LAKE SUPERIOR STATE UNIVERSITY

Academic Program Review

DUE DATE: November 21, 2018

The HLC Criteria for Accreditation, specifically Core Component 4.A, require institutions to maintain a "practice of regular program review[1]" as one component for ensuring the quality of our educational programs and evaluating our effectiveness in achieving our stated student learning outcomes. For academic units, "Program" means an academic School.

School:	Natural Resources & Environment
Degree Programs of the School: (indicate which, if any, hold specialized programmatic accreditation)	• Conservation Biology Human Dimensions Concentration • Environmental Science Physical Sciences Concentration Policy & Management Concentration • Fisheries & Wildlife Management Conservation Officer Concentration Fisheries Management Concentration Wildlife Management Concentration • Geographic Information Technology Associates, Minor, and Certificate • Geology Environmental Geology • Natural Resource Technology • Parks & Recreation
Academic Program Review Submission Date:	
Dean:	David M Myton, Ph.D.
School Chair:	Dennis M Merkel, Ph.D.
Names of Faculty Members Completing Program Review Report:	Sally Childs, Ph.D. John Graham, Ph.D. William Houston, Ph.D. Hari Kandel, Ph.D. Kevin Kapuscinski, Ph.D.

[1] https://www.hlcommission.org/Policies/criteria-and-core-components.html

	Paul Kelso, Ph.D. Dennis Merkel, Ph.D. Kat Rocheford, Ph.D. John Roese, Ph.D. Derek Wright, Ph.D.

Guidelines for Completing the Academic Program Review

Questions in Part 1 are focused at the School level, and should reflect School-level data, findings, etc.

Questions in Part 2 should be completed for each distinct academic degree program in the School. In the cases where an academic degree holds specialized programmatic accreditation, Schools can cite the page(s) which address the prompt question. In all cases, attach evidence where available using the appendix cover sheet to identify how the evidence supports the relevant criteria or prompt.

PART 1: School-Level Review

School Mission and Goals

1. Provide the School's mission statement and explain its connection to the University mission.

   Provide our students with the skills to become responsible and informed stewards of the natural resources and environment of the Great Lakes region and beyond.

   The SNRE mission has an explicit focus both on student learning and skill building in the context of our unique place.

2. List the School-level goals and explain how they support and connect to the CAFE Master Goals of the Strategic Plan.
   https://www.lssu.edu/wp-content/uploads/2018/09/2018-2023-LSSU-Strategic-Plan.pdf

   Culture

   Cultivate an environment of collaboration and inclusion for students, faculty, and staff in all fields of study.

   Academics

   Promote faculty-student interaction in high-quality instruction, hands-on research opportunities, and advising.

   Finance

   Promote transparent fiscal responsibility in all budgetary processes including the collection and allocation of course and program fees to meet the needs of our students and programs.

   Enrollment

   Increase recruitment and retention, grow and improve programs

Explain how the School works to address each of the following questions. For each question, respond with a narrative and supporting evidence.

Teaching and Learning Programs Evaluation and Improvement: (CC 4.A)

3. Explain how faculty determine program and course learning outcomes, course prerequisites, rigor of courses, expectations for student achievement, and student access to resources.

Course learning outcomes are determined by faculty primarily responsible for the course. Teaching qualifications for courses are based on graduate course work and research experiences, ensuring expertise in discipline areas. Course learning outcomes are determined by this qualified faculty.

Course rigor is the responsibility of the faculty teaching the course. Lower and upper level courses differ in rigor and the degree of higher level learning outcomes. Lower level courses focus on recall and comprehension, upper level courses rely more on course work requiring synthesis, analysis and evaluation. Methods of assessment also vary with exams and quizzes common in lower level courses transitioning to written reports, case studies, and analysis of lab data in the upper level courses.

Program outcomes and assessment of student achievement are addressed through examination of capstone (Seminar) rubrics.

4. Explain how faculty ensure the equivalence of learning outcomes and achievement in all modes and locations where degrees are delivered. Provide examples of course syllabi from multiple delivery modes and locations of the same course(s).

   All SNRE courses are delivered on campus, however many courses across the school have a substantial field component making use of the natural resource base of the Eastern Upper Peninsula. The field courses are designed so that despite changing locations from year to year, the learning outcomes do not change.

5. If applicable, attach the most recent report, findings and recommendations from specialized programmatic accreditations within the School.

   To date there are no specialized accreditations although certification from The Wildlife Society and the American Fisheries Society are in discussion.

   Individual courses within the programs do carry certifications FIRE102 Rural and Wildland Fire, EMED188 Wilderness First Responder, and BIOL475 Aquatic Entomology

6. Report data from the past two years to show what students are doing after graduation from the programs in your School. For example, statistical data should report the numbers of students in specific areas (*i.e.,* business, government, education, military, unemployed, pursuing advanced degrees, etc.). Attach representative data.

   In the summer of 2018 a survey of graduates was distributed to graduates from 2012 to 2018. 82 responses were collected from programs within the School of Natural Resources & Environment. In answer to the question of their status AT graduation, 66% entered employment in their field or a related field, 18% entered graduate school, 6% did

internships or volunteer work, 4% were employed outside of their field, and 6% reported either still looking for a job or waiting to hear from a graduate school.

Assessment (CC 4.B and CC 4.C)

Explain how the School uses assessment to promote ongoing growth and improvement. As evidence for each question, you may choose to include content from the 'Use of Results' column in the 4-Column Program Assessment Report, or provide broader assessment results from an alternative source.

7. School-level goals and their connections to the university's CAFE Master Goals Strategic Plan were listed in Question 2 of this report. Select 3-5 of those goals as a focus for the School's 4-Column School Assessment Report; add the selected goals to the 4-Column report document, and attach the document.

8. Describe how results from assessment have been used to improve your School. Include specific examples.

A survey of Conservation Officer job requirements of 17 states revealed that requirements vary by state, with some states requiring only B.S. degrees in natural resource management, such as Fisheries and Wildlife Management (e.g., Wyoming), and others not requiring any level of college education (e.g., Michigan), although many successful candidates have some level of higher education. Programs that are nested within other degrees and offer multiple career options for graduates are likely to be most successful in increasing program enrollment as well as providing employment after graduation. A Conservation Officer concentration was added to the Fisheries and Wildlife management program based on this information.

In the spring semester of 2018 (S18), the Environmental Science and SNRE faculty reviewed the current program offerings in Environmental Science and GIS with regard to student proficiency (program outcomes, university learning outcomes, etc.) and alignment with the strategic plan and identified a number of opportunities for improvement. These include:

- *Eliminating BIOL 126 to reduce content redundancy and expanded introductory GIS courses*
- *Adding EVRN 211 to give BS Env Sci students additional GPS experience, surveying skills, orienteering, topographic map interpretation, and additional field skills*
- *Requiring more robust prerequisites for 300 level GIS courses to better prepare students.*

- *Adding courses in remote sensing and modern GIS technology skills to better reflect changing technology and uses of that technology. Deletion of outdated courses.*
- *Adding field intensive Soils class as a required course in the Physical Sciences and Policy & Management concentration to give students needed field and soils experiences.*

9. Describe how the School uses assessment results to inform and facilitate better planning and budgeting.

   Summation of course and program fees forms the budget base. Faculty input is compiled and analyzed for course expenditures. For many of the programs technology advances drive new equipment acquisition. These advances come at a cost and annual reevaluation is needed to balance the need for either increasing course and program fees or whether the contribution of newer technology to student learning outcomes is worth the expenditure. Prioritization of expenses come from both straightforward assessment of numbers of students served and contributions to the widest number of programs.

10. In addition to LSSU's campus-wide programs designed to support retention and degree completion, list any additional activities of the School specifically intended to increase retention and degree completion.

    As part of the campus wide first year experience (FYE) efforts USEM101 was added to the Geology and Environmental Science programs. A unique activity added to this course was an afternoon long field experience to increase student-student and student-faculty connections.

    The Fish and Wildlife program has had a FYE course BIOL199 for over ten years, in addition to being a pioneering FYE course students are engaged in research activities and exposed to activities they will be undertaking in sophomore, junior and senior level courses.

    Faculty mentor the discipline specific student organizations (Fisheries & Wildlife Club, Parks & Recreation Club, Society for Conservation Biology, Environmental Science Club Geology Club) and travel to national and regional meetings with them.

    A number of faculty have established research groups with students that meet regularly.

Resources (CC 5.A and CC 5.C).

11. Describe how the School allocates resources to adequately support the mission. Include explanations of faculty/staff, fiscal, and infrastructure allocations. For example, describe the process used to ensure that each faculty member or instructor in the program is qualified to teach the courses they are assigned, as consistent with HLC guidelines. (https://www.hlcommission.org/Publications/determining-qualified-faculty.html)

Resource allocation starts with summation of course and program fees for the School. These form the basis for the approved budget. Budget requests are allocated within the approved budget to support purchases of equipment, course supplies, and travel for course field work.

Teaching qualifications are determined and evaluated by the faculty within the disciplines, following HLC recommendations. This determines minimum qualifications needed to teach a class.

12. Explain how the School ensures that the curriculum for each program is current. For example, evidence may include specialized program accreditation, advisory boards, input from industry, discipline standards, previous School reviews or reports, etc.

The faculty have been hired as experts within their disciplines and their knowledge and professional network guide keeping programs current and relevant (see GIS assessment in Q8).

Parks & Recreation has an advisory board that meets annually to semiannually.

The certification requirements of the American Fisheries Society and The Wildlife Society guide the program requirements of the Fisheries and Wildlife concentrations, respectively.

PART 2: Degree-Level Review

Degree Program: _____

Explain how the program works to address each of the following questions. For each question, respond with a narrative and supporting evidence.

Assessment (CC 4.B and CC 4.C)

13. Provide evidence that the degree-level program outcomes are clearly stated and are effectively assessed, including the "use of results." Attach the 4-Column Program Assessment Report.

14. Explain how results from degree assessments were used to improve the degree program. Include specific examples.

    Type response here.

Quality, Resources and Support (CC 3.A)

15. Explain how the program ensures that degree program-level and course-level learning outcomes are at an appropriate level. Attach evidence, including a degree audit for the program.

    Type response here.

The Lumina Foundation's Degree Qualification Profile (DQP) is suggested as a resource for answering the questions about what students should know and be able to do at each degree level:
http://degreeprofile.org/wp-content/uploads/2017/03/DQP-grid-download-reference-points-FINAL.pdf

Intellectual Inquiry (CC 3.B).

16. Explain what the program does to engage students in collecting, analyzing, and communicating information; mastering modes of inquiry or creative work; developing skills integral to the degree program. Attach examples of undergraduate research, projects, and creative work.

    Type response here.

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Four Column Assessment Report**
This documentation is relevant to Question number:	**Part I, #7**
Briefly summarize the content of the file and its value as evidence supporting program review:	

Assessment: Planning Unit Four Column

School of Natural Resources & Environment

School: Planning - Natural Resources and Environment

Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
Goal #1 Culture - Cultivate an environment of collaboration and inclusion for students, faculty, and staff in all fields of study. **Goal Status:** Active **Start Date:** 11/01/2018 **Strategic Plan Outcome(s) addressed:** C1. We cultivate an environment of inclusion where all members treat others with dignity and respect. **Assessment Year:** AY18-19	**Other Findings**	**Finding Reporting Year:** 2018-2019 **Goal met:** Yes Faculty across SNRE are involved in assisting, in a variety of capacities, development of the Center for Freshwater Research and Education under Director Dr. Ashley Moerke and Assistant Director for Research Dr. Kevin Kapuscinski Faculty consistently provide students with out-of-class field activities in Environmental Science, Geology, Parks and Recreation, and Fisheries and Wildlife. Faculty mentor student senior projects serving as de facto collaborators in all SNRE Disciplines Faculty serve in cross disciplinary committees to update, revise and create new courses (11/09/2018)	**Use of Result:** More closely track out-of-class faculty/student events Develop School level seminar outcomes and explore developing SNRE seminar sequence. Consolidate discipline level seminars. (11/09/2018) **Budget Rationale:** Save Money
Goal #2 Academics - Promote faculty-student interaction in high-quality instruction, hands-on research opportunities, and advising. **Goal Status:** Active **Start Date:** 11/01/2018 **Strategic Plan Outcome(s) addressed:** A1. We will cultivate continuous academic and co-curricular improvement to provide relevant programs and support services.	**Other Findings**	**Finding Reporting Year:** 2018-2019 **Goal met:** Yes Cross disciplinary faculty worked to update GIS courses, eliminate redundant courses, and develop new courses. Automation and advances in technology have removed the need for much of the programming that was formerly in the GIS program, and course offerings outside of environmental science were found to contain content redundancies. As a result, courses were deleted and new courses were developed that stress analysis of geospatial information. New technologies such as drones are being incorporated into the program. Results were a laddered set of a new	**Use of Result:** New classes will be offered on a rolling schedule. Continue with course development. Improved tracking students in Certificate, Minor and Associates tracks. Develop FAQ sheets for new faculty advisors to bring them quickly up to speed on advising across disciplines. (11/09/2018)

Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
Assessment Year: AY18-19	**Other Findings**	certificate and minor in Geographic Information Science and a new associate's degree in Geospatial Technology. An sharp uptick in students into the Fish and Wildlife program and aa concomitant loss of faculty necessitated spreading out advisees to faculty in disciplines out side of Fisheries and Wildlife. Faculty graciously accepted these assignments and attended meetings and shared advising advice to accommodate the influx of students EVRN389 the research Methods class for Environmental Science students identified the need for greater field experiences. BIOL230 Soils and EVRN211 Field Data Methods were added to the program (11/09/2018)	
Goal #3 Enrollment - Increase recruitment and retention, grow and improve programs **Goal Status:** Active **Start Date:** 11/01/2018 **Strategic Plan Outcome(s) addressed:** E1. We will cultivate, maintain, and support an enrollment management strategic plan that will center on programs and activities that reach enrollment goals. **Assessment Year:** AY18-19	**Other Findings**	**Finding Reporting Year:** 2018-2019 **Goal met:** No The SNRE became operational in September of 2018. Faculty have been working since then on developing a School mission and vision, the translation of this into marketing materials. Faculty are engaged in face to face meeting with prospective students, often several times a week. First year experiences courses have been developed and delivered to the Fall 2018 student class. Exercises to connect students with one another and the faculty have been implemented. Early results indicate a need for the BIOL199 to have more instructor-student interaction. An afternoon outing for the USEM101 Geology/Env Science students was a success. Faculty delivered midterm grades for all freshman level classes to aid advisors in addressing student retention issues (11/09/2018)	**Use of Result:** Meetings scheduled to more effectively integrate the FYE courses with student research classes across the school. Look at LIBR101 to assist students in library research skills (11/09/2018)

LAKE SUPERIOR STATE UNIVERSITY

Academic Program Review

DUE DATE: November 21, 2018

Guidelines for Completing the Academic Program Review

Questions in Part 2 should be completed for each distinct academic degree program in the School. In the cases where an academic degree holds specialized programmatic accreditation, Schools can cite the page(s) which address the prompt question. In all cases, attach evidence where available using the appendix cover sheet to identify how the evidence supports the relevant criteria or prompt.

PART 2: Degree-Level Review

Degree Program: Conservation Biology

Explain how the program works to address each of the following questions. For each question, respond with a narrative and supporting evidence.

Assessment (CC 4.B and CC 4.C)

1. Provide evidence that the degree-level program outcomes are clearly stated and are effectively assessed, including the "use of results." Attach the 4-Column Program Assessment Report.

2. Explain how results from degree assessments were used to improve the degree program. Include specific examples.

   While assessing the degree, faculty determined that the satisfactory standards for BIOL 299 and 499 rubrics (assessing the final materials for students' senior projects) were too low. As such, we revised the rubrics to reflect a higher standard as "satisfactory".

   The capstone course, BIOL 470, Ecological Restoration, has not recently functioned as a true "capstone" to the degree, since the course lacks appropriate pre-requisites, and students end up taking it with variable preparation. Faculty are currently reconsidering which courses would be appropriate pre-requisites, so that the course can effectively function as a capstone, taken during the students' senior years.

   The Con Bio program is close to meeting the educational requirements for students to apply for the Society for Ecological Restoration "Certified Ecological Restoration Practitioner" (CERP) program – adding a second course in ecological restoration (likely with a special topical

emphasis) and reevaluating the physical science requirements to fully meet the CERP education standards is ongoing.

Many of the currently accepted "human dimensions" courses are rarely offered. We are in the process of reassessing acceptable courses, including approaching faculty who teach potentially-relevant courses to determine whether they are able to modify their course material to be applicable to requirements in the Con Bio program.

Quality, Resources and Support (CC 3.A)

3. **Explain how the program ensures that degree program-level and course-level learning outcomes are at an appropriate level. Attach evidence, including a degree audit for the program.**

   Course learning outcomes are determined by faculty primarily responsible for the course. Teaching qualifications for courses are based on graduate course work and research experiences, ensuring expertise in discipline areas. Course learning outcomes are determined by this qualified faculty.

   Course rigor is the responsibility of the faculty teaching the course. Lower and upper level courses differ in rigor and the degree of higher level learning outcomes. Lower level courses focus on recall and comprehension, upper level courses rely more on course work requiring synthesis, analysis and evaluation. Methods of assessment also vary with exams and quizzes common in lower level courses transitioning to written reports, case studies, and analysis of lab data in the upper level courses.

   Program outcomes and assessment of student achievement are addressed through examination of capstone (Seminar) rubrics.

The Lumina Foundation's Degree Qualification Profile (DQP) is suggested as a resource for answering the questions about what students should know and be able to do at each degree level:
http://degreeprofile.org/wp-content/uploads/2017/03/DQP-grid-download-reference-points-FINAL.pdf

Intellectual Inquiry (CC 3.B).

4. **Explain what the program does to engage students in collecting, analyzing, and communicating information; mastering modes of inquiry or creative work; developing skills integral to the degree program. Attach examples of undergraduate research, projects, and creative work.**

   As part of their degree, Con Bio students complete a multi-year undergraduate research project or experiential learning project (ELP) (BIOL 199, 299, 398 or 399, 495 or 497, and 499), culminating in their final semester when they communicate and present the results of their project in the senior seminar, BIOL 499. The products include a written publication-grade research report, a conference poster, and a 15 minute oral presentation made during their final semester.

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Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Degree Audits**
This documentation is relevant to Question number:	**Part II, #3**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Degree audits for Conservation Biology and Human Dimensions Concentration**

LAKE SUPERIOR STATE UNIVERSITY

B.S. CONSERVATION BIOLOGY

Name Sample, Seamore
ID A000

GPA
- NA Cumulative
- NA Major
- NA Gen Ed

REQUIREMENTS
- 0 Total Credits
- 0 LSSU Credits
- 0% % 300 / 400

APPROVAL & VERIFICATION

Advisor *Date*

Registrar *Date*

Effective Fall 2018

MAJOR

Course	Subst	Sem	Credits	Grade
BIOL131			4	
BIOL132			4	
BIOL199			1	
BIOL203			3	
BIOL220			4	
BIOL230			4	
BIOL250			3	
BIOL280			3	
BIOL284			4	
BIOL286			3	
BIOL287			3	
BIOL299			1	
BIOL304			3	
BIOL337			3	
BIOL420			3	
BIOL470			3	
BIOL499			1	
CHEM115			5	
CHEM116			5	
EVRN131			3	
EVRN225			3	
EVRN311			3	
MATH111			3	
MATH112			4	
Jr Option...			---	
Sr Option...			---	
Global...			---	

GENERAL EDUCATION

Course	Sem	Credits	Grade
COMM101		3	
ENGL110		3	
ENGL111		3	
Humn...		---	
Humn...		---	
SocSci...		---	
SocSci...		---	
Diversity...		---	

FREE ELECTIVES

Course	Sem	Credits	Grade

LAKE SUPERIOR STATE UNIVERSITY

B.S. CONSERVATION BIOLOGY

Human Dimensions Concentration

Name Sample, Seamore
SID A000

GPA		REQUIREMENTS	
NA	Cumulative	0	Total Credits
NA	Major	0	LSSU Credits
NA	Gen Ed	0%	% 300/400

APPROVAL & VERIFICATION

Advisor _____ *Date* _____

Registrar _____ *Date* _____

Effective Fall 2018

MAJOR

Course	Subst	Sem	Credits	Grade
BIOL131			4	
BIOL132			4	
BIOL199			3	
BIOL203			3	
BIOL220			4	
BIOL230			4	
BIOL250			3	
BIOL280			3	
BIOL284			4	
BIOL286			3	
BIOL287			3	
BIOL299			1	
BIOL304			3	
BIOL337			3	
BIOL420			3	
BIOL470			3	
BIOL499			1	
CHEM115			5	
EVRN131			3	
EVRN225			3	
EVRN311			3	
MATH111			3	
Jr Option...			---	
Sr Option...			---	
Global...			---	
Marketing...			---	
Poli. Sci...			---	
Comm...			---	

GENERAL EDUCATION

Course	Sem	Credits	Grade
COMM101		3	
ENGL110		3	
ENGL111		3	
Humn...		---	
Humn...		---	
SocSci...		---	
SocSci...		---	
Diversity...		---	

FREE ELECTIVES

Course	Sem	Credits	Grade

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School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Four Column Assessment Report**
This documentation is relevant to Question number:	**Part II, #1**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Nuventive™ Improve program assessment report**

Assessment: Program Four Column

Program (CoSE) - Conservation Biology BS

Assessment Contact: Dr. John Graham
Program Notes: This program absorbs the former Conservation Leadership degree

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
Foundation - Students in the Conservation Biology program will thoroughly research and synthesize the primary literature for information relevant to a current scientific investigation or experiential learning project. **Goal Status:** Active **Goal Category:** Student Learning **Institutional Learning:** ILO2 - Use of Evidence - Students will identify the need for, gather, and accurately process the appropriate type, quality, and quantity of evidence to answer a complex question or solve a complex problem.	**Direct - Capstone Project - including undergraduate research -** As part of their undergraduate research project or experiential learning project (ELP) ConBio students are required to use sources from the primary literature to communicate the scope and rationale of their project. Rubrics are used to evaluate this requirement for the senior thesis paper. **Criteria Target:** Criteria target: All ConBio students will meet minimum satisfactory requirements (average 14 of 20 for the 'Introduction' section of a thesis rubric or 20/30 for the 'Problem statement and background' section of an ELP rubric). At least 25% of the students will demonstrate exemplary scores (17/20 for thesis or 26/30 for ELP) for the respective section. **High Impact Program Practices 1:** Undergraduate Research **High Impact Program Practices 2:** Capstone Course(s), Projects	**Finding Reporting Year:** 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/22/2018)	**Use of Result:** In future years, request that Biol 499 instructor record individual scores for all sections within rubrics. Revise rubric to reflect minimum satisfactory standards of 70% instead of 60%. (08/22/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes Satisfactory: 100% (5/5) Exemp: 60% (3/5) (08/15/2018)	**Use of Result:** Goal met. Reassess next cycle. (08/22/2018)
	Direct - Writing Intensive	**Finding Reporting Year:** 2016-2017	

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	Assignment - Foundation, sophomore seminar: Students in the sophomore seminar sequence are required to complete an annotated bibliography in an area related to their research interests. A rubric is used to evaluate this assignment. **Criteria Target:** Criteria target: all students will meet minimum satisfactory requirements (70% on the literature section of the rubric). At least 25% of students will exhibit above-average performance (90% on the literature section of the rubric).	**Goal met:** No Data not available for 2016-17 (08/15/2018)	**Use of Result:** Biol 299 instructor will collect results for ConBio students during fall semester 2018 in order to assess whether students are meeting the goal. (08/17/2018)
	Direct - Capstone Project - including undergraduate research - As part of their undergraduate project, ConBio students are expected to properly cite sources from the primary literature. Rubrics are used to evaluate this requirement for the written paper. **Criteria Target:** All ConBio students will meet minimum acceptable standards for properly citing references (less than 4 points deducted from the 'Literature Cited' section of the paper rubric). At least 25% of students will meet an exemplary standard for properly citing references (less than 2 points deducted from the 'Literature Cited' section of the paper rubric).	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes Two ConBio students were in 299, one received 100% on the literature section, the other received 75% (08/22/2018)	**Use of Result:** Reassess during next cycle. Revise rubric to reflect minimum satisfactory standards of 70% instead of 60%. (08/22/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes Satisfactory: 100% (5/5) Exemplary: 100% (5/5) (08/15/2018)	**Use of Result:** Goal met. Reassess next cycle. (08/22/2018)
Capstone Project - Capstone project: Students in the Conservation Biology program will design and conduct a scientific investigation or experiential learning project (ELP) using appropriate tools and techniques in	**Direct - Capstone Project - including undergraduate research -** All ConBio students are required to conduct an independent and original project under the guidance of a faculty mentor. The mentor evaluates the	**Finding Reporting Year:** 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/22/2018)	**Use of Result:** In future years, request that Biol 499 instructor to record individual scores for all sections within rubrics. Revise rubric to reflect minimum

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
order to demonstrate skill in the practice of conservation biology. **Goal Status:** Active **Goal Category:** Student Learning **Institutional Learning:** ILO2 - Use of Evidence - Students will identify the need for, gather, and accurately process the appropriate type, quality, and quantity of evidence to answer a complex question or solve a complex problem.	scientific and social merit of the project, as presented in a written paper, using the 'Methods', 'Results', and 'Discussion' sections of a grading rubric for a thesis student, or the 'Approach', 'Outcomes', and 'Lessons Learned' section of a grading rubric for an ELP student. **Criteria Target:** All students will meet minimum satisfactory requirements (42 of 60 for a thesis student, or 35 of 50 for an ELP student) over the relevant sections of the rubric. At least 25% of the students will achieve exemplary performance (54 of 60 for a thesis student or 43 out of 50 for an ELP student) over the relevant sections of the rubric. **High Impact Program Practices 1:** Service Learning, Community-based learning **High Impact Program Practices 2:** Undergraduate Research		satisfactory standards of 70% instead of 60%. (08/22/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes Satisfactory: 100% (5/5) Exemplary: 40% (2/5) (08/15/2018)	**Use of Result:** Goal met. Reassess next cycle. (08/22/2018)
Communication and outreach - Students in the Conservation Biology program will effectively communicate the results or outcomes of their independent project in multiple formats. **Goal Status:** Active **Goal Category:** Student Learning **Institutional Learning:** ILO1 - Formal Communication - Students will develop and clearly express complex ideas in written and oral presentations.	**Direct - Presentation, Performance -** All ConBio students are required to communicate the results of an independent project (thesis or ELP) in the form of a poster presentation. This includes a 2-hour Q&A session open to the public, with the student in attendance. Posters are evaluated by multiple faculty using a rubric. **Criteria Target:** All ConBio students will meet minimum satisfactory requirements (70 of 100 on the rubric). At least 25% of students will achieve exemplary performance (90	**Finding Reporting Year:** 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/22/2018)	**Use of Result:** In future years, request that Biol 499 instructor record individual scores for all sections within rubrics. Revise rubric to reflect minimum satisfactory standards of 70% instead of 60%. (08/22/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes Satisfactory: 100% (5/5) Exemplary: 40% (2/5) (08/15/2018)	**Use of Result:** Goal met. Reassess next cycle (08/23/2018)

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	of 100 on the rubric). **High Impact Program Practices 1:** Capstone Course(s), Projects **High Impact Program Practices 2:** Undergraduate Research		
	Direct - Presentation, Performance - All ConBio students are required to communicate the results of an independent research project in the form of a digital presentation at a research symposium held at the end of each semester. Presentations are evaluated by multiple faculty using a rubric. **Criteria Target:** All ConBio students will meet minimum satisfactory requirements (28 of 40 on the rubric). At least 25% of students will achieve exemplary performance (36 of 40 on the rubric). **High Impact Program Practices 1:** Capstone Course(s), Projects	**Finding Reporting Year:** 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/22/2018)	**Use of Result:** In future years, request that Biol 499 instructor record individual scores for all sections within rubrics. Revise rubric to reflect minimum satisfactory standards of 70% instead of 60%. (08/22/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes Satisfactory: 100% (5/5) Exemplary: 60% (3/5) (08/15/2018)	**Use of Result:** Goal met. Reassess next cycle. (08/22/2018)
	Direct - Capstone Project - including undergraduate research - All ConBio students are required to communicate the results of their independent project in the form of a written paper. The paper is evaluated by each student's faculty mentor using a rubric. **Criteria Target:** All ConBio students will meet minimum satisfactory requirements (70 of 100 on the rubric). At least 25% of students will achieve exemplary performance (90 of 100 on the rubric). **High Impact Program Practices 1:** Capstone Course(s), Projects	**Finding Reporting Year:** 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/22/2018)	**Use of Result:** In future years, request that Biol 499 instructor record individual scores for all sections within rubrics. Revise rubric to reflect minimum satisfactory standards of 70% instead of 60%. (08/22/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes Satisfactory: 100% (5/5) Exemplary: 40% (2/5) (08/15/2018)	**Use of Result:** Goal met. Reassess next cycle (08/23/2018)
Professionalism - Students in the	**Indirect - Report/Audit - Internal -**	**Finding Reporting Year:** 2017-2018	

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
Conservation Biology program will engage in professional activities related to the study, conservation, or management of natural resources. **Goal Status:** Active **Goal Category:** Student Learning **Institutional Learning:** ILO4 - Professional Responsibility - Students will demonstrate the ability to apply professional ethics and intercultural competence when answering a question, solving a problem, or achieving a goal.	The program champion will report yearly on the professional activities of students in the ConBio program. **Criteria Target:** The students will maintain a club (LSSU SCB) with at least 5 active members. LSSU SCB will maintain affiliation with the professional organization the Society for Conservation Biology. LSSU SCB will engage in a variety of professional activities which could include, but are not limited to, conservation biology projects on campus or in the community, attendance at SCB professional meetings, hosting workshops or symposia, etc. **High Impact Program Practices 1:** Learning Communities	**Goal met:** Yes The LSSU chapter of the Society for Conservation was formed and officially recognized as a chapter by the parent organization. Throughout the year, the club engaged in a variety of activities including: -- Dr. Allan's Annual Scots Pine Pull – Fall 2017; Combination event with LSSU Fisheries and Wildlife Club (7 SCB Members); Dr. Allan's Pond Sampling – Fall 2017 (1 SCB Member); Speaker, Phil, from Keep Our Lakes Great Ballot Initiative – Fall 2017 (About 15 attendees, including 2 professors and 5 SCB members); Great Lake State Weekend – Bird Beak Evolution Education – Fall 2017 (4 SCB members); R Program Experience – Winter 2018 (2 SCB Members); DNR Eastern Upper Peninsula Citizens' Advisory Council Meetings – Fall and Spring 2017/2018 (2 SCB Members); Speaker, Nick Cassel, from EUP CISMA – Spring 2018 (About 10 attendees); Laker Woods Committee Mapping and Planning – Spring 2018 (6 attendees); Hike and Tree Identification Walk - Spring 2018 (6 attendees); Great Backyard Bird Count – Spring 2018 (3 attendees); Laker Woods Mapping with CISMA – Summer 2018 (2 SCB attendees) (08/15/2018)	**Use of Result:** The ConBio degree is close to meeting the education requirements for students to apply for certification as a restoration practitioner from the Society for Ecological Restoration. As we continue to review the degree over the upcoming year, changes to directly meet the education requirements for SER certification would help students to engage further in professional activities, and encourage students to begin the certification process. Changes would likely include: - Restructuring Biol 470 to actually function as a capstone course (e.g., adding appropriate pre-reqs so that students are fully prepared for the material, adding a lab section so that students can actually engage in restoration in the course, etc.) -Adding an additional upper level restoration course, possibly with a focus (e.g., wetland restoration, or prairie restoration, etc.), in order to meet the 6 credits in restoration required for the certification -Reconsidering courses required for the program (e.g., the certification requires 15 credits in physical science, including at least 6 in soils, hydrology, and/or climate science - we require 4 credits of soils, but don't necessarily require hydrology or climate science, depending on

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
			what the students take.) (11/14/2018) **Use of Result:** Goal met. Reassess next cycle. (08/22/2018)
Post-graduation - careers and further education - Graduates of the Conservation Biology program will go on to careers in conservation biology or proceed to graduate school to further their education. **Goal Status:** Active **Goal Category:** Operational Goal, not related to student learning	**Indirect - Report/Audit - Internal -** The program champion will report annually on the future plans of past and current graduates of the Conservation Biology program **Criteria Target:** The School will know the post graduate plans of 75% of its graduating seniors.	**Finding Reporting Year:** 2017-2018 **Goal met:** No Graduates were not surveyed during 2017-2018. (08/22/2018)	**Use of Result:** All recent graduates (2012-2018) were sent LSSU graduate survey in August 2018. Results will be tabulated and entered as they arrive. (08/22/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Data were not collected during 2016-2017 (08/17/2018)	**Use of Result:** All recent ConBio graduates (2012-2018) were sent the LSSU CoSE graduate survey on 15 Aug 2018, and asked to complete it by 20 Aug, with a followup reminder sent on 17Aug 2018. (08/17/2018)

LAKE SUPERIOR STATE UNIVERSITY

Academic Program Review

DUE DATE: November 21, 2018

Guidelines for Completing the Academic Program Review

Questions in Part 2 should be completed for each distinct academic degree program in the School. In the cases where an academic degree holds specialized programmatic accreditation, Schools can cite the page(s) which address the prompt question. In all cases, attach evidence where available using the appendix cover sheet to identify how the evidence supports the relevant criteria or prompt.

PART 2: Degree-Level Review

Degree Program: Environmental Science

Explain how the program works to address each of the following questions. For each question, respond with a narrative and supporting evidence.

Assessment (CC 4.B and CC 4.C)

1. Provide evidence that the degree-level program outcomes are clearly stated and are effectively assessed, including the "use of results." Attach the 4-Column Program Assessment Report.

2. Explain how results from degree assessments were used to improve the degree program. Include specific examples.

A review of program requirements and revision of the Environmental Science degree in 2017-18AY identified several areas for improvement which were approved in May 2018 and implemented for the fall semester 2018. These changes were based on a review of job qualifications, and on faculty assessment of degree level and course level student learning. The major changes we have implemented include:

1. *Inclusion of a freshman seminar experience as a required element (USEM 101 section specific to Environmental Science and Geology majors)*
2. *Increasing the required field component through a new course (EVRN 211 Field Data Methods), requiring BIOL 230: Intro to Soil Science for 2 degree concentrations, and adjusting scheduled offerings of courses so that an addition laboratory is offered in the fall (EVRN 315: Human Impacts on the Environment) which is more amenable to field work in Northern Michigan.*

3. *A restructuring of the Upper Level courses (Deletion of EVRN 313 and 425 and replacement with EVRN 315 and EVRN 435) to improve organization of course material and adjust the curriculum to better incorporate current environmental problems.*
4. *A significant restructuring of the GIS and remote sensing curricula, resulting in the deletion of four courses (BIOL 126, EVRN 231, EVRN 345, and EVRN 465), increasing the instructional hours in EVRN 131, introduction of three new courses (EVRN 225 and EVRN 365, EVRN 445) and modification of two courses (EVRN 325 and EVRN 355). These changes reduce some content duplication, increase satellite remote sensing content, and allow incorporation of emerging technologies such as use of drones to collect remote sensing data. We also implemented a revised course prerequisite to improve student achievement of key learning outcomes.*

Quality, Resources and Support (CC 3.A)

3. Explain how the program ensures that degree program-level and course-level learning outcomes are at an appropriate level. Attach evidence, including a degree audit for the program.

Course learning outcomes are determined by faculty primarily responsible for the course. Teaching qualifications for courses are based on graduate course work and research experiences, ensuring expertise in discipline areas. Course learning outcomes are determined by this qualified faculty.

Course rigor is the responsibility of the faculty teaching the course. Lower and upper level courses differ in rigor and the degree of higher level learning outcomes. Lower level courses focus on recall and comprehension, upper level courses rely more on course work requiring synthesis, analysis and evaluation. Methods of assessment also vary with exams and quizzes common in lower level courses transitioning to written reports, case studies, and analysis of lab data in the upper level courses.

Program outcomes and assessment of student achievement are addressed through examination of capstone (Seminar) rubrics.

The Lumina Foundation's Degree Qualification Profile (DQP) is suggested as a resource for answering the questions about what students should know and be able to do at each degree level:
http://degreeprofile.org/wp-content/uploads/2017/03/DQP-grid-download-reference-points-FINAL.pdf

Intellectual Inquiry (CC 3.B).

4. Explain what the program does to engage students in collecting, analyzing, and communicating information; mastering modes of inquiry or creative work; developing skills integral to the degree program. Attach examples of undergraduate research, projects, and creative work.

   The seminar series EVRN 359, 495, & 499 was designed to train students in the use of primary literature, to design a research project, carry it out, analyze data collected and to communicate results.

   The series culminates in EVRN499 where the students write a scientific paper detailing their project, create a poster and attend a session to describe it to an audience of lay people and specialists, and deliver an oral presentation of the more salient results of their work.

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Four Column Assessment Report**
This documentation is relevant to Question number:	**Part II #1**
Briefly summarize the content of the file and its value as evidence supporting program review:	**TRACDAT Program assessment report**

Assessment: Program Four Column

Environmental Science

Program (CoSE) - Environmental Science BS

Assessment Contact: Dr. Derek Wright
Mission Statement: The mission of the Environmental Science BS program is to develop effective, knowledgeable, and professional leaders in the field of environmental science.

Program Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
Knowledge & Skills - The Environmental Science graduate will demonstrate 1. Factual and theoretical knowledge of chemistry, biology, earth, and environmental science 2. Cross-disciplinary Field & laboratory knowledge and skills 3. Applied Analytical Skills 4. Communication skills 5. Information retrieval skills 6. safe laboratory practices **Goal Status:** Active **Institutional Learning:** ILO3 - Analysis and Synthesis - Students will organize and synthesize evidence, ideas, or works of imagination to answer an open-ended question, draw a conclusion, achieve a goal, or create a substantial work of art.	**Other Findings** Course Assessment **High Impact Program Practices 1:** Not	**Finding Reporting Year:** 2017-2018 **Goal met:** No Some skills were not being presented in ES courses, students demonstrated need for additional exposure to and practical experience with other skills. (02/08/2018) **Related Documents:** EVRN Curriculum Map a.xlsx EVRN Curriculum Recommendations.docx	**Use of Result:** Removed EVRN 313 Solid and Hazardous Waste from ES programs and replaced with redesigned course EVRN 315 Human Impacts on the Environment to expand on more modern topics e.g. climate change, erosion and sedimentation control, and organic pollutants) as well as adding laboratory hours (from EVRN425 Environmental Systems Analysis) to focus on practical applications. EVRN 435 is now focused on engineered systems. In addition, BIOL 230 Introduction to Soils was added to the Policy and Management and Physical Sciences concentrations. See related documentation for additional details. (02/08/2018) **Budget Rationale:** There is no net change to faculty load. **Budget Request:** 0

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome **Direct - Capstone Project - including undergraduate research -** Senior Capstone Project Assessment Report **High Impact Program Practices 1:** Capstone Course(s), Projects **High Impact Program Practices 2:** Undergraduate Research		
Employability - The Environmental Science graduate will demonstrate readiness for employment in business or industry as an environmental scientist, biological technician, GIS Analyst, physical science technician, pollution control specialist, laboratory chemist environmental specialist or environmental field technician. **Goal Status:** Active **Institutional Learning:** ILO4 - Professional Responsibility - Students will demonstrate the ability to apply professional ethics and intercultural competence when answering a question, solving a problem, or achieving a goal.	**Other Findings**	**Finding Reporting Year:** 2017-2018 **Goal met:** No Greater than 80% of job postings referenced field skills as required experience. Environmental science majors were found to lack proficiency in field skills based on performance in EVRN389 Environmental Research Methods. (03/08/2018) **Related Documents:** F18_audit_Environmental Science_Chemistry Conc.docx F18_audit_Environmental Science_Physical Science Conc.docx	**Use of Result:** Created a new course EVRN 211 Field Data Methods as a core requirement for all ES concentrations. In addition, BIOL 230 Introduction to Soils was added as concentration requirement for the Policy and Management and Physical Sciences concentrations. (04/15/2018) **Budget Rationale:** This does increase the faculty load for ES faculty, however, the load is balanced by the deletion of BIOL126 and lab sections. **Budget Request:** 0
		Finding Reporting Year: 2017-2018 **Goal met:** No Environmental science majors were found to lack skill in remote sensing and geospatial techniques. (10/25/2017) **Related Documents:** EVRN Curriculum Recommendations.docx EVRN Curriculum Map a.xlsx	**Use of Result:** Redesigned geospatial courses (EVRN131, 231, 345, 465, and BIOL126), created one new course, modified the existing minor, created a new certificate and associate program. (02/08/2018) **Budget Rationale:** No net change to faculty load. **Budget Request:** 0
	EAL Annual Report **High Impact Program Practices 1:**	**Finding Reporting Year:** 2012-2013 **Goal met:** Yes	

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	Internships **High Impact Program Practices 2:** Collaborative Assignments, Projects	EAL Annual Report (12/12/2013)	
Readiness for Graduate Study - The Environmental Science graduate will demonstrate readiness for graduate study in environmental science, environmental chemistry, environmental toxicology, Environmental management, environmental policy, biochemistry or other related fields **Goal Status:** Active **Institutional Learning:** ILO2 - Use of Evidence - Students will identify the need for, gather, and accurately process the appropriate type, quality, and quantity of evidence to answer a complex question or solve a complex problem.	Alumni Success Report **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome		
	Graduate/Alumni Survey **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome		
Technical Skills - The Environmental Science graduate will demonstrate proficiency and familiarity with combination of chemical instrumentation and modern computer software for environmental and chemical analysis and for environmental research **Goal Status:** Active **Goal Level (Bloom/Webb):** Mid-Level (Analyzing/Applying)	**Other Findings**	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes Environmental Analysis Lab employed three Environmental Science majors. The Science Prep Lab employed four Environmental Science major. (08/23/2018)	**Use of Result:** Continue to identify and promote Environmental Science majors for employment in the EAL and prep labs. (08/23/2018)
	EAL Annual Report **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome	**Finding Reporting Year:** 2012-2013 **Goal met:** Yes EAL Annual Report (12/12/2013)	
	Instrument Utilization Report **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes Environment science majors proficiently utilized multiple sampling analytical techniques and laboratory equipment. (05/15/2018) **Related Documents:**	**Use of Result:** Continue to maintain access for students to modern instrumentation and equipment for field and laboratory experience. Continue to plan for maintenance expenses as well as new acquisitions related

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
		3 yr Equipment Usage.xlsx	to emerging technologies. (05/15/2018) **Budget Rationale:** A combination of university resources (course and program fees) and grant activity are needed to support this initiative.
Scholarship - The university supports an active and engaged faculty in the environmental sciences **Goal Status:** Active **Goal Category:** Administrative & Staffing	Annual Faculty Scholarship Report **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome		
Infrastructure - The University provides resources for the maintenance and support of the program including the science labs of Crawford Hall and the Environmental Analysis Laboratory. **Goal Status:** Active **Goal Category:** Infrastructure Resource Objectives	Instrumentation Acquisition & Replacement Plan **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome	**Finding Reporting Year:** 2013-2014 **Goal met:** Yes Instrumentation Acquisition & Replacement Plan (12/12/2013)	

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Degree Audits**
This documentation is relevant to Question number:	**Part II #3**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Degree Audits for Environmental Science w/concentrations in: 1) Policy & Management, 2) Physical Sciences, and 3) Chemistry**

LAKE SUPERIOR STATE UNIVERSITY

B.S. Environmental Science – Policy & Management Concentration

Name_____ **ID#** _____ **Advisor**_____
Expected Date of Graduation_____ **Chair Approval** _____

Enter semester (i.e. F08) and grade (i.e. B) for each class at LSSU, for transfer credits enter BOTH: 'TR' and the grade.

Environmental Science Core Requirements (66-67cr.)

	Grade/Sem.
USEM101 University Seminar 1 (Take USEM101during 1st semester)	
NSCI103 Environmental Science 3	
EVRN131 Introduction to GIS/GPS 3	
EVRN211 Field Data Methods 1	
EVRN225 Intermediate GIS 3	
EVRN311 Environmental Law 3	
EVRN315 Human Impacts Evrn 4	
EVRN389 Evrn Research Methods 3	
EVRN395 Junior Seminar 1	
EVRN499 Senior Seminar 1	
BIOL131 General Biology: Cells 4	
BIOL132 General Biology: Organisms 4	
BIOL337 General Ecology 3	
BIOL204 General Microbiology 4	
GEOL121 Physical & Hist. Geology I 4	
Complete one course from the following two:	
*NSCI116 Intro to Oceanography 4	
*GEOG108 Physical Geography: Meteorology & Climatology 4	
CHEM115 General Chemistry I 5	
CHEM116 General Chemistry II 5	
Complete one course from the following two:	
*MATH112 Calc for Busn Life Sci 4	
*MATH151 Calculus I 4	
Complete one course from the following three:	
*MATH207 Principles of Statistics 3	
*BUSN211 Business Statistics 3	
*BIOL 280 Biostatistics 3	
Complete one course from the following two:	
*GEOL411 Hydrologic Systems: Surface and Groundwater 4	
*BIOL286 Principles of Watersheds 3	

Concentration Requirements (33 cr.)

BIOL203 Fund. of Natural Resources 3	
BIOL230 Intro Soil Sci 3	
BIOL287 Conservation Biology 3	
BIOL304 The Human Environment 3	
EVRN317 Environmental Health App 4	
EVRN325 Geospatial Analysis 3	
ECON202 Princ of Microeconomics 3	
ECON307 Environmental Economics 3	
POLI342 International Evrn Policy 3	
Complete two courses from the following three:	
*EVRN355 GIS Program & App 4	
*EVRN365 Applied Geospatial Tech 4	
*EVRN445 Remote Sens Spatial Stats 4	

Directed Electives (5 cr. minimum)

BIOL284 Princ of Forest Conservation 4	
BIOL470 Restoration Ecology 3	
BUSN308 Managing Cultural Diff 3	
CHEM208 Survey Organic Chem 4	
COMM302 Argument. & Advocacy 3	
COMM320 Public Relations4	
CSCI105 Intro to Computer Program 3	
EVRN495 Senior Project 2	
EVRN435 Environmental Systems 3	
FIRE312 Hazardous Materials Mgmt 4	
GEOG 302 Economic Geography 4	
GEOG306 Cultural Geography 3	
POLI110 Intro American Gvt & Politics 4	
POLI201 Intro to Public Admin 3	
POLI301 Policy Analysis & Eval 4	

General Education Requirements (22-25 cr.)

☐ *Check if MTA completed*

ENGL110 First year composition I 3	
ENGL111 First year composition II 3	
COMM101 Fundamentals Speech 3	
Humanities Elective_____	
Humanities Elective_____	
Social Sci. 3cr. fulfilled by ECON202 above	
Social Science elective 3-4 _____	
Diversity elective 3-4 _____	
Natural Science – fulfilled by core requirements	
Mathematics – fulfilled by core requirements	

Graduation Criteria include:

☐ Residency: 50% of 300/400 courses earned at LSSU
☐ Total credits in excess of 124
☐ Minimum 24 Cr. at 300/400 level
☐ GPA OVERALL & in major, minimum of 2.0
Office use: Dean_____

LAKE SUPERIOR STATE UNIVERSITY

B.S. Environmental Science – Physical Sciences Concentration

Name_____ **ID#** _____ **Advisor**_____
Expected Date of Graduation_____ **Chair Approval** _____

Enter semester (i.e. F08) and grade (i.e. B) for each class at LSSU, for transfer credits enter BOTH: 'TR' and the grade.

Environmental Science Core Requirements (66-67cr.)

	Grade/Sem.
USEM101University Seminar 1	
Take USEM101during 1st semester	
NSCI103Environmental Science3	
EVRN131Introduction to GIS/GPS 3	
EVRN211 Field Data Methods 1	
EVRN225 Intermediate GIS 3	
EVRN311Environmental Law 3	
EVRN315 Human Impacts Evrn4	
EVRN389 Environ Res Methods 3	
EVRN395 Junior Seminar 1	
EVRN499 Senior Seminar 1	
BIOL131General Biology: Cells 4	
BIOL132General Biology: Organisms 4	
BIOL337 General Ecology 3	
BIOL204 General Microbiology 4	
GEOL121Physical & Hist. Geology I 4	
Complete one course from the following two:	
*NSCI116Intro. to Oceanography 4	
*GEOG108Physical Geography: Meteorology & Climatology 4	
CHEM115 General Chemistry I 5	
CHEM116 General Chemistry II 5	
Complete one course from the following two:	
*MATH112Calc for Business & Life Sciences 4	
*MATH151Calculus I 4	
Complete one course from the following three:	
*MATH207Principles of Statistics3	
*BUSN211 Business Statistics 3	
*BIOL280 Biostatistics 3	
Complete one course from the following two:	
*GEOL411 Hydrologic Systems: Surface and Groundwater 4	
*BIOL286Principles of Watersheds 3	

Concentration Requirements (35 cr.)

BIOL230 Introduction to Soils 4	
CHEM208Surv Org Chem 4	
CHEM231 Quantitative Analysis 4	
CHEM332 Instrumental Analysis 4	
EVRN317 Environmental Health App 4	
EVRN341 Environmental Chemistry 4	
EVRN435 Environ. Systems 3	
PHYS221 or PHYS231 (4)	
PHYS222 or PHYS232 (4)	

General Education Requirements (25-29 cr.)

☐ *Check if MTA completed*

ENGL110 First year composition I 3	
ENGL111 First year composition II 3	
COMM101 Fundamentals Speech 3	
Humanities Elective_____	
Humanities Elective_____	
Social Science elective 3-4 _____	
Social Science elective 3-4 _____	
Diversity elective 3-4 _____	

Natural Science – fulfilled by core requirements
Mathematics – fulfilled by core requirements

Graduation Criteria include:
- ☐ Residency: 50% of 300/400 courses earned at LSSU
- ☐ Total credits in excess of 124
- ☐ Minimum 24 Cr. at 300/400 level
- ☐ GPA OVERALL &in major, minimum of 2.0

Office use: Dean_____

LAKE SUPERIOR STATE UNIVERSITY

B.S. Environmental Science – Chemistry Concentration

Name_____ **ID#** _____ **Advisor**_____
Expected Date of Graduation_____ **Chair Approval** _____

Enter semester (i.e. F08) and grade (i.e. B) for each class at LSSU, for transfer credits enter BOTH: 'TR' and the grade.

Environmental Science Core Requirements (66-67cr.)

	Grade/Sem
USEM101 University Seminar 1	
Take USEM101 during 1st semester	
NSCI103 Environmental Science 3	
EVRN131 Introduction to GIS/GPS 3	
EVRN211 Field Data Methods 1	
EVRN225 Intermediate GIS 3	
EVRN311 Environmental Law 3	
EVRN315 Human Impacts Evrn 4	
EVRN389 Evrn Research Methods 3	
EVRN395 Junior Seminar 1	
EVRN499 Senior Seminar 1	
BIOL131 General Biology: Cells 4	
BIOL132 General Biology: Organisms 4	
BIOL337 General Ecology 3	
BIOL204 General Microbiology 4	
GEOL121 Physical & Hist Geology I 4	
Complete one course from the following two:	
*NSCI116 Intro to Oceanography 4	
*GEOG108 Physical Geography: Meteorology & Climatology 4	
CHEM115 General Chemistry I 5	
CHEM116 General Chemistry II 5	
Complete one course from the following two:	
*MATH112 Calculus for Business & Life Sciences 4	
*MATH151 Calculus I 4	
Complete one course from the following three:	
*MATH207 Principles of Statistics 3	
*BUSN211 Business Statistics 3	
*BIOL280 Biostatistics 3	
Complete one course from the following two:	
*GEOL411 Hydrologic Systems: Surface and Groundwater 4	
*BIOL286 Principles of Watersheds 3	

#For American Chemical Society certified degree (See Department Chair for special rules and additional requirements regarding ACS certification):
#EVRN495 Senior Project 2 _____

Concentration Requirements (51-52 cr.)

	Grade/Sem
PHYS221 or PHYS231 Physics 4	
PHYS222 or PHYS232 Physics 4	
CHEM225 Organic Chemistry I 4	
CHEM231 Quantitative Analysis 4	
CHEM261 Inorganic Chemistry 4	
CHEM326 Organic Chemistry II 4	
CHEM332 Instrumental Analysis 4	
CHEM341 Environmental Chemistry 4	
CHEM351 Introductory Biochemistry 4	
CHEM353 Introductory Toxicology 3	
CHEM361 Physical Chemistry I 4	
CHEM363 Physical Chemistry lab 1	
EVRN435 Evrn Systems 3	
Complete one of the following math options:	
*ENGR140 Linear Algebra 2	
AND	
*ENGR245 Calculus App. Tech. 3	
OR	
*MATH152 Calculus II 4	

General Education Requirements (25-29 cr.)

☐ *Check if MTA completed*

ENGL110 First year composition I 3	
ENGL111 First year composition II 3	
COMM101 Fundamentals Speech 3	
Humanities Elective_____	
Humanities Elective_____	
Social Science elective 3-4 _____	
Social Science elective 3-4 _____	
Diversity elective 3-4 _____	
Natural Science – fulfilled by core requirements	
Mathematics – fulfilled by core requirements	

Graduation Criteria include:
☐ Residency: 50% of 300/400 courses earned at LSSU
☐ Total credits in excess of 124, Min.24 Cr. at 300/400 level
☐ GPA OVERALL & in major, minimum of 2.0

Office use: Dean_____

LAKE SUPERIOR STATE UNIVERSITY

Academic Program Review

DUE DATE: November 21, 2018

Guidelines for Completing the Academic Program Review

Questions in Part 2 should be completed for each distinct academic degree program in the School. In the cases where an academic degree holds specialized programmatic accreditation, Schools can cite the page(s) which address the prompt question. In all cases, attach evidence where available using the appendix cover sheet to identify how the evidence supports the relevant criteria or prompt.

PART 2: Degree-Level Review

Degree Program: Fisheries and Wildlife Management

Explain how the program works to address each of the following questions. For each question, respond with a narrative and supporting evidence.

Assessment (CC 4.B and CC 4.C)

1. Provide evidence that the degree-level program outcomes are clearly stated and are effectively assessed, including the "use of results." Attach the 4-Column Program Assessment Report.

2. Explain how results from degree assessments were used to improve the degree program. Include specific examples.

A survey of Conservation Officer job requirements of 17 states revealed that requirements vary by state, with some states requiring only B.S. degrees in natural resource management, such as Fisheries and Wildlife Management (e.g., Wyoming), and others not requiring any level of college education (e.g., Michigan), although many successful candidates have some level of higher education. Programs that are nested within other degrees and offer multiple career options for graduates are likely to be most successful in increasing program enrollment as well as providing employment after graduation. A Conservation Officer concentration was added to the Fisheries and Wildlife management program based on this information.

Quality, Resources and Support (CC 3.A)

3. Explain how the program ensures that degree program-level and course-level learning outcomes are at an appropriate level. Attach evidence, including a degree audit for the program.

Course learning outcomes are determined by faculty primarily responsible for the course. Teaching qualifications for courses are based on graduate course work and research experiences, ensuring expertise in discipline areas. Course learning outcomes are determined by this qualified faculty.

Course rigor is the responsibility of the faculty teaching the course. Lower and upper level courses differ in rigor and the degree of higher level learning outcomes. Lower level courses focus on recall and comprehension, upper level courses rely more on course work requiring synthesis, analysis and evaluation. Methods of assessment also vary with exams and quizzes common in lower level courses transitioning to written reports, case studies, and analysis of lab data in the upper level courses.

Program outcomes and assessment of student achievement are addressed through examination of capstone (Seminar) rubrics.

The Lumina Foundation's Degree Qualification Profile (DQP) is suggested as a resource for answering the questions about what students should know and be able to do at each degree level:
http://degreeprofile.org/wp-content/uploads/2017/03/DQP-grid-download-reference-points-FINAL.pdf

Intellectual Inquiry (CC 3.B).

4. Explain what the program does to engage students in collecting, analyzing, and communicating information; mastering modes of inquiry or creative work; developing skills integral to the degree program. Attach examples of undergraduate research, projects, and creative work.

The seminar series BIOL199, 299, 399, 495, & 499 was designed to train students in the use of primary literature, to design a research project, carry it out, analyze data collected and to communicate results.

The series culminates in BIOL499 where the students write a scientific paper detailing their project, create a poster and attend a session to describe it to an audience of lay people and specialists, and deliver an oral presentation of the more salient results of their work.

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Four Column Assessment Report**
This documentation is relevant to Question number:	**Part II #1**
Briefly summarize the content of the file and its value as evidence supporting program review:	**TRACDAT Program assessment report**

Assessment: Program Four Column Fisheries and Wildlife Management

LAKE SUPERIOR STATE UNIVERSITY

Program (CoSE) - Fisheries Wildlife Management BS

Assessment Contact: Dr. Dennis Merkel, Chair
Mission Statement: Graduates of the Bachelors of Science Degree in Fisheries & Wildlife Management at Lake Superior State University will demonstrate skill in the practice of natural resources conservation or management and the ability to design and complete a scientific investigation.

Student Learning Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
Scientific Literature - Students in the Fisheries and Wildlife Management program will thoroughly research and synthesize the primary literature for information relevant to a current scientific investigation. **Goal Status:** Active **Goal Category:** Student Learning **Goal Level (Bloom/Webb):** High-Level (Creating/Evaluating)	**Direct - Capstone Project - including undergraduate research** - As part of their undergraduate research project, F&W students are required to use sources from the primary literature to communicate the scope and rationale of their project. Rubrics are used to evaluate this requirement for the poster, thesis paper, and oral presentation. **Criteria Target:** All F&W students will meet minimum satisfactory requirements (average 6 of 10 for the relevant sections of the presentation rubrics; 12 of 20 for the 'Introduction' section of the thesis rubric). At least 75% of the students will demonstrate exemplary performance (average 9 of 10 for the relevant sections of the presentation rubrics; 18 of 20 for the 'Introduction' section of the thesis rubric). **Schedule/Notes:** Assessment will occur each semester.	**Finding Reporting Year:** 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/30/2018)	**Use of Result:** In future semesters, request that Biol 499 instructor record individual scores for all sections within rubrics. Completed for Fall 2108 semester (08/30/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Spring 2017 All students met the minimum acceptable standard for the paper and presentation 50% of the students demonstrated exemplary standards for the paper, 36% of the students demonstrated exemplary standards for the presentation (08/16/2017)	**Use of Result:** Discussion of the minimum and exemplary standards led to: Agreement that 6 out of 10 was NOT an acceptable minimum standard, this was raised to 7 out of 10 It was decided that a standard of 75% of the students meeting the exemplary level was not realistic, it was changed to 25% Since the introduction section of the project is aslo evaluated it was decided to use the senior rubric for the 399 final proposal and

Student Learning Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	High Impact Program Practices 1: Undergraduate Research **High Impact Program Practices 2:** Capstone Course(s), Projects **Related Documents:** Presentation Rubric		compare this to the senior paper. An increase of 20% in average scores is expected. The senior rubric will be changed to reflect that 6/10 is not in the acceptable range (08/27/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Fall 2016 All students met the minimum acceptable standard for the paper and presentation 71% of the students demonstrated exemplary standards for the paper, 14% of the students demonstrated exemplary standards for the presentation (01/16/2017)	
		Finding Reporting Year: 2012-2013 **Goal met:** No (Fall 2012) All F&W students met the minimum acceptable standards for the poster. 53% of F&W students demonstrated exemplary standards for the poster. (05/13/2013)	
		Finding Reporting Year: 2012-2013 **Goal met:** No (Spring 2013) All F&W students met the minimum acceptable standard for each of the three formats (poster, oral presentation, and thesis paper. 90% of F&W students demonstrated exemplary performance for the oral presentation. 73% of F&W students demonstrated exemplary performance for the thesis paper. 50% of F&W students demonstrated exemplary	

Student Learning Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
		performance for the poster. (05/10/2013)	
	Direct - Presentation, Performance - As part of their undergraduate research project, F&W students are required to discuss the results of their project within the context of previously published work, (using sources from the primary literature). Rubrics are used to evaluate this requirement for the poster and oral presentation. **Criteria Target:** All F&W students will meet minimum acceptable standards (average 6 of 10 across the relevant sections of both rubrics). At least 75% of the students will exhibit exemplary performance (average 9 of 10 across the relevant sections of both rubrics). **Schedule/Notes:** Assessment will take place each semester. **High Impact Program Practices 1:** Undergraduate Research **High Impact Program Practices 2:** Capstone Course(s), Projects **Related Documents:** Research Poster Rubric	**Finding Reporting Year:** 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/30/2018)	**Use of Result:** In future semesters, request that Biol 499 instructor record individual scores for all sections within rubrics. Completed for Fall 2108 semester (08/30/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Spring 2017 All Students met minimum acceptable standards in presentation Poster results not recorded 14% of students exhibited exemplary performance on presentation (08/21/2017)	**Use of Result:** Discussion of the minimum and exemplary standards led to: Agreement that 6 out of 10 was NOT an acceptable minimum standard, this was raised to 7 out of 10 It was decided that a standard of 75% of the students meeting the exemplary level was not realistic, it was changed to 25% More focus on scientific literature incorporated into the Freshman seminar course (08/27/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Fall 2016 All Students met minimum acceptable standards in both poster and presentation 29% of students exhibited exemplary performance on poster 14% of students exhibited exemplary performance on presentation (12/21/2016)	
		Finding Reporting Year: 2012-2013 **Goal met:** No (Fall 2012)	

Student Learning Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
		All F&W students met the minimum acceptable standards for the poster. 47% of F&W students demonstrated exemplary standards for the poster. (05/13/2013)	
		Finding Reporting Year: 2012-2013 **Goal met:** No (Spring 2013) All F&W students met the minimum acceptable standards for both the poster and oral presentation. 59% of F&W students demonstrated exemplary standards for the oral presentation. 53% of F&W students demonstrated exemplary standards for the poster. (05/10/2013)	
	Direct - Writing Intensive Assignment - Students in the sophomore seminar sequence are required to complete a literature review paragraph in an area related to the research interests. Students may repeat the assignment until a letter perfect draft is obtained. **Criteria Target:** All students will meet minimum satisfactory requirements (60% on the assignment) At least 50% of our students will exhibit above-average performance (80% on the assignment) **Schedule/Notes:** Assessment will be conducted each semester **High Impact Program Practices 1:** Common Intellectual Experiences **High Impact Program Practices 2:** Undergraduate Research	**Finding Reporting Year:** 2017-2018 **Goal met:** No Fall 2017 60 % of students met minimum satisfactory requirements 55% of students exhibited above average performance (08/21/2018)	**Use of Result:** Examination of 299 assignments revealed that many students did not take the opportunity to rewrite their assignment. This approach will be modified in the fall of 2018 in 299 Professionalism and intellectual maturity incorporated into BIOL199 Discussion of the minimum and exemplary standards led to: Agreement that 60% was NOT an acceptable minimum standard, this was raised to 70% (08/27/2018)
	Direct - Capstone Project - including undergraduate research - As part of their undergraduate research	**Finding Reporting Year:** 2016-2017 **Goal met:** No Spring 2017	**Use of Result:** Discussion of the minimum and exemplary

Student Learning Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	project, F&W students are expected to properly cite sources from the primary literature. Rubrics are used to evaluate this requirement for both the poster and written paper. **Criteria Target:** All F&W students will meet minimum acceptable standards for properly citing references (6 of 10 for the 'References' section of the poster rubric; less than 4 points deducted from the 'Literature Cited' section of the paper rubric). At least 75% of the students will meet an exemplary standard for properly citing references (9 of 10 for the 'References' section of the poster rubric; less than 2 points deducted from the 'Literature Cited' section of the paper rubric). **Schedule/Notes:** Assessment will occur each semester. **High Impact Program Practices 1:** Writing-Intensive Course(s) **High Impact Program Practices 2:** Capstone Course(s), Projects **Related Documents:** Research Paper Rubric	93% of students met minimum acceptable standard on the paper 78% of students exhibited exemplary performance on the paper (08/21/2017)	standards led to: Agreement that 6 out of 10 was NOT an acceptable minimum standard, this was raised to 7 out of 10 It was decided that a standard of 75% of the students meeting the exemplary level was not realistic, it was changed to 25% Continue assignments in 199, 299, & 399 (08/27/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes Fall 2016 All students met minimum acceptable standards for the paper All students exhibited exemplary performance for the paper (12/21/2016)	
		Finding Reporting Year: 2012-2013 **Goal met:** Yes (Fall 2012) All F&W students met the minimum acceptable standards for the poster. 67% of F&W students demonstrated exemplary standards for the poster. (05/13/2013)	**Use of Result:** It was determined that the focus of evaluating the poster should be on communicating results and discussion more than on literature citations. (08/21/2014)
		Finding Reporting Year: 2012-2013 **Goal met:** No (Spring 2013) All F&W students met the minimum acceptable standards for the thesis paper. 89% of F&W students met the minimum acceptable standards for the poster. 79% of F&W students demonstrated exemplary standards	

Student Learning Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
		for the poster. 73% of F&W students demonstrated exemplary standards for the thesis paper. (05/10/2013)	
Scientific Investigation - Students in the Fisheries and Wildlife Management program will design and conduct a scientific investigation of a testable hypothesis or methodology using appropriate tools and techniques. **Goal Status:** Active **Goal Level (Bloom/Webb):** High-Level (Creating/Evaluating)	**Other Findings**	**Finding Reporting Year:** 2016-2017 **Goal met:** No Fall 2016 All students met the minimum satisfactory requirements 29% of the students exhibited exemplary performance on the methods, results, and discussions of the paper rubric (12/21/2016)	
	Direct - Capstone Project - including undergraduate research - All F&W students are required to conduct an independent and original research project under the guidance of a faculty mentor. The mentor evaluates the scientific merit of the project, as presented in written thesis, using the 'Methods', 'Results', and 'Discussion' sections of a grading rubric. **Criteria Target:** All students will meet minimum satisfactory requirements (36 of 60 over the relevant sections of the rubric). At least 75% of the students will achieve exemplary performance (54 of 60 over the relevant sections of the rubric). **Schedule/Notes:** Assessment will be conducted each semester **High Impact Program Practices 1:** Undergraduate Research **High Impact Program Practices 2:** Writing-Intensive Course(s) **Related Documents:** Research Paper Rubric	**Finding Reporting Year:** 2016-2017 **Goal met:** No Fall 2016 All students met the minimum satisfactory requirements 29% of the students exhibited exemplary performance on the methods, results, and discussions of the paper rubric (12/21/2018)	**Use of Result:** Discussion of the minimum and exemplary standards led to: Agreement that 36 out of 60 was NOT an acceptable minimum standard, this was raised to 42 out of 60 It was decided that a standard of 75% of the students meeting the exemplary level was not realistic, it was changed to 25% Continue current assignments in seminar sequence (08/27/2018)
		Finding Reporting Year: 2017-2018 **Goal met:** No Scores of individual sections were not recorded and compiled. (08/30/2018)	**Use of Result:** In future semesters, request that Biol 499 instructor record individual scores for all sections within rubrics. Completed for Fall 2108 semester (08/30/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Spring 2017	

Student Learning Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
		All students met the minimum satisfactory requirements 29% of the students exhibited exemplary performance on the methods, results, and discussions of the paper rubric (08/21/2017) **Finding Reporting Year:** 2012-2013 **Goal met:** No (Spring 2013) All F&W students met the minimum acceptable standard. 73% of F&W students demonstrated exemplary standards. (05/13/2013)	
Communication - Students in the Fisheries and Wildlife Management program will effectively communicate the results or outcomes of their scientific investigation in multiple formats. **Goal Status:** Active **Goal Level (Bloom/Webb):** High-Level (Creating/Evaluating)	**Direct - Presentation, Performance** - All F&W students are required to communicate the results of an independent research project in the form of a poster presentation. This includes a 2-hour Q&A session, open to the public, with the students in attendance. Posters are evaluated by multiple faculty using a rubric. **Criteria Target:** All F&W students will meet minimum satisfactory requirements (60 of 100 on the rubric) At least 75% of our students will achieve exemplary performance (90 of 100 on the rubric). **Schedule/Notes:** Assessment will occur each semester. **High Impact Program Practices 1:** Undergraduate Research **High Impact Program Practices 2:** Capstone Course(s), Projects **Related Documents:** Research Poster Rubric	**Finding Reporting Year:** 2016-2017 **Goal met:** No Spring 2017 All F&W students met the minimum acceptable standard for the poster. 29% of F&W students demonstrated exemplary performance for the poster. (08/21/2017)	**Use of Result:** Discussion of the minimum and exemplary standards led to: Agreement that 60 out of 100 was NOT an acceptable minimum standard, this was raised to 70 out of 100 It was decided that a standard of 75% of the students meeting the exemplary level was not realistic, it was changed to 25% (08/27/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Fall 2016 All F&W students met the minimum acceptable standard for the poster. 43% of F&W students demonstrated exemplary performance for the poster. (12/21/2016)	
		Finding Reporting Year: 2012-2013 **Goal met:** No	

Student Learning Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
		(Fall 2012) All F&W students met the minimum acceptable standard for the poster. 67% of F&W students demonstrated exemplary performance for the poster. (05/13/2013)	
		Finding Reporting Year: 2012-2013 **Goal met:** No (Spring 2013) All F&W students met the minimum acceptable standard for the poster. 61% of F&W students demonstrated exemplary standards for the poster. (05/13/2013)	
	Direct - Presentation, Performance - All F&W students are required to communicate the results of an independent research project in the form of a PowerPoint presentation at a research symposium held at the end of each semester. Presentations are evaluated by multiple faculty using a rubric. **Criteria Target:** All F&W students will meet minimum satisfactory requirements (24 of 40 on the rubric) At least 75% of the students will achieve exemplary performance (36 of 40 on the rubric). **Schedule/Notes:** Assessment will take place each semester. **High Impact Program Practices 1:** Undergraduate Research **High Impact Program Practices 2:** Capstone Course(s), Projects **Related Documents:** Presentation Rubric	**Finding Reporting Year:** 2016-2017 **Goal met:** No Spring 2107 All F&W students met the minimum acceptable standard for the oral presentation 36% of F&W students demonstrated exemplary performance for the oral presentation (08/21/2017)	**Use of Result:** Discussion of the minimum and exemplary standards led to: Agreement that 24 out of 40 was NOT an acceptable minimum standard, this was raised to 28 out of 40 It was decided that a standard of 75% of the students meeting the exemplary level was not realistic, it was changed to 25% (08/27/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Fall 2016 All F&W students met the minimum acceptable standard for the oral presentation. 14% of F&W students demonstrated exemplary performance for the oral presentation. (12/21/2016)	
		Finding Reporting Year: 2012-2013 **Goal met:** Yes (Spring 2013)	

Student Learning Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
		All F&W students met the minimum acceptable standard for the oral presentation. 76% of F&W students demonstrated exemplary performance for the oral presentation. (05/13/2013)	
	Direct - Capstone Project - including undergraduate research - All F&W students are required to communicate the results of an independent research project in the form of a written paper. The paper is evaluated by each student's faculty mentor using a rubric. **Criteria Target:** All F&W students will meet minimum satisfactory requirements (60 of 100 on the rubric). At least 75% of our students will achieve exemplary performance (90 of 100 on the rubric). **Schedule/Notes:** Assessment will take place each semester. **High Impact Program Practices 1:** Undergraduate Research **High Impact Program Practices 2:** Capstone Course(s), Projects **Related Documents:** Research Paper Rubric	**Finding Reporting Year:** 2016-2017 **Goal met:** No Spring 2017 All F&W students met the minimum acceptable standards for the written thesis. 43% of F&W students demonstrated exemplary performance for the written thesis. (08/21/2017)	**Use of Result:** Discussion of the minimum and exemplary standards led to: Agreement that 60 out of 100 was NOT an acceptable minimum standard, this was raised to 70 out of 100 It was decided that a standard of 75% of the students meeting the exemplary level was not realistic, it was changed to 25% Continue with current seminar assignments (08/27/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** No Fall 2016 All F&W students met the minimum acceptable standards for the written thesis. 14% of F&W students demonstrated exemplary performance for the written thesis. (12/21/2016)	
		Finding Reporting Year: 2012-2013 **Goal met:** No (Spring 2013) All F&W students met the minimum acceptable standards for the written thesis. 64% of F&W students demonstrated exemplary performance for the written thesis. (05/13/2013)	
External Validity - Graduates of the	**Indirect - Report/Audit - External -**		

Student Learning Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
Fisheries and Wildlife Management program will be prepared to meet certification requirements of the American Fisheries Society or The Wildlife Society. **Goal Status:** Active **Goal Category:** Operational Goal, not related to student learning **Goal Level (Bloom/Webb):** Goal is not a student learning outcome.	Program requirement will be compared to the certification requirements of the American Fisheries Society (AFS) and The Wildlife Society (TWS). Our program requirements will be modified as needed to ensure that our graduates can meet the educational requirements for certification established by these professional Societies. **Criteria Target:** All F&W graduates opting for a concentration in either Fisheries Management or Wildlife Management will meet the minimum educational requirements for certification by the AFS or TWS respectively. **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome	**Finding Reporting Year:** 2012-2013 **Goal met:** No Program change proposals to the F&W programs were approved by the School of Biological Sciences on 10/29/2012. The proposal was forwarded to the University Curriculum Committee and approved on 11/28/2012. The proposal was then forwarded to the Provost's Council for final approval. The revised program will take effect in the Fall of 2013. (11/28/2012)	**Use of Result:** In 2015-2016 program revisions were enacted to conform to certification requirements. A faculty position was given a portfolio to develop the human dimensions aspect of the program. This development will continue in the Fall of 2018. Discussions will continue during the Fall of 2018 on: Tracking students who receive certification How to incorporate certification so that students may receive it before graduation (08/27/2018)
		Finding Reporting Year: 2011-2012 **Goal met:** Yes In the spring of 2012 the faculty within the F&W program identified professional certification as a desirable and achievable goal. At this time our program requirements did not match those of the relevant professional societies (AFS and TWS). (03/14/2012)	**Use of Result:** Continue to monitor certification requirements for the AFS & TWS. (12/03/2012) **Use of Result:** Modify the concentrations in Fisheries Management and Wildlife Management to match the minimum educational requirements for certification by the AFS or TWS. (10/25/2012)
Professionalism - Graduates of the Fisheries and Wildlife Management program will have developed a sense of professionalism/work ethic **Goal Status:** Active	Survey of Graduates **Criteria Target:** On graduate survey over 50% of graduates will rank the program in the top two categories of a 5 category scale	**Finding Reporting Year:** 2018-2019 **Goal met:** Yes 57% of graduates ranked program as having helped build skills in areas of professionalism/ work ethic (08/27/2018)	**Use of Result:** Continue graduate survey refine questions Continue work on Internship coordinator position to develop

Student Learning Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
Goal Category: Student Learning **Start Date:** 08/12/2018 **Institutional Learning:** ILO4 - Professional Responsibility - Students will demonstrate the ability to apply professional ethics and intercultural competence when answering a question, solving a problem, or achieving a goal.			more internship opportunities (08/27/2018)

Appendix Cover Sheet

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Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Examples of Undergraduate Research**
This documentation is relevant to Question number:	**Part II #4**
Briefly summarize the content of the file and its value as evidence supporting program review:	**A typical example of the senior symposium program**

Lake Superior State University- School of Biological Sciences Symposium, Saturday December 3, 2016

8:50 – 9:00 a.m. **302 Crawford**

Welcome – Dean of Arts and Sciences, Dr. Donna Fiebelkorn

Fisheries/Wildlife/Conservation Session
302 Crawford

9:00 – 9:20 a.m.

Food source comparison of eastern hemlock (Tsuga canadensis) cones vs northern white cedar (Thuja occidentalis) cones for north american red squirrels (Tamiasciurus hudsonicus)

Katie Brownell

North American red squirrels (*Tamiasciurus hudsonicus*) can be beneficial to trappers as a fur bearing mammal, to larger animals as a food source and to food trees as a seed disperser. They can also be very destructive and cause massive amounts of damage to property by building nests and chewing holes. Red squirrels are also a consistent source of power outages, costing factories and businesses thousands of dollars of loss production a day. Management to increase or decrease squirrel population numbers centers around their food sources and feeding habits. The goal of this study was to determine which one of two trees, the Eastern Hemlock (*Tsuga canadensis*) or the Northern White Cedar (*Thuja occidentalis*) were more useful as a food source to the red squirrels based on feeding habits and dry weight available. Two study sites were set at Tahquamenon Falls State Park Rivermouth in the Fall of 2016. Multiple squirrels were observed feeding on multiple target trees for each site. Samples of seeds were taken from each type of cone and measurements were done to get an average seed weight for each type cone. A t-test compared the two cone types for dry weight available for a 4.2 hour feeding day. It was found that the Eastern Hemlock tree was more beneficial with a p-value less than 0.01. This data will be helpful in assisting future studies in creating management plans for North American red squirrels.

9:20 – 9:40 a.m. a.m.

Endohelminth Communities within Eastern Upper Peninsula Waterfowl in 2014

Jessica Haller

Waterfowl hunting is a popular recreational sport in Munoscong Bay, found within the Eastern Upper Peninsula of Michigan. Hunters and Biologists are often interested in knowing about the health risks of consuming waterfowl, the risks of pathogenic diseases in waterfowl, and the ecology of waterfowl feeding. By surveying endohelminths (Nematodes, Trematodes, Cestodes, Acanthocephalans) found in hunter-harvested waterfowl we addressed the aforementioned issues. A total of 21 waterfowl representing common species harvested along Munoscong Bay (Bufflehead (*Bucephala albeola*), Mallard (*Anas platyrhynchos*), Common Merganser *Mergus merganser*) and Redhead (*Aythya americana*)) were collected during fall 2014, and frozen until necropsy. Partial necropsy of intestinal tracts occurred, helminths were collected and identified. Thirty individual parasites were collected with *Corynosoma Constrictum* being the most abundant and prevalent. Out of all the waterfowl collected, 48% were infected with endohelminthths. I found no know pathogenic species to either humans or waterfowl. The high infection rate of *C. constrictum* indicates that waterfowl were feeding on freshwater amphipods over the summer months prior to migration. With the Upper Peninsula having so many waterfowl hunters, it is extremely important to understand the amount and types of parasites using ducks as hosts because if pathogenic parasites are found, it could become detrimental to humans and other species of animals.

9:40 – 10:00 a.m.

Does bioaccumulation of mercury differ between a hatchery-reared and wild Lake Trout (salvelinus namaycush) in Lake Huron?

Kyle Urban

The Lake Trout (*Salvelinus namaycush*) is a top pelagic predator in the Great Lakes and an ecologically and economically important native species. In addition to being apex predators, Lake Trout have a long life span, which allows them to accumulate high concentrations of contaminates such as mercury. The objective of my study was to determine if hatchery-reared and wild Lake Trout had different concentrations of mercury at the same total length and age. Muscle tissue samples were collected in the summer of 2015 from Lake Trout in Lake Huron and analyzed for concentration of mercury using dynamic mechanical analysis. A total of 79 samples were analyzed; 47 were hatchery-reared fish and 32 were wild fish. Concentrations of mercury increased with the total length of fish, but did not differ between hatchery-reared and wild Lake Trout. My results indicate that even though hatchery-reared Lake Trout were fed a prepared diet for the first 14 months of their life, their concentrations of mercury were similar to wild Lake Trout that fed on wild prey. Lake Trout being reared in hatcheries and their prepared diets should be tested for concentrations of mercury to help better understand if they accumulate mercury from their food.

10:00 – 10:20 a.m.

Comparing four types of survey methods for Herpetofauna in Northern Michigan

Graham Peters

Amphibians have been difficult to survey due to the variety of behaviors, times, habitats, and seasons they are active. Wildlife managers have employed many survey methods to accurately determine what species are in a given area. During this study, four survey methods were applied at sites around Michigan's northern Lower Peninsula and eastern Upper Peninsula. A preliminary call survey was conducted in the Upper Peninsula. Pitfall traps and coverboards were concurrently placed and checked throughout the study period at three different sites. Manual search and capture was done at the end of the study period in order to supplement unsuccessful pitfall traps and coverboards. The call survey gave us knowledge of what frogs and toads were present but missed reptiles and non-singing amphibians. Pitfall traps caught eleven individuals from four different species while coverboards were completely unsuccessful. Manual capture was the most effective yielding 40 individuals from eight different species over 18 hours of searching.

10:20 – 10:40 a.m. **Break**

10:40 – 11:00 a.m.

Assessing the Economic Feasibility of a Plastic to Oil Pyrolysis Machine

Andrew Grossmann

Human's use of plastics has increased in recent decades and is becoming a problem to dispose of. Current recycling methods, although useful to an extent, is based on public participation who recycle less than 25% of common plastics. Plastic pyrolysis machines heat plastic and Styrofoam into oil and have met with great success and profits but as of yet are outside the common households price range. The goal of my project was to assess the economic feasibility of a small scale plastic heating machine that a household could afford. Twenty potential consumers of the product were interviewed and their sustainable habits, willingness to purchase the machine, and annual income were assessed. Overall 90% of those who participated were willing to purchase the machine at the proposed price of $1500. Those in the lower and higher wage classes were more willing to purchase the machine at a higher price than annual salary makers of 60-100K. The results show that a pyrolysis machine was economically feasible but must undergo more research and a working prototype is advised.

11:00 – 11:20 a.m.

Ash Tree Diameter in Relation to Emerald Ash Borer Induced Mortality

Connor Mason

The Emerald Ash Borer is a relatively new, extremely dangerous invasive species that is currently ravaging the Ash tree population in both the United States and Canada. This can have serious implications on the future composition of our forests if the Emerald Ash Borer keeps spreading. Many people do not know the dangers of bringing wood in and out of campsites and as a result, humans play a big role in the spread of the beetle. The objective of this project was to determine the relationship between Ash tree diameter and EAB infestation rates and ultimately see what Michigan forests might look like in the future. I decided on four sites to investigate, surveying 60 Ash trees in each site. The circumferences of the trees were measured using a sewing tape. The density of the trees at each site was also recorded. A general trend was found that suggests that the Emerald Ash Borer starts wiping out Ash trees when the tree gets to about five inches in diameter. I believe this means that we will not see any more mature Ash trees in our forests and instead will only see young Ash trees. This could throw off the balance of the ecosystem as species might depend on mature Ash trees being around especially in areas of high density.

11:20 – 11:40 am

Comparison of Fish Assemblages in Adventitious and Non-adventitious Streams

Samuel Day

Adventitious streams are unique streams that differ from the general concept of stream networks in that they do not mark a gradual change in stream size and habitat from the mainstem. These sharp habitat differences may result in more unique fish assemblages. The objectives of this study were to determine if fish assemblages of adventitious streams differed from those of non-adventitious streams in the Pine River watershed (Eastern Upper Peninsula, MI), and if these differences could be attributed to habitat differences. There were no significant differences in Shannon-Weiner diversity values between adventitious and non-adventitious streams. Species richness and similarity varied more by stream position than stream type. However, differences in habitat, including stream width, temperature, and discharge were observed between adventitious and non-adventitious streams, whereas specific conductivity varied more by stream position than stream type. These results suggest that watershed factors (e.g., land use, surficial geology) may have a stronger influence on fish assemblage structure than stream type (i.e., adventitious or non-adventitious) in the Pine River watershed. Fisheries managers could use this information to prioritize management efforts within the watershed.

11:40 – 12:00

Autumn Wiese

Habitat loss has led to decline in waterfowl populations in areas across the United States. One way to counter the loss of habitat is wetland restoration and mitigation, those projects recreate and restore the habitat that was once lost. There are still some questions on how much these new wetlands are used. This study compared waterfowl numbers and species composition in mitigation wetlands and natural wetlands. Trail cameras were placed at 2 study sites in Mason County, MI to capture detailed images of the migrating waterfowl. An additional 2 sites were observed, via the point source survey method. The data was analyzed by site and bird species. Paired t-test and chi-squared analysis were used to compare bird usage by species of the mitigation vs. natural wetlands. It showed that waterfowl do use both wetlands, but use on the mitigated sites was about half of the natural sites. These results will assist in future projects that aim to understand how waterfowl react to and use mitigated wetlands.

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Natural Resources and Environment**
Document Title (if attached) or Filename (if emailed):	**Degree Audits**
This documentation is relevant to Question number:	**Part II #3**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Degree Audits for F&W, Fisheries Concentration, Wildlife Concentration, Conservation Officer Concentration**

LSSU Fisheries and Wildlife

LAKE SUPERIOR STATE UNIVERSITY

B.S. FISHERIES & WILDLIFE MANAGEMENT

Name _____

ID _____

GPA		REQUIREMENTS	
NA	Cumulative	0	Credits
NA	Major	0	LSSU Credits
NA	Gen Ed	0%	% 300 / 400

APPROVAL & VERIFICATION

_____ _____

Advisor *Date*

_____ _____

Registrar *Date*

Effective Fall 2018

MAJOR

Course	Subst	Sem	Credits	Grade
BIOL131			4	
BIOL132			4	
BIOL199			1	
BIOL203			3	
BIOL220			4	
BIOL250			3	
BIOL280			3	
BIOL299			1	
BIOL310			3	
BIOL311			3	
BIOL312			3	
BIOL333			3	
BIOL337			3	
BIOL339			3	
BIOL345			4	
BIOL399			1	
BIOL432			3	
BIOL439			3	
BIOL495			2	
BIOL499			1	
CHEM115			5	
CHEM116			5	
EVRN131			3	
MATH111			3	
MATH112			4	
Biology...			---	
Botany...			---	
Zoology...			---	
PhysSci...			---	

GENERAL EDUCATION

Course	Sem	Credits	Grade
COMM101		3	
ENGL110		3	
ENGL111		3	
Humn...		---	
Humn...		---	
SocSci...		---	
SocSci...		---	
Diversity...		---	

FREE ELECTIVES

Course	Sem	Credits	Grade

DEVELOPMENTAL

Course	Sem	Credits	Grade
READ091		3	
MATH087		3	
MATH088		3	

LSSU Fisheries and Wildlife

LAKE SUPERIOR STATE UNIVERSITY

B.S. FISHERIES & WILDLIFE MANAGEMENT

Fisheries Management Concentration

Name _____

ID _____

GPA		REQUIREMENTS	
NA	Cumulative	0	Credits
NA	Major	0	LSSU Credits
NA	Gen ed	0%	% 300 / 400

APPROVAL & VERIFICATION

_____ _____

Advisor *Date*

_____ _____

Registrar *Date*

Effective Fall 2018

MAJOR

Course	Subst	Sem	Credits	Grade
BIOL131			4	
BIOL132			4	
BIOL199			1	
BIOL203			3	
BIOL220			4	
BIOL250			3	
BIOL280			3	
BIOL299			1	
BIOL310			3	
BIOL333			3	
BIOL337			3	
BIOL345			4	
BIOL372				
BIOL399				
BIOL432			3	
BIOL475			3	
BIOL495			2	
BIOL499			1	
CHEM115			**5**	
CHEM116			**5**	
EVRN131			**3**	
MATH111			**3**	
MATH112			**4**	
Biology...			---	
Biology...			---	
Biology...			---	
Zoology...			---	
HumDim...			---	
PhysSci...			---	

GENERAL EDUCATION

Course	Sem	Credits	Grade
COMM101		3	
ENGL110		3	
ENGL111		3	
Humn...		---	
Humn...		---	
SocSci...		---	
SocSci...		---	
Diversity...		---	

FREE ELECTIVES

Course	Sem	Credits	Grade

LSSU Fisheries and Wildlife

LAKE SUPERIOR STATE UNIVERSITY

B.S. FISHERIES & WILDLIFE MANAGEMENT

Wildlife Management Concentration

Name _____

ID _____

GPA		REQUIREMENTS	
NA	Cumulative	0	Credits
NA	Major	0	LSSU Credits
NA	Gen Ed	0%	% 300 / 400

APPROVAL & VERIFICATION

_____ *Advisor* _____ *Date*

_____ *Registrar* _____ *Date*

Effective Fall 2018

MAJOR

Course	Subst	Sem	Credits	Grade
BIOL131			4	
BIOL132			4	
BIOL199			1	
BIOL202			3	
BIOL203			3	
BIOL220			4	
BIOL250			3	
BIOL280			3	
BIOL284			4	
BIOL299			1	
BIOL311			3	
BIOL312			3	
BIOL337			3	
BIOL339			3	
BIOL399			1	
BIOL439			3	
BIOL495			2	
BIOL499			1	
CHEM115			5	
CHEM116			5	
EVRN131			3	
MATH111			3	
MATH112			4	
Biology...			—	
Zoology...			—	
PhysSci...			—	
Policy...			—	
Policy...			—	
Policy...			—	

GENERAL EDUCATION

Course	Sem	Credits	Grade
COMM101		3	
ENGL110		3	
ENGL111		3	
Humn...		—	
Humn...		—	
SocSci...		—	
SocSci...		—	
Diversity...		—	

FREE ELECTIVES

Course	Sem	Credits	Grade

LSSU Fisheries and Wildlife

LAKE SUPERIOR STATE UNIVERSITY

B.S. FISHERIES & WILDLIFE MANAGEMENT

Conservation Officer Concentration

Name _____

ID _____

GPA		REQUIREMENTS	
NA	Cumulative	0	Credits
NA	Major	0	LSSU Credits
NA	Gen Ed	0%	% 300 / 400

APPROVAL & VERIFICATION

_____ _____

Advisor *Date*

_____ _____

Registrar *Date*

Effective Fall 2018

MAJOR

Course	Subst	Sem	Credits	Grade
BIOL131			4	
BIOL132			4	
BIOL199			1	
BIOL203			3	
BIOL220			4	
BIOL250			3	
BIOL280			3	
BIOL299			1	
BIOL310			3	
BIOL333			3	
BIOL337			3	
BIOL339			3	
BIOL345			4	
BIOL399			1	
BIOL432			3	
BIOL439			3	
BIOL495			2	
BIOL499			1	
CHEM115			5	
CHEM116			5	
CJUS101			3	
CJUS102			3	
CJUS197			1	
CJUS201			1	
COMM225			3	
EVRN131			3	
MATH111			3	
MATH112			4	
PSYC101			4	
Botany...			---	

GENERAL EDUCATION

Course	Sem	Credits	Grade
COMM101		3	
ENGL110		3	
ENGL111		3	
Humn...		---	
Humn...		---	
Diversity...		---	

FREE ELECTIVES

Course	Sem	Credits	Grade

Taxonomy...	---	
CrimJus...	---	
Sociology...	---	

LAKE SUPERIOR STATE UNIVERSITY

Academic Program Review

DUE DATE: November 21, 2018

Guidelines for Completing the Academic Program Review

Questions in Part 2 should be completed for each distinct academic degree program in the School. In the cases where an academic degree holds specialized programmatic accreditation, Schools can cite the page(s) which address the prompt question. In all cases, attach evidence where available using the appendix cover sheet to identify how the evidence supports the relevant criteria or prompt.

PART 2: Degree-Level Review

Degree Program: B. S. Geology

Explain how the program works to address each of the following questions. For each question, respond with a narrative and supporting evidence.

Assessment (CC 4.B and CC 4.C)

1. Provide evidence that the degree-level program outcomes are clearly stated and are effectively assessed, including the "use of results." Attach the 4-Column Program Assessment Report.

   The degree level program outcomes are summarized in Improve:
   See attached 4 column program assessment report from Improve

2. Explain how results from degree assessments were used to improve the degree program. Include specific examples.

   There is ongoing assessment of the geology program. We have worked with national experts to develop a geology program that integrates course material through project centered and often field focused activities. Through feedback from students, industry and educational professionals via surveys, publications, conference presentations and personal communication we have increased the frequency and intellectual depth field focus student course projects. Through these project center activities students improve their observational skills and make connections and integrating concepts from multiple subdisciplines to address geoscience questions and prepare to be geoscience professionals.

Quality, Resources and Support (CC 3.A)

3. Explain how the program ensures that degree program-level and course-level learning outcomes are at an appropriate level. Attach evidence, including a degree audit for the program.

The LSSU geology program is nationally recognized the curriculum and focus on student development and application of core geoscience concepts and skills (Kelso and Brown, 2015). Our focus is on student's development of student mastery and application of geoscience core concepts. The activities described above are selected and developed to address the Lumina Foundations Degree Qualification Profile by developing students core knowledge and skills while working with team members to integrate and apply this knowledge to solve real world problems. LSSU geoscience faculty continue to work with individuals and the community to develop appropriate and relevant course and program level outcomes, examples of program degree audits are attached. As an example of the recognition of LSSU leadership in this field Dr. Paul Kelso was invited to be one of three national panelists at a geoscience town hall titled "What Are the Core Competencies and Skills for Earth Science Students?" at the Earth Educators' Rendezvous in Madison, WI, July 19, 2016

Kelso, Paul, and Lewis M. Brown, 2015, Integrating field-centered, project based activities with academic year coursework: A curriculum wide approach, American Geophysical Union, Abstract: 73998.

Intellectual Inquiry (CC 3.B).

4. Explain what the program does to engage students in collecting, analyzing, and communicating information; mastering modes of inquiry or creative work; developing skills integral to the degree program. Attach examples of undergraduate research, projects, and creative work.

The project centered and often field focused activities described above require geology students to solve problems through development of a plan, collecting and analyzing information and communicating the results of their work written and/or orally. An example of LSSU course level, real world, project centered field activities in GEOL431 Geophysical Systems were presented at the American Geophysical Union meeting in Fall 2018 (Kelso and Brown, 2018). Many geology students also complete research projects which involve collecting, analyzing, and communicating information. Attach are a couple of examples of geology student research projects which students presented at the Geological Society of America North Central Section meeting in Ames, IA in April, 2018. One of the LSSU student projects at the Geological Society of America North Central Section meeting was recognized at runner up for the best student project overall (attached file: Geology 4a Student research). Another LSSU student project presented at this meeting was recognized with the best Undergraduate Student Paper Award by the Great Lakes Section of the Society for Sedimentary Geology.

Kelso, Paul, and Lewis M. Brown, 2018, A Project-Based, Field Focused Introductory Geophysics Course that Integrates Multiple Near Surface Geophysical Techniques to Solve Problems, ED51H-0653, presented at 2018 Fall Meeting, American Geophysical Union, Washington, D.C., 10-14 Dec.

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School: SNRE	
Document Title (if attached) or Filename (if emailed):	**Attached file Geology 1 Assessment_ Program Four Column**
This documentation is relevant to Question number:	**Program question 1**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Improve 4 column geology program data**

Assessment: Program Four Column

Program (CoSE) - Geology BS

Assessment Contact: Dr. Paul Kelso

Program Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
Knowledge & Skills - The Geology graduate will demonstrate 1. theoretical and practical knowledge of geologic principles; 2. Team work, 3. professional behavior, 4. communication skills **Goal Status:** Active	**Other Findings**	**Finding Reporting Year:** 2016-2017 **Goal met:** Yes Final two projects Sorensen Ranch and Badger Pass goal 70% or better on geologic map achieved by 70% of the students 88% of students received a 70% or better [more] (08/21/2018)	**Use of Result:** Encourage students to consider geologic processes and impact of rock exposure as constraints on interpretations (08/21/2018)
Institutional Learning: ILO1 - Formal Communication - Students will develop and clearly express complex ideas in written and oral presentations.		**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 91% received a 70% or better on presentation in GEOL468 (06/07/2018)	**Use of Result:** encourage students to give practice presentation to peers at least 1 day before classroom presentation (08/21/2018)
	Direct - Presentation, Performance - Student mastery of knowledge and skills demonstrated through individual projects associated with particular courses will be used to evaluate this outcome **Criteria Target:** 70% of students will achieve 70% or better **High Impact Program Practices 1:** Collaborative Assignments, Projects **High Impact Program Practices 2:** Common Intellectual Experiences		
Employability - The Geology graduate will demonstrate readiness for	**Direct - Group project, collaborative learning -** performance on projects -		

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
geoscience employment such as: an environmental geologist, public sector geoscientist, mud logger, geophysicist, mine geologist, exploration geologist, etc. **Goal Status:** Inactive **Institutional Learning:** ILO1 - Formal Communication - Students will develop and clearly express complex ideas in written and oral presentations.	which are often designed to simulate geologist employment activities discussions with alumni and/or employers **High Impact Program Practices 1:** Capstone Course(s), Projects **High Impact Program Practices 2:** Collaborative Assignments, Projects		
Readiness for Graduate Study - The Geology graduate will demonstrate readiness for graduate school and competiveness for graduate assistantships **Goal Status:** Active	**Other Findings**	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes approximately 25% of geoscience students attend graduate school 2017: 50% of LSSU geology graduates accepted to graduate school (08/20/2018)	**Use of Result:** continue to encourage students to consider graduate school as an option in group and individual conversations. (08/20/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes approximately 25% of geoscience students attend graduate school 2017: 50% of LSSU geology graduates accepted to graduate school (07/19/2017)	**Use of Result:** encourage students to consider graduate school as an option in group and individual conversations. (08/20/2018)
		Finding Reporting Year: 2012-2013 **Goal met:** Yes 83% of LSSU geology graduates accepted to graduate school (12/10/2013)	
	Regular, recurring - Graduate school acceptance **High Impact Program Practices 1:** Capstone Course(s), Projects **High Impact Program Practices 2:** Undergraduate Research		
	Indirect - Report/Audit - Internal - Percent of students accepted to graduate school **Criteria Target:** approximately 25% of geoscience students attend		

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	graduate school **High Impact Program Practices 1:** Capstone Course(s), Projects **High Impact Program Practices 2:** Undergraduate Research		
Scholarship - The university suppports scholarship where undergraduate students have the opportunity to engage in geoscience research, often publishable, working with faculty mentors **Goal Status:** Active **Institutional Learning:** ILO3 - Analysis and Synthesis - Students will organize and synthesize evidence, ideas, or works of imagination to answer an open-ended question, draw a conclusion, achieve a goal, or create a substantial work of art.	**Other Findings**	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 59% of LSSU Junior/Seniors geology majors participated in independent research 32% of LSSU Junior/Seniors geology majors presented or were coauthors on abstracts presented at national or regional scholarly (08/20/2018)	**Use of Result:** Encourage students to consider presenting the results of their research at scientific meetings (08/20/2018) **Budget Rationale:** funds to help defray travel costs are essential. Funds in addition to Student research and students activities fund are important if students are going to regularly have the opportunity to participate in these meetings which are career building experiences for students.
		Finding Reporting Year: 2016-2017 **Goal met:** Yes 61% of LSSU Junior/Seniors geology majors participated in independent research 29% of LSSU Junior/Seniors geology majors presented or were coauthors on abstracts presented at national or regional scholarly meetings (07/19/2017)	**Use of Result:** Encourage students to consider presenting the results of their research at scientific meetings (08/20/2018) (08/20/2018) **Budget Rationale:** funds to help defray travel costs are essential. Funds in addition to student research and students activities fund are important if students are going to regularly have the opportunity to participate in these meetings which are career building experiences for students.
	Direct - Capstone Project - including undergraduate research - Student participation in research projects **Criteria Target:** 25% **High Impact Program Practices 1:** Undergraduate Research	**Finding Reporting Year:** 2012-2013 **Goal met:** Yes 75% of LSSU Junior/Seniors geology majors participated in independent research 25% of LSSU Junior/Seniors geology majors presented or were coauthors on abstracts presented at national or	

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	High Impact Program Practices 2: Capstone Course(s), Projects	regional scholarly meetings (12/10/2013)	
Infrastructure - The university supplies resources for the maintenance and support of the geology program including field trip expenses and logistics, field and Crawford Hall laboratory equipment and facilities and appropriate technology and software **Goal Status:** Active **Goal Category:** Infrastructure Resource Objectives **Goal Level (Bloom/Webb):** Goal is not a student learning outcome.	**Indirect - Report/Audit - Internal -** report of department infrastructure needs **High Impact Program Practices 1:** Not applicable to this outcome **High Impact Program Practices 2:** Not applicable to this outcome	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes ongoing equipment were assessed Equipment purchases require that course and program fees collected from students within the program are rolled over from year to year so that significant purchases can be made as needed for the geology program. Many larger purchases are not made yearly but require the funds from multiple years to accumulate before purchases are made. This goal met if funds are rolled over from year to year as has been the case in recent years. If funds are not rolled over from year to year this goal is not met. (08/20/2018)	**Use of Result:** Discussions with administration and the budget office have noted the importance of maintaining roll over funds in all accounts from year to year to facilitate purchase that vary from year to year to support geology students and associated equipment and materials which are integral to their educational experience. (08/20/2018) **Budget Rationale:** See above about the importance of maintaining roll over of funds in CSSM, student course fee and student program fee within individual program budgets from year to year to facilitate major purchases and to accommodate expenses which vary from year to year. Without roll o
Technical Skills - The Geology graduate will solve geologic problems by demonstrating competence conducting field and laboratory studies; 2. creating and interpreting geoscience maps and cross sections, 3. analyzing geologic data sets and software and/or technology **Goal Status:** Active	**Other Findings**	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 67% of students received a 70% or better on these field data collection activities in GEOL308 Of students who handed in all components of assignment 100% received a 70% or better (06/05/2018)	**Use of Result:** Stress the importance of each students handing in all components of each assignment. remind students these skills are important for success in future projects and future classes (07/24/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes 90% of students received a 70% or better on these field data collection activities in GEOL308 (06/27/2017)	**Use of Result:** Encourage students to hand in all components of each activity. (08/21/2018)
	Direct - Presentation, Performance -		

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	Mastery associated with outcomes of course projects **Criteria Target:** 70% of students get 70% or better on activity **High Impact Program Practices 1:** Collaborative Assignments, Projects		

Appendix Cover Sheet

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Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School: SNRE	
Document Title (if attached) or Filename (if emailed):	**File names :Geology 3 BS_geology_audit_F16 Geology 3 BS_geology-enviornmental option_Audit_F16**
This documentation is relevant to Question number:	**Program question 3**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Geology degree audits**

LAKE SUPERIOR STATE UNIVERSITY

B.S. - GEOLOGY - ENVIRONMENTAL GEOLOGY OPTION

Name: _____ ID: _____ Program Start Date: _____

Advisor: _____ Expected Month/Year of Graduation: _____

Dept. Chair Approval: _____ Date: _____

Note: All information below should be from the student's most recent transcript and/or transfer evaluation sheet. Attach substitution/waiver forms as necessary.

General Education Requirements

		Cr	Semester	Grade
Communications – 9 Credits				
(or other approved gen. ed. comm. courses)				
ENGL 110	First Year Composition I	3		
ENGL 111	First Year Composition II	3		
COMM101	Fundamentals of Speech Communication	3		
Humanities – 6-8 Credits				
Social Science – 6-8 Credits				
Cultural Diversity – 3-4 Credits				
Natural Science – 7-8 Credits				
(Satisfied by courses listed under program requirements)				
Mathematics – 3 Credits				
(Satisfied by courses listed under program requirements)				

Program Requirements

		Cr	Semester	Grade
GEOL 121	Physical/Historical Geology I	4		
GEOL 122	Physical/Historical Geology II	4		
GEOL 223	Mineralogy and Petrology	5		
GEOL 308	Structural Geology Systems	5		
GEOL 380	Introduction to Field Geology	3		
GEOL 315	Geoenvironmental Systems	5		
GEOL 411	Hydrologic Systems: Surface and Groundwater	4		
GEOL 431	Geophysical Systems	5		
GEOL 450	Geology Seminar I	2		
GEOL 451	Geology Seminar II	2		
GEOL 480	Advanced Field Geology	3		
CHEM 115	General Chemistry I	5		
CHEM 116	General Chemistry II	5		
CHEM 225	Organic Chemistry I	4		
CHEM 326	Organic Chemistry II	4		

Program Requirements (continued)		Cr	Semester	Grade
[PHYS 221	Principles of Physics I * *or*	4		
PHYS 231	Applied Physics Eng./Sci I *]			
[PHYS 222	Principles of Physics II * *or*	4		
PHYS 232	Applied Physics Eng./Sci II *]			
MATH 111	College Algebra *	3		
[MATH 112	Calculus for Busi. and Life Sci. *	4		
	or			
MATH 151	Calculus I *]			
[MATH 207	Prin. of Statistical Methods or	3		
MATH 308	Prob. and Math. Statistics or			
BUSN 211	Business Statistics]			
	Program Requirements Subtotal	**78**		

Distributed electives to equal 95 credits				
GEOL 325	Clastic Systems	4		
GEOL 445	Carbonate Systems	5		
GEOL 490	Research Topics in Geology	1-4		
CHEM 231	Quantitative Analysis	4		
CHEM 332	Instrumental Analysis	4		
CHEM 341	Environmental Chemistry	4		
FIRE 312	Hazardous Material Management	4		
BIOL 230	Introduction to Soil Science	4		
NSCI 103	Environmental Science	3		
EVRN 131	Intro GIS/GPS	3		
	Distributed Electives Subtotal	**17**		
Total Credits (Program Requirements + Distributed Electives)		**95**		

* Students with adequate preparation in mathematics are advised to take MATH151 and MATH152 and to take PHYS231/PHYS232.

Students must complete a minimum of 124 credits to receive a Bachelor's degree.

Directions: Fill in the semester and grade for each course as completed. Two semesters before your intended graduation date this form should be filled in indicating the courses you are then taking, and those you will take in the next semester. Have the form signed and submit to the Fletcher Center with your Graduation Application form. You must have a signed Course Substitution/Waiver Form for any deviations from the audit above – see your advisor for this form.

LAKE SUPERIOR STATE UNIVERSITY

B.S. – GEOLOGY

Name: _____ ID: _____ Program Start Date: _____

Advisor: _____ Expected Month/Year of Graduation: _____

Dept. Chair Approval: _____ Date: _____

Note: All information below should be from the student's most recent transcript and/or transfer evaluation sheet.

General Education Requirements

		Cr	Semester	Grade
Communications – 9 Credits				
(or other approved gen. ed. comm. courses)				
ENGL110	First Year Composition I	3		
ENGL 111	First Year Composition II	3		
COMM101	Fundamentals of Speech Communication	3		
Humanities – 6-8 Credits				
Social Science – 6-8 Credits				
Cultural Diversity – 3-4 Credits				
Natural Science – 7-8 Credits				
(Satisfied by courses listed under program requirements)				
Mathematics – 3 Credits				
(Satisfied by courses listed under program requirements)				

Program Requirements

Geology Course Requirements			Semester	Grade
GE 121	Physical/Historical Geology I	4		
GE 122	Physical/Historical Geology II	4		
GE 223	Mineralogy and Petrology	5		
GE 308	Structural Geology Systems	5		
GE 315	Geoenvironmental Systems	5		
GE 323	Geochemical Systems	4		
GE 325	Clastic Systems	4		
GE 380	Introduction to Field Geology	3		
GE 411	Hydrologic Systems: Surface and Groundwater	4		
GE 431	Geophysical Systems	5		
GE 445	Carbonate Systems	5		
GE 450	Geology Seminar I	2		
GE 451	Geology Seminar II	2		
GE 468	Tectonic Systems	5		
GE 480	Advanced Field Geology	3		
	Subtotal	**60**		

Supporting Course Requirements		Cr	Semester	Grade
CHEM 115	General Chemistry I	5		
CHEM 116	General Chemistry II	5		
[PHYS 221	Principles of Physics I *	4		
	or			
PHYS 231	Applied Physics Eng./Sci I *]			
[PHYS 222	Principles of Physics II *	4		
	or			
PHYS 232	Applied Physics Eng./Sci. II *]			
MATH 111	College Algebra *	3		
[MATH 112	Calculus for Busi. & Life Sci. *	4		
	or			
MATH 151	Calculus I *]			
[MATH 207	Principles of Statistical Methods	3		
	or			
MATH 308	Prob. and Math. Statistics			
	or			
BUSN 211	Business Statistics]			
	Subtotal	**28**		

*Students with adequate preparation in mathematics are advised to take MATH151 and MATH152 and to take PHYS231/PHYS232.

Students must complete a minimum of 124 credits to receive a Bachelor's degree.

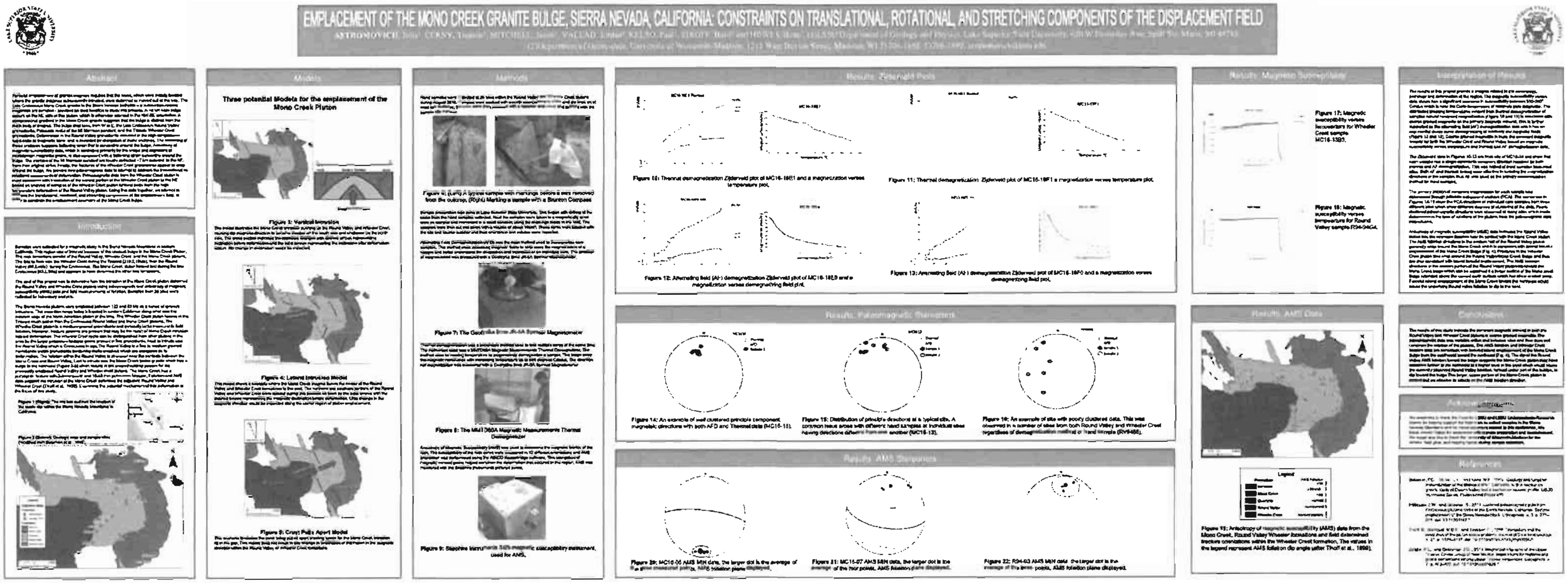
Directions: Fill in the semester and grade for each course as completed. Two semesters before your intended graduation date this form should be filled in indicating the courses you are then taking, and those you will take in the next semester. Have the form signed and submit to the Fletcher Center with your Graduation Application form. You must have a signed Course Substitution/Waiver Form for any deviations from the audit above – see your advisor for this form.

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School: SNRE	
Document Title (if attached) or Filename (if emailed):	**Filenames attached:** **Geology 4a Student research** **Geology 4b Student research** **Geology 4c Class team project**
This documentation is relevant to Question number:	**Program question 4**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Examples of student class projects and independent research projects**


EMPLACEMENT OF THE MONO CREEK GRANITE BULGE, SIERRA NEVADA, CALIFORNIA: CONSTRAINTS ON TRANSLATIONAL, ROTATIONAL, AND STRETCHING COMPONENTS OF THE DISPLACEMENT FIELD
Abstract
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Results: AMS Stereonets
Results: AMS Data
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Figure 20: MC16-05 AMS MIN data, the larger dot is the average of the three measured points. AMS foliation plane displayed.
Figure 21: MC16-07 AMS MIN data, the larger dot is the average of the four points. AMS foliation plane displayed.
Figure 22: RV94-03 AMS MIN data, the larger dot is the average of the three points. AMS foliation plane displayed.
Conclusions
Acknowledgments
References

LAKE SUPERIOR STATE UNIVERSITY

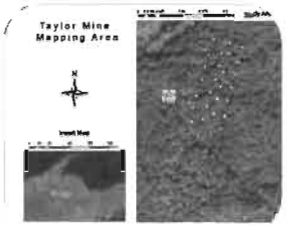
Taylor Mine

Julia Astromovich, Jay Cockrell, & Christina Boyce

LSSU

Introduction

On September 4th, 2016 a geophysics class from LSSU was sent out to the Baraga area for a weekend survey of the Taylor Mine Area. Taylor Mine is currently an abandoned iron mine (See Map 1 for location details). The objective of the survey was to determine contacts between lithologic units in the area, create a geologic map from the geophysical data, and determine the geologic history of the area. To achieve this goal, survey equipment was used to set up a survey grid (Map 1). Once the grid was set up, a series of geophysical equipment was used in the area. Equipment included, self potential, EM16 (VLF), proton procession magnetometer (Scintrex Envi Mag), fluxgate magnetometer (M700), and a horizontal loop EM (Apex Max-Min II). Field notes were also taken of outcrops that were visible in the area. Data was later compiled where it could be further processed in graphs and figures to better understand the geology of the area. The geologic foundation of the Upper Peninsula was formed from Archean aged cratons impacting. Later, in the Proterozoic these cratons began to rift which caused mafic dikes to reach at near surface before eventually cooling as the rifting of the Keweenaw halted prematurely.



Map 1: Field location near Barega, MI. Survey lines were 0m to 60m with 20m spacing. Stations were -100m to 200m with 5m spacing.

Abstract

A geophysics class at Lake Superior State University was sent to Baraga, MI to use geophysical survey equipment to map out a study area and section it into four separate lines with the total area being 300m by 60m. In this study area, different geophysical equipment was used on each line to determine magnetic and electromagnetic variances in the subsurface. The electromagnetic data was collected using a VLF system and a horizontal loop EM system while the magnetic data was collected using a proton precession magnetometer and a fluxgate magnetometer. Also, self-potential data was collected on all four lines to measure natural current in the ground. The EM and magnetic data was then processed and modeled in Oasis Montaj to determine the location, size, and properties of the materials in the subsurface. Those data sets which could not be modeled in Oasis Montaj were modeled in Surfer as a surface map depending on the values of the data. It was determined that there are three different rock types in the area surveyed; phyllite, gabbro, and gneiss (BIF). From these discovered rock types, a geologic map was created and a basic cross section after interpreting all the data. In this area it is likely that the gneiss (BIF) and phyllite layers were deposited around the same time in the Archean oceans. At a later time, folding occurred in the area, possibly of tectonic origin. Next, a magmatic intrusion occurred and cut along a plane of weakness that existed from the previous folding. After all models were created, it was later determined that the results of the magnetics data in Oasis Montaj were not completely adjusted. The directions on the lines were about 15 degrees off of the north direction and the induced magnetics were not entirely accounted for because of this.

Procedures

EM16 (VLF)
Electromagnetic waves from Cutler, Maine cause secondary currents to occur within conductive bodies in the ground. This instrument can read those secondary currents created. By adjusting the dip angle and quadrature, using sound as an indicator, conductive bodies can be located.
Horizontal Loop EM (Apex Max-Min II)
By generating its own electromagnetic waves, a transmitter and receiver system can locate conductive bodies in the ground via secondary currents generated. This instrument uses a horizontal loop system; frequencies 222, 888, and 1777 were used. (2014 data used 3555 which we later processed)
Proton Procession Magnetometer (Scintrex Envi-Mag)
This instrument measures changes in the Earth's magnetic field when over different rock types. Data at a base station is needed to correct for diurnal changes over time. Collection was done in a walking mode that continuously collected data and a station mode collected every 5m.
Fluxgate Magnetometer (McPhar M700)
The vertical component of the Earth's magnetic field is measured with this instrument. Time needed to be kept between all readings and from one base station to another to correct for diurnal variations in the Earth's magnetic field.
Self-Potential (SP)
This instrument measures the natural current in the ground. By connecting a volt-reader to the copper tip of a porous pot and saturating the ground with salt water, the volt-reader reads the changes in nanovolts from each station.

Interpretation/Discussion

EM16 (VLF)
The dip angle was used to make a surface grid within Surfer. This instrument measures conductivity and shows where the iron-rich gneisses are in the area at the surface. More extreme angles point to the iron-rich areas (**Figure 8**).
Horizontal Loop EM (Apex Max-Min)
The horizontal loop EM data was processed in a software called Oasis Montaj where it was processed via inverse modeling of the data. The best representative data was that of the frequency 3555 as seen in **Figure 9 and 5.** The program is able to determine where anomalies are located based on imputed data. Large anomalies can bee seen at the 100m to 60m and 10m to -90m. These appear to be zones of gneiss (BIF) of the iron rich rock and closely follow the dikes downwards.
Proton Precession Magnetometer (Scintrex Envi-Mag)
The PPM data was also processed in Oasis Montaj where forward modeling and inverse modeling was used. Data was imputed into the software and the usar created models using different rock types with different magnetic susceptibilities to best represent the data which can be seen in **Figure 2-4.** This model likely shows where the dikes may have intruded from below.
Fluxgate Magnetometer (M700)
Oasis is not able to calculate this magnetics data, instead it was processed in Surfer which made a surface map of where the highs and lows were in the data set (**Figure 6**). A large anomaly associated with the intrusion can be seen at about 65m on line 0.
Self-Potential
This data shows water flow in the area. The large cliff/intrusion in the center doesn't have large charge values. Water likely flows off of this cliff and along planes of weakness in the area within the folded gneiss and phyllite. Also, since the iron-rich gneiss is in the area it is likely those ions dissolve in water and then flow downhill where they collect and then as they flow charge is created in those areas (**Figure 7**).
Rock Descriptions
Gabbro; black, heavy, dense, has elongate crystals likely black plagioclase, some pyroxenes, magnets sticks to the surface, magnetic susceptibility 0.0071984 cgs units.
Gneiss (BIF); banded brown to white layers, likely a BIF, quartzite and iron rich arenite make up bands, grains visible in quartzite, bands up to 5cm thick, magnetic susceptibility of 0.00016546 cgs units.
Phyllite; gray on fresh surfaces, reddish-brown on weathered surfaces, thinly bedded (less than 1cm most often), fine-grained, silt and clay, magnetic susceptibility essentially 0 cgs units.

Results of Survey

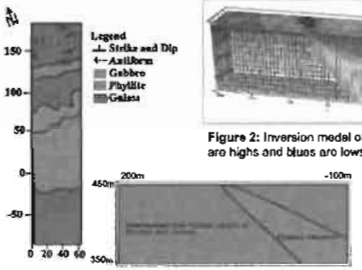


Figure 1: Geologic Map showing plunge of the antiform and geologic rock types. Cross section shows a sheet cone dike of the gabbro intrusion.

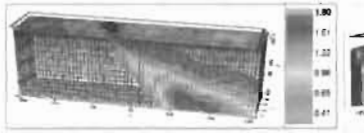


Figure 2: Inversion model of ENVI-Mag data 2014. Reds are highs and blues are lows (linear scale used).

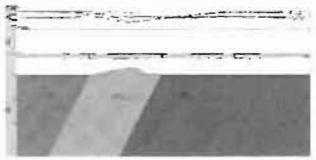


Figure 3: VE 0.04. ENVI-Mag Data from line 20, station 45m, to station 105m on line 20. Left to right labels, phyllite, gabbro intrusion, gneiss.

Figure 4: ENVI-Mag Geosoft Map. Blues show lows and pinks shows highs with green being moderate. The black line shows where the GM-SYS model was drawn from.

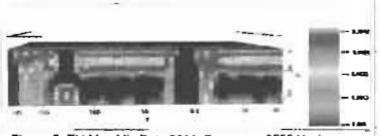


Figure 5: EM Max-Min Data 2014. Frequency 3555 Hz, in phase across entire project area. Blues are lows and reds are highs (log scale used).

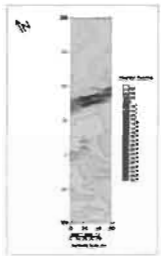


Figure 6: M700 data processed in Surfer. Blues show lows and yellows show highs.

Figure 7: Self Potential Data in millivolts. Blues and yellows indicate flow. Green is no charge.

Figure 8: EM16 data with filtered dip angle and filtered station numbers.

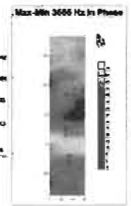


Figure 9: Max-Min 3555 Hz in Phase data processed in Surfer.

Summary/Conclusions

The Chert-Iron formation suggests deposition roughly during/before a great oxygenation event, this would have occurred in an oceanic basin environment, as iron ions saturated the oceans, micro-organisms would feed, produce oxygen and settle the iron to a layer. Once the ocean was sufficiently oxygenated, the micro-organisms would die in mass forming a chert layer and the cycle would repeat. Working with the data from the models created, it seems that the original layers were folded. Potentially when the Penokean and Superior cratons impacted, the layers were folded and thrust up out of the ocean. The folding and compaction of the layers could also have associated faults related to the stresses of the craton impacts. Later, in the Proterozoic, the mid-continental rifting event initiated, allowing mafic igneous mantle rock to rise near surface as extension began to pull the continent apart. One of these mafic dikes could possibly be highlighted in the center of this survey by the intrusion observed in the field (Figs. 2-4). Hydrothermal venting could be a possible reason for the crystallization of quartz on top of the chert and dispersed in void spaces as the iron oxidized and eroded away, this venting process would also be associated with the pluton rising from the rifting event. The shape of the intrusion could be explained by the intrusion following a previous plane of weakness from the tectonic collision event that happened earlier in the area's history. The area appears to be part of a sheet cone dike, which suggests forceful emplacement of the pluton, possibly allowed to rise from the rifting of the Keweenaw. EM data likely shows where BIFs are located. Since they are conductive, they show high points on the model (Figure 5). SP data also shows the location of the BIFs because the dissolved iron ions in the flowing water make the area more conductive (Figure 7).The data also suggests the dike intrusions are not conductive at all (Figure 5). The dike intrusion can also be seen in the M700 data (Figure 6).EM16 shows a similar trend to the max-min models showing conductive BIF and non-conductive intrusions (Figure 8).Lastly, less than 10,000 years ago the glaciers advanced and receded over the area causing massive erosion to occur which exposed the dikes in the area that may have originally been at a greater depth.

Future Work

Paleomagnetic cores for the intrusive gabbro rock could be collected to better understand the remnant magnetism to build a more accurate model. It would give the direction and proper magnitude. When creating maps in Oasis Montaj, it is imperative to add the inclination direction when creating the figures. Without the correct direction, induced magnetization cannot be accounted for. For our magnetic data, this needs to be redone (15 degrees of offset) and re-interpretation of the data needs to occur. When in the field, it is best to check all data to make sure that it was collected correctly before leaving the field site.

Acknowledgments

We would like to thank Dr. Paul Kelso for this opportunity. Without his guidance and assistance, this project would seem impossible. Also, thank you to the entire GeoPhysics class at LSSU. Without each others support, we would never have been able to complete the project.

LAKE SUPERIOR STATE UNIVERSITY

Academic Program Review

DUE DATE: November 21, 2018

Guidelines for Completing the Academic Program Review

Questions in Part 2 should be completed for each distinct academic degree program in the School. In the cases where an academic degree holds specialized programmatic accreditation, Schools can cite the page(s) which address the prompt question. In all cases, attach evidence where available using the appendix cover sheet to identify how the evidence supports the relevant criteria or prompt.

PART 2: Degree-Level Review

Degree Program: Parks and Recreation

Explain how the program works to address each of the following questions. For each question, respond with a narrative and supporting evidence.

Assessment (CC 4.B and CC 4.C)

1. Provide evidence that the degree-level program outcomes are clearly stated and are effectively assessed, including the "use of results." Attach the 4-Column Program Assessment Report.
   See Appendix I

2. Explain how results from degree assessments were used to improve the degree program. Include specific examples.

   Outcome; The graduate will demonstrate proficiency and competence in planning recreational activities in a variety of settings
   Assessment; 100% of the students met the assessment criteria Goal Met
   Use of results; Continue to require that students present and lead activities within the class period
   Continue to require that students develop and complete a 10 day, student led, wilderness or backcountry expedition to take place immediately at the conclusion of spring semester

   Outcome; the graduate will be able to apply statistical procedures and analysis to concepts and issues in the field of Park and Recreation Management
   Assessment; 66% of the students scored 70% on stat. questions on midterm Goal not met

Use of results; provide more course worksheets and allow more in class work time
revise assessment to include more stat. specific quizzes

Quality, Resources and Support (CC 3.A)

3. Explain how the program ensures that degree program-level and course-level learning outcomes are at an appropriate level. Attach evidence, including a degree audit for the program.

The following guidelines reflect the Lumina Foundation Degree Qualifications

Upon completion of this degree;

- the graduate will be able to define and explain styles and practices of the field and be familiar with terms, techniques and tools of the field.
  Specific courses which support this are; RECS 101 Introduction to Recreation and Leisure
  RECS 262 Outdoor Recreation
- the graduate will be able to investigate familiar but complex components of the field of study by assembling, arranging and reformulation ideas
  Specific course which support this are; RECS 362 Land Management for Recreation Purposes
  RECS 365 Expedition Management
- the graduate will be able to frame, clarify and evaluate complex challenges which bridges the field of study with other fields using theories, and scholarship
  Specific courses which support this are; RECS 360 Facilitation and Interpretation
  RECS 365 Expedition Management
- the graduate will be able to construct a summary project or paper through the use of scholarship and inquiry
  Specific courses which support this are; RECS 397 Junior Research Seminar
  RECS 435 Research in Recreation and Leisure Sciences
  RECS 437 Senior Research Seminar
  Current degree audit and selected course syllabi attached as Appendix II

The Lumina Foundation's Degree Qualification Profile (DQP) is suggested as a resource for answering the questions about what students should know and be able to do at each degree level:
http://degreeprofile.org/wp-content/uploads/2017/03/DQP-grid-download-reference-points-FINAL.pdf

Intellectual Inquiry (CC 3.B).

4. Explain what the program does to engage students in collecting, analyzing, and communicating information; mastering modes of inquiry or creative work; developing skills integral to the degree program. Attach examples of undergraduate research, projects, and creative work.

There are several capstone experiences affiliated with this degree program which involve mastering modes of inquiry and creative work, and result in the student's developing skills which are integral to the degree program and their professional development

Among them are; RECS 365 Expedition Management
RESC 362 Land Management for Recreation Purposes
The Senior Research sequence; RECS 397, 435,437

RECS 365
The purpose and function of this course is to provide the students with the opportunity to conceptualize all aspects of a 10 day wilderness/backcountry expedition, become aware of various pedagogical models and affiliated learning theories, determine the feasibility of the planned experience, develop a risk management plan, develop a budget, engage in fund raising, work out the logistics of food, transportation and on site considerations.
Students need to initiate and maintain contact with regional resources, identify and engage the appropriate outfitters, and complete all of the planning details necessary to complete the experience.
This course thoroughly integrates the students into "real world" affiliations, networking opportunities, and experiences.

RECS 362
One of the Learning Outcomes of this course is that the student will be working with an agency or a municipality which owns a land mass that is designated for recreational development. The student, with a small group of his or her peers, will produce a land management plan which is compatible with the goals of the land managing agency and concurrently, provides a comprehensive development plan for expanded recreational use. This project is both creative and pragmatic. Student projects which have come out of this class have been actualized by the USFS.

The Senior Research Sequence; RECS 397, RECS 435, RECS 437
This sequence involves students completing a research project which involves original research. The student identifies and selects a field related research project and, through the utilization of the scientific method, engages in a line of inquiry designed to answer a particular question.
Frequently, students align themselves with a particular recreation area; a particular state park or district of the USFS. Data obtained from student projects has been used to support development decisions and funding applications in a variety of Michigan state parks and USFS districts in Michigan.

Support documents have been submitted as Appendix III

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Science and Natural Resources**
Document Title (if attached) or Filename (if emailed):	**Appendix I**
This documentation is relevant to Question number:	**Part 2** **Assessment** **Question 1**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Appendix I contains the 4-Column Program Assessment Report This report clearly states assessment standards, results, and the use of results**

Parks and Recreation - Assessment: Program Four Column

LAKE SUPERIOR STATE UNIVERSITY

October 24, 2018

Program (CoSE) - Parks and Recreation BS

Mission Statement: The mission of this program is to provide students with the knowledge base and skill set they will need to manage the resource base and concurrently provide environmental education and experiential learning opportunities to outdoor recreation users
Assessment Contact: Dr. Sally Childs

Program Outcomes	*Assessment Criteria & Procedures*	*Assessment Results*	*Use of Results*
Land Management Policy - The student will be able to discuss and explain the history and derivation of the policies, practice and protocols specific to recreation, of the federal agencies which manage landmasses for recreation either as a primary or secondary function. **Goal Status:** Active	**Direct - Exam/Quiz - within the course** - Student will demonstrate mastery of the information through their response to questions on the mid-term and final exams. **Criteria Target:** 80% of the students will earn a score of 70% or higher on the exams	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 53% of students earned 70% or higher on the midterm, 100% of students earned 70% or higher on the final. Students MET the goal by the final exam. (12/28/2017)	**Use of Result:** Review games invented, Revised study guides, Quizzes added (12/28/2017)
Goal Level (Bloom/Webb): Mid-Level (Analyzing/Applying) [Bloom] **Institutional Learning:** ILO1 - Formal Communication - Students will develop and clearly express complex ideas in written and oral presentations. **Revision Notes:** 8/18 revised from: Graduates have developed a recreational use, land management plan for an existing undeveloped landmass	**Direct - Group project, collaborative learning** - Students will incorporate policy, practices and protocols of a specific agency as they develop a land management plan for a land mass within the jurisdiction of that agency through a collaborative capstone project. **Criteria Target:** 80% of the students will submit a management plan and receive a score of 70% or higher **High Impact Program Practices 1:** Writing-Intensive Course(s)	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 100% of the students completed the land management plan, 81% of students earned 70% or higher on the project. The goal was MET for both (12/28/2017)	**Use of Result:** Continue to; affiliate with regional land management agencies, provide detailed project outline, set due dates for submission of section drafts (12/28/2017)

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	High Impact Program Practices 2: Capstone Course(s), Projects **Direct - Experiential , including Service Learning Experience Evaluation** - Students will call 2 professionals in the field anywhere in the United States. These will be 2 people they do not know. They will conduct an interview to learn about this individual's professional responsibilities, and to seek recommendations for their own professional growth - OR - Complete a 10 hour filed based experience working with local professionals **Criteria Target:** 80% of the students will complete and submit 2 interviews 80% of the students receive a score of 70% or higher on both papers **Schedule/Notes:** Each student will contact 2 different professionals working for a land management agency somewhere in the United States. They will arrange to conduct an interview, following the interview guidelines provided. They will then write 2/1 papers and present the content of the respective interviews, or field exp. **High Impact Program Practices 1:** Service Learning, Community-based learning	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 100% of the students completed 2 interviews/field. 100% of the students earned 70% or higher on interviews/field. (12/28/2017)	**Use of Result:** Continue to require this assignment (12/28/2017)
Research - Graduates demonstrate professional competence and expertise through completion of an original research study, including a	**Direct - Writing Intensive Assignment** - Student will identify a research problem that they will explore using the scientific method.	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 90% of students selected their research problem, 81% earned 70% or higher on the first chapter assignment. Both	**Use of Result:** Continue to require that students submit drafts of each section to obtain feedback prior to submitting final paper.

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
written a senior research thesis and poster presentation. **Goal Status:** Active **Goal Level (Bloom/Webb):** High-Level (Creating/Evaluating) [Bloom] **Institutional Learning:** ILO3 - Analysis and Synthesis - Students will organize and synthesize evidence, ideas, or works of imagination to answer an open-ended question, draw a conclusion, achieve a goal, or create a substantial work of art.	They will write a first chapter which includes; Identification of study, Support for study (efficacy), Research questions/hypothesis, Limitations, Delimitations, Assumptions, Definition of terms, Summary. **Criteria Target:** 100% of the students will identify and select a research problem 80% of the students will earn a score of 70% or higher on the 1st chapter **High Impact Program Practices 1:** Writing-Intensive Course(s) **High Impact Program Practices 2:** Undergraduate Research	goals were met. (08/28/2018)	Continue to have upper class students visit class to discuss their research (08/28/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes 100% of students selected a research problem, 85% of students earned 70% or higher on the first chapter. Goal MET for both problem selection and first chapter. (08/28/2017)	**Use of Result:** Have upper classmen visit class to discuss their research (08/28/2017)
	Direct - Writing Intensive Assignment - Student will write Chapter 2 (Review of literature) and Chapters 3 (Methodology). If the student is working with human subjects, and intends to conduct their research in the summer, they will obtain IRB approval. **Criteria Target:** 80% of the students will earn a score of 70% or higher on Chapters 2 & 3 100% of the summer research students will receive IRB approval **High Impact Program Practices 1:** Writing-Intensive Course(s) **High Impact Program Practices 2:** Undergraduate Research	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 100% of students scored 70% or higher on chapter 2 and 3, 100% of "summer" students received IRB approval. Goals met. (08/28/2018)	**Use of Result:** Continue to have students submit drafts of chapters. Continue to have students submit drafts of IRB. Continue to encourage students to complete assignments (08/28/2018)
		Finding Reporting Year: 2016-2017 **Goal met:** Yes 71% of students scored 70% or higher on chapter 2 and 3, 100% of the "summer" students received IRB approval. Both goals were met. (08/28/2017)	**Use of Result:** Continue to have students submit drafts of IRB (08/28/2017)
	Direct - Writing Intensive Assignment - Student will conduct research, analyze data, write Chapter 4 (presentation of data),	**Finding Reporting Year:** 2016-2017 **Goal met:** No 100% submitted chapters 4 & 5, 66% scored 70% or higher	**Use of Result:** Require practice poster presentation in class (08/28/2017)

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	write Chapter 5 (summary discussion). Student will submit final research paper Student will provide a poster presentation **Criteria Target:** 80% of the students will submit chapters 4 and 5. 80% Of the students will receive a score of 70% or higher on their complete paper. 80% of the students will provide a poster presentation **Schedule/Notes:** Student will write and submit Chapters 4 and 5. Student submit complete research paper (Chapters 1-5). Student will provide poster presentation **High Impact Program Practices 1:** Writing-Intensive Course(s) **High Impact Program Practices 2:** Undergraduate Research	on complete paper, 100% made a successful poster presentation. Chapter goal met, paper goal NOT met, poster goal met (08/28/2017)	
Statistics - The graduate will be able to apply statistical procedures and analysis to concepts and issues in the field of Park and Recreation Management. **Goal Status:** Active **Goal Level (Bloom/Webb):** Mid-Level (Analyzing/Applying) [Bloom] **Institutional Learning:** ILO3 - Analysis and Synthesis - Students will organize and synthesize evidence, ideas, or works of imagination to answer an open-ended question, draw a conclusion, achieve a goal, or create a substantial work of art.	**Direct - Exam/Quiz - within the course** - Students will be able to demonstrate that they understand various statistical (z-scores, t-tests, ANOVA, CHI square) procedures, when it is appropriate to use them, and how to determine if significance has been reached **Criteria Target:** 80% of the students will earn a score of 70% or higher on the respective Mid-term and final exam questions **Schedule/Notes:** Student will demonstrate proficiency in understanding of various statistical procedures through their performance on the RECS 435 mid-	**Finding Reporting Year:** 2017-2018 **Goal met:** No 66% of students scored 70% + on stat. questions on mid-term 75% of students scored 70% + on stats. questions on final final (08/28/2018)	**Use of Result:** Offer quiz specific to stat procedures Provide more in class worksheets (08/28/2018)

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	term and final. Either or both exams will have 4 or 5 questions which ask the students to; identify when a particular stat. procedure is appropriate, to explain significance, and to consult tables to determine if significance has been reached re; Chi Square and Critical Value of F. These students will also complete a Stats. Course; PSCY 210 or MATH 207		
	High Impact Program Practices 1: Common Intellectual Experiences **Direct - Exam/Quiz - within the course -** The student is able to distinguish between characteristics of statistical procedures used in experimental research and descriptive research The student will be able to respond correctly to various mid-term and final exam questions (RECS 345), differentiating between characteristics of experimental and descriptive statistics. They will be able to identify how/when/which procedures would be appropriate. **Criteria Target:** 80% of the students will score 70% or higher on these respective questions	**Finding Reporting Year:** 2017-2018 **Goal met:** No 56% of students scored 70% + on stat. questions on mid-term 50% of students scored 70% + on stats. questions on final exam neither goal was met this semester (08/28/2018)	**Use of Result:** Try to find and explain more examples that are meaningful to students Increase in class discussion and Q & A Increase in class worksheets (08/28/2018)
	Direct - Capstone Project - including undergraduate research - The student will be use the appropriate statistical procedure for analyzing and presenting the data and obtained for their senior research project	**Finding Reporting Year:** 2016-2017 **Goal met:** Yes 66% of students obtained a score of 70% or higher, 100% used the appropriate method of presentation. Research project score was not met, presentation method was met. (08/28/2017)	**Use of Result:** Continue to require drafts of each chapter. Continue to provide meeting opportunities for individual students. Continue to provide examples from previous student's work (08/28/2017)

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	Criteria Target: 80% of the students will obtain a score of 70% or high on their senior research project 80% of the students will obtain a use the appropriate method of presentation of data in their senior research project **Schedule/Notes:** The student will be able to utilize the appropriate statistical procedure to analyze the data for their senior research project The presentation of data will be appropriate to the statistical procedure utilized. **High Impact Program Practices 1:** Undergraduate Research		
Recreation Planning - The graduate will demonstrate proficiency and competence in planning recreational activities in a variety of settings. **Goal Status:** Active **Goal Level (Bloom/Webb):** Mid-Level (Analyzing/Applying) [Bloom] **Institutional Learning:** ILO4 - Professional Responsibility - Students will demonstrate the ability to apply professional ethics and intercultural competence when answering a question, solving a problem, or achieving a goal.	Students will work in small groups and, using guidelines provided, select an activity which teaches a specific environmental concept, prepare an activity plan. **Criteria Target:** 80% of the students will earn a score of 70% or higher on the activity plan they develop and submit **High Impact Program Practices 1:** Collaborative Assignments, Projects	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 100% earned a score of 70% or higher on the activity plan. Goal was MET (08/28/2018) **Finding Reporting Year:** 2016-2017 **Goal met:** Yes 100% earned a score of 70% or higher on the activity plan. Goal was MET (08/28/2017)	**Use of Result:** Continue to provide activity plan guidelines. Continue to require student lead activities. Create more opportunities for peers to provide feedback (08/28/2018) **Use of Result:** Continue to provide activity plan guidelines, require student lead activities (08/28/2017)
	Direct - Group project, collaborative learning - Students will work in groups to develop a 10 day wilderness or back country expedition. Topics to be addressed include; budget, rick management, transportation logistics, bock country itinerary, trail management, food, search and	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 100% of students earned a score of 70% or higher on the expedition plan assignment. Goal was MET. (08/29/2018) **Finding Reporting Year:** 2016-2017	**Use of Result:** Continue to require drafts of sections to be submitted for review. Continue to provide in class work sessions. Continue to provide previous student work as examples (08/29/2018) **Use of Result:** Provide in class

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	rescue and first aid, equipment management. This plan must be capable of being implemented by this group at the end of the semester **Criteria Target:** 80% of the students will earn a score of 70% or higher on their expedition Plan **High Impact Program Practices 1:** Collaborative Assignments, Projects **High Impact Program Practices 2:** Capstone Course(s), Projects	**Goal met:** Yes 100% of students earned a score of 70% or higher on the expedition plan - Goal MET (08/29/2017)	work sessions (08/29/2017)
Facility Management and Outdoor/Adventure Education Leadership - The graduate will demonstrate leadership qualities, skills and competencies through the development of outdoor educational activities and programming. **Goal Status:** Active **Institutional Learning:** ILO4 - Professional Responsibility - Students will demonstrate the ability to apply professional ethics and intercultural competence when answering a question, solving a problem, or achieving a goal.	**Direct - Group project, collaborative learning** - Students will lead various outdoor activities, environmental awareness, and adventure education/back country events. Student will work with a group of their peers to lead a recreation based environmental activity. The students will provide instruction and lead their classmates through the completion of the activity **Criteria Target:** 80% of the students will earn a score of 70% on their ability to engage their classmates in the completion of the activity **High Impact Program Practices 1:** Collaborative Assignments, Projects	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 92% of students earned a score of 70% or higher for engaging their peers in the planned activity. Goal - met. (08/29/2018) **Finding Reporting Year:** 2016-2017 **Goal met:** Yes 88% of students earned a score of 70% or higher for engaging their peers in the planned activity. Goal - met. (08/29/2017)	**Use of Result:** Continue to require students to lead group activities in various classes and various settings. Continue to provide optional leadership experiences; Pathfinders, Rec Club Activities. Continue to encourage students to find summer employment opportunities that will enable them to serve in a leadership role. (08/29/2018) **Use of Result:** Continue to provide optional leadership experiences to build skills necessary for this outcome (08/29/2017)
	Indirect - Survey, including self-evaluation, peers, or graduates - The student will be involved working with their classmates to assist in leading a 10 day back country/wilderness experienceAt the	**Finding Reporting Year:** 2016-2017 **Goal met:** Yes 100% of students earned a score of 80% or higher on Expedition Behavior - goal MET. (08/29/2018) **Finding Reporting Year:** 2017-2018	**Use of Result:** Continue to use the instructor rating tool, identify any areas of persistent deficiency. (08/29/2017) **Use of Result:** Continue use of this

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results
	conclusion of the Expedition, the student will rate themselves and receive a rating from the instructor on Expedition Behavior. This rating consists of earning a maximum score of 20 points in each of 5 categories; Pre trip responsibilities, Leadership, Safety conscious behavior, Environmental ethics, General contribution **Criteria Target:** 90% of the students will earn a score of 80% or higher for Expedition Behavior	**Goal met:** Yes 100% of students earned a score of 80% or higher on Expedition Behavior - goal MET. (08/29/2018)	assessment, disaggregate findings and report on the average weightings. (08/29/2018)
	High Impact Program Practices 1: Collaborative Assignments, Projects **Direct - Experiential , including Service Learning Experience Evaluation** - Each student will complete a 400 to 600 hour Internship with an agency (local, state or federal), or not for profit or commercial enterprise that has a recreation Affiliation. Student will complete assignments affiliated with this course; completing the required hours, submission of journals, completing and submitting project report, obtaining and submitting evaluations from their site supervisors, submitting self-evaluation and summery paper **Criteria Target:** 100% of the students will submit required assignments, 90% of the students will receive an evaluation of 80% or	**Finding Reporting Year:** 2017-2018 **Goal met:** Yes 100% of students submitted the affiliated course assignments, 90% received site supervisor score of 80% or higher. Goals: MET. (08/29/2018) **Finding Reporting Year:** 2016-2017 **Goal met:** Yes 100% of students submitted the affiliated course assignments, 90% received site supervisor score of 80% or higher. Goals: MET. (08/29/2017)	**Use of Result:** Continue to require students to complete internships. Evaluate Site Supervisor survey, examine results by survey section. (08/29/2018) **Use of Result:** Revise site supervisor survey (08/29/2017)

Program Outcomes	Assessment Criteria & Procedures	Assessment Results	Use of Results

higher from their site supervisors

High Impact Program Practices 1:
Internships
High Impact Program Practices 2:
Service Learning, Community-based learning
Related Documents:
20180829142515588.pdf
20180829142507792.pdf

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Science and Natural Resources**
Document Title (if attached) or Filename (if emailed):	**Appendix II**
This documentation is relevant to Question number:	**Part 2** **Quality, Resources and Support** **Question 3**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Appendix II contains the course syllabi for the specific courses identified as meeting the Lumina Foundation Degree Qualifications.** **The current degree audit form is also included** **The course objectives which appear on each syllabi include objectives which respond to the Lumina Qualifications**

College of Science and Environment **Fall 2018**
School of Science and Natural Resources
RECS 101

Course Title:
RECS 101 Introduction to Recreation Studies and Leisure Services (3,0)

Meeting Time and Place
MWF 10-10:50 Norris 206

Prerequisites:
None

Instructor: Dr. Sally A. Childs
Office # 108J Norris Center
635-2610
schilds@lssu.edu

Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
	10:30-12 am	1-2 pm	10:30-12 am	By Appointment
	1-2 pm			

Required Text: N/A

Recommended Text: Edgington, C.R., Jordon, D.J., DeGraaf, D.G., Edginton, S.R., ***Leisure and Life Satisfaction***

Course Goals
The primary purpose of this course is to provide an introduction to the field of recreation and leisure services with an overview of; philosophy, history, theory, programs, professional leadership and organizations, economics, and leisure service providers.
This course will expose students to;

- Selected definitions, theories and philosophical concepts associated with the recreation professional's understanding of recreation and leisure
- Historical events which influenced the evolution of recreation, parks and the leisure service movement
- The purposes, organizational structure and functions of public, private and not-for-profit agencies which provide recreation and leisure services
- The various professional organizations which serve the recreation and leisure professional
- The values of recreation for special populations, and to become aware of the types of agencies which serve these populations
- The economic impact of the production and consumptions of recreation and leisure goods and services
- Contemporary issues and future trends in recreation and leisure

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School of Science and Natural Resources
RECS 101

Course Objectives: At the conclusion of this course, the student will:

1. Be able to discuss, from a professional perspective (terms and vocabulary), various theories, and philosophical concepts associated with recreation and leisure
2. Be able to identify and explain the influence of various historical events on the evolution of parks, and the leisure service movement
3. Be able to identify the specific recreation providers and the services they provide within public, private and not-for-profit agencies and organizations
4. Be able to identify specific professional organizations which serve various recreation professionals
5. Be able to identify and discuss the benefits available to special populations through recreation, and identify various organizations and agencies which specifically serve these populations
6. Be able to describe how the production of recreation goods and services impacts the region (local, state and federal) economically
7. Be able to identify and discuss contemporary issues and future trends in recreation and leisure
8. The student will be able to identify and discuss their professional career goals.
9. The student will be able to locate various job posting bulletins and web sites which are specific to their chosen careers.
10. The student will read various professional publications related recreation and leisure services
11. First Year Experience learning objectives;
    - Locate and navigate university resources
    - Generate a 2 or 4 year plan of study
    - Discover and connect to opportunities on and off campus
    - Articulate a variety of academic success strategies
    - Apply standards of ethics and professionalism
    - Explore career goals and personal strengths

Course Requirements: Papers

1 Goal paper **20 points**

The purpose of this assignment is to challenge the student to identify and explain their professional goals, and to do this from several perspectives. The students will be asked to explain short term goals (to be obtained within the next 5 years) and to identify and explain long term goals, (to be obtained within the next 10 years from this date). These goals should include identifying and briefly describing the type of career that you hope to pursue and why. This paper should be 2-4 pages in length.

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RECS 101

1 Job Search Paper **20 points**

The purpose of this assignment is to provide the student with the opportunity to actively seek out the ideal job through the use of Job Bulletins and Internet web sites. The student will search for ***currently available*** career opportunities they are attracted to, select 3 jobs which are compatible with their previously identified professional goals, briefly explain the position posted, and explain why these jobs are attractive and desirable to you will select the 1 job out of the 3 discussed which would be the job most desired by you, and explain why. The resource consulted to learn of position posting as well as contact information (name of individual and agency, e-mail and/or phone # **must** be provided for each of the 3 positions. Papers without this information will not receive points.

This paper must be formatted so that each job is discussed separately, and is preceded by identifying; the name of the job (and or job title)
where you found the job posting (specific web site or job bulletin)
posting dates
contact information (name/position of on site contact person, phone number, e-mail and regular mail address)
This paper should be 2 to 4 pages in length.

1 Abstract **20 points**
This article must be taken from a professional journal. It should NOT BE a research paper. The abstract format for this assignment will be provided by the instructor of this course. The purpose of this assignment is to introduce the student to various professional journals. It is expected that the student will use the APA writing style. This paper will be 2 pages in length.

All papers submitted for this course should be a computer generated product, double spaced, using size 10 or 12 font. No paper will be accepted late.

In class evaluations
2 Quizzes to be administered sometime during the first 5 weeks and the last 5 weeks of the course

1 Mid term exam

1 Final exam

Attendance
A student may earn up to 20 points for attendance and participation.

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School of Science and Natural Resources
RECS 101

Evaluation.....points available and grading scale

1 Goal Paper	20 points	20 points total
1 Job Search paper	20 points	20 points total
1 Abstract	20 points	20 points total
2 Quizzes	15 points each	30 points total
2 Exams	50 points each	100 points total
Attendance	20 points	20 points total
		210 points possible

210 – 189	A
188 – 168	B
167 – 147	C
146 – 126	D

The appropriate plus or minus grade will be awarded to the student who earns a point value within 3 points of either end of the range for a particular letter grade.

Ground Rules:

1. Papers and projects will not be accepted late.
2. Students are expected to do their own work. Any form of cheating or plagiarism will not be tolerated and could result in an F grade for the course and possible dismissal from the university (see student handbook)
3. Cell phones must be turned off during class. No use of headphones will be permitted during class. Violation of the afore indicated ground rules will result in a loss of up to 500 points.

University Policies and Statements:
The Americans with Disabilities Act and Accommodations

Incompliance with LSSU policies and equal access laws, disability-related accommodations or services will be available to students with documented disabilities.

If you are a student with a disability and you think you may require accommodations you must register with Disability Services (DS), which is located in the KJS Library, room 130, ((06) 635-2355 orx2355 on campus. DS will provide you with a letter of confirmation of your verified disability and authorize recommended accommodations. This authorization must be presented to your instructor before any accommodations can be made.

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School of Science and Natural Resources
RECS 101

Students who desire such services should meet with instructors in a timely manner, preferably during the first week of class, to discuss individual disability related needs. Any student who feels that an accommodation is needed – based on the impact of the disability - should meet with instructors privately to discuss specific needs.

IPASS (Individual Plan for Academic Student Success)

If at mid-term your grades reflect that you are at risk for failing some or all of your courses, you will be contacted by a representative of IPASS. The IPASS program is designed to help you gain control of your academic success through pro-active communication and goal setting, the development of study skills, and alternate learning strategies. You may call 635-2887 or e-mail ipass@lssu.edu if you would like to sign up early in the semester or you have any questions or concerns.

Tenative Course Outline

Week 1	Introduce course Discuss the concepts of Recreation, Leisure, Play
Week 2 & 3	Introduce Erickson....discuss the 8 Stages of Development as they Relate to the Recreation Provider
Week 3 - 7	Explore the development of Recreation and Recreation opportunities from a Historical, Socio-Economic and Political perspective Quiz 1 sometime during this period
Week 8- 10	Classification and Discussion of Recreation Providers Mid-term
Week 11-12	Introduction of "Special Recreation Providers" Quiz 2 during this period
Week 13 - 14	Therapeutic Recreation, Leadership
Week 14	Leadership
Week 15	Final Exam

Topic Outline for RECS 101 (3 credits)	**% of time spent**
o Introduce Recreation, Leisure, and Play	10%
o Introduce Erickson and discuss 8 stages of development	20%
History, Socio-Economic and Political influence on Recreation	30%
Recreation Providers	20 %

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RECS 101

	Special Recreation Providers		10%
*	Therapeutic Recreation Providers		5%
	Leadership		5%
		Total	100 %

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

RECS 262 Outdoor Recreation (3,0) **3 credits**

Course Title:
RECS 262 Outdoor Recreation

Meeting Time and Place
MWF 10-11 Norris 202

Prerequisites:
RECS 105

Instructor:

Dr. Sally A. Childs
Office # 108J Norris Center
635-2610 (office) 635-2367(dept)
schilds@lssu.edu

Office Hours

Monday	Tuesday	Wednesday	Thursday	Friday
11-12am	12 -2 pm	11-12 am	1-2 pm	By Appointment

Required Text:
N/A

Course Objectives:
At the conclusion of this course the student will be able to;

- Define the term Outdoor Recreation as it is defined among Land Managers
- Demonstrate or discuss proficiencies in Outdoor Living Skills which include;
    - Using a Protractor compass and orienting it to a map
    - Building a fire pit, sump hole and personal disposal pit according to LNT practices
    - Backcountry first aid
    - Shelter construction
    - Weather signs
    - Knots
- Explain the history of the development, and the goals affiliated with;
    * Outdoor education
    * Environmental Education
    * Experiential Education
    * Interpretation
    * Organized Camping
    * Outdoor Recreation for Special Populations
    * Adventure Programming

College of Science and Environment **Fall 2018**
School of Science and Natural Resources
RECS 262 Outdoor Recreation (3,0)

- Develop, organize and teach an interpretive/outdoor educational experience
- Participate in a residential outdoor recreation experience
- Identify the primary professional organizations affiliated with the above listed disciplines
- Discuss the salient issues associated with outdoor recreation

Course Requirements

2 Quizzes **15 points each**
These will be announced in class ahead of time administered. There will be no "make up" opportunities provided.

2 Exams **50 points each**
These will be announced in class ahead of time administered. There will be no "make up" opportunities provided.

1 Abstract **20 points each** This must be taken from a professional journal and be specific to one of the major topics addressed in class. If the relationship is not apparent, the student will not receive credit.

1 Advocacy Paper **20 points**
Choose a topic which relates to one of the major topics addressed in class. You must use a minimum of 3 references to support your position.

1 Presentation **20 points**
You will work in small groups of 2 or 3 and develop a presentation which involves the class in a learning experience specific to outdoor or environmental education. Instruction units may be taken from OBIS, Project Adventure, DNR materials, Project Learning Tree, USFS materials, etc. Evaluation will be based upon faculty and peer evaluation of the quality of the presentation and the involvement of the presentation group members.

1 Material Packet **20 points**
Each group will assemble a packet of materials which explain the instructional goals (what are we learning about?) of their presentation. The packet will also include materials necessary, organizational format, teaching environment necessary, prior
preparation for that environment, and a brief lesson plan. This will be duplicated and made available to all class members and the instructor.

1 Outing **50 points**
Each student is expected to attend the class outing. This will consist of an overnight experience. Much of the equipment necessary will be provided by the university. Additional needs will be discussed in class and we as a group will make the necessary arrangements.

Attendance **10 points**
Each student may earn up to an additional 10 points if they attend class on a regular basis and they participate in class discussion.

College of Science and Environment **Fall 2018**
School of Science and Natural Resources
RECS 262 Outdoor Recreation (3,0)

Grading Scale and Policies:

2 Quizzes	15 points each	30 points total
2 Exams	50 points each	100 points total
1 Abstract	20 points	20 points total
1 Advocacy Paper	20 points	20 points total
1 Presentation	20 points	20 points total
1 Packet	20 points	20 points total
1 Outing	50 points possible	50 points total
Attendance	10 points possible	10 points total
	Total	270 points possible

270-243	A
242-216	B
215-189	C
188-162	D

The appropriate "plus" or "minus" grade will be awarded to the student/s who score within approximately 3 points of either end of each grade level.

Ground Rules:

1. Papers and projects will not be accepted late.
2. Students are expected to do their own work. Any form of cheating or plagiarism will not be tolerated and could result in an F grade for the course and possible dismissal from the university (see student handbook)
3. Cell phones must be turned off during class. No use of headphones will be permitted during class. Violation of the afore indicated ground rules will result in a loss of up to 500 points.

University Policies and Statements:
The Americans with Disabilities Act and Accommodations

Incompliance with LSSU policies and equal access laws, disability-related accommodations or services will be available to students with documented disabilities.

If you are a student with a disability and you think you may require accommodations you must register with Disability Services (DS), which is located in the KJS Library, room 130, ((06) 635-2355 orx2355 on campus. DS will provide you with a letter of confirmation of your verified disability and authorize recommended accommodations. This authorization must be presented to your instructor before any accommodations can be made.

College of Science and Environment **Fall 2018**
School of Science and Natural Resources
RECS 262 Outdoor Recreation (3,0)

Students who desire such services should meet with instructors in a timely manner, preferably during the first week of class, to discuss individual disability related needs. Any student who feels that an accommodation is needed – based on the impact of the disability - should meet with instructors privately to discuss specific needs.

IPASS (Individual Plan for Academic Student Success)

If at mid-term your grades reflect that you are at risk for failing some or all of your courses, you will be contacted by a representative of IPASS. The IPASS program is designed to help you gain control of your academic success through pro-active communication and goal setting, the development of study skills, and alternate learning strategies. You may call 635-2887 or e-mail ipass@lssu.edu if you would like to sign up early in the semester or you have any questions or concerns.

Tenative Course Outline

Week 1	Introduce the professional definitions of Outdoor Recreation
Week 2-4	Outdoor living skills
Week 5-6	Outdoor education, Experiential education, Environmental Education, Interpretation
Week 7	1st Examination. There will be an exam at about this time
Week 7-8	Organizing camping
Week 9	Outdoor recreation for special populations
Week 10-11	Adventure programming
Week 12	Organize for teaching opportunities
Week 13-14	Interpretation/Environmental Education presentations

Topic Outline for Outdoor Recreation 262 (3 credits)	**% of time spent**
o Define and discuss the concept of Outdoor Recreation	10%
o Outdoor Living	20 %
o Definitions, history and goals of; Outdoor education Environmental Education Experiential Education Interpretation	20 %

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

RECS 262 Outdoor Recreation (3,0)

* Definitions, history and goals of;	Organized Camping	20 %
	Camping for Special Populations	10 %
	Adventure Programming	10%
* Interpretation/Environmental Education presentations		10%
	Total	100 %

College of Professional Studies **Fall 2017**
School of Kinesiology **3 Credits**

Course Title:
RECS 362 Land Management for Recreation Purposes

Meeting Time and Place
MWF 10 -11 Norris 202

Prerequisites:
RECS 101 and 262 or NSCI 103 and EVRN 131

Instructor:

Dr. Sally A. Childs
Office # 108J Norris Center
635-2610 (office) 635-2367(dept)
schilds@lssu.edu

Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
	10:30-12 am 1-2 pm	1-2 pm	10:30-12 am	By Appointment

Recommended texts;
Text:
Duncan, D., Burns, K., National Parks; America's Best Idea
Egan, T., The Big Burn; Teddy Roosevelt and the Fire that Saved America
Zinser, C.I.., Outdoor Recreation

Course Goals
This course will;

- Provide the student with an opportunity to become aware of federal agencies that have management jurisdiction over land masses which provide outdoor recreation opportunities
- Enable the student to develop an understanding of the cultural and political history, and philosophy of these agencies relative to recreation and land management
- Identify policy evolution relative to emerging social, political, and environmental issues
- Identify past and present management concepts and become familiar with their application
- Expose the student to key individuals and their contribution to the creation of outdoor recreation land masses and the subsequent management goals and objectives

College of Professional Studies **Fall 2017**
School of Kinesiology **3 Credits**

- Identify current issues relative to managing lands and outdoor recreation opportunities
- Identify current methods and procedures utilized in outdoor recreation land management
- Enable students to become responsible for developing an outdoor recreation land management plan for an existing land mass

Course Objectives:
Upon successful completion of this course;

- The student will be aware of federal agencies that have management jurisdiction over land masses which provide outdoor recreation opportunities
- The student will develop an understanding of the cultural and political history, and philosophy of these agencies relative to recreation and land management
- The Student will have identified policy evolution relative to emerging social, political, and environmental issues
- The Student will be familiar with past and present management concepts and become familiar with their application
- The Student will be familiar with key individuals and their contribution to the creation of outdoor recreation land masses and the subsequent management goals and objectives
- The Student will be able identify current issues relative to managing lands and outdoor recreation opportunities
- The Student will be able to identify current methods and procedures utilized in outdoor recreation land management
- The student will have developed an outdoor recreation land management plan for an existing land mass

Course Requirements

2 Quizzes 15 points each
These will be announced ahead of time and focus on the material recently covered in class and/or the assigned readings

2 Interviews or 1, Ten hour Field Experiences 50 points
These will be required field experiences which will involve travel to various sites and could involve an over night trip

1 Land Management Project 100 points
This will be an ORIGINAL comprehensive Land Management Planning and Development Project. You will be required to follow a topic outline which will be provided. This project must include maps. Blue prints, and a DETAILSED description of the existing land mass (including GPS coordinates) AND the DEVELOPMENT you propose. A good plan will be approximately 60 pages long, plus references.

College of Professional Studies **Fall 2017**
School of Kinesiology **3 Credits**

1 Presentation Outline 20 points
This will be an outline of the contents of your presentation and will indicate who is providing the respective information. All group members are required to be presenters.

1 group Presentation 50 points
This will be a presentation to the class, guests and the representatives of the agency/organization which has management responsibility for the land mass which contains your development plan.

Grading Scale and Policies:

2 Quizzes @ 15 points each	30 points possible
1 Interviews/1 Field Experiences	50 points possible
1 Land Management Project	100 points possible
1 Presentation Outline	20 points possible
1 group Presentation	50 points possible
1 Mid term	50 points possible
1 Final Exam	50 points possible
Attendance and Participation	20 points possible
Total points possible	**370**

370 - 333 A
332 - 296 B
295 - 259 C
258 - 222 D

Ground Rules:

1. Papers and projects will not be accepted late.
2. Students are expected to do their own work. Any form of cheating or plagiarism will not be tolerated and could result in an F grade for the course and possible dismissal from the university (see student handbook)
3. Cell phones must be turned off during class. No use of headphones will be permitted during class. Violation of the afore indicated ground rules will result in a loss of up to 500 points.

University Policies and Statements:
The Americans with Disabilities Act and Accommodations Incompliance with LSSU policies and equal access laws, disability-related accommodations or services will be available to students with documented disabilities.

College of Professional Studies **Fall 2017**
School of Kinesiology **3 Credits**

If you are a student with a disability and you think you may require accommodations you must register with Disability Services (DS), which is located in the KJS Library, room 130, ((06) 635-2355 orx2355 on campus. DS will provide you with a letter of confirmation of your verified disability and authorize recommended accommodations. This authorization must be presented to your instructor before any accommodations can be made.

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Tenative Course Outline

Week 1 & 2	Outdoor recreation and affiliated resources Land mass Preservation Movement Who, What, When, Where	
Week 3 & 4	National Park System and National Parks Service, History and Development Case Studies in Diversity, Form and Function	Quiz 1
Week 5	National Parks: Other Areas	
Week 6	United States Forest Service History and Evolution	
Week 7	USFS Recreation Policy Planning and Management	
Week 8	Bureau of Land Management (BLM) History, Policy Evolution, Distribution of BLM Lands	
Week 9	National Wildlife Refuge System	

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School of Kinesiology **3 Credits**

Week 10	Wilderness; Concept and Reality National Wilderness Preservation System (NWPS)	
Week 11 & 12	Other Federal Agencies which provide Outdoor Recreation Opportunities as a Secondary Function	Quiz 2
Week 13 & 14	Presentations	

Topic Outline for Facilitation and Interpretation (3 credits)	**% of time spent**
o Define and discuss the concepts affiliated with Outdoor Recreation as a Resource	15%
o National Parks Service	15 %
o United States Forest Service	12%
o Bureau of Land Management	12%
o Wildlife Refuge System	10%
o Wilderness (NWPS)	10%
o Other Federal agencies which provide Outdoor Recreation as a secondary function	10%
o Presentations	16%

College of Professional Studies **Spring 2018**
School of Kinesiology **3 Credits**

Course Title:
RECS 365 Expedition Management (3,0)

Prerequisites:
RECS 101, RECS 105, and RECS 262
Instructor:

Dr. Sally A. Childs
Office # 108J Norris Center
635-2610 (office) 635-2367(dept)
schilds@lssu.edu

Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
	10:30 – 12:0	1 - 2	10:30 – 12:00	By Appointment
	1 – 2			

Recommended Text:
Priest, S., Gass, M., ***Effective Leadership in Adventure Programming***

Course Goals:
This course will focus on the following:

1. Involve the students in various Initiative games and activities and identify their potential values .
2. Introduce the student to the concept of Adventure Programming, including educational theories, leadership strategies, safety concerns, risk management, group and individual behaviors, facilitation goals and techniques, ethics and professional perspectives.
3. Making Decisions! This course will greatly emphasize decision making. The students will be expected to make the majority of the decisions affecting the expedition. The course will provide the background through class discussion, guest speakers, assigned readings and lecture presentation.
4. Completely plan and implement a back country or wilderness trip of at least 10 days in duration. This planning will include: liability concerns, first aid and safety, search and rescue, and evacuation plans, meal planning and nutrition, transportation, route planning, map acquisition, equipment purchasing and maintenance, repair kits, outdoor ethics and courtesies, insurance, budget, developing a written itinerary, preplanning and debriefing sessions.

Course Objectives:
At the conclusion of this course the student will be able to;

- Identify the potential values associated with Initiative games and activities

College of Professional Studies **Spring 2018**
School of Kinesiology **3 Credits**
RECS 365 Expedition Management (3,0)

- Discuss aspects of adventure programming concepts, including educational theories, leadership strategies, safety concerns, risk management, group and individual behaviors, facilitation goals and techniques, ethics and professional perspectives.
- Make Decisions! This course will greatly emphasize decision making. The students will be expected to make the majority of the decisions affecting the expedition. The course will provide the background through class discussion, guest speakers, assigned readings and lecture presentation.
- Completely plan and complete a back country or wilderness trip of at least 10 days in duration. This planning will include: liability concerns, first aid and safety, search and rescue, and evacuation plans, meal planning and nutrition, transportation, route planning, map acquisition, equipment purchasing and maintenance, repair kits, outdoor ethics and courtesies, insurance, budget, developing a written itinerary, preplanning and debriefing sessions.

Course Requirements

Attendance and participation is essential to individual and group success. Excessive absences (3 or more) will have a negative impact, and will also result in a loss of points towards final evaluation.

The student will work with a committee of 3-4 to develop and present an expedition which can be realized by the class.

The completed expedition packet must be submitted to the instructor prior to presentation. The packet must be typed or computer generated. It must be submitted in hard copy, size 1 font, double spaced, not printed on paper so that it is back to back.

All students must go on the expedition.

A professional quality, computer generated promotional brochure, which provides a name and description of the trip, tentative itinerary, contact information, dates and times, fees, promotional language, and significant characteristics, must be made available to each class member prior to the presentation. This must be produced in the promotional brochure format (i.e., 2 fold, 3 panel, not a document format … 8 1/2 by 11). Failure to provide this information in this format will result in a loss of up to ten points.

** NO group will be permitted to present their trip to the class unless the y have detailed, multi-colored, topographical maps that contains the entire route of the proposed trip

The class will select an expedition to complete and then all class members will work to successfully accomplish that goal.

College of Professional Studies **Spring 2018**
School of Kinesiology **3 Credits**
RECS 365 Expedition Management (3,0)

Grading Scale and Policies:
Evaluation will be based upon the point system. Points will be acquired in the following manner:

1 Midterm	50 pts
1 Final Test (**Take Home Final** to be completed after we return from the trip)	50 pts
Committee Presentation	30 pts
Trip Packet	100 pts
Brochure	10 pts
Class Participation Points	10 pts
Expedition Behavior	100 pts

This will include the following components:

- Pre-trip responsibilities
- Leadership
- Safety Conscious Behavior
- Environmental Ethics
- General Contribution

350 pts total*

350-315	A
315-280	B
279-245	C
244-210	D

* There may be some "unscheduled" quizzes as potential bonus point opportunities

Ground Rules:

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College of Professional Studies **Spring 2018**
School of Kinesiology) **3 Credits**
RECS 365 Expedition Management (3,0)

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Tenative Course Outline

Week 1 &2 Introduction, explain expedition options, discuss adventure programming concepts, i.e. the purpose and function of adventure programs, facilitating the experience.
Introduce Initiative Games
Assignment: Chapters 1 & 2, 14-15

Week 3 & 4 Continue previous discussion topics.
Trip Packet, Discuss trip planning, Committee work
Assignment: Chapters 11-13, 18 & 20

Week 5 Safety Awareness
Insurance and Liability
Committee Work
Assignment: Chapters 7 & 10

College of Professional Studies **Spring 2018**
School of Kinesiology **3 Credits**
RECS 365 Expedition Management (3,0)

Week 6 Nutrition, Meal planning and preparation
Packing

Week 7 & 8 Safety and trail first aid, search, rescue and evacuation
Health concern; heat, cold, and attitude
Assignments: Chapters 8 & 9

Week 9 Equipment: purchasing and maintenance, repair kits
Committee work
Assignments: Chapter 6

Week 10 Ethics, courtesy, and trail techniques
Committee work.
Assignments: Chapters 23 & 24

Week 11 Review and finalize logistics

Week 12 & 13 ** Expedition Presentations and Selection

Week 14 Assemble and finalize selected expedition

On Expedition

First 2 weeks of summer break: (Approximately between May 2 and May 11)
The class will select an expedition to complete and then all class members will work to successfully accomplish that goal. All students enrolled in the class must complete the Expedition portion of the class.

Topic Outline for RECS 365 Expedition Management (3 credits) % of time spent

Introduction, explain expedition options, discuss adventure programming concepts, i.e. the purpose and function of adventure programs, facilitating the experience.	10%
Introduce Initiative Games	10%
Trip Packet, Discuss trip planning,	10%
Safety Awareness/Risk Management Insurance and Liability	10%
Nutrition, Meal planning and preparation	5%
Packing	5%
Safety and trail first aid, search, rescue and evacuation Health concern; heat, cold, and attitude	10%

College of Professional Studies **Spring 2018**
School of Kinesiology **3 Credits**
RECS 365 Expedition Management (3,0)

Equipment: purchasing and maintenance, repair kits	5%
Ethics, courtesy, and trail techniques	5%
Expedition Presentations and Selection	5%
Assemble and finalize selected expedition	5%
"On Expedition"	20%
Total	**100%**

Total 100%

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

Course Title
RECS 360 Facilitation and Interpretation Techniques 3 credits

Meeting Time and Place
9:00 am MW
TBA Field Experience….Fridays
Norris Center Rm 212

Prerequisites
RECS 105 and RECS 262

Instructor
Dr. Sally A. Childs
Office # 108J
635- 2610
schilds@lssu.edu

Office Hours

Monday	Tuesday	Wednesday	Thursday	Friday
11-12am	12 -2 pm	11-12 am	1-2 pm	By Appointment

Required Text;

Rohnke, Karl., Silver Bullets, 1984, Kendal/Hunt ISBN 0-8403-5682
Tilde, Freeman, Interpreting Our Heritage, 1957, The University of Chapel Hill Press ISBN 0-8078-4016-5

Goals/Objectives

- Upon completion of this course, the student will be familiar with and able to explain Tilden's Six Principles of Interpretation
- The student will be able to provide an interpretive experience that incorporates the Six Principles of Interpretation
- The Student will have visited a State or National Park, and a National Wildlife refuge and met with the respective Interpreter at that site
- The Student will be familiar with standard methods of Facilitating a Problem Solving or Outdoor experience according to the current methods practiced in the field today
- The Student will facilitate a Problem Solving/Outdoor experience using the various methodologies
- The Student will have attended an Outdoor Education center and roll played both a Participant and a facilitator for that course

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

Assignments

Provide an in class facilitation experience using Tilden's Principles of Interpretation
or lead an Initiative experience
1 Subject paper (approximately 5 pages long)
Develop a 7 -10 session (week) instructional interpretive guide
2 exams or 3 Quizzes
3 field experiences
State Historic Park
National Wildlife refuge
Outdoor Education Center
3 Interpreter evaluation papers

Grading Scale and Policies

2 Exams/3 quizzes	50 pts each /33 pts each		100 pts possible
Field Experiences	50 points each		150 pts possible
Subject paper	50 points		50 pts possible
Leading Interp/initiative	20 points		20 pts possible
Interpreter Eval. Papers	10 points		30 points
Interpretation Guide	100 points		100 pts possible
		Total	450 pts possible

440 - 396 A
396 - 352 B
351 - 308 C
307 - 264 D

Ground Rules

1. Completing assignments on time and keeping up with the class material is important for success in this course and in college. Late assignments **will not** be accepted except for legitimate **pre-approved** reasons as determined by the instructor. Examples of legitimate reasons are: severe illness, death in family, etc.
2. Students are expected to perform all assigned work themselves. Any form of cheating or plagiarism will be handled in accordance with the

   Honor Code Procedures. Use of head phones, cell phones and hats during exams is prohibited.

3. Cell phones must be turn off for all class and lab sessions. If the cell phone is on and rings, the student will be asked to leave the class for the day and this will count as an absence.

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

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Tentative Course Outline

Week 1	Review syllabus, discuss lab meeting times Develop conceptual theory relative to; Interpretation Facilitation
Week 2	Discuss Tilden
Week 3-4	Continue Tilden, , prep for 1st field experience
Week 5	Field experience Interpretation discussion and Prep
Week 6	aprox time for mid term

Week 7	In class Interp experiences continue

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

Week 8	Introduce "Facilitation" Discuss Positive Peer Culture Challenge by Choice Prep for Facilitation field experience
Week 9	Introduce Project Adventure/Rohnke Prep for Facilitation field experience Dates TBA
Week 10	Continue "Facilitation" discussion
Week 11	Discuss and prep for in class Facilitation experiences
Week 12	Facilitation experiences
Week 13	In class presentation evaluations Prep for 2nd Facilitation field experience (Elementary school - Pathfinders)
Week 14	Review
Week 15	Scheduled Final Exam Period

Topical Outline

Facilitation	35%
Interpretation	35%
In class presentations	10%
Field Experiences	20%
Total	100%

College of Science and Environment **Fall 2018**
School of Science and Natural Resources
Course Title:
RECS 397 Recreation Studies Junior Research Seminar (1,0)

Meeting Time and Place
12 – 1:50 M Norris 202

Prerequisites:
Junior standing and majoring in Parks and Recreation or Sports and Recreation

Instructor: Dr. Sally A. Childs
Office # 108J Norris Center
635-2610
schilds@lssu.edu

Office Hours

Monday	Tuesday	Wednesday	Thursday	Friday
11-12am	12 -2 pm	11-12 am	1-2 pm	By Appointment

Required Text:
Thomas, J.R., Nelson, J.K., (2001). *Research Methods In Physical Activity* (4th ed.) Champaign, IL., Human Kinetics

Recommended Text:
N/A

Course Description
To introduce the student to the concept, purpose, methods, and function of conducting scholarly research and engaging in scientific inquiry. This course will be completed as a prerequisite to RECS 435, and RECS 437. RECS 397 is the course in which the student will identify and initiate their senior research project.

Course Goals

- The student will be able to identify and explain components of scientific inquiry
- The student will become familiar with moral and ethical considerations specific to Human Subject Research
- The student will be able to write a hypothesis or research questions relative to a topic of study
- The student will write the first chapter of a research proposal

- The student will be able to conduct a critical review of current research being completed in the fields of Recreation, Parks and Recreation, and Sports and Recreation Management
- The student will be able to discriminate between research which is well done and research which is poorly done, and understand the different categories of research
- The students will become familiar with the ethics of Human Subject Research
- The student will be exposed to sampling strategies and the concept of a representative sample

Course objectives

- The student will be able to explain the process of scientific inquiry
- The student will be able to explain the purpose and function of the IRB
- The student will be able to write a research hypothesis and research questions
- The student will write the first chapter of a research proposal
- The student will be able to discriminate between a well designed and implemented study and a study which is not well designed.
- The student will be able to explain considerations for obtaining a appropriate sample size and composition

Grading Scale and Policies

The student will be evaluated on their ability to satisfactorily master the above identified objectives.

Methods by which the student will demonstrate mastery will include the following;

- Quizzes and tests
- Written assignments;
  - Write research hypothesis/research questions
  - Critical review
  - Submission of the first chapter of a research proposal

Evaluation

2 Tests	50 pts each	100	175 - 157 A
			156- 140 B
First draft of Chapter 1		Minus 10 pts possible	139 - 122 C
First Chapter		30	121 – 105 D
Discussion assignments		25	
Attendance and Participation		10	
	Total Points	175	

College of Science and Environment **Fall 2018**
School of Science and Natural Resources
Ground Rules:

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2.Students are expected to perform all assigned work themselves. Any form of cheating or plagiarism will be handled in accordance with the Honor Code Procedures. Violations of the Honor Code may result in an F for the course grade.

3.Use of head phones, cell phones and hats during exams is prohibited.

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IPASS (Individual Plan for Academic Student Success)

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

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Tentative Course Outline

Week 1	Become familiar with the concept of scientific inquiry and the characteristics of valid research. Discuss the pursuit of Truth Assign a literature review of professional journals
Week 2	Identify salient issues in the field of recreation and leisure studies Discuss categories of research
Week 3	Distribute template for Chapter 1 discuss component parts of Chapter 1 Students will be required to become familiar with the Tuskegee Study
Week 4	Discuss the Tuskegee study and the ethics of Human Subject research. Distribute and discuss IRB packet Assign draft of first 4 sections of chapter 1
Week 5	Student will discussion and critical review of chapter 1 Strengths and challenges will be identified
Week 6 – 10	Research strategies and techniques will be identified Sampling methodologies, instrumentation and population selection will be discussed. First draft of Chapter 1 will be submitted on week 10
Week 11	First draft of chapter 1 will be returned.
Week 12	Final draft of Chapter 1 will be submitted
Week 13	Final draft of Chapter 1 will bet returned
Week 14	Review test

College of Science and Environment **Fall 2018**
School of Science and Natural Resources

Topical outline

Introduction of concepts and constructs of scholarly research		40%
Identifying salient issues in the field		10%
Presentation of ethical considerations affiliated with Human Subject research		5%
Presentation of writing format for scholarly research		25%
Identifying and Selecting study problem	(concurrent and continual	100%)
Introducing sampling, population selection and instrumentation		20%
	Total	100%

College of Professional Studies **Spring 2018**
Department of Kinesiology **3 Credits**

Course Title:
RECS 435 Research in Recreation Studies and Leisure Sciences (3,0)

Prerequisites:
RECS 397 and RECS 105
PSYC 210, CJUS 345, or MATH 207

Instructor:

Dr. Sally A. Childs
Office # 108J Norris Center
635-2610 (office) 635-2367(dept)
schilds@lssu.edu

Office Hours:

Monday	Tuesday	Wednesday	Thursday	Friday
	10:30 – 12:00 1 -2	1- 2	10:30 – 12:00	By Appointment

Required Text:
Thomas J.R., Nelson, J.K. (2001), *Research Methods In Physical Activity,* Human Kinetics

Course Goals:
The course will expose the students;

- To be able to identify various research methodologies and to explain their respective strengths and weaknesses.
- To provide the student with opportunities to acquire skills which will enable them to become critical evaluators of the efficacy of research projects.
- To learn how to apply the scientific method as a means of acquiring information.
- To identify and initiate a worthy study, and to assemble the first three chapters of a research project specific to the identified problem.
- To submit a well written and well formatted Research Proposal
- To submit an IRB application for review by the university IRB
- The student's research will be approved by the IRB prior to the end of the semester
- The student will be approved to initiate their study during the summer semester.

Course Objectives:
At the conclusion of this course the student will be able to;

- Identify various research methodologies and to explain their respective strengths and weaknesses.
- Demonstrate the application of the scientific method as a means of acquiring information.
- Identify and initiate a worthy study, and develop and submit the first three chapters of a research project specific to the identified problem

College of Professional Studies **Spring 2018**
Department of Kinesiology **3 Credits**
RECS 435 Research in Recreation Studies and Leisure Sciences (3,0)

- Submit an IRB application for review by the university IRB
- Receive approval from the IRB, prior to the end of the semester, to conduct their research
- Be approved to initiate their study during the summer semester.

Course Requirements

Re submit Chapter 1

This will be either the "final" first chapter that was submitted at the end of Fall semester, or, if your study topic has changed, a new 1st chapter

Submit 1st Draft Chapter 2

Submit 1st Draft Chapter 3

- Each first draft for each chapter will be returned with comments and corrections, but will not be evaluated for points. However, no chapter will be accepted after the date it is due. If a student does not submit a chapter on time, they will automatically lose 10 points, and their paper **will not** be reviewed by the professor.

Examinations

- Mid-Term Exam
- Final Exam
- Possible quizzes….if the class as a whole requests the opportunity

Submit Final Paper (Final Drafts Chapters 1, 2 & 3)

IRB Application

- The IRB application must be submitted on time, and approval for the IRB committee must be obtained prior to receiving a grade for this course.

Class Attendance and Participation

Grading Scale and Policies:

Re submit Chapter 1	minus 10 points possible
1st Draft Chapter 2	minus 10 points possible
1st Draft Chapter 3	minus 10 points possible
Mid-Term Exam	50 points possible
Final Exam	50 points possible
Final Paper (Final Drafts Chapters 1, 2 & 3)	100 points possible
IRB Application	10 points possible
Class Attendance and Participation	20 points possible
	260 points total

260-234	A
233-208	B
207-182	C
181-156	D

The appropriate "plus" or "minus" grade will be awarded to the student/s who score within approximately 3 points of either end of each grade level.

College of Professional Studies **Spring 2018**
Department of Kinesiology **3 Credits**
RECS 435 Research in Recreation Studies and Leisure Sciences (3,0)

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Tenative Course Outline

Week 1	Introduce Course Chapter One Revisited
Week 2	Literature Review
Week 3	Determining appropriate Methodologies for YOUR Study

College of Professional Studies **Spring 2018**
Department of Kinesiology **3 Credits**
RECS 435 Research in Recreation Studies and Leisure Sciences (3,0)

Week 4	Types of Research & Methodologies Identifying Sampling Strategies **1st Draft Chapter 2 is Due (February 2)** **Re-submit Chapter 1**
Week 5	Methodologies continued; Instrumentation, Validity, Reliability **Return 1st Draft Chapter 2 (February 16)**
Week 6	Literature Review….. Characteristics of Good Research Error
Week 7	Statistics….which tool does what?? Descriptive, Parametric/ Non-parametric Midterm Exam (approximate time)
Week 8	Statistics continued; ANOVA, t-test, z-scores **1st Draft Chapter 3 is Due (March 19)**
Week 9	Statistics continued…Probability, Chi-Square Presentation and formatting guides for final submission of A Research Proposal **Return 1st Draft Chapter 3 (March 23)**
Week 10	Instrumentation, Validity, Reliability
Week 11	Ethics in Research "Institutional Review Board" (IRB) **Submit Final Draft of your Research Proposal (Chapters 1-3, Bib. etc.) (April 4)**
Week 12	Prepare Institutional Review Board (IRB) application **Submit IRB application for faculty review (April 6)** **Return final draft of Research Proposal (April 13)**
Week 13	Chapter 4, Analysis of Data… How? Presentation? **Final Submission of IRB application to IRB Chair (April 16)**
Week 14	Review
Week 15	**Final Exam**

College of Professional Studies **Spring 2018**
Department of Kinesiology **3 Credits**
RECS 435 Research in Recreation Studies and Leisure Sciences (3,0)

Topic Outline for Research in Recreation Studies and Leisure Sciences (3 credits)

% of time spent	
Introduce Course	3%
Chapter One Revisited	2%
Literature Review	10%
Types of Research & Methodologies	35%
Identifying Sampling Strategies	
Instrumentation, Validity, Reliability	
Threats to Validity and Common Sources of Error	12%
Statistics….which tool does what??	18%
Descriptive, Parametric/ Non-parametric	
ANOVA, t-test, z-scores	
Probability, Chi-Square	
Presentation and formatting guides for final submission of a Research Proposal	5%
Ethics in Research "Institutional Review Board" (IRB)	5%
Prepare Institutional Review Board (IRB) application	
Chapter 4, Analysis of Data… How? Presentation?	10%
Total	100%

RC 437 Recreation Studies Senior Seminar
Course Syllabus

Text; Thomas, J.R., Nelson, J.K., (2001). *Research Methods In Physical Activity* (4th ed.) Champaign, IL., Human Kinetics

Cronk, Brian C., (2006). *How to Use SPSS* (4th Ed.), Glendale, CA., Pyrczak Publishing

Instructor;
Dr. Sally A. Childs, CTRS
#2610

Course Goals and Objectives

This course is the 3rd course in a three course senior research sequence (RC 397, RC 435, RC437). The student will have written their research proposal in RC 435. The purpose of this course (RC 437) is to facilitate the students ability to complete the senior research project. Therefore, to satisfactorily complete this course the student will;

1) Complete the administration of the research project in accordance with the existing approved Chapter 3 procedures, or as modified in consultation with the instructor and the IRB
2) Assemble and enter data for computer analysis using SPSS, SISTAT., Excell, or other approved computer stat. packages
3) Write Chapter 4* (data analysis and presentation). This chapter must present the data in both a written and graphic format.
4) Write Chapter 5** (interpretation, observation and recommendations).
5) Write a 1 page abstract of the completed study.
6) Develop a poster session and 10 minute presentation. Public presentations of the Senior Research Projects will take place during the last week of the semester.

*Students will submit the first draft of Chapter 4 on or about week 10 of the semester.
**Students will submit the first draft of Chapter 5 on or about week 12 of the semester.

The final draft of Chapters 1-5 will be submitted on Friday of week 13. Projects will be returned during the final exam period. The project MUST be internally valid. (Be sure that the data presented and discussed in chapters 4 and 5 reflects the Research Questions/Hypothesis in chapter one!!!)..

Evaluation		Points	
Application submitted to Human Subjects Review Board		10	
1st Draft Chapter 4	(number of points lost if not submitted on due date)	10	
1st Draft Chapter 5	(number of points lost if not submitted on due date)	10	
Abstract		10	
Public Poster/presentation			20
Final Draft Chapters 1-5		100	
	Total Points Possible	140	

Points/Grades

140 -126 A
125-112 B
111- 98 C
98- 84 D

Bachelor of Science in Parks and Recreation — School of Science and Natural Resources

Audit Worksheet Fall 2018

Name _____ ID# _____ Advisor _____

Intended month of Graduation _____ School Chair Approval _____

Semester entered Program _____

Degree Requirements

Program Requirements (35 cr)

RECS 101 Intro to Rec and Leisure	3	___	___
KINS 105 Prog Dev and Leadership	3	___	___
RECS 262 Outdoor Recreation	3	___	___
RECS 290 Practicum	1	___	___
RECS 360 Facilitation & Interpretation	3	___	___
RECS 362 Land Mngt for Rec Purp	3	___	___
RECS 365 Expedition Management	3	___	___
RECS 390 Rec Leader Apprentice	1	___	___
RECS 397 Rec Studies Jr Res. Sem.	1	___	___
RECS 435 Research in Rec/Leisure	3	___	___
RECS 437 Rec Studies Sr Res. Sem.	1	___	___
KINS 481 Prof Dev Seminar	1	___	___
KINS 482 Administration of Recreation	3	___	___
RECS 492 Internship	6	___	___

Cognate Requirements (28-29 cr)

BIOL 132 General Biology: Organisms	4	___	___
BIOL 203 Fund of Nat Resources	3	___	___
EVRN 131 Intro to GIS and GPS	3	___	___
MATH 111 College Algebra	3	___	___
NSCI 103 Env Science	3	___	___
NSCI 104 Env Science Lab	1	___	___
Complete one course of the following two:			
GEOL 121 Phys Geology	4	___	___
NSCI 102 Great Lakes Region Geology & Resources	4	___	___
Complete one course sequence of the following 2 :			
CHEM 108 & CHEM 109 Applied Chemistry and Lab	4	___	___
CHEM 115 Gen. Chem. I	5	___	___

Resources Management 9 credits from the following:

BIOL 230 Intro to Soil Science	4	___	___
BIOL 284 Princ of Forest Cons	4	___	___
BIOL 286 Princ of Watersheds	3	___	___
BIOL 345 Limnology	4	___	___
EVRN 311 Environmental Law	3	___	___
EVRN 315 Human Impacts Evrn	4	___	___
GEOL 122 Phys Geology	4	___	___
GEOL 223 Mineralogy & Petrology	5	___	___
GEOL 323 Geochemical Systems	4	___	___
GEOL 411 Hydrologic Systems	5	___	___
Complete one course from the following two:			
EMED 188 Wilderness First Responder	2	___	___
EMED 189 Medical First Responder	3	___	___

Skill/Certifications 9 credits from the following:

BIOL 107 F & W Identification	3	___	___
BIOL 202 Field Botany	3	___	___
BIOL 280 Biostatistics	3	___	___
BIOL 310 Ichthyology	3	___	___
BIOL 311 Mammalogy	3	___	___
BIOL 312 Ornithology	3	___	___
EVRN 225 Intermediate GIS	3	___	___
EVRN 317 Evrn Health Applications	3	___	___
EVRN 389 Research Methods	3	___	___
FIRE 102 Rural & Wildland Fire	3	___	___
GEOL 308 Structural Geology	5	___	___
GEOL 315 Geoenvi Systems	5	___	___
GEOL 380 Intro to Field Geology	3	___	___
GEOL 431 Geophysical Systems	5	___	___

General Education

Communication;

ENGL 110 Freshman Composition 1	3	___	___
ENGL 111 Freshman Composition II	3	___	___
COMM 101 Fundamentals of Speech	3	___	___
Mathematics _____	3	___	___
Diversity _____	3	___	___
Natural Science _____	___	___	___
_____	___	___	___

Humanities

_____	___	___	___
_____	___	___	___

Social Science

_____	___	___	___

General Electives (Crs to accomplish 125 total hrs)

_____	___	___	___
_____	___	___	___
_____	___	___	___
_____	___	___	___

Total Credits earned are at least 125

I certify that all school requirements are Complete and the school GPA is 2.0 or higher

_____ _____

School Chair Date

2.0 Minimum General Education Requirements ___

2.0 Minimum Overall GPA ___

Appendix Cover Sheet

Use a copy of this cover sheet for each document submitted. Evidence supporting the questions and narratives does *not* need to be electronically added to this Program Review form. One option is to use this cover sheet to add content to directly this Word document. A second option is to submit separate documents along with the form, also using this cover sheet for each document provided.

Send email with supporting documentation to: TRACDAT@lssu.edu, with a cc to your dean, or submit as a hardcopy to your dean.

School:	**Science and Natural Resources**
Document Title (if attached) or Filename (if emailed):	**Appendix III**
This documentation is relevant to Question number:	**Part 2** **Intellectual Inquiry** **Question 4**
Briefly summarize the content of the file and its value as evidence supporting program review:	**Appendix III contains supplemental material (project guidelines) for each of the courses identified as a response to question 4. Each guideline is specific to the course project which provides opportunities for the student to demonstrate modes of inquiry and creative work and result in the student's developing skills which are integral to the degree program and their professional development**

RECS 365 Final Packet Evaluation Form

Group Name _____ Members _____ _____ _____ _____

General Introductory Information (5)..... _____
- Name
- Description
- Destination
- Purpose
- People to be served

Forms (10)..... _____
- Release
- Med
- Insurance
- Skill Eval
- Search and Rescue procedure
- Accident

Publicity Brochure (10).....
- Cost
- Description
- Purpose
- Conditioning
- Required knowledge/skills
- Contact info
- Equipment needs

Complete Itinerary (15) ..... _____
- Area departing from and time of departure/destination
- Total elapsed time
- Transportation time/stops/down time
- Phone #'s
  - Contacts back home
  - Agents/agencies in area
  - Emergency contacts
- Daily itinerary
  - Elevation changes
  - Daily travel times and distance
  - Meals times
  - Evening activities
  - Daily departure and arrival times
  - Map with trip route, campsites, and emergency info indicated
  - Description of terrain

Meal Planning (15) .....

- Complete menus
  - Quantities/meal/person
  - Snacks
  - Complete list of food items and cost/item
  - Caloric info; protein/carbs/fat

Repair Kits (5) .....

- First Aids kit,
  - items listed
- Equipment repair kits,
  - items listed

Budget (10) .....

- Itemized accounting
  - Food
  - Outfitters
  - Insurance
  - Maps
  - Equipment
  - Transportation

Total points earned out of a possible 70 points.....

RC 362 Land Management Site Planing and Development Guidelines

I. Specifically identify the landmass
- What is the name of this landmass?
- Provide specific location information and location maps
- Identify the agency or organization with ownership and/or management responsibility
- Provide a complete description of the property and the adjacent properties
- Provide detailed information regarding site access
- Size and extent of site
- Man made features....roads, buildings, utility lines, etc.
- Current use and conditions
- Zoning concerns

II. Site Analysis

Provide complete and detailed information about the following;

Climate
- prevailing wind direction
- seasonal hours of sunlight
- precipitation
- temperature

Geology

Soils...- type
- description
- glossary

Surface drainage (percolation)
- water characteristics

Wildlife
- unique species
- endangered species

Vegetative cover
- indigenous
- exotics

Topography
- elevation variation
- slope classification

Variety of resources available on site
- unique qualities or unusual characteristics
- natural attractions

Demographics
- describe the primary and secondary users

Provide an overview map and written description which indicates and describes resource areas and management zones. Discuss the ecological carrying capacity of each area. Include the location of existing man made features.

CONTENT CHAPTER 1

Introduce Study
It is important to introduce the topic of your study and the various contributing components. These "components" could include philosophies, strategies, similar topics, contributing factors, and an explanation of the activity or activities which your study is going to focus upon. You need to validate your study as being a topic worthy of studying.

Explain and support (citations) need for study
You need to validate your study as being a topic worthy of studying. What is the purpose of your study. Why is this study necessary? What might be learned which could be of value. This would be a good time to introduce any controversy your chosen topic may produce, or has produced.

Present Null Hypothesis (Research Questions)
Research is oriented towards "disproving the null", which means that you write your hypothesis in a negative form. Example. If the focus of the was to determine what impact a daily 20 minute aerobic workout for senior citizens might have upon lowering their resting heart rate, my null hypothesis would be: A daily 20 minute aerobic workout will have NO impact upon the subjects resting heart rate.
Research questions are often used in the place of a null hypothesis when the type of research being conducted is small group, single subject, observational, or descriptive research.

Limitations
In this section you discuss the limitations of your study. Example: This study is limited to the Certified Therapeutic Recreation Specialists registered with MRPA. Often times limitations are related to your sample population, the time involved during which the research was conducted, instrumentation, in other words, the "mechanics" of the study.

Delimitations
These are also limitations of your study.

Assumptions of the Study
This in some ways relates to your ability to generalize your results. For example:

The subjects selected to participate in the aerobic conditioning are representative of the general senior population. (How could you structure your study so that it is likely that your subjects are a representative group?)

That the administration of the assessment tests will not significantly impact heart rate. (How could you minimize impact so as not to distort results?)

Chapter 2
Section Headings

Introduction
Restate your introduction to your study

Historical Literature or Related Literature
You would use this section to provide a historical relationship to your study with previous concepts and or theories

Related Studies
Identify and describe previous studies that have be completed which relate in some respect your study. Relate these studies to you study in your discussion
Be sure to Discuss in detail; sampling, administration (methodology), data analysis, results

Instrumentation
Use this section to discuss the various instruments that you have found, in addition to the instruments that were used in the studies that you discussed in the previous section. Be sure to include in your discussion; type of instrument (survey, psychometric, measuring tape, etc) and explain the types of and number of items (Likert-type scale) or calibration (measuring tape calibrated to 1/16 of an inch), indications of validity and reliability, and indicate why this would/would not be an appropriate instrument for your study.

Specific Instrument
In this section you would be discussing your specific instrument. Describe it, identifying all of the characteristics indicated in the previous paragraph. Indicate where you obtained this instrument, how it is scored, and be sure to discuss validity, reliability, and why this would be the most appropriate instrument for your study.

Summary
Briefly summarize the literature and studies that you reviewed and state once again the instrument that you intend to use for your study and explain why.

Chapter 3

Chapt 3 =Procedures for Collecting Data
-Quality (Validity, Reliability) of research demands upon quality of procedures followed - methodology
-Much attentional to detail
-info. Re: where data comes from (source)
how data gathered (collection methods)
how data analized (treatment)

Chapt 3
-During 1st paragraph - re-states problem (as appears in chapt. 1)
-Org. as follows

Sampling - identify subjects, why these subjects selected, how specifically (when!) - info. Re confidentiality etc

Instrumentation - discussion re: instruments - which one & why, what does this instrument consist of -include a copy in appendix
info on usability & scoring

Research Strategie - design (type)- especially important to explain
design in experimental research & why selected
descriptive research = identify type & why selected

Administration - how study conducted (administered) = when, how
Why (why that particular time frame!)
Who conducted it-who contacted-when-how
-how was data collected SPECIFICALLY

Treatment of Data - discussion of how data analized-statistical
Procedure? Computer package? How presented? (graph-charts-diagrams?)
who presented to? How distributed?

Topic Headings that might be useful
- Arrangements for conducting study
- Letters sent
- People contacted
- Instrument selected
- Selection of subjects
  - Who
  - Why
  - How
  - When
  - Where

RC 437 Chapter 4

Many of you have obtained good and useful information... but you are having difficulty trying to figure out what to do with it... that's to be expected!! So... here are the answers to your questions. This is what you MUST do in order to present your information appropriately and format your presentation correctly.

Be sure to use section headings.

Be sure to double space all of the written portions of this chapter.

1. Provide an introductory paragraph which re-states the focus of your study. It would be GOOD to include your research questions or hypothesis (which ever you used)

2. Develop separate bar - charts for EACH ITEM (question), for some of you, you will not be analyzing each item... you will be analyzing cohorts... check your instrument scoring instructions to be sure. Regardless of whether it's an item by item or cohort analysis, be sure to label each column, and indicate what the numbers on the vertical (and horizontal... if this axis has numbers) axis refers to. You may also include the computer generated tables... but you will need to explain these as well.

3. Provide a complete, detailed explanation for the data which appears on each chart. You will need to provide the question, or at least the topic that this chart refers to, and also indicate the possible answers that the respondent could select from.

4. Provide a summary section at the end of this chapter which summarizes the data.

When reporting numerical results, use actual numbers (150 out of 300 respondents) instead of percentages (50%)... the actual numbers convey more precise information.

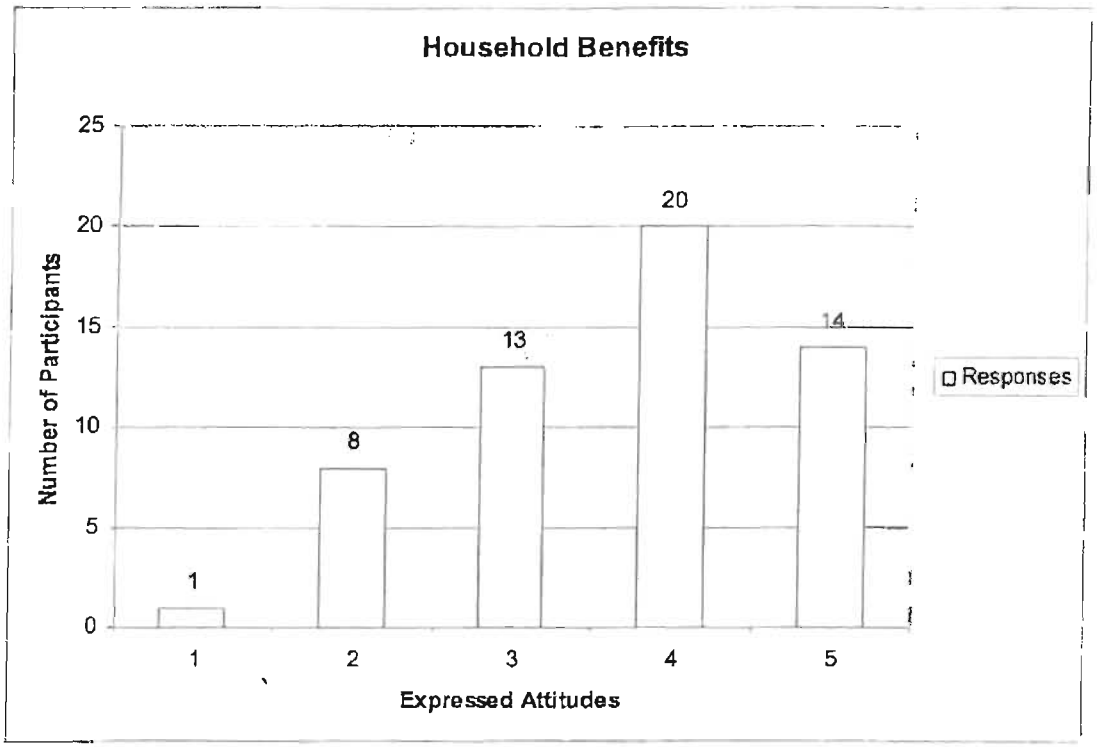
DO NOT use the word "significance" unless you have used a statistical procedure which will determine statistical significance (for example... t-test, or ANOVA). Remember, descriptive statistics DO NOT enable you to determine "significance".

Remember to use page numbers.

See the attached example of what this format is most apt to look like on the page. There are also examples of completed senior research projects in my office. I will be HAPPY to make them available to you to look at....just ask!!

When you submit your final paper, you will need to resubmit the final draft of chapters 1-3 (from last semester) plus your 1st draft of Chapter 4. Consult the text or the provided handouts for information regarding the correct way to format your final document.... (title page, table of contents, table of charts, etc., appendices, etc).

The first graph represents the responses from all 56 participants and how they answered the first interview question. The first interview question was: Have you or anyone in your household ever benefitted from living near a national park or game reserve?

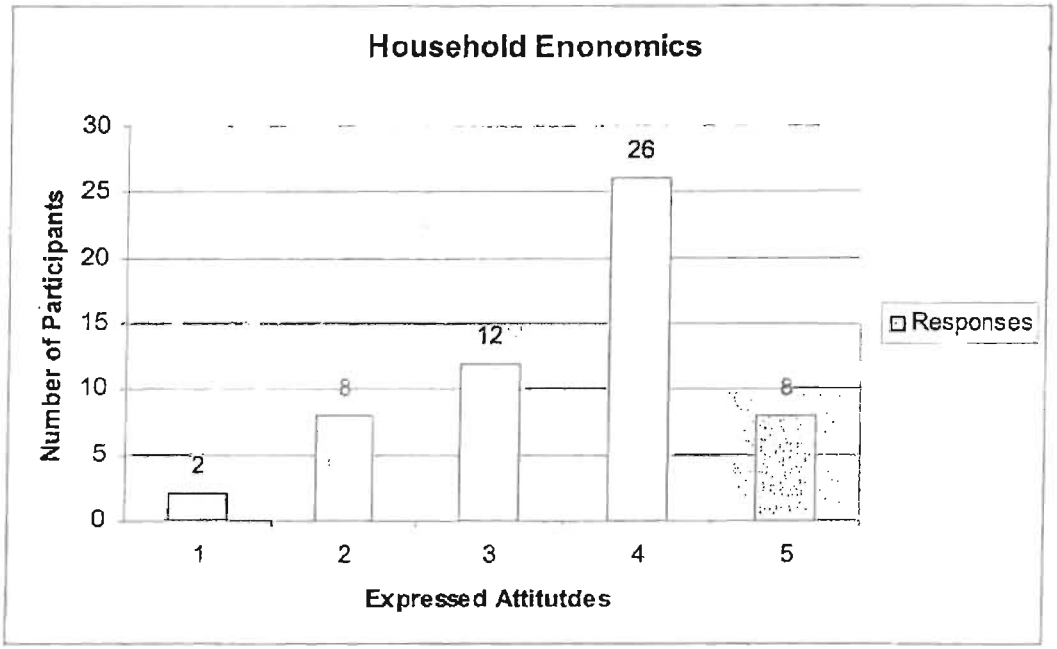


Of the 56 total respondents, 20 expressed a positive attitude that they had been helped or benefited from the national parks this was the highest of the five possible scores. The second highest indicated that 14 people had extremely positive attitudes in regards to this question. Having an impartial stance on the question, 13 people responded with a score of three during the interview. Only 8 people had a negative attitude, and the lowest response was only 1 person had an extremely negative attitude towards the national parks or game reserves benefiting their household.

$34/56 = x$

$0/56 =$

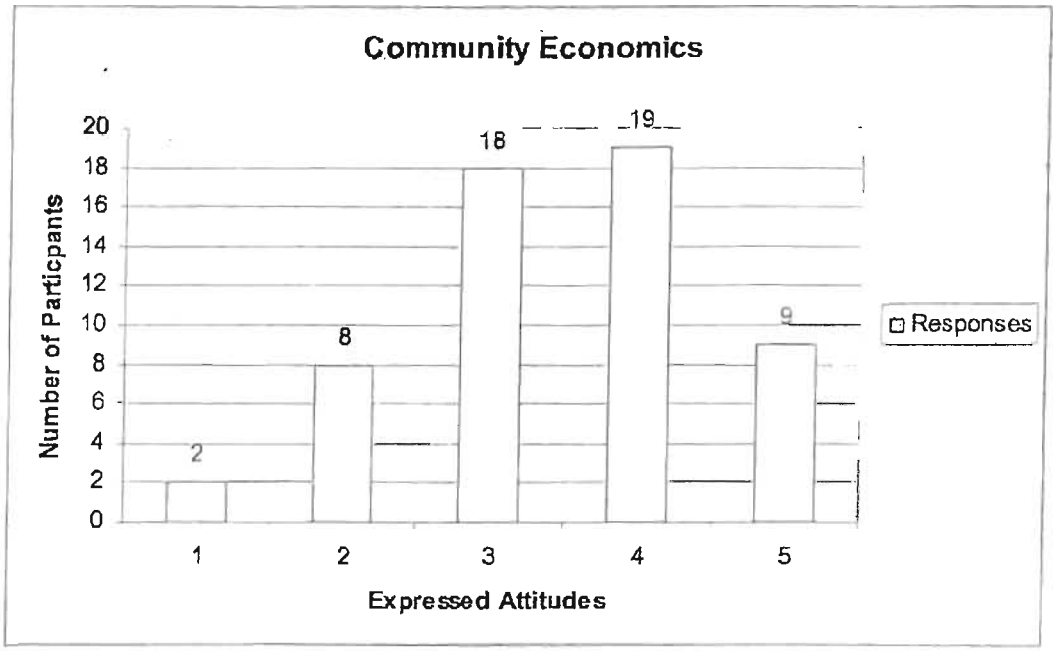
The second graph displays the participant answers for question number 2. This question was: How much do you think the national park or reserve will help your household economically?



In regards to this question, of the 56 total respondents 26 people had a positive attitude towards the parks and reserves, which was by far the highest response. The next highest response was 12 people, expressed impartial feelings towards the parks and reserves. Eight people were extremely positive in their attitudes towards the benefits to their household economically and once again eight people were also negative to any benefits from the parks or reserves. The lowest expressed score was again one, the extremely negative attitude but this time 2 people expressed that sentiment.

34 = +
10 = −

The third graph shows the responses to the question: How much do you think the chances are the national park or reserve will help your community economically?



Attitudes towards the third question were closer than in the previous two questions. Here the graph displays that of the 56 respondents 19 had positive response but there were also 18 people with impartial attitudes. While 9 people had attitudes that were extremely positive and 8 people had negative attitudes towards the parks. One again, an extremely negative response only occurred twice in regards to this question.

$2\Theta = X$

$10 = 1$

Chapter 5
Congratulations!! You're almost done!!!
The important thing to remember in Chapter 5 is that this is your summary. This chapter will be one of your shortest chapters. Short is good!! As long as you include everything you need!! In other words....short is good, being complete is essential!!

Contents of Chapter 5;

- Re-state the purpose of your study...

- Summarize the results...don't re-state every item...but be sure to identify the **statistically significant** items. You will also need to identify what the level of significance was for this study .... .01(?).... .05 (?) Remember NOT to use the word "significant" unless the results are statistically significant.
- Identify any problems you may have had....inadequate response rate,....weather related difficulties,.....failure to ask questions in your instrument that answered your research questions,.....????
- Identify anything that happened....either in the process or in the results, that you did not expect
- Indicate whether you would recommend further research relative to this topic, or population
- Identify any recommendations you would make....or things that you would have done differently

When you submit your final paper, Chapters 1-5, be sure that you use the format guide that was provided to you for this class.