ACADEMIC PROGRAM REVIEW:

COLLEGE OF ARTS AND SCIENCES

5-YEAR REVIEW: 2019-2023

Lake Superior State University

Contents

5-Year Academic Program Review 2023

Due to the Dean's Office by October 27, 2023

This reporting form was introduced in FY2020; numerical data prior to FY2020 may be excluded.

BIOLOGY

Submitted by: *Thu Nguyen*
Date: *8/31/2023*
School: *School of Science and Medicine*
Academic Program(s): *Biology*

Annual Program Data Reporting

The following table summarizes data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022	2022-2023
Enrollments	Freshmen: *16* Sophomores: *16* Juniors: *20* Seniors: *23*	Freshmen: *11* Sophomores: *16* Juniors: *10* Seniors: *36*	Freshmen: *12* Sophomores: *21* Juniors: *18* Seniors: *29*	Freshmen: *11* Sophomores: *21* Juniors: *19* Seniors: *24*
Retention as of fall 2023	Fr to So: *25* So to Jun: *21* Jun to Sen: *13*	Fr to So: *5* So to Jun: *6* Jun to Sen: *17*	Fr to So: *26* So to Jun: *16* Jun to Sen: *16*	Fr to So: *5* So to Jun: *17* Jun to Sen: *17*
Degrees Conferred	12	17	17	9

Graduate Placement Data:

Below is a summary of graduate placement data based on the available graduate survey data or communication from graduates.

	2019-2020	2020-2021	2021-2022	2022-2023
Graduate/professional programs	2 PhD program 2 MS program 1 Veterinary school	2 Physician Asst. prog. 2 medical school 2 MS program 1 PhD program	2 medical school 1 Physician Asst. prog. 1 PhD program	1 Physician Asst. prog. 1 medical school
Employment in the field of study	2	3		

Students majoring in the various concentrations of biology have been admitted to medical

school, and physicians assistant school. Some students have gone on to masters or doctoral graduate programs. As most of this information is collected via the post-graduation survey, the reporting numbers are low. Additionally, some students not having desirable employment in their field of study may be discouraged from completing the survey. In order to have a higher response rate, it may be necessary to employ a departmental exit survey upon graduation.

Although students are encouraged to reach out to faculty when their plans change, few do so.

High Impact Practices:

The biology department engages students in the high impact practices via the seminar series for freshmen to seniors.

- First-year seminar- introduces students to college life, the university, and senior research.
- Sophomore seminar – introduces students to reading/interpreting peer-reviewed literature and potential research topics. They critique junior and senior presentations for academically appropriate content and quality. By the end of sophomore seminar, students will have chosen a faculty research mentor.
- Junior seminar – students work closely with a mentor to design a research project. Students will write and present a research proposal. By the end of junior seminar, they will be prepared to carry out senior thesis research.
- Senior Seminar – students perform the research that was proposed in junior seminar. Data and results are collected and interpreted. This is the capstone course in which students present a poster of their research at the university wide symposium, give an oral presentation to peers and faculty, write a thesis on their research findings in the style of a scientific manuscript.

Summary of Annual Assessment Updates

The following table summarizes assessment data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022
Program Learning Outcome Findings	Target criteria met in all academic outcomes. • Professionalism outcome met. • Post-graduation success outcomes not met, but the target criterion for these outcomes is aspirational rather than expected.	Target criteria met in most of the academic outcomes, except in Fall 2020 a lower-than desired percentage of students met the "scientific investigation" outcome. • The professionalism outcome was met according to one of the two assessment methods, but not the other one. • Post-graduation success outcomes not met, but	Two of the three academic outcomes failed to meet the target criterion; the third outcome was partially met. This is due to a small number of low-scoring students in that year's class. • The professionalism outcome was met according to one of the assessment methods, but not the other one.

		the target criterion for these outcomes is aspirational.	The post-graduation success outcomes were not met according to the officially-recorded criteria, but the criteria are very aspirational.

Summary of decisions, recommendations, and/or improvements concerning the future of the program

Decisions and recommendations should include budgets, additions of new courses or concentrations, discontinuation or suspension of the program, etc.

2019-2020

- The program was extensively reviewed, resulting in development and proposal of the revisions which were implemented the following year (described below).

2020-2021

- The Biology program was extensively revised according to a "One Health" model, creating two new concentrations (Food and Ecology and Animal Biology), creating several new courses, and revising several existing courses. The course revisions included the reformatting of the final two courses in the seminar series (BIOL 399 and BIOL 499, junior seminar and senior seminar, respectively) so that each faculty member serves as the official course instructor for his own mentees, instead of having a single instructor for each course.

2021-2022

- The focus was on optimizing the new seminar structure and refining our assessment methods and criteria.

2022-2023

- Currently optimization of the new seminar structure is on going and refinement is being performed for assessment methods and criteria.

Rationale or justification for decisions made for the future of the program

- The "One health" (https://www.cdc.gov/onehealth/index.html) paradigm was adopted as an umbrella concept that would meet the objective of all of the biology concentrations
    - This program is currently adopted by veterinary medicine and was introduced by an alumni student
    - This is a transdisciplinary approach weaving human, animal, environmental health. All of these areas work together and balance each other.
    - The philosophy of "One health" directs students to the importance and connectivity of each area of study

Long-range future goals or plans for the program

- Grow enrollment by marketing the strength of the program and its concentrations
- Recruit and retain qualified faculty to support learning and research
- Obtain resources for classroom and student research
- In order to bolster student success, become more familiar with required courses and knowledge from course content. This would allow faculty to emphasize/deemphasize content for follow-up courses in the sequence.
- Re-evaluate teaching/learning strategies post-covid

Quality, Resources, and Support for the program

Summarize Strengths and Weaknesses in each area.

Student Learning:

Strengths

- The 2021-2022 academic program outcomes took a dip, but overall (considering all years, including 2022-2023), our data suggest we do a very good job teaching our students to use scientific literature, carry out scientific investigation, and communicate scientific findings.

Weaknesses

- Some program outcomes were not met, and were determined to be aspirational instead of expected

Graduate Success:

We all can tell spectacular success stories of individual students. We wish we could boast that 100% of our graduates enjoyed that kind of success, but we can't. This is partly because getting data on graduate outcomes has been an ongoing challenge, and partly because not all of our students actually succeed in finding employment or further education in their chosen life pathways.

Academic Programming and Rogor:

Strengths

- Students are prepared for the medical field and graduate school (as evidenced by admission/completion of medical school/graduate degrees)
- New concentrations were established as options for students to continue career paths with or without pursuing postgraduate studies

Faculty Qualifications, Staffing, and Effectiveness of Instruction:

Strengths

- Full-time faculty all have terminal degrees (PhD/MD) in area of instruction/expertise

Weaknesses

- Not enough staffing/faculty to support effective instruction

Assessment Practices:

Strengths

- Robust assessment of program goals is performed
- Reassessment of program content is ongoing

Weaknesses

- Some program outcomes need to be reevaluated

Resources / Facilities:

Strengths

- Recent reallocation of space has created additional student/faculty research space
- Acquisition of New instrumentation for molecular biology
- New scanning electron microscope, spectroscopy and microscope lab
- Aquaponics facility
- space for student aquaculture research

Weaknesses

- Hematology/histology and other laboratory equipment could modernized

5-Year Academic Program Review 2023

Due to the Dean's Office by October 27, 2023

This reporting form was introduced in FY2020; numerical data prior to FY2020 may be excluded.

CHEMISTRY

Submitted by: *Thu Nguyen*
Date: *8/31/2023*
School: *School of Science and Medicine*
Academic Program(s): *This report summarizes Chemistry, Biochemistry, Forensic Chemistry, Cannabis chemistry and integrated science*

Annual Program Data Reporting

The following table summarizes data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022	2022-2023
Enrollments	Freshmen: *16* Sophomores: *20* Seniors: *30*	Freshmen: *33* Sophomores: *16* Juniors: *12* Seniors: *36*	Freshmen: *34* Sophomores: *23* Juniors: *17* Seniors: *24*	Freshmen: *29* Sophomores: *24* Juniors: *23* Seniors: *22*
Retention as of fall 2023	Fr to So: *7* So to Jun: *10* Jun to Sen: *15*	Fr to So: *19* So to Jun: *8* Jun to Sen: *11*	Fr to So: *17* So to Jun: *18* Jun to Sen: *13*	Fr to So: *17* So to Jun: *15* Jun to Sen: *19*
Degrees Conferred	21	37 (includes A.S., Cert)	25 (includes A.S., Cert)	26 (includes A.S., Cert)

Graduate Placement Data:

Below is a summary of graduate placement data based on the available graduate survey data or communication from graduates.

	2019-2020	2020-2021	2021-2022	2022-2023
Graduate/professional programs	1 MS program 2 PhD program 1 Pharmacy school 2 Medical school	1 Pathology Asst. prog. 1 MS program 2 PhD program	2 PhD program 1 MS program	2 PhD program
Employment in the field of study	6	12	9	2

High Impact Practices:

The chemistry department engages students in the high impact practices via the seminar series for freshmen to seniors.

- First-year seminar- introduces students to college life, the university, and the senior research process.
- Sophomore seminar – introduces students to reading/interpreting peer-reviewed literature and potential research topics.
- Junior seminar – students are introduced to various faculty members' research. They choose a research mentor to develop a research project. Using scientific peer-reviewed literature, students prepare a formal proposal for their senior research project, which is presented to faculty and peers.
- Senior research – students perform the research that was proposed in junior seminar. Data and results are collected and interpreted. Research may be done in the laboratory, at a research experience for undergraduates program (or similar), or a literature review.
- Senior Seminar – This is the capstone course in which students present a poster of their research at the university wide symposium, give an oral presentation to peers and faculty, write a thesis on their research findings in the style of a scientific manuscript.

Summary of Annual Assessment Updates

The following table summarizes assessment data from the Annual Update Reports conducted for this program:

Students were assessed in 3 areas:

- Knowledge and skills- proficiency in course level outcomes by average test scores
- Employability/readiness for Graduate/professional study – senior satisfaction survey on feelings of how well LSSU prepared students for their work.
- Scholarship – students developed and completed a research project

	2019-2020	2020-2021	2021-2022
Program Learning Outcome Findings	• Knowledge and skills- Average scores was >60%. Outcome was met • Employability – 83% of students felt satisfactorily or well prepared for post graduation (67% response rate) • Scholarship- 17	• Knowledge and skills- Average scores was >60%. Outcome was met • Employability – 66% of students felt satisfactorily or well prepared for post graduation (31% response rate) • Scholarship- 19	• Knowledge and skills- Average scores was >60%. Outcome was met • Employability – 88% of students felt satisfactorily or well prepared for post graduation (100% response rate) • Scholarship – 17

	students completed and presented a research project, averaging over 78% on each final product.	students completed and presented a research project, averaging over 85% on each final product.	students completed and presented a research project, averaging over 80% on each final product.

Summary of decisions, recommendations, and/or improvements concerning the future of the program

Decisions and recommendations should include budgets, additions of new courses or concentrations, discontinuation or suspension of the program, etc.

2019-2020

- Presentations of posters and oral presentations were disrupted by covid. Students recorded presentations.
- Students could benefit from practice presentations more. Faculty discussed introducing technical rehearsals for students

2020-2021

- In order to improve student performance in biochemistry, changes were made to prerequisites for biochemistry to include BOTH semesters of organic chemistry.
- Technical rehearsals was implemented for students, where they presented to a few faculty members. They were given feedback and areas of improvement. Students generally appreciated having this opportunity.

2021-2022

- Based on the number of students meeting the target outcome goal in Knowledge and skills, the target outcome will be raised to 68%
- Having an exit survey at the end of the course (instead of 6-12 month post graduate survey) increase response rate to 100% of graduating seniors.
- To improve in the area of scholarship, two new courses were added to the chemistry seminar series, designed for freshmen and sophomores, respectively. This was done to improve students' data analysis skills.

2022-2023

- As the number of students in the cannabis program increased, faculty were stretched thin for advising research projects. To offer a better research experience for students, the requirement of senior research was removed. Students have the option to either do a research project, or take an additional chemistry course.
- The forensics degree was updated to include additional courses in microscopy (following the purchase of a scanning electron microscope through an NSF grant), and genetics.
- The biochemistry degree was changed to include more biology courses to match surrounding universities. Students will now need to take an additional 7 credits in biology courses, in addition to microbiology.
- Based on enrollment of chemistry students, the chemistry degree was changed to allow students to take 14 credits of upper level chemistry courses, instead of

requiring specialized upper level courses that are not offered regularly.

Rationale or justification for decisions made for the future of the program

Decision making was driven by faculty discussions, student learning outcomes, and student feedback.

- The decision to remove the research requirement was based on:
  - Limited number of faculty to advise research projects
  - Students not interested in graduate school were uninterested and unmotivated to plan and execute a research project. If their primary goal was to gain employment, having them take an additional course with lab accomplished the additional lab experience.
- The biochemistry degree added courses in biology to support the degree. A survey of surrounding universities had more biology courses (25-26 credits), while LSSU's biochemistry degree had only 15-16 credits of biology. The biochemistry degree now includes 16 credits of required courses with 7 additional elective credits. The addition of requiring microbiology will allow a greater variety of upper level electives.
- The addition of the courses to the forensic degree were intended to strengthen the degree. Genetics was added as this is an increasingly important area to forensics. The purchase of the Scanning electron microscope will give students additional experience in this area. A microscopy certificate is also now available to students across campus.
- Changes in the chemistry degree were based on:
  - Low enrollment in upper level courses
  - Cancellation of classes by administration for courses required for graduation even with 5 students
  - Faculty availability

Long-range future goals or plans for the program

- Increase student enrollment to allow for stabilization of course offerings
- Recruit and retain additional qualified faculty to support department enrollment and research goals
- Develop new academic programing related to polymer chemistry, natural products, and biomedical sciences.

Quality, Resources, and Support for the program

Summarize Strengths and Weaknesses in each area.

Student Learning:

Strengths

- Through laboratory and research experiences, students use advanced chemical instrumentation.
- Students are afforded opportunities to perform cutting edge research with faculty
- Proactive students can benefit greatly from critical thinking, project planning, problem solving when choosing to undertake research/lab employment

Weaknesses

- Students struggle with mathematical proficiency, often hindering the presentation of chemical concepts.
- Additionally, due to math proficiency, some course content is either not covered, or skimmed over
- There has been an increase in the last several years of student apathy towards learning

Graduate Success:

Strengths

- Students with high use rates of advanced chemical instrumentation through laboratory and research experiences have had success with finding employment related to their field
- Several students each year apply to, and are accepted into MS and PhD programs in the areas of science, including: chemistry, forensic science, toxicology, medicinal chemistry, cellular and molecular biology
- Students applying to pharmacy school have a high (>90%) success rate of acceptance

Weaknesses

- Evaluation of graduate success is based on arbitrary criteria that do not take into account what individual students define as success.

Academic Programming and Rigor:

Strengths

- Students have the opportunity to take both introductory and advanced courses in multiple disciplines of chemistry.
- Students utilize advanced chemical instrumentation in laboratory and research experiences
- Chemistry programs offer studies in various subject areas including: chemistry, biochemistry, forensic science, and cannabis chemistry

Weaknesses

- Student preparedness in mathematics places stress on maintaining rigor in the discipline topic areas.
- Lack of clear academic administrative leadership hinders curriculum revision and development.
- Lack of marketing discourages development of new programs that may fail due to low enrollment numbers

Faculty Qualifications, Staffing, and Effectiveness of Instruction:

Strengths

- Instructional effectiveness is evaluated through a rigorous process defined in the faculty contract.

- Faculty qualifications are evaluated during the robust hiring process. Official documentation is maintained through contractually defined processes.
- >85% of existing faculty have a terminal degree and are teaching focused
- Faculty attend workshops and educational conferences to increase student engagement.
- Faculty implement varied teaching styles (from traditional lecture) including flipped classroom, standards based grading, etc.
- In-house laboratory manuals were written for general and organic chemistry to gear towards learning outcomes for LSSU students

Weaknesses

- Faculty research output and instructional use of departmental instrumentation is hindered due to lack of technical staff.
- Faculty turnover and slow administrative response to departures creates situations where faculty qualification requirements are made flexible to ensure course offerings are maintained.
- Lack of staffing creates underprepared or incorrectly prepared reagents/supplies for teaching laboratory experiments. Undergraduate student workers are primarily responsible for preparing these.

Assessment Practices:

Strengths

- Robust assessment is occurring on regular intervals at multiple levels
- Current assessment activities are being utilized to drive program revision.

Weaknesses

- Faculty turnover is limiting the continuity and consistency of assessment over repeated course offerings.

Resources / Facilities:

Strengths

- State of the art/modern instrumentation that students can utilize.
    - Some of these they work on independently and also learn how to troubleshoot
-

Weaknesses

- Not enough staffing for facilities
- Limited lab space for individual faculty research
- Lack of financial resources and support do not allow for regular maintenance of instrumentation and equipment
- Lack of administrative continuity and support has hindered the development and implementation of a plan for maintaining departmental facilities.

5-Year Academic Program Review 2023

Due to the Dean's Office and Vice Provost by November 27, 2023

This reporting form was introduced in FY2020; numerical data prior to FY2020 may be excluded.

ENVIRONMENTAL SCIENCE

Submitted by: *Steven Johnson and Paul Kelso*
Date: *10/26/2023*
School: *College of Science and the Environment*
Academic Program(s): *Environmental Science*

Annual Program Data Reporting

The following table summarizes data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022	2022-2023
Enrollments	Prior to 2022, program enrollment data was reported as:	Freshmen: *3* Sophomores: *1* Juniors: *5* Seniors: *11*	Freshmen: *3* Sophomores: *8* Juniors: *8* Seniors: *13*	Freshmen: *3* Sophomores: *10* Juniors: *8* Seniors: *14*
Retention as of fall 2023	Prior to 2022, program retention data was reported as:	Freshmen: *1* Sophomores: *1* Juniors: *5* Seniors: *5*	Freshmen: *5* Sophomores: *2* Juniors: *4*	Freshmen: *8* Sophomores: *5* Juniors: *8*
Degrees Conferred		4	6	6

Graduate Placement Data:

Prior to 2022, program graduate placement data was reported as n/a. No survey respondents.
For 2022-2023, program graduate placement data was reported as n/a. No survey respondents.

High Impact Practices:

Beginning in 2017, the Environmental Science program (implemented/improved/changed) the high impact practice (HIP) of CURE based undergraduate research. Results of this HIP were collected in 2018, 2019, & 2022, and analyzed by D. Wright. In 2020, faculty determined that CURE based coursework had a significant impact on students' development of research skills, and the ability to successfully complete independent projects with appropriate faculty guidance. In 2021, additional upper-level courses were converted to CURE based labs, which now encompass both water quality and atmospheric deposition based projects. These successes made significant contributions to National

Science Foundation Major Research Instrumentation awards in successive funding cycles, resulting in the acquisition of a scanning electron microscope with automated particle analysis capabilities (Atmospheric/soil/sediment characterization) and a micro x-ray fluorescence spectrometer (element bioaccumulation), which will be integrated into these courses, and should significant impact student learning and lead to increased research skills.

Summary of Annual Assessment Updates

The following table summarizes assessment data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022
Program Learning Outcome Findings	**Overall, students achieved program learning outcomes at a high level, but lack of dedicated space hinders our ability to expand successful CURE based labs**	Overall, students achieved program learning outcomes at a high level. Dean Johnson assigned a teaching lab (CRW 258), allowing expansion of CURE labs. Curriculum adjustments were discussed based on most common career outcomes and evolving job skill requirements.	CURE labs have further improved student research/practical project skills. These team based experiences should be a high priority for further expansion in the program. The positive impact of CURE experiences has exceeded that of our traditional senior projects which are extremely resource intensive, suggesting we should re-examine the senior project curriculum. Further, student career readiness may benefit from some curriculum adjustments (see report)

Summary of decisions, recommendations, and/or improvements concerning the future of the program

Decisions and recommendations should include budgets, additions of new courses or concentrations, discontinuation or suspension of the program, etc.

2019-2020 Faculty recommended the Dean assign dedicated teaching/undergraduate research space, and acquire some new equipment

2020-2021 Faculty recommended the Dean purchase some equipment to facilitate CURE coursework

2021-2022 Faculty recommended the Dean purchase some equipment to facilitate CURE coursework. Curriculum revision was discussed extensively but final recommendations were not made.

2022-2023 Faculty recommended the Dean purchase some equipment to facilitate CURE coursework. Curriculum revision recommendations were made – see report.

Rationale or justification for decisions made for the future of the program

Recommendations to the Dean for dedicated program space and new equipment were fulfilled. Curriculum recommendations were made to be presented to the curriculum committee in AY23-24 based on analysis of evolving career opportunities, new instrumentation, and growing program enrollment. While we do not have a formal advisory committee, these proposals were discussed with professionals in environmental health agencies, MiEGLE, US-EPA, consulting firms, and other agency personnel.

Long-range future goals or plans for the program

Environmental Science has seen growth in program enrollment, which has included FTIC freshman, transfer students, and internal major changes. We believe that we can readily accommodate 40-45 students in the program with existing faculty and resources. Thus, further modest enrollment growth is a continued priority.

Quality, Resources, and Support for the program

Current instrumentation and facilities are excellent. All affiliated faculty have at least some research space, and a combination of University investment and successful grant writing have resulted in the program having arguably the best analytical capabilities of any PUI in the US based on a survey of the top 50 ranked liberal arts as well as PUI regional publics (conducted summer 2023). However, we have identified three additional instrumentation needs: Field portable XRF, a powder X-Ray Diffractometer (XRD), and a sediment grain size analyzer. Budgetary constraint likely mean that additional grant writing will be necessary to meet these needs. Program faculty currently have ~1.5 million in extramural research funding, and all faculty are actively publishing research (often including LSSU undergraduate co-authors). A previous weakness was in climate expertise, but the recent hire of Dr. P Nalaka Ranasinghage has addressed this weakness – he set up his research lab (shared with P. Kelso) in F23 and is already recruiting students. Drs. Wright, Kandel, and Ranasinghage all presented research at the American Geophysical Union Fall Meeting in F23, with 3 LSSU Environmental Science students as authors, two of which were the presenting author.

Student Learning: Evidence of student learning (course assessment outcomes and program level assessment) continues to indicate a high level of achievement.

Graduate Success: Faculty survey indicated 100% employment/graduate school admission of graduates that could be located. The most common employment for graduates was in Environmental Health (county and state agencies). University survey response was poor.

Academic Programming and Rigor: Upper level coursework addresses major career areas and

graduate school preparation.

Faculty Qualifications, Staffing, and Effectiveness of Instruction: 100% of program faculty have a terminal degree in a relevant field (Ph.D.). All faculty have active research programs. Drs. Wright and Kandel have current research funding, and Dr. Ranasinghage (New in F23) has set up his lab and has begun developing funding proposals. Current staffing is adequate to cover teaching loads, with the exception of Dr. Wright's sabbatical in 24-25AY, for which there is an active search.

Assessment Practices: Program assessment is robust (see Neuventive/Tracdat reports).

Resources / Facilities: Resources and facilities are currently adequate. Instrumentation is excellent, despite some additional needs to facilitate new research directions. Strategies to acquire needed research instrumentation are under development by program faculty. Dean Johnson's external fundraising has been of significant assistance in supporting facilities and instrumentation. Colleagues and research collaborators in Chemistry and Biology have similarly been instrumental in our recent increase in grant writing success. The major resource deficiency is the lack of program specific marketing (common to most LSSU programs), but a notable improvement is social media marketing is encouraging.

Wright Lab: https://derekwrightlssu.com/

MASC Lab: https://sites.google.com/lssu.edu/masclab/home

EMBL: https://sites.google.com/lssu.edu/embl/home

5-Year Academic Program Review 2023

Due to the Dean's Office and Vice Provost by November 27, 2023

This reporting form was introduced in FY2020; numerical data prior to FY2020 may be excluded.

GEOLOGY

Submitted by: *Steven Johnson and Paul Kelso*
Date: *10/26/2023*
School: *College of Science and the Environment*
Academic Program(s): *Geology*

Annual Program Data Reporting

The following table summarizes data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022	2022-2023
Enrollments	Freshmen: Sophomores: Juniors: Seniors:	Freshmen: *3* Sophomores: *5* Juniors: *5* Seniors: *10*	Freshmen: *2* Sophomores: *1* Juniors: *1* Seniors: *9*	Freshmen: *3* Sophomores: *2* Juniors: *7* Seniors: *9*
Retention as of fall 2023	Freshmen: Sophomores: Juniors: Seniors, continuing:	Freshmen: *3* Sophomores: *4* Juniors: *4* Seniors, continuing: *6*	Freshmen: *2* Sophomores: *2* Juniors: *5*	Freshmen: *4* Sophomores: *5* Juniors: *10*
Degrees Conferred		4	6	4

Graduate Placement Data:

2023 – 100% of graduates accepted to graduate school
2022 – 100% of graduates who applied for jobs were employed in the field – 1 unknown
2021 – 50% accepted to graduate school, 50% employed in field – 1 unknown
2020 – 33% accepted to graduate school, 67% employed in field – 3 unknown
2019 – 43% accepted to graduate school, 57% employed in field – 3 unknown

High Impact Practices:

The geology program engages students through high impact practice (HIP) of such as:

- Freshman seminar – student collect analyze and interpret geology data, reading/interpreting peer-reviewed literature and undertake projects related to scientific ethics. Freshman meet and

work with other geology and environmental science freshman students developing connections and community with peers and faculty.

- Collaborative projects – student work with partners or small groups on projects in Freshman, Sophomore, Junior and Senior level classes. Students work with different team members on different projects to learn how to work effectively on a team with individuals who have different strengths, experiences and backgrounds.
- research experiences – students complete in-class and/or independent research experience where they have geoscience questions, they collection information/data to address the problem, analyze/synthesize/interpret the data, and communicate results written and/or orally.
- capstone courses – Students complete capstone courses were they apply knowledge and skills from previous courses to address geoscience questions. Students synthesize the data they collect with their prior knowledge to interpret complex geologic problems to present their results and interpretations as geologic maps, geologic cross sections, and/or written or orally or both.

Summary of Annual Assessment Updates

The following table summarizes assessment data from the Annual Update Reports conducted for this program:

	2020-2021	2021-2022	2022-2023
Program Learning Outcome Findings	Knowledge and skills – 91% of students received a 70% or better on final GEOL431 project which was an integrated field / lab / team project with a final report and oral presentation Employability – 33% LSSU geology graduates are attending graduate school. 100% of other graduates who have remained in contact accepted positions within 6 months of graduations Scholarship - 100% of geology graduates participated in course related field, laboratory and/or literature based research projects 71% of geology graduates participated in independent projects	Knowledge and skills – GEOL468 90% of students received >70% on Appalachian geology field guide synthesis project Employability – 100% of graduates had were employed within 6 months of graduation Scholarship - 100% of geology graduates participated in course related field, laboratory and/or literature based research projects, 75% of geology graduates participated in independent	Knowledge and skills - GEOL480 Final projects 91% of students received a 70% or better Employability – 100% geology graduates accepted to graduate school Scholarship - 100% of geology graduates participated in course related field, laboratory and/or literature based research projects 100% of geology graduates participated in independent research projects and presented results at Geological Society of America North Central section meeting.

Summary of decisions, recommendations, and/or improvements concerning the future of the program

Decisions and recommendations should include budgets, additions of new courses or concentrations, discontinuation or suspension of the program, etc.

2019-2020

- New Data Science B.S. degree with Geosystems Modeling concentration created in

collaboration with computer science program to leverage strength of geology and computer science programs
- Discussed developing a concentration within geology
- Decreased course offerings and course credits in geology due cut of qualified faculty
- Recommend that student course and program fees returned to program to support students

2020-2021
- Created new water and climate concentration within .B.S. geology program in response to student and national interest in climate change and water resources.
- Summer field course canceled due to covid as were most other geologic field excursions. This decreased students ability to undertake field studies and interpret and synthesize data collected. Recommend reinstating geologic field studies as soon as possible.
- Recommend that student course and program fees returned to program to support students

2021-2022
- Summer field courses again canceled due to covid. This decreased students ability to undertake field studies and interpret and synthesize data collected. Recommend reinstating geologic field studies as soon as possible.
- Recommend that student course and program fees returned to program to support students
- Recommend hiring new faculty with background in climate, environmental and sedimentary processes to support core courses and programs in Geology and Environmental Science

2022-2023
- Summer field courses were offered allowing students to develop field skills, collect data and synthesize results to address geoscience questions.
- Recommend that student course and program fees returned to program to support students. LSSU stated it will return a larger portion of student fees next year. Transparency is an issue as is accounting for fees for last decade which students paid but were not spent for expenditures related to program courses and equipment.
- Successful search conducted for faculty with background in climate, environmental and sedimentary processes to support core courses and programs in Geology and Environmental Science, new faculty will start Fall 2023

Rationale or justification for decisions made for the future of the program

Decisions made based on discussions of geology and environmental science faculty, current students, alumni, and individuals in geoscience community.
- Created new geoscience related degree concentration in weather and climate and geosystems modeling to prepare graduates for new directions and fields of growth within the geosciences.
- Proposed and hired a new faculty with an expertise in climate, environmental and sedimentary processes because no LSSU faculty with the background to teach core courses and advise students in some of these disciplines which are critical for the success geological and environmental sciences students and society

Long-range future goals or plans for the program

- Increase geology program marketing and student recruitment

- Increase student enrollment
- Retain qualified faculty to support program enrollment, support student research and help the geology program grow and thrive
- Increase access to modern equipment which includes purchases of new equipment and computers for geology courses and student/faculty research

Quality, Resources, and Support for the program

Summarize Strengths and Weaknesses in each area.

Student Learning:

Strengths

- Students successful completed multiple high impact practices such as freshman seminar, Collaborative projects, research experiences, communication intensive courses and capstone experiences.

Weaknesses

- During 2020-2022 many geologic field experiences were not possible due to the pandemic related travel restrictions. This including not offering the capstone field course. These students participated in additional individual research experiences. The capstone summer geology field course was reinstated in 2023 for all geology students.

Graduate Success:

- 100% of graduates had full time employment in the field or were attending graduate school within 6 months of graduation among those who have looked for work and stayed in contact (>85% of geology graduates)
- 35% of graduates attended graduate school after graduation (2018-2023)

Academic Programming and Rigor:

Strengths

- Students were well prepared for graduate school and for employment as is evident by the high rate of success for entrance into graduate school (35% which is above national average) and high employment rate for graduate (~100% for those that look for employment in the field).
- New B.S. Geology water and climate concentration was added because of student interest in these geologic sub-disciplines.

Weaknesses

- There was a decrease in content depth and breadth due to cut backs in geology course offerings and geology course credits necessitated by faculty cuts.

Faculty Qualifications, Staffing, and Effectiveness of Instruction:

Strengths

- Full-time faculty all have terminal degrees (PhD) in geoscience related field
- New tenure track faculty was hired in 2023 with background in climate, environmental and sedimentary processes to support core courses and programs in Geology and Environmental Science

Weaknesses

- Cuts in staff in geology over the years resulted in a decrease in content depth and breadth due to cut backs in geology course offerings and geology course credits, recent hire helps address this but only partially makes up for previous cuts

- Not returning 100% of student generated course and program fees plus traditional CSSM funds has limited the ability to purchase, maintain and use equipment and technology in the classroom, laboratory and outdoor field settings

Assessment Practices:

Strengths

- Assessment of program goals is performed regularly and is ongoing
- Assessment of individual courses is conducted every semester

Weaknesses

- Staffing limitations and changes to faculty teaching some courses has results in less than desired continuity and follow up as some course content and course learning objectives change when instructor changes occur

Resources / Facilities:

Strengths

- Unique and diverse geologic settings in LSSU region allows students to conduct field geologic studies in most LSSU geology course which is not possible at any other university in the region
- Dedicated geology laboratories with a wide variety of geologic specimens and geologic specific software allows students to study and learn by directly studying a variety of geologic processes
- New equipment such as SEM with EBSD which was recently installed and the upcoming installation of micro XRF equipment will provide new opportunities for student/faculty geoscience related research and class related projects

Weaknesses

- Not returning 100% of student generated course and program fees plus traditional CSSM funds over the years has limited the ability to purchase, maintain and equipment and technology for students to use in the classroom, laboratory, outdoor field settings and for research
- Computers in geology computer facility are >6yrs old which is starting to limit their effectiveness with modern software, these computers we scheduled to be replaced but that has not happened
- Not only should 100% of student generated course and program fees be returned to programs which generated fees, but also unspent fees should be able to be rolled over from year to year to allow for budgeting and planning for larger equipment purchases and upgrades that are not possible with a single year of fees which was the design and plan when course and program fees were first instituted in the sciences at LSSU

5-Year Academic Program Review 2023

Due to the Dean's Office by October 27, 2023

This reporting form was introduced in FY2020; numerical data prior to FY2020 may be excluded.

CREATIVE WRITING

Submitted by: *Chad and Julie Barbour*
Date: *10/27/23*
School: *Arts and Letters*
Academic Program(s): *Creative Writing (previously Literature-Creative Writing)*

Annual Program Data Reporting

The following table summarizes data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022	2022-2023
Enrollments	Freshmen: *Fall 1* Sophomores: *Fall 0* Juniors: *Fall 1* Seniors: *Fall 8*	Freshmen: *Fall 3* Sophomores: *Fall 4* Juniors: *Fall 3* Seniors: *Fall 5*	Freshmen: *Fall 3* Sophomores: *Fall 3* Juniors: *Fall 3* Seniors: *Fall 1*	Freshmen: *Fall 2* Sophomores: *Fall 2* Juniors: *Fall 5* Seniors: *Fall 2*
Retention as of fall 2023	Fr to So: *1* So to Jun: *0* Jun to Sen: *1*	Fr to So: *6* So to Jun: *2* Jun to Sen: *3*	Fr to So: *4* So to Jun: *3* Jun to Sen: *1*	Fr to So: *6* So to Jun: *2* Jun to Sen: *3*
Degrees Conferred		4		

Graduate Placement Data:

No information collected. We are creating a survey, the results of which will be shared during the next program review.

High Impact Practices:

All courses in the program use high impact practices, such as reflective assignments about the writing process that take place throughout each semester. One 200-level course (ENGL 223) includes a collaborative project among students in the arts. We offer an editing internship for Border Crossing, and international journal of literature (ENGL 399), that spans an academic year. Capstone courses include a Publication Market Research Report (ENGL 409), a proposal and thesis (ENGL 480 and 482, a two-semester sequence), and a Senior Symposium poster (ENGL 482).

Summary of Annual Assessment Updates

The following table summarizes assessment data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022
Program Learning Outcome Findings			• Students are meeting the desired goal for the Creation outcome. • Students meet the desired goal for knowledge of publishing pathways. • Students perform adequately for the Literature claim, but could show improvement in the area of analysis.

Summary of decisions, recommendations, and/or improvements concerning the future of the program

Decisions and recommendations should include budgets, additions of new courses or concentrations, discontinuation or suspension of the program, etc.

2019-2020

No students graduated from the program during this time.

2020-2021

No students graduated from the program during this time.

2021-2022

- *Border Crossing* will move to short forms to better facilitate student understanding in the internships
- For creative writing portfolio, continue reading craft essays in the student's chosen genre
- Increasing representation of diverse voices in syllabi
- Exploring opportunities to build community among majors and minors in the program through writing retreats

2022-2023

We will have students graduating from the program in May 2023 so this data cannot be reported.

Rationale or justification for decisions made for the future of the program

Decisions made for the future of the program focus on student learning and building community, as well as increasing retention.

Long-range future goals or plans for the program

Continue to hold on-campus writing retreats for undergraduate students per semester during the academic year. Grow and retain students in the program through various marketing strategies. Build a low-residency MFA program.

Quality, Resources, and Support for the program

Summarize Strengths and Weaknesses in each area.

Student Learning:

Program is very community oriented. Students and faculty work well together, continuously sharing ideas to increase agency and ownership of student learning.

Graduate Success:

At this time, we do not have numbers to report. We are working on a survey for graduates in May 2023.

Academic Programming and Rigor:

All courses in the program use high impact practices, such as reflective assignments about the writing process that take place throughout each semester. One 200-level course (ENGL 223) includes a collaborative project among students in the arts. We offer an editing internship for Border Crossing, and international journal of literature (ENGL 399), that spans an academic year. Capstone courses include a Publication Market Research Report (ENGL 409), a proposal and thesis (ENGL 480 and 482, a two-semester sequence), and a Senior Symposium poster (ENGL 482).

Faculty Qualifications, Staffing, and Effectiveness of Instruction:

Not enough faculty. At this time, only one faculty member in the school has an MFA in Creative Writing and teaches all courses in the major, except for Performance Writing which is taught by theater faculty. One faculty member holds an MFA in Creative Writing at this time and teaches all courses in the major, except for Performance Writing which is taught by theater faculty. If an MFA program is requested by administration, a new hire to teach fiction will be required.

Course evaluations for faculty in the program are always high.

Assessment Practices:

Courses in the program are assessed every semester and results entered into Nuventive. Student learning is a high priority, and changes are made to course content based on student performance and need.

Resources / Facilities:

At this time, the program is low in faculty resources. Facilities for faculty and students in the program require no change.

5-Year Academic Program Review 2023

Due to the Dean's Office by October 27, 2023

This reporting form was introduced in FY2020; numerical data prior to FY2020 may be excluded.

ENGLISH LANGUAGE & LITERATURE

Submitted by: Chad Barbour
Date: *10-27-23*
School: Arts and Letters
Academic Program(s): English Language Literature / ELA 5-12

Annual Program Data Reporting

The following table summarizes data from the Annual Update Reports conducted for this program:

	2019-2020	2020-2021	2021-2022	2022-2023
Enrollments	Freshmen: *Fall 1* Sophomores: *Fall 3* Juniors: *Fall 1* Seniors: *Fall 2*	Freshmen: *Fall 1* Sophomores: *Fall 3* Juniors: *Fall 3* Seniors: *Fall 2*	Freshmen: *Fall 1* Sophomores: *Fall 1* Juniors: *Fall 6* Seniors: *Fall 1*	Freshmen: *Fall 0* Sophomores: *Fall 2* Juniors: *Fall 2* Seniors: *Fall 6*
Retention as of fall 2023	Fr to So: *2 Retained* So to Jun: *2 Retained* Jun to Sen: *1 Retained*	Fr to So: *3 Retained* So to Jun: *3 Retained* Jun to Sen: *1 Retained*	Fr to So: *1 Retained* So to Jun: *Argos error* Jun to Sen: *3 Retained*	Fr to So: *2 Retained* So to Jun: *Argos error* Jun to Sen: *4 Retained*
Degrees Conferred	1	0	0	2

Graduate Placement Data:

100% placement in jobs related to degree

High Impact Practices:

Student Teaching
Senior thesis (ENGL 490/499)
Fieldwork

Summary of Annual Assessment Updates

The following table summarizes assessment data from the Annual Update Reports conducted for this

program:

	2019-2020	2020-2021	2021-2022
Program Learning Outcome Findings	Students demonstrate knowledge of texts and understanding of content. Critical analysis skills tend to be weaker.	Reorganization of course content (from chronological to thematic units) in some courses helped to strengthen students' understanding of text-context relationship.	Continued efforts to improve critical analysis skills and provide a clearer framework for the content. Student continue to demonstrate surface knowledge of the texts (especially with being able to identity significant ideas and textual evidence).

Summary of decisions, recommendations, and/or improvements concerning the future of the program

Decisions and recommendations should include budgets, additions of new courses or concentrations, discontinuation or suspension of the program, etc.

2019-2020
No changes

2020-2021
No changes

2021-2022
MDE mandated switch to grade-band based program. A new 5-12 ELA program was proposed and approved.

2022-2023
The ELA 5-12 program began accepting students. The old secondary English program (English Language Literature) is being phased out. The remaining students in that program will be graduating within the next two years.

Rationale or justification for decisions made for the future of the program

Decisions for the program are largely based on needs of the Education program. English faculty work closely with Education faculty to maintain standards and make changes as needed.

Long-range future goals or plans for the program

Increase enrollment and recruitment.

Quality, Resources, and Support for the program

Summarize Strengths and Weaknesses in each area.

Student Learning:
In the most recent 3-year tally of MTTC scores, secondary English students had a 80% passing rate. The single student who failed the MTTC in that time period recently retook the exam and passed. This past year, another student failed the MTTC on the first attempt but passed on the second attempt.

Generally, student performance on the course-level demonstrates comprehension of the content. Missteps on the MTTC may be as much a result of test anxiety than a reflection on the program, especially since in those instances the student is able to pass on a second try.

Graduate Success:
Students are successful in finding jobs relevant to their degree.

Academic Programming and Rigor:
ELL, and now ELA 5-12, provides a thorough and comprehensive survey of the content area in literature, literary theory, composition theory, and writing.

Faculty Qualifications, Staffing, and Effectiveness of Instruction:
Faculty are qualified and bring to the courses a wide range of knowledge and experience. Student evaluations are consistently positive. One weakness is that there has been only one faculty member teaching a majority of the literature courses. A second faculty member will be taking on more of these courses in the coming year.

Assessment Practices:
Course-level assessment has been consistent.

Resources / Facilities:
English as a department has only three full-time faculty members. One member largely handles literature courses, another covers creative writing, and the third teaches first-year writing but is taking on more literature courses as we move forward.