



## Environmental and Chemical Sciences- CHPH [ECCH]

**Cycles included in this report:**  
Jun 1, 2021 to May 31, 2022

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## Program Name: Environmental and Chemical Sciences-CHPH [ECCH]

Reporting Cycle: Jun 1, 2021 to May 31, 2022

### 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

2017-2018:

The submitted research reports showed that the students used chemical instrumentation but in a limited way. For example, one of the important instruments NMR (Nuclear Magnetic Resonance) spectrometer was not available. In order to improve the situation, we have written grants to TASC as well as to BoR to purchase various instruments. We are continuously looking for ways to get more instruments to the department. This is the current situation and as well as the future plan.

2018-2019:

The instrumentation situation did not change in this reporting year however, there is some good news. The NMR machine had arrived and operations. Purchases of GC-MS, ICP-MS, HPLC and other instruments are underway. So the future of the instrumentation looks bright. With the help of increased instrumentation availability and the new faculty, we are planning to enhance the enrollment for the graduate program.

2019-2020:

2020-2021:

The program gained a graduate student who is helping with research interests of the department and hopefully will help recruit more students

2021-2022:

The program improved its recruiting efforts by going to gradfest and career expo on campus to help increase enrollment.

### 4 Program Highlights from the Reporting Year

2017-2018:

- We have managed to involve the majority of the graduates with thesis-option in the cutting edge research.
- Faculty (Dr. Douvris and Dr. Merchant) presented student-involved research findings in national (253rd ACS National Meeting, CA; Dr. Douvris, Autophagy in the American Alligator; Joint Meeting of Ichthyologists and Herpetologists, Austin, TX) and regional meetings.
- Faculty published nine peer-reviewed research papers.
- Faculty has written three book chapters.

2018-2019:

The students who graduated with thesis option did fairly well. One student, Mr. Francis Cadre, joined the Ph.D. program at the University of Idaho and Mr. Phenoix S-Hall accepted a temporary lecturer position at McNeese State University.

Several publications are in the pipeline from these two graduate students. Future plans includes increasing the enrollment and strengthening the curriculum.

2019-2020:

Program still being built back up. Several faculty continue to work on research and motivate students to come back and get a master's degree.

2020-2021:

Program starting to see mentored students going into the master's program.

2021-2022:

Program has seen continued mentorship from Dr. Vaughan with both graduate students and seen some recruiting events from the department and college level at career fairs hosted by the university. Ms. Amy Reed is especially doing well with presentations and has the potential to work on continued research with Dr. Vaughan and Dr. Merchant.

## 5 Program Mission

The chemistry concentration of the Master of Science in Environmental & Chemical Sciences program seeks to (a) provide students with advanced expertise in the theoretical and technical aspects of chemistry, (b) while exposing students to selected areas of expertise in Environmental Science, (c) promote (i) academic inquiry, (ii) the exchange of knowledge, and (iii) the advancement of knowledge through scientific research and/or other scholarly activities, (iv) development of communication skills (oral, verbal and technological), (d) prepare students for (i) immediate employment in scientific fields, (ii) entry into doctoral level programs or professional school (in medicine, dentistry, pharmacy, etc.), and (iii) careers in teaching, and (e) prepare students for the ethical and scientific issues they may face in the workplace.

## 6 Institutional Mission Reference

The program's mission closely parallels that of the University in the provision of educational opportunities to students seeking a M.S. degree in Environmental & Chemical Sciences with a concentration in chemistry. The degree is offered in conjunction with the School of Agricultural Sciences. We conduct faculty-led research leading to publications in peer-reviewed journals and presentations at regional, national and international scientific meetings. We also interface many of our research efforts with faculty from other departments on campus, with faculty from other universities across the state and around the world, and with state and local industries. Rigorous and versatile programs of study and research together with local Internships, encouragement, and support for quality student opportunities (pre- and post-graduation) support core values of academic excellence, student success, and University-community alliances.

## 7 Assessment and Benchmark CHEM 526, 610, and/or 631 Project Reports

Assessment: CHEM 526, 610, and/or 631 project reports (whichever course is offered that academic year). The assessment of research reports had been done by the respective graduate faculty at the end of each semester. It is a continuous process until the student is ready for the final report. The final reports are examined by a committee, and the student presents a seminar on the research findings and faces questions both on the research topic as well as general chemical knowledge. Once a student fulfills all these requirements, he or she is deemed fit to receive the degree.

Benchmark: Will be established after sufficient data is collected.

### Outcome Links

#### Experimental Chemistry [Program]

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

### 7.1 Data

Academic Year	Students scoring ____% or higher					
	CHEM 526		CHEM 610		CHEM 631	
	#	%	#	%	#	%
2018-2019	0	—	0	—	0	—
2019-2020	0	—	0	—	0	—
2020-2021	0	—	0	—	0	—

2021-2022	0	—	0	—	0	—
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### 7.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:

Make the students exposed to the current trends (recent research literature) in the corresponding courses.

2018-2019:

No student has taken these courses.

2019-2020:

None of the courses have been offered. Need to re-evaluate graduate program benchmarks.

2020-2021:

None of the courses offered. The program currently only has 2 students in it.

2021-2022:

The courses weren't offered during this cycle, however 100% of students enrolled in CHEM 613 and 641 scored 80% or higher on all project reports. Data for CHEM 610 will be collected after Fall 2022.

## 8 Assessment and Benchmark CHEM 526, 610, and/or 631 Presentations

Assessment: CHEM 526, 610, and/or 631 presentation scores (whichever course is offered that academic year).

Benchmark: Will be established after three years of data collection.

### Outcome Links

#### Communication [Program]

Graduates express ideas effectively through oral, written, and/or technological communications in academic and professional environments.

### 8.1 Data

Academic Year	Students scoring ____% or higher					
	CHEM 526		CHEM 610		CHEM 631	
	#	%	#	%	#	%
2018-2019	0	—	0	—	0	—
2019-2020	0	—	0	—	0	—
2020-2021	0	—	0	—	0	—
2021-2022	0	—	0	—	0	—

### 8.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:

2018-2019:

These courses have not been offered this year, due to the lack of enough graduate faculty.

2019-2020:

The courses have not been offered. This is due to the program enrollment being at 3 students.

2020-2021:

The courses have not been offered. This is due to the program enrollment being at 2 students. Need to re-evaluate benchmarks.

2021-2022:

The courses weren't offered during this cycle, however 100% of the students enrolled in CHEM 613 and 641 scored above 80% on all presentations. Data for CHEM 610 will be compiled after Fall 2022 semester.

## 9 Assessment and Benchmark CHEM 690 Report Scores

Assessment: CHEM 690 report on research project including experimental and literature components. We require the students to participate in presenting their research findings at departmental, local, regional, and national symposiums.

Benchmark: 80% of program graduates will score 80% or higher on their submitted research reports each semester.

### Outcome Links

#### Chemical Principles [Program]

Graduates demonstrate competence in advanced chemical principles and techniques.

## 9.1 Data

2017-2018:

All the students met the above criteria.

Academic Year	Students that met or exceeded 80%	
	#	%
2018-2019	1/1	100%
2019-2020	1/1*	100%
2020-2021	1/1*	100%
2021-2022	—	—

\* No presentations done due to the COVID-19 pandemic.

### 9.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:

To expose the students as much as possible in chemical methods, instrumentation, and research methodology, and then make them ready for the ever-changing workforce.

2018-2019:

Only one student graduated, Mr. Cadree Francis. He completed all the requirements and met the benchmark.

The plan is to recruit more graduate students.

2019-2020:

The benchmark was met, however due to the pandemic presentations were not allowed.

2020-2021:

The benchmark was met, however due to the pandemic presentations were not allowed.

2021-2022:

The benchmark wasn't met because the course wasn't offered and will not be offered until Spring 2023.

## 10 Assessment and Benchmark CHEM 695 Seminar

Assessment: Seminar on research project will demonstrate students' communication skills and knowledge of chemical principles. All the students must present their research findings to the faculty of the department in the form of a seminar. In that seminar, the students will be asked several questions to defend their research. Faculty assess the quality of the answers and research findings and make suggestions for further improvement.

Benchmark: 80% of program graduates will score 80% or higher on their written critiques of seminar speakers in CHEM 695 each semester.

### Outcome Links

#### Chemical Principles [Program]

Graduates demonstrate competence in advanced chemical principles and techniques.

#### Communication [Program]

Graduates express ideas effectively through oral, written, and/or technological communications in academic and professional environments.

## 10.1 Data

2017-2018:

All the students met the above criteria.

Academic Year	Students that met or exceeded 80%	
	#	%
2018-2019	0	0
2019-2020	1/1*	100%
2020-2021	1/1*	100%
2021-2022	—	—

\*Layout and requirements adjusted due to the COVID-19 pandemic and aftermath of hurricanes.

### 10.1.1 Analysis of Data and Plan for Continuous Improvement

2017-2018:

To invite outside speakers who are experts in the field.

2018-2019:

No graduate student enrolled in the seminar.

The plan is to enroll more students for the graduate program.

2019-2020:

The seminar had to make adjustments due the COVID-19 pandemic.

2020-2021:

The seminar had to make adjustments due the COVID-19 pandemic.

2021-2022:

The benchmark wasn't met because the course wasn't offered this cycle. It will be offered in Fall 2022.

End of report