Instruction, and Domain 4: Professionalism.

The following scoring scale is used: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4- Highly Effective.

Benchmark: 90% of candidates will score a 3.00 or higher on each element in the Field Experience Evaluation (FEE) Rubric for Domains 1-4.

Prior to 2016-2017, the benchmark was that 100% of students will meet or exceed the benchmark of 2.00. The State of Louisiana sets the benchmark.

15.1 Data

2018-2019:

There were no completers in the 2018-2019 academic year and, therefore, no new data to report.

2019-2020:

There were no completers in the 2019-2020 academic year and, therefore, no new data to report.

2020-2021:

There were no completers in the 2020-2021 academic year and, therefore, no new data to report.

2021-2022:

There were no completers in the 2021-2022 academic year and, therefore, no new data to report.

Chemistry Education - FEE with InTASC Standards:

| Element | InTASC Standard | Fall 2022 N= | | | Spring 2023 N= | | |
|---------------------------------------|-----------------|-----------------|-------|----|-------------------|-------|----|
| | | Mean | Range | %* | Mean | Range | %* |
| Domain 1: Planning and Preparation | | | | | | | |
| Component 1.1 | | | | | | | |
| 1.1.1 | 4n | | | | | | |
| 1.1.2 | 6r | | | | | | |

| | | | | | | | |
|--|----|--|--|--|--|--|--|
| 1.1.3 | 2g | | | | | | |
| 1.1.4 | 1b | | | | | | |
| Domain 2: The Classroom Environment | | | | | | | |
| Component 2.1 | | | | | | | |
| 2.1.1 | 3j | | | | | | |
| 2.1.2 | 3d | | | | | | |
| 2.1.3 | 3d | | | | | | |
| 2.1.4 | 3d | | | | | | |
| Component 2.2 | | | | | | | |
| 2.2.1 | 3c | | | | | | |
| 2.2.2 | 3f | | | | | | |
| 2.2.3 | 3f | | | | | | |
| Domain 3: Instruction | | | | | | | |
| Component 3.1 | | | | | | | |
| 3.1.1 | 8f | | | | | | |
| 3.1.2 | 4c | | | | | | |
| 3.1.3 | 5e | | | | | | |
| Component 3.2 | | | | | | | |
| 3.2.1 | 7a | | | | | | |
| 3.2.2 | 3j | | | | | | |
| 3.2.3 | 4f | | | | | | |
| 3.2.4 | 3d | | | | | | |
| Component 3.3 | | | | | | | |
| 3.3.1 | 6d | | | | | | |
| 3.3.2 | 6a | | | | | | |
| 3.3.3 | 6d | | | | | | |
| 3.3.4 | 8b | | | | | | |
| Domain 4: Professionalism | | | | | | | |
| Component 4.1 | | | | | | | |
| 4.1.1 | 9o | | | | | | |
| 4.1.2 | 9l | | | | | | |
| 4.1.3 | 9o | | | | | | |

15.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

Data Analysis:

There were no completers for the 2018-2019 AY, therefore there is no data to report. Mentors, University Supervisors, and Secondary faculty will participate in professional develop focused on the FEE elements and will work to norm the tool and establish inter-rater reliability.

Plan for Continuous Improvement:

- Chemistry education faculty and secondary faculty will work to determine appropriate strategies for assessing learning and fostering higher order discussions.

- Methods courses will emphasize the expectations for student-led discussions in the classroom.

2019-2020:

2020-2021:

There were no completers during the 2020-2021 academic year and therefore no new data to report. The POP Cycle will be implemented for two formal observations during each semester of residency. Walk throughs will also be conducted to support areas for improvement identified in the FEE data for each student. Additionally, seminars and personalized coaching by mentors and site supervisors will support the growth of candidates during the residency semester to meet standards identified on the FEE rubric and to become better teachers.

2021-2022:

There were no completers in the 2021-2022 academic year with a concentration in Chemistry Education therefore no new data was reported.

All major assessments, including the field experience evaluation, are being realigned to the 2022 Danielson Framework for Teaching Model in preparation for the Fall 2024 CAEP accreditation visit therefore a new assessment will be implemented in Fall 2022.

2022-2023:

16 Assessment and Benchmark Teacher Candidate Work Sample

Assessment: The scoring scale for the Teacher Candidate Work Sample is: 1- Ineffective; 2- Effective: Emerging; 3- Effective: Proficient; 4- Highly Effective.

Benchmark: 80% of candidates will score a 3.00 or above on each of the elements on the Teacher Candidate Work Sample Rubric.

16.1 Data

2018-2019:

There were no completers in the 2018-2019 academic year and, therefore, no new data to report.

2019-2020:

There were no completers in the 2019-2020 academic year and, therefore, no new data to report.

2020-2021:

There were no completers in the 2020-2021 academic year and, therefore, no new data to report.

2021-2022:

There were no completers in the 2021-2022 academic year and, therefore, no new data to report.

Chemistry Education - Teacher Candidate Work Sample (data from EDUC 333 and EDUC 412):

| Criteria | | Fall 2022 N= | Spring 2023 N= | Fall 2023 N= | Spring 2024 N= | Fall 2024 N= | Spring 2025 N= |
|----------------------|------------------------|-----------------|-------------------|-----------------|-------------------|-----------------|-------------------|
| Choice of Assessment | Mean | | | | | | |
| | Range | | | | | | |
| | % Proficient or Higher | | | | | | |
| | Mean | | | | | | |

| | | | | | | | |
|--|------------------------|--|--|--|--|--|--|
| Pre-Assessment | Range | | | | | | |
| | % Proficient or Higher | | | | | | |
| Post-Assessment | Mean | | | | | | |
| | Range | | | | | | |
| | % Proficient or Higher | | | | | | |
| Alignment of Lesson Evidence | Mean | | | | | | |
| | Range | | | | | | |
| | % Proficient or Higher | | | | | | |
| Student Level of Mastery and Evaluation of Factors | Mean | | | | | | |
| | Range | | | | | | |
| | % Proficient or Higher | | | | | | |
| Data to Determine Patterns and Gaps | Mean | | | | | | |
| | Range | | | | | | |
| | % Proficient or Higher | | | | | | |
| Response to Interventions | Mean | | | | | | |
| | Range | | | | | | |
| | % Proficient or Higher | | | | | | |

16.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

There were no completers in the 2018-2019 AY, therefore, there is no new data to report.

Plan for Continuous Improvement:

The Teacher Candidate Work Sample is being replaced by the Teaching Cycle which provides specific expectations and increased rigor with scaffolded support to improve candidate abilities to evaluate student learning and plan for differentiated instruction.

2019-2020:

2020-2021:

There were no completers for this program in the 2020-2021 academic year and therefore no new data to report. The Teacher Candidate Work Sample has been revised and is now the Teaching Cycle Assessment. This assessment was piloted in the 2018-2019 academic year and was fully implemented into all programs and methods courses in the 2019-2020 academic year. This tool is used to provide useful data for diagnosing strengths and areas for improvement in the practices of our candidates as they work to move children. The rainbow chart will be reviewed and revised summer 2021 so that the Teaching Cycle components are introduced sequentially throughout the program.

2021-2022:

There were no completers in the 2021-2022 academic year with a concentration in Chemistry Education therefore no new data was reported.

All major assessments, including the teaching cycle, are being realigned to the 2022 Danielson Framework for Teaching Model in preparation for the Fall 2024 CAEP accreditation visit therefore a new assessment will be implemented in Fall 2022.

2022-2023:

17 Assessment and Benchmark Praxis Content and PLT Exam Data

Assessment 1: Praxis content exam is #5245 for Chemistry Education, Grades 7-12. This exam must be passed prior to student teaching. The passing score required by the state for 2017-2018 is 151.

Assessment 2: Praxis Principles of Learning and Teaching Exam is #5624 for Grades 7-12. The passing score required by the state for 2017-2018 is 157.

Benchmark 1: 90% of Chemistry Education majors will achieve a passing score on the Praxis Chemistry Education Exam (#5245) on the first attempt. Passing score set by the state is 151.

Benchmark 2: 80% of candidates will pass the Principles of Learning and Teaching, Grades 7-12 Praxis exam on the first attempt.

17.1 Data

2018-2019:

There were no completers in the 2018-2019 academic year and, therefore, no new data to report.

2019-2020:

There were no completers in the 2019-2020 academic year and, therefore, no new data to report.

2020-2021:

There were no completers in the 2020-2021 academic year and, therefore, no new data to report.

2021-2022:

There were no completers in the 2021-2022 academic year and, therefore, no new data to report.

Chemistry Education - Praxis Content #5245:

| | | Fall 2022 | Spring 2023 | Fall 2023 | Spring 2024 | Fall 2024 | Spring 2025 |
|---|-------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| #5245 Overall | Number | | | | | | |
| | Mean | | | | | | |
| | Range | | | | | | |
| | % Passed on 1st Attempt | | | | | | |
| #5245 Breakdown | Number | | | | | | |
| Basic Principles of Matter and Energy; Thermodynamics | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (14) | | | | | | |
| Atomic and Nuclear | Mean | | | | | | |
| | Range | | | | | | |

| Structure | Percentage Correct (12) | | | | | | |
|--|-------------------------|--|--|--|--|--|--|
| Nomenclature; Chemical Composition; Bonding and Structure | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (15) | | | | | | |
| Chemical Reactions; Periodicity | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (20) | | | | | | |
| Solutions and Solubility; Acid-Base Chemistry | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (15) | | | | | | |
| Scientific Inquiry and Social Perspectives of Science | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (12) | | | | | | |
| Scientific Procedures and Techniques | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (12) | | | | | | |

17.1.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

There were no completers for the 2018-2019 AY, therefore, there is no data to report.

Plan for Continuous Improvement:

- A faculty member in the Chemistry Education content area will take the Praxis content exam to determine appropriate topics for course content.
- Chemistry faculty will examine the coursework in the Chemistry Education program to determine where the topics indicated in the previous bullet are covered within the prescribed content courses.
- Based on courses above, faculty will determine the best time for candidates to take the Praxis Content Exam and include that recommendation in the advising process.

2019-2020:

2020-2021:

There were no completers during the 2020-2021 academic year and therefore, no new data to report.

A content faculty member should sit for the Praxis Content exam in the upcoming 2021-2022 academic year. This will provide insight into the types of questioning on the current exam and provide a glimpse into what topics need to be further addressed within the program. It is critical that candidates are not only introduced to the knowledge, but that it is also reviewed and reinforced throughout the program to ensure in depth understanding that can be transferred to their own students when serving as a teacher of record.

2021-2022:

There were no completers in the 2021-2022 academic year with a concentration in Chemistry Education therefore no new data was reported.

All EPAC faculty were asked to review curriculum to ensure alignment and coverage of topics within the Praxis content exam are present in the curriculum. Topics should be identified on syllabi to ensure that new faculty understand the importance of covering the materials within the coursework.

2022-2023:

17.2 Data

2018-2019:

There were no completers in the 2018-2019 academic year and, therefore, no new data to report.

2019-2020:

There were no completers in the 2019-2020 academic year and, therefore, no new data to report.

2020-2021:

There were no completers in the 2020-2021 academic year and, therefore, no new data to report.

2021-2022:

There were no completers in the 2021-2022 academic year and, therefore, no new data to report.

Chemistry Education - Praxis Content #5624:

| | | Fall 2022 | Spring 2023 | Fall 2023 | Spring 2024 | Fall 2024 | Spring 2025 |
|---|-------------------------|-----------|-------------|-----------|-------------|-----------|-------------|
| #5624 Overall | Number | | | | | | |
| | Mean | | | | | | |
| | Range | | | | | | |
| | % Passed on 1st Attempt | | | | | | |
| #5624 Breakdown | Number | | | | | | |
| Students as Learners | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (21) | | | | | | |
| Instructional Process | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (21) | | | | | | |
| Assessment | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (14) | | | | | | |
| Professional Development Leadership and Community | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage Correct (13) | | | | | | |
| Analysis of Instructional Scenarios | Mean | | | | | | |
| | Range | | | | | | |
| | Percentage | | | | | | |

| | | | | | | | | | |
|--|--------------|--|--|--|--|--|--|--|--|
| | Correct (16) | | | | | | | | |
|--|--------------|--|--|--|--|--|--|--|--|

17.2.1 Analysis of Data and Plan for Continuous Improvement

2018-2019:

There were no completers in the 2018-2019 AY, therefore, there is no data to report.

Plan for Continuous Improvement:

- Candidates will receive an 8-semester course sequence during advising indicating when to enroll in EDUC 203 and PSYC 261 (these two courses are content related to the Praxis PLT).
- Advisors will recommend candidates take the Praxis PLT once EDUC and PSYC 261 are successfully completed.
- Secondary education faculty will monitor pass rates of candidates in order to assure alignment and proper sequencing in the redesigned programs.

2019-2020:

2020-2021:

There were no completers during the 2020-2021 academic year. With the redesign of the program for teacher residency, particular coursework has been strategically determined to assist candidates on acquiring the knowledge needed for the exam. Candidates are advised to take the exam soon after completing PSYC 261 and EDUC 203 which according to sequence falls sophomore mid-year. Faculty will analyze secondary education program PLT data to determine trends and areas for improvement.

2021-2022:

There were no completers in the 2021-2022 academic year with a concentration in Chemistry Education therefore no new data was reported.

All course sequences are being re-evaluated for the 2023-2024 academic catalog to ensure proper alignment of content and that all required material is covered for candidates to perform well on the Principles of Learning and Teaching exam and in the P-12 classroom.

2022-2023:

End of report