### Curriculum Proposal

#### ENVR 18-19 #9

#### Packet Contents

<table>
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<tr>
<th>1.1 Summary</th>
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**New Course:**

<table>
<thead>
<tr>
<th>1.3 ENVR 3800 Environmental Data Analysis (3 credits)</th>
</tr>
</thead>
</table>

**Program Modification:**

<table>
<thead>
<tr>
<th>1.10 Environmental Studies, B.S. major Ecosystems Emphasis</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.21 Environmental Studies, B.S. major Geohydrology Emphasis</td>
</tr>
<tr>
<td>1.31 Environmental Studies, B.S. major Environmental Health and Toxicology Emphasis</td>
</tr>
</tbody>
</table>

**Program Drop: drop to EMPHASIS ONLY**

<table>
<thead>
<tr>
<th>1.45 Environmental Studies, Environmental Policy and Planning Emphasis (DROP TO EMPHASIS ONLY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.45 Environmental Studies, B.S. major Industrial Ecology Emphasis (DROP TO EMPHASIS ONLY)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1.49 Signatures</th>
</tr>
</thead>
</table>
BSU Curriculum Forms

Form 1

Curriculum Modification Summary

College: Individual and Community Health
Department: Center for Sustainability Studies
Proposer: Michael J. Murray
Proposer’s position: Chair
Describe the modification(s) you propose, and how it (/they) will work to students' advantage. (This description and explanation will be included in Curriculum Report packets forwarded to the Faculty Senate.):

Streamlining the curriculum and reducing the overall credit required for completion. This is part of a larger integrated program with the creation of the Center for Sustainability Studies and the merger of the CEESSE programs with the Geography program.

Modifications proposed (specify number of each):

1. Course Modification(s) (form 2)
2. New Course(s) (form 3)
3. Course Drop(s) (form 4)
4. Program Modification(s) (form 5)
5. New Program(s) (form 6)
6. Program Drop(s) (form 7) DROP TO EMPHASIS ONLY

The modifications affect (check):

1. Liberal Education
2. Undergraduate Curriculum
3. Graduate Curriculum
4. Teacher Licensure Program(s)
BSU Curriculum Forms

Form 3
Updated: 9.19.15

New Course Form

Course Number:
Undergraduate: ENVR 3800
Graduate:

Course Title: Environmental Data Analysis

Course Description:
The aim of this course is to expose students to both introductory and advanced analytical methods for environmental applications. The class will provide a primer on introductory inferential statistics (sampling, probability, central tendencies, spread, t-tests and ANOVA) and work towards more advanced analytical applications which are geared towards research questions in Environmental Studies, Geology, and Geography. These techniques include multiple regression, logistic regression, multi-dimensional scaling, regression trees, cluster analysis, survival analysis and basic time series analysis. This class will focus on learning both the theoretical background and application of these methods and discuss the ethical and contextual issues that surround the use of statistical analysis in environmental research.

Credits: 3

Prerequisite(s):
Undergraduate: None
Graduate:

1. Reason(s) for creating this course: To give students a basic background in inferential statistics and in analytical methods that are specific to environmental analysis

2. How often will this course be offered?
One time per year in the fall.

3. What are the student learning outcomes for the course (please precede each outcome with "Students will...")?
   - Students will develop a solid foundation in basic inferential statistics and sampling techniques
   - Students will be able to successfully design a research project and appropriately state research and null hypothesis statements.
   - Students will develop the ability to identify the correct data and statistical test to utilize for any given study.
   - Students will gain a basic proficiency in multiple statistical software including SPSS, Minitab and R.
• Students will be able to explain and apply advanced environmental analytical methods including multiple regression, logistic regression, multi-dimensional scaling, regression trees, cluster analysis, survival analysis and basic time series analysis.
• Students will be able to design, carry out, and disseminate results from a study using an advanced environmental analytical method.

4. What are the major content areas for the course?
• Research design
• Foundational statistical methods
• Environmental Analysis

5. Is this course repeatable for credit, and if so, what is the maximum number of credits that can be earned? **No**

6. If this course is intended primarily for off-campus delivery (not offered on campus), what delivery mechanism will be used? **N/A**

7. What is the projected maximum class size (cap)?
**30 students (needs to be taught in a computer lab so limited by the constraints of this learning environment).**

8. What qualified faculty will be available to teach this course?
**Dr. Jeff Ueland**

NOTE WELL: Department and dean, in approving this proposal, attest both to the adequacy of the qualifications of faculty here named, and to their availability to teach the course at the frequency specified above, without excessive overload or disruption to other curriculum.

9. What additional library and other resources need or should be provided for this course, that are not already available?
**None**

10. What special personal property or service fee(s) would be charged to students taking this course? These charges would be for 1) items that are retained by the student and have an educational or personal value beyond the classroom, or 2) services that are on the student’s behalf (see MnSCU Board Policy 5.11).
   **Amount per student:** $
   **For:**

11. Attach a sample syllabus for the course. Note: if this course is double-numbered (u-grad/grad), the syllabus must include an additional component for graduate students.
Environmental Data Analysis

ENVR 3800
3 Credits
Hagg-Sauer 242
HS 426
Ph: (218) 755-2805
jueland@bemidjistate.edu

Readings and Resources:
To be supplied throughout the semester via D2L

Course description (content):
The aim of this course is to expose students to both introductory and advanced analytical methods for environmental applications. The class will provide a primer on introductory inferential statistics (sampling, probability, central tendencies, spread, t-tests and ANOVA) and work towards more advanced analytical applications which are geared towards research questions in Environmental Studies, Geology, and Geography. These techniques include multiple regression, logistic regression, multi-dimensional scaling, regression trees, cluster analysis, survival analysis and basic time series analysis. This class will focus on learning both the theoretical background and application of these methods and discuss the ethical and contextual issues that surround the use of statistical analysis in environmental research.

Learning outcomes:
Upon completion of this course students should:

- Students will develop a solid foundation in basic inferential statistics and sampling techniques
- Students will be able to successfully design a research project and appropriately state research and null hypothesis statements.
- Students will develop the ability to identify the correct data and statistical test to utilize for any given study.
- Students will gain a basic proficiency in multiple statistical software including SPSS, Minitab and R.
- Students will be able to explain and apply advanced environmental analytical methods including multiple regression, logistic regression, multi-dimensional scaling, regression trees, cluster analysis, survival analysis and basic time series analysis.
- Students will be able to design, carry out, and disseminate results from a study using an advanced environmental analytical method.

Course requirements and expectations:
Obtaining prescribed materials; punctual class attendance; serious predisposition; focusing on learning and self-enrichment; active class participation; engaging in class discussions; raising why and how questions; taking notes in class; developing analytical reading skills; studying independently; establishing study groups; handing in assignment on time; making appointments with the lecturer when necessary; upholding academic integrity.
Course Homepage and Email Contact:
For this course all content, including lectures and handouts can be found on the D2L site created for this course. You can log onto your D2L account and find the course and all the material will be accessible to you. You must also use only your BSU email accounts to correspond for this course. It is also your responsibility to check the D2L site frequently as I will post all important class changes and messages at this location. All changes to the course schedule made in class are the responsibility of the student.

Tentative Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Material</th>
<th>Readings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TBD</td>
<td>Introduction, Measures of Central Tendency</td>
<td>TBD</td>
</tr>
<tr>
<td>2</td>
<td>TBD</td>
<td>Probability, hypothesis testing and research design</td>
<td>TBD</td>
</tr>
<tr>
<td>3</td>
<td>TBD</td>
<td>Sampling, statistical power</td>
<td>TBD</td>
</tr>
<tr>
<td>4</td>
<td>TBD</td>
<td>t-tests</td>
<td>TBD</td>
</tr>
<tr>
<td>5</td>
<td>TBD</td>
<td>ANOVA</td>
<td>TBD</td>
</tr>
<tr>
<td>6</td>
<td>TBD</td>
<td>Correlation</td>
<td>TBD</td>
</tr>
<tr>
<td>7</td>
<td>TBD</td>
<td>Non-parametric tests</td>
<td>TBD</td>
</tr>
<tr>
<td>8</td>
<td>TBD</td>
<td>Regression</td>
<td>TBD</td>
</tr>
<tr>
<td>9</td>
<td>TBD</td>
<td>Multiple Regression</td>
<td>TBD</td>
</tr>
<tr>
<td>10</td>
<td>TBD</td>
<td>Logistic Regression</td>
<td>TBD</td>
</tr>
<tr>
<td>11</td>
<td>TBD</td>
<td>Multi-Dimensional Scaling</td>
<td>TBD</td>
</tr>
<tr>
<td>12</td>
<td>TBD</td>
<td>Regression trees (CART)</td>
<td>TBD</td>
</tr>
<tr>
<td>13</td>
<td>TBD</td>
<td>Cluster Analysis</td>
<td>TBD</td>
</tr>
<tr>
<td>14</td>
<td>TBD</td>
<td>Survival Analysis</td>
<td>TBD</td>
</tr>
<tr>
<td>15</td>
<td>TBD</td>
<td>Basic Time Series</td>
<td>TBD</td>
</tr>
<tr>
<td>16</td>
<td>TBD</td>
<td>Final</td>
<td>TBD</td>
</tr>
</tbody>
</table>

Grading:
You will attend weekly classes, complete assignments as provided, a final project, and a final exam. Projects will be turned-in in digital format to the D2L site. Each project will consist of a single pdf or word document that contains the completed material. It is a good practice to save all of your graded and returned assignments until you receive your grade for the course. The weighting for the projects and exam will be as follows:
Assignment Specifics:

<table>
<thead>
<tr>
<th>Project</th>
<th>Description</th>
<th>% of Grade</th>
<th>Due Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assignments</td>
<td>Completion in-class/independent assignments</td>
<td>40</td>
<td>TBA</td>
</tr>
<tr>
<td>Final Project</td>
<td>Project (extra credit for presenting at student achievement day)</td>
<td>35</td>
<td>TBA</td>
</tr>
<tr>
<td>Final Exam</td>
<td>Final Exam</td>
<td>20</td>
<td>TBA</td>
</tr>
<tr>
<td>Attendance</td>
<td>Daily attendance taken</td>
<td>5</td>
<td>Daily</td>
</tr>
</tbody>
</table>

Individual Project:
Each student will develop an individual project that and uses one of the methods learned throughout the semester to solves a question using environmentally themed data. The questions should follow a standard research process that we will discuss early in the class. It will be a formal research project and can be submitted as paper (~10 pages) or poster. Extra Credit will be offered if the student presents the work at student achievement day.

Grading Schedule:
- A: 90%-100%     - B+: 87%-89.9%   - B: 80%-86.9  - C+: 77%-79.9%  - C: 70%-76.9%
- D+: 67%-69.9%   - D:  60%-66.9%   - F: 0%-59.9%

Delivery of Assignments and Late Assignments:
I do not accept late assignments. All assignments will be turned in on D2L unless otherwise specified.

Attendance:
Since this course relies heavily on in-class demonstrations and project work, attendance is critical. You get one unexcused absence that will not affect grading. Each additional absence will proportionally decreases your final grade. Roll will be taken in class daily. The following and only the following absences are eligible to be excused and properly documented: religious holidays, as specified in BSU policy; absences due to representing BSU at official functions, verified emergencies and/or illness. While one is not penalized per se for excused absences, s/he is nevertheless responsible for all content missed, including any assignments, knowledge, or skills covered or assigned in the missed class(es). If you do miss class, you should make every effort to contact me before the next class period, so that you can catch up on the missed material. No “extra” credit is available, and all projects and the final exam must be completed to pass the course. I will post all grades and additional handouts on D2L so make sure to check the site regularly.

Computer Lab Use
If you happen to be on campus, the department of geography has a computer lab that can be utilized when there are not classes being held. The lab is in Hagg-Sauer 246. This lab is available for your computer-based assignments in this course outside of class time as well. You can use the lab whenever it is open. No food or drinks are allowed in the lab and it is reserved for coursework only – i.e. not web surfing. This is an open lab, you will need a
flashdrive or some other storage device to back-up your projects and continue your work outside of the lab.

**Academic Integrity:**
BSU students are expected to practice the highest standards of ethics, honesty and integrity in all of their academic work. Any form of academic dishonesty (e.g., plagiarism, cheating and misrepresentation) may result in disciplinary action. Possible disciplinary actions may include failure for part or an entire course as well as suspension from the University. It is suggested that students review BSU’s statement on academic integrity found within the Student Code of Conduct.

**Disruptive Behavior in the Classroom:**
We at Bemidji State University believe the classroom is an environment where civility, human dignity and respect is maintained. Any variation from this for example yelling or saying profanity at an instructor or another person in the classroom, or any other loud, lewd, belligerent or obnoxious behavior resulting in a disruption from teaching, and learning are violations of the Code of Conduct and will not be tolerated. If this occurs, you will be asked to leave the classroom not to return until you meet with the University Conduct Officer and you could be subject to a judicial hearing.

**Extended Leave Procedure:**
If student has to be away from class from an extended period of time (more than two class sessions) for medical emergencies or a funeral, you are asked to contact the Student Life and Success Office where a leave notice will be given to your faculty. This notice informs the faculty of your departure and return date back to campus. This leave does not absolve you from any assignment you have due during your leave. You are to make arrangements with your instructors of when to complete any assignments due during the leave period. You can complete a leave form as this website [https://www.bemidjistate.edu/offices/student-life-success/extended-absence/](https://www.bemidjistate.edu/offices/student-life-success/extended-absence/)

**Students with Special Needs:**
BSU is committed to making all educational programs, course materials, services and activities sponsored by the University accessible to individuals with disabilities. Students requesting accommodations due to a disability or other need for access should contact Accessibility Services as soon as possible. Accessibility Services is located at Decker Hall 202. PH: 218.755.3883 or email: accessibility@bemidjistate.edu. This information is also available through Minnesota Relay Services at 800.627.3529.

**Tutoring availability:**
BSU is committed to assisting our students in their academic endeavors and has in place the Advising Success Center as a valuable resource: [https://www.bemidjistate.edu/services/advising-success-center/services/tutoring/](https://www.bemidjistate.edu/services/advising-success-center/services/tutoring/)
The Minnesota State system has updated the online tutoring service available to our students. We are now partnering with Tutor.com to offer 24/7 online tutoring, which will connect students with an expert tutor for extra assistance one-on-one. Online tutoring
services can be accessed through the main page in D2L and your course page, by clicking on the tutor.com link, located in the “HelpLinks” menu.

**All students will receive 15 hours of tutoring at no cost.** Tutoring services cover a variety of subject areas including math, writing, accounting, economics, biology, languages and nursing. Additional time may be purchased by students directly through tutor.com.

**Mental Health and Counseling:**
Students may experience mental health concerns or stressful events that may lead to diminished academic performance. The Student Center for Health & Counseling is available to assist you with concerns and can include stress relief services. They can be reached in Cedar Hall, First Floor. Phone: (218) 755-2053.

**Accessibility statement:**
Upon request this document can be made available in alternate formats. Please contact Accessibility Services at 755-3883.
BSU Curriculum Forms

Form 5

Program Modification Form

Program to be modified: Environmental Studies, B.S. major Ecosystems Emphasis

List all proposed change(s):
The newly structured Center for Sustainability Studies has reviewed and revised four of the five Environmental Studies emphasis options. Each emphasis has had extensive revisions as shown below in the detailed information.

Reason(s) for the change(s):

Streamlining the curriculum and reducing the overall credit required for completion. This is part of a larger integrated program with the merger of the Geography program.

Note: In order to avoid hidden prerequisites, if a course is being dropped from this program (but not from the entire curriculum), please check for which remaining courses may include this dropped course as a prerequisite. Course prerequisites may be found in the online catalog (http://www.bemidjiState.edu/academics/catalog/). Remedies for hidden prerequisites may be found under Curriculum Forms at (http://www.bemidjiState.edu/faculty_staff/faculty_association/forms/).

Note: If a course from another department/program was either added to or dropped from this program, please notify the chair/coordinator of that course's department/program and indicate the following:
The course’s home department/program was notified of the addition or dropping of their course(s) on ___1/25/19_______ (date) by____________________ (mail, email, or phone).

The Psychology department was contacted on 1/25/19. No feedback
The Chemistry department was contacted on 1/25/19. (feedback attached)

Please check one of the items below:

______ No comments were received from other programs or departments within one week of the notification.

_____ Comments were received within one week of the notification, and are attached.

Note: If this is a joint program, the signatures of both department chairs (and both deans, if different colleges) must be provided.
Alert: Attach a copy of the current program showing the marked changes. Please copy the current program from the online catalog (http://www.bemidjistate.edu/academics/catalog/) and paste it into Word. Then use either the Track Changes feature under Tools, or the underline and strikethrough Font feature under Format. (Please note that the Track Changes feature may be easily switched on and off by holding down the Ctrl+Shift+E keys.)

Current Program

Environmental Studies, B.S. major
Ecosystem Emphasis

Required Credits: 76
Required GPA: 2.25

I REQUIRED CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- ECON 2000 Markets and Resource Allocation (3 credits)
- ENVR 2000 Introduction to Environmental Science (3 credits)
- ENVR 3300 Environmental Management and Safety (3 credits)
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 3880 Environmental Controversies (2 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 4880 Senior Seminar I (1 credit)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1111 General Chemistry I (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ECON 3040 Environmental Economics (3 credits)
• ENVR 3040 Environmental Economics (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

• ENVR 3600 Environmental Justice and Sustainability (3 credits)
• ENVR 4210 Environmental Law and Policy (3 credits)

COMPLETE 1 OF THE FOLLOWING COURSES (3 CREDITS):

• ENVR 4970 Internship (3 credits)
• ENVR 4990 Thesis (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

• SOC 3001 Social Statistics (3 credits)
• STAT 2610 Applied Statistics (4 credits)

ECOSYSTEM STUDIES EMPHASIS

COMPLETE THE FOLLOWING COURSES:

• BIOL 1211 Introductory Biology I (4 credits)
• BIOL 1212 Introductory Biology II (4 credits)
• BIOL 2610 General Ecology (3 credits)
• ENVR 4200 Wastewater Treatment (3 credits)
• ENVR 4400 Environmental Microbiology (3 credits)
• ENVR 4500 Environmental Toxicology (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

• MATH 1170 College Algebra (4 credits)
• MATH 1470 Precalculus (5 credits)

SELECT 1 OF THE FOLLOWING COURSES:

• CHEM 1112 General Chemistry II (4 credits)
• CHEM 2212 Principles of Chemistry II (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

• BIOL 3630 Conservation Biology (3 credits)
• GEOG 3630 Conservation Biology (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

• BIOL 3361 Limnology (4 credits)
• BIOL 3840 Wetlands Ecology (3 credits)
- ENVR 3840 *Wetlands Ecology* (3 credits)

SELECT 3 SEMESTER CREDITS OF UPPER DIVISION (3000/4000) ELECTIVES APPROVED IN ADVANCE BY A CEEESS ADVISOR.
PROPOSED CHANGES TO PROGRAM

Environmental Studies, B.S. major
Ecosystem Emphasis

Required Credits: **76.59**
Required GPA: 2.25

I REQUIRED CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- ECON 2000 Markets and Resource Allocation (3 credits)
- ENVR 2000 Introduction to Environmental Science (3 credits)
- ENVR 3300 Environmental Management and Safety (3 credits)
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 3880 Environmental Controversies (2 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 4880 Senior Seminar I (1 credit)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1111 General Chemistry I (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ECON 3040 Environmental Economics (3 credits)
- ENVR 3040 Environmental Economics (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)

COMPLETE SELECT 1 OF THE FOLLOWING COURSES (3 CREDITS):

- ENVR 4970 Internship (3 credits)
- ENVR 4990 Thesis (3 credits)
SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 3800 Environmental Data Analysis (3 credits)
- PSY 3401 Basic Stats for Research (4 credits)
- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

Choose one from the following:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4610 Sustainability: Theory and Practice (3 credits)

Choose one from the following:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

ECOSYSTEM EMPHASIS

COMPLETE THE FOLLOWING COURSES—SELECT 2 OF THE FOLLOWING:

- BIOL 1120 General Biology: Evolution And Ecology (3 credits)
- BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)
- BIOL 2610 General Ecology (3 credits)
- ENVR 4200 Wastewater Treatment (3 credits)
- ENVR 4400 Environmental Microbiology (3 credits)
- ENVR 4500 Environmental Toxicology (4 credits)
- CHEM 1111 General Chemistry I (4 credits)
- CHEM 1112 General Chemistry II (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 1120 Historical Geology (4 credits)
- PHYS 1101 General Physics I (4 credits)
- PHYS 1102 General Physics II (4 credits)
- PHYS 2101 Physics I (5 credits)
- PHYS 2102 Physics II (5 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- MATH 1170 College Algebra (4 credits)
- MATH 1470 Precalculus (5 credits)
SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1112 General Chemistry II (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- BIOL 3630 Conservation Biology (3 credits)
- GEOG 3630 Conservation Biology (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- BIOL 3361 Limnology (4 credits)
- BIOL 3840 Wetlands Ecology (3 credits)
- ENVR 3840 Wetlands Ecology (3 credits)

SELECT 34 CREDITS FROM THE FOLLOWING COURSES that have not been completed in the core above:

- ENVR 3040 Environmental Economics (3 credits)
  or ECON 3040 Environmental Economics (3 credits)
- ENVR 3300 Environmental Management and Safety (3 credits)
- ENVR 3700 Natural Resource Management (3 credits)
- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 3840 Wetlands Ecology (3 credits)
  or BIOL 3840 Wetlands Ecology (3 credits)
- ENVR 4110 Environmental Chemistry (3 credits)
- ENVR 4200 Wastewater Treatment (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4400 Environmental Microbiology (3 credits)
- GEOG 2100 Introduction to Physical Geography (3 credits)
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOG 3232 Intermediate Geographic Information Systems (3 credits)
- GEOG 3255 Remote Sensing (3 credits)
- GEOG 3630 Conservation Biology (3 credits)
  or BIOL 3630 Conservation Biology (3 credits)
- GEOG 4130 Biogeography (3 credits)
- GEOG 4140 Landscape Ecology (3 credits)
- GEOG 4265 Spatial Analysis (3 credits)
- GEOG 4275 Advanced Geographic Information Systems (3 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
- GEOL 3212 Hydrogeology (3 credits)
- GEOL 3700 Environmental Geophysics (3 credits)
- GEOL 4300 Global Environmental Change (3 credits)
SELECT 3 SEMESTER CREDITS OF OR ANY OTHER RELATED UPPER DIVISION (3000/4000) ELECTIVES COURSES APPROVED IN ADVANCE BY A Center for Sustainability Services ADVISOR.
Clean Copy of Proposed Program

Environmental Studies, B.S. major

Ecosystem Emphasis

Required Credits: 59
Required GPA: 2.25

I Required Core Courses

Complete the following courses:

- ENVR 2000 Introduction to Environmental Science (3 credits)
- ENVR 3880 Environmental Controversies (2 credits)
- ENVR 4880 Senior Seminar I (1 credit)

Select 1 of the following courses:

- ENVR 4970 Internship (3 credits)
- ENVR 4990 Thesis (3 credits)

Select 1 of the following courses:

- ENVR 3800 Environmental Data Analysis (3 credits)
- PSY 3401 Basic Stats for Research (4 credits)
- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

Select 1 of the following courses:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4610 Sustainability: Theory and Practice (3 credits)

Select 1 of the following courses:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

Ecosystem Emphasis

Select 2 of the following courses:

- GEOL 1110 Physical Geology (4 credits)
- GEOL 1120 Historical Geology (4 credits)
• BIOL 1120 General Biology: Evolution And Ecology (3 credits)
• BIOL 1211 Introductory Biology I (4 credits)
• BIOL 1212 Introductory Biology II (4 credits)
• CHEM 1111 General Chemistry I (4 credits) or CHEM 2211 Principles of Chemistry I (4 credits)
• CHEM 1112 General Chemistry II (4 credits) or CHEM 2212 Principles of Chemistry II (4 credits)
• PHYS 1101 General Physics I (4 credits) or PHYS 2101 Physics I (5 credits)
• PHYS 1102 General Physics II (4 credits) or PHYS 2102 Physics II (5 credits)

Select 34 credits from the following courses that have not been completed in the core above:

• ENVR 3040 Environmental Economics (3 credits)
  or ECON 3040 Environmental Economics (3 credits)
• ENVR 3300 Environmental Management and Safety (3 credits)
• ENVR 3700 Natural Resource Management (3 credits)
• ENVR 3600 Environmental Justice and Sustainability (3 credits)
• ENVR 3840 Wetlands Ecology (3 credits)
  or BIOL 3840 Wetlands Ecology (3 credits)
• ENVR 4110 Environmental Chemistry (3 credits)
• ENVR 4200 Wastewater Treatment (3 credits)
• ENVR 4210 Environmental Law and Policy (3 credits)
• ENVR 4400 Environmental Microbiology (3 credits)
• GEOG 2100 Introduction to Physical Geography (3 credits)
• GEOG 3231 Introduction to Geographic Information Systems (3 credits)
• GEOG 3232 Intermediate Geog. Info. Sys. (3 credits)
• GEOG 3255 Remote Sensing (3 credits)
• GEOG 3630 Conservation Biology (3 credits)
  or BIOL 3630 Conservation Biology (3 credits)
• GEOG 4130 Biogeography (3 credits)
• GEOG 4140 Landscape Ecology (3 credits)
• GEOG 4265 Spatial Analysis (3 credits)
• GEOG 4275 Advanced Geographic Information Systems (3 credits)
• GEOL 3120 Soils (4 credits)
• GEOL 3211 Environmental Hydrology (3 credits)
• GEOL 3212 Hydrogeology (3 credits)
• GEOL 3700 Environmental Geophysics (3 credits)
• GEOL 4300 Global Environmental Change (3 credits)

Or any other related courses (3000/4000) approved in advance by a Center for Sustainability Services advisor.
SUGGESTED SEMESTER SCHEDULE FOR ENVIRONMENTAL STUDIES MAJOR,
B.S. ECOSYSTEMS EMPHASIS

The following is a list of Environmental Studies Major Courses arranged by year. This schedule is intended to help students plan their courses in an orderly fashion; however, these are only suggestions and this schedule is flexible.

Freshman

- ENVR 2000 Introduction to Environmental Science (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- CHEM 1111 General Chemistry I (4 credits)
  or CHEM 2211 Principles of Chemistry I (4 credits)
- Liberal Education Requirements
- Emphasis Electives

Sophomore (with the emphasis already selected)

- ENVR 3880 Environmental Controversies (2 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
  or GEOL 3120 Soils (4 credits)
  or ENVR 4220 Sampling and Analysis (4 credits)
- ENVR 3600 Environmental Justice and Sustainability (3 credits)
  or ENVR 4210 Environmental Law and Policy (3 credits)
  or ENVR 4610 Sustainability: Theory and Practice (3 credits)
- SOC 3001 Social Statistics (3 credits)
  or STAT 2610 Applied Statistics (4 credits)
  or PSY 3401 Basic Statistics for Research (4 credits)
  or ENVR 3800 Environmental Data Analysis (3 credits)
- Liberal Education Requirements
- Emphasis Electives

Junior

- Liberal Education Requirements
- Emphasis Electives

Senior

- ENVR 4880 Senior Seminar I (1 credit)
- ENVR 4970 Internship (3 credits)
  or ENVR 4990 Thesis (3 credits)
- Liberal Education Requirements
- Emphasis Electives
BSU Curriculum Forms
Form 5
Program Modification Form

Program to be modified: Environmental Studies, B.S. major GeoHydrology emphasis

List all proposed change(s):
The newly structured Center for Sustainability Studies has reviewed and revised four of the five Environmental Studies emphasis options. Each emphasis has had extensive revisions as shown below in the detailed information.

Reason(s) for the change(s):
Streamlining the curriculum and reducing the overall credit required for completion. This is part of a larger integrated program with the merger of the Geography program.

Note: In order to avoid hidden prerequisites, if a course is being dropped from this program (but not from the entire curriculum), please check for which remaining courses may include this dropped course as a prerequisite. Course prerequisites may be found in the online catalog (http://www.bemidjistate.edu/academics/catalog/). Remedies for hidden prerequisites may be found under Curriculum Forms at (http://www.bemidjistate.edu/faculty_staff/faculty_association/forms/).

Note: If a course from another department/program was either added to or dropped from this program, please notify the chair/coordinator of that course's department/program and indicate the following:
The course’s home department/program was notified of the addition or dropping of their course(s) on __________(date) by____________________(mail, email, or phone).

Please check one of the items below:

   ___ x ___ No comments were received from other programs or departments within one week of the notification.
       Biology contacted 1.25.19

   ______ Comments were received within one week of the notification, and are attached.

Note: If this is a joint program, the signatures of both department chairs (and both deans, if different colleges) must be provided.

Alert: Attach a copy of the current program showing the marked changes.
Please copy the current program from the online catalog (http://www.bemidjistate.edu/academics/catalog/) and paste it into Word. Then use either the Track Changes feature under Tools, or the underline and strikethrough Font feature under Format. (Please note that the Track Changes feature may be easily switched on and off by holding down the Ctrl+Shift+E keys.)
Current Program

Environmental Studies, B.S. major
Geohydrology Emphasis

Required Credits: 75
Required GPA: 2.25

I REQUIRED CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- ECON 2000 Markets and Resource Allocation (3 credits)
- ENVR 2000 Introduction to Environmental Science (3 credits)
- ENVR 3300 Environmental Management and Safety (3 credits)
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 3880 Environmental Controversies (2 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 4880 Senior Seminar I (1 credit)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1111 General Chemistry I (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ECON 3040 Environmental Economics (3 credits)
- ENVR 3040 Environmental Economics (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)

COMPLETE 1 OF THE FOLLOWING COURSES (3 CREDITS):

- ENVR 4970 Internship (3 credits)
- ENVR 4990 Thesis (3 credits)
SELECT 1 OF THE FOLLOWING COURSES:

- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

GEOHYDROLOGY EMPHASIS

COMPLETE THE FOLLOWING COURSES:

- ENVR 4050 Geochemistry (3 credits)
- GEOL 2110 Mineralogy and Petrology (4 credits)
- GEOL 3212 Hydrogeology (3 credits)
- GEOL 3700 Environmental Geophysics (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOG 3232 Intermediate Geographic Information Systems (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- BIOL 1120 General Biology: Evolution And Ecology (3 credits)
- BIOL 1211 Introductory Biology I (4 credits)

SELECT 2 OF THE FOLLOWING COURSES:

- GEOL 3120 Soils (4 credits)
- GEOL 3400 Glacial and Pleistocene Geology (3 credits)
- GEOL 3600 Stratigraphy and Sedimentation (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- MATH 1470 Precalculus (5 credits)
- MATH 2471 Calculus I (5 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- PHYS 1101 General Physics I (4 credits)
- PHYS 2101 Physics I (5 credits)

SELECT 3 SEMESTER CREDITS OF UPPER DIVISION (3000/4000) ELECTIVES APPROVED IN ADVANCE BY A CEEESS ADVISOR.
PROPOSED CHANGES TO PROGRAM

Environmental Studies, B.S. major
Geohydrology Emphasis

Required Credits: 75 65
Required GPA: 2.25

I REQUIRED CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- ECON 2000 Markets and Resource Allocation (3 credits)
- ENVR 2000 Introduction to Environmental Science (3 credits)
- ENVR 3300 Environmental Management and Safety (3 credits)
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 3880 Environmental Controversies (2 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 4880 Senior Seminar I (1 credit)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1111 General Chemistry I (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ECON 3040 Environmental Economics (3 credits)
- ENVR 3040 Environmental Economics (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)

COMPLETE Select 1 OF THE FOLLOWING COURSES (3 CREDITS):

- ENVR 4970 Internship (3 credits)
- ENVR 4990 Thesis (3 credits)
SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 3800 Environmental Data Analysis (3 credits)
- PSY 3401 Basic Stats for Research (4 credits)
- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

Choose one from the following:

Select 1 of the following courses:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4610 Sustainability: Theory and Practice (3 credits)

Choose one from the following:

Select 1 of the following courses:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

GEOHYDROLOGY EMPHASIS

COMPLETE THE FOLLOWING COURSES:

- ENVR 4050 Geochemistry (3 credits)
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 2110 Mineralogy and Petrology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
- GEOL 3212 Hydrogeology (3 credits)
- GEOL 3700 Environmental Geophysics (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOG 3232 Intermediate Geographic Information Systems (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- BIOL 1120 General Biology: Evolution And Ecology (3 credits)
- BIOL 1211 Introductory Biology I (4 credits)

SELECT 2 OF THE FOLLOWING COURSES:

- GEOL 3120 Soils (4 credits)
- GEOL 3400 Glacial and Pleistocene Geology (3 credits)
- GEOL 3600 Stratigraphy and Sedimentation (3 credits)
SELECT 1 OF THE FOLLOWING COURSES:

- MATH 1470 Precalculus (5 credits)
- MATH 2471 Calculus I (5 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- PHYS 1101 General Physics I (4 credits)
- PHYS 2101 Physics I (5 credits)

Complete Select 15 credits from the following list courses that have not been completed in the core above:

- ENVR 3040 Environmental Economics (3 credits)
  or ECON 3040 Environmental Economics (3 credits)
- ENVR 3300 Environmental Management and Safety (3 credits)
- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 3840 Wetlands Ecology (3 credits)
  or BIOL 3840 Wetlands Ecology (3 credits)
- ENVR 4050 Geochemistry (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4220 Sampling and Analysis (4 credits)
- ENVR 4400 Environmental Microbiology (3 credits)
- GEOG 2100 Introduction to Physical Geography (3 credits)
- GEOG 3232 Intermediate Geographic Information Systems (3 credits)
- GEOG 3255 Remote Sensing (3 credits)
- GEOG 4130 Biogeography (3 credits)
- GEOG 4140 Landscape Ecology (3 credits)
- GEOG 4265 Spatial Analysis (3 credits)
- GEOG 4275 Advanced Geographic Information Systems (3 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 4300 Global Environmental Change (3 credits)
- BIOL 1120 General Biology: Evolution And Ecology (3 credits)
  or BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)

OR ANY OTHER RELATED COURSES (3000/4000) APPROVED IN ADVANCE BY A CEEESS Center for Sustainability Services ADVISOR.

SELECT 3 SEMESTER CREDITS OF UPPER DIVISION (3000/4000) ELECTIVES APPROVED IN ADVANCE BY A CEEESS ADVISOR.
Clean copy of Proposed Program

**Environmental Studies, B.S. major**
Geohydrology Emphasis

Required Credits: 65
Required GPA: 2.25

I Required Core Courses

Complete the following courses (6 credits):

- ENVR 2000 Introduction to Environmental Science (3 credits)
- ENVR 3880 Environmental Controversies (2 credits)
- ENVR 4880 Senior Seminar I (1 credit)

Select 1 of the following courses (3 CREDITS):

- ENVR 4970 Internship (3 credits)
- ENVR 4990 Thesis (3 credits)

Select 1 of the following courses: (3-4 CREDITS)

- ENVR 3800 Environmental Data Analysis (3 credits)
- PSY 3401 Basic Stats for Research (4 credits)
- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

Select 1 of the following courses:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4610 Sustainability: Theory and Practice (3 credits)

Select 1 of the following courses:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

**GEOHYDROLOGY EMPHASIS**

Complete the following courses
• GEOL 1110 Physical Geology (4 credits)
• GEOL 3211 Environmental Hydrology (3 credits)
• GEOL 2110 Mineralogy and Petrology (4 credits)
• GEOL 3212 Hydrogeology (3 credits)
• GEOL 3700 Environmental Geophysics (3 credits)
• GEOG 3231 Introduction to Geographic Information Systems (3 credits)

Select 1 of the following courses:

• GEOL 3400 Glacial and Pleistocene Geology (3 credits)
• GEOL 3600 Stratigraphy and Sedimentation (3 credits)

Select 1 of the following courses:

• MATH 1470 Precalculus (5 credits)
• MATH 2471 Calculus I (5 credits)

Select 1 of the following courses:

• PHYS 1101 General Physics I (4 credits)
• PHYS 2101 Physics I (5 credits)

Select 15 credits from the following courses that have not been completed in the core above:

• ENVR 3040 Environmental Economics (3 credits)
or ECON 3040 Environmental Economics (3 credits)
• ENVR 3300 Environmental Management and Safety (3 credits)
• ENVR 3600 Environmental Justice and Sustainability (3 credits)
• ENVR 3840 Wetlands Ecology (3 credits)
or BIOL 3840 Wetlands Ecology (3 credits)
• ENVR 4050 Geochemistry (3 credits)
• ENVR 4210 Environmental Law and Policy (3 credits)
• ENVR 4220 Sampling and Analysis (4 credits)
• ENVR 4400 Environmental Microbiology (3 credits)
• GEOG 3232 Intermediate Geographic Information Systems (3 credits)
• GEOG 3255 Remote Sensing (3 credits)
• GEOG 4130 Biogeography (3 credits)
• GEOG 4140 Landscape Ecology (3 credits)
• GEOG 4265 Spatial Analysis (3 credits)
• GEOG 4275 Advanced Geographic Information Systems (3 credits)
• GEOL 3120 Soils (4 credits)
• GEOL 4300 Global Environmental Change (3 credits)
Or any other related courses (3000/4000) approved in advanced by a Center for Sustainability Services Advisor.

SUGGESTED SEMESTER SCHEDULE FOR ENVIRONMENTAL STUDIES MAJOR, B.S. GEOHYDROLOGY EMPHASIS

The following is a list of Environmental Studies Major Courses arranged by year. This schedule is intended to help students plan their courses in an orderly fashion; however, these are only suggestions and this schedule is flexible.

Freshman

- ENVR 2000 Introduction to Environmental Science (3 credits)
- PHYS 1101 General Physics I (4 credits)
  or PHYS 2101 Physics I (5 credits)
- MATH 1470 Precalculus (5 credits)
  or MATH 2471 Calculus I (5 credits)
- Liberal Education Requirements
- Emphasis Electives

Sophomore (with the emphasis already selected)

- ENVR 3880 Environmental Controversies (2 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 2110 Mineralogy and Petrology (4 credits)
- ENVR 3600 Environmental Justice and Sustainability (3 credits)
  or ENVR 4210 Environmental Law and Policy (3 credits)
  or ENVR 4610 Sustainability: Theory and Practice (3 credits)
- SOC 3001 Social Statistics (3 credits)
  or STAT 2610 Applied Statistics (4 credits)
  or PSY 3401 Basic Statistics for Research (4 credits)
  or ENVR 3800 Environmental Data Analysis (3 credits)
- Liberal Education Requirements
- Emphasis Electives

Junior

- Liberal Education Requirements
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
- GEOL 3700 Environmental Geophysics (3 credits)
- Liberal Education Requirements
- Emphasis Electives

Senior
- ENVR 4880 Senior Seminar I (1 credit)
- ENVR 4970 Internship (3 credits)
  or ENVR 4990 Thesis (3 credits)
- GEOL 3212 Hydrogeology (3 credits)
- GEOL 3400 Glacial and Pleistocene Geology (3 credits)
  or GEOL 3600 Stratigraphy and Sedimentation (3 credits)
- Liberal Education Requirements
- Emphasis Electives
BSU Curriculum Forms

Form 5

Program Modification Form

Program to be modified: Environmental Studies B.S. major Environmental Health and Toxicology Emphasis

List all proposed change(s):
The newly structured Center for Sustainability Studies has reviewed and revised four of the five Environmental Studies emphasis options. Each emphasis has had extensive revisions as shown below in the detailed information.
Reason(s) for the change(s):
Streamlining the curriculum and reducing the overall credit required for completion. This is part of a larger integrated program with the merger of the Geography program.

Note: In order to avoid hidden prerequisites, if a course is being dropped from this program (but not from the entire curriculum), please check for which remaining courses may include this dropped course as a prerequisite. Course prerequisites may be found in the online catalog ([http://www.bemidjistate.edu/academics/catalog/](http://www.bemidjistate.edu/academics/catalog/)). Remedies for hidden prerequisites may be found under Curriculum Forms at ([http://www.bemidjistate.edu/faculty_staff/faculty_association/forms/](http://www.bemidjistate.edu/faculty_staff/faculty_association/forms/)).

Note: If a course from another department/program was either added to or dropped from this program, please notify the chair/coordinator of that course's department/program and indicate the following:
The course's home department/program was notified of the addition or dropping of their course(s) on__________(date) by__________________(mail, email, or phone).

Please check one of the items below:

___X___ No comments were received from other programs or departments within one week of the notification. Biology contacted 1.25.19

_______ Comments were received within one week of the notification, and are attached.

Note: If this is a joint program, the signatures of both department chairs (and both deans, if different colleges) must be provided.

Alert: Attach a copy of the current program showing the marked changes.
Please copy the current program from the online catalog ([http://www.bemidjistate.edu/academics/catalog/](http://www.bemidjistate.edu/academics/catalog/)) and paste it into Word. Then use either the Track Changes feature under Tools, or the underline and
strikethrough Font feature under Format. (Please note that the Track Changes feature may be easily switched on and off by holding down the Ctrl+Shift+E keys.)
Current Program

*Environmental Studies, B.S. major*

Environmental Health and Toxicology Emphasis

Required Credits: 76
Required GPA: 2.25

**I REQUIRED CORE COURSES**

**COMPLETE THE FOLLOWING COURSES:**

- ECON 2000 *Markets and Resource Allocation* (3 credits)
- ENVR 2000 *Introduction to Environmental Science* (3 credits)
- ENVR 3300 *Environmental Management and Safety* (3 credits)
- GEOG 3231 *Introduction to Geographic Information Systems* (3 credits)
- GEOL 1110 *Physical Geology* (4 credits)
- GEOL 3211 *Environmental Hydrology* (3 credits)

**COMPLETE THE FOLLOWING COURSE:**

- ENVR 3880 *Environmental Controversies* (2 credits)

**COMPLETE THE FOLLOWING COURSE:**

- ENVR 4880 *Senior Seminar I* (1 credit)

**SELECT 1 OF THE FOLLOWING COURSES:**

- CHEM 1111 *General Chemistry I* (4 credits)
- CHEM 2211 *Principles of Chemistry I* (4 credits)

**SELECT 1 OF THE FOLLOWING COURSES:**

- ECON 3040 *Environmental Economics* (3 credits)
- ENVR 3040 *Environmental Economics* (3 credits)

**SELECT 1 OF THE FOLLOWING COURSES:**

- ENVR 3600 *Environmental Justice and Sustainability* (3 credits)
- ENVR 4210 *Environmental Law and Policy* (3 credits)

**COMPLETE 1 OF THE FOLLOWING COURSES (3 CREDITS):**

- ENVR 4970 *Internship* (3 credits)
- ENVR 4990 *Thesis* (3 credits)
SELECT 1 OF THE FOLLOWING COURSES:

- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

ENVIRONMENTAL HEALTH AND TOXICOLOGY EMPHASIS

COMPLETE THE FOLLOWING COURSES:

- BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)
- ENVR 4220 Sampling and Analysis (4 credits)
- ENVR 4400 Environmental Microbiology (3 credits)
- ENVR 4500 Environmental Toxicology (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1112 General Chemistry II (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 3507 Analytical Chemistry (3 credits)
- CHEM 4411 Biochemistry I (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 3570 Analytical Chemistry Laboratory (1 credit)
- CHEM 4471 Biochemistry Laboratory I (1 credit)

SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 4050 Geochemistry (3 credits)
- ENVR 4110 Environmental Chemistry (3 credits)
- CHEM 4110 Environmental Chemistry (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- MATH 1470 Precalculus (5 credits)
- MATH 2471 Calculus I (5 credits)

SELECT 3 SEMESTER CREDITS OF UPPER DIVISION (3000/4000) ELECTIVES APPROVED IN ADVANCE BY A CEEESS ADVISOR.
PROPOSED CHANGES TO PROGRAM

*Environmental Studies, B.S. major*
Environmental Health and Toxicology Emphasis

Required Credits: **76**
Required GPA: **2.25**

I REQUIRED CORE COURSES

COMPLETE THE FOLLOWING COURSES:

- ECON 2000 **Markets and Resource Allocation** (3 credits)
- ENVR 2000 **Introduction to Environmental Science** (3 credits)
- ENVR 3300 **Environmental Management and Safety** (3 credits)
- GEOG 3231 **Introduction to Geographic Information Systems** (3 credits)
- GEOL 1110 **Physical Geology** (4 credits)
- GEOL 3211 **Environmental Hydrology** (3 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 3880 **Environmental Controversies** (2 credits)

COMPLETE THE FOLLOWING COURSE:

- ENVR 4880 **Senior Seminar I** (1 credit)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1111 **General Chemistry I** (4 credits)
- CHEM 2211 **Principles of Chemistry I** (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ECON 3040 **Environmental Economics** (3 credits)
- ENVR 3040 **Environmental Economics** (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 3600 **Environmental Justice and Sustainability** (3 credits)
- ENVR 4210 **Environmental Law and Policy** (3 credits)

COMPLETE 1 OF THE FOLLOWING COURSES (3 CREDITS):

- ENVR 4970 **Internship** (3 credits)
- ENVR 4990 **Thesis** (3 credits)
SELECT 1 OF THE FOLLOWING COURSES:

- ENVR 3800 Environmental Data Analysis (3 credits)
- PSY 3401 Basic Stats for Research (4 credits)
- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

Choose one from the following Select 1 of the following courses:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4610 Sustainability: Theory and Practice (3 credits)

Choose one from the following Select 1 of the following courses:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

ENVIRONMENTAL HEALTH AND TOXICOLOGY EMPHASIS

COMPLETE THE FOLLOWING COURSES: Select 2 of the following courses:

- BIOL 1120 General Biology: Evolution And Ecology (3 credits)
- BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)
- ENVR 4220 Sampling and Analysis (4 credits)
- ENVR 4400 Environmental Microbiology (3 credits)
- ENVR 4500 Environmental Toxicology (4 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 1111 General Chemistry I (4 credits)
- CHEM 1112 General Chemistry II (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)
- GEOL 1110 Physical Geology (4 credits)
- GEOL 1120 Historical Geology (4 credits).

SELECT 1 OF THE FOLLOWING COURSES:

- CHEM 3507 Analytical Chemistry (3 credits)
- CHEM 4411 Biochemistry I (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:
- CHEM 3570 Analytical Chemistry Laboratory (1 credit)
- CHEM 4471 Biochemistry Laboratory I (1 credit)

SELECT 1 OF THE FOLLOWING COURSES: Complete the following courses:

- ENVR 4050 Geochemistry (3 credits)
- ENVR 4110 Environmental Chemistry (3 credits)
- ENVR 4220 Sampling and Analysis (4 credits)
- ENVR 4500 Environmental Toxicology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
- CHEM 4110 Environmental Chemistry (3 credits)

SELECT 1 OF THE FOLLOWING COURSES:

- MATH 1470 Precalculus (5 credits)
- MATH 2471 Calculus I (5 credits)

SELECT 19 CREDITS FROM THE FOLLOWING COURSES that have not been completed in the core above:

- ENVR 3040 Environmental Economics (3 credits)
  or ECON 3040 Environmental Economics (3 credits)
- ENVR 3300 Environmental Management and Safety (3 credits)
- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 3840 Wetlands Ecology (3 credits)
  or BIOL 3840 Wetlands Ecology (3 credits)
- ENVR 4200 Wastewater Treatment (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4400 Environmental Microbiology (3 credits)
- GEOG 2100 Introduction to Physical Geography (3 credits)
- GEOG 3231 Introduction to Geographic Information Systems (3 credits)
- GEOG 3232 Intermediate Geographic Information Systems (3 credits)
- GEOG 4130 Biogeography (3 credits)
- GEOG 4140 Landscape Ecology (3 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3700 Environmental Geophysics (3 credits)
- GEOL 4300 Global Environmental Change
- BIOL 3361 Limnology (4 credits)
- GEOG 3630 Conservation Biology (3 credits)
  or BIOL 3630 Conservation Biology (3 credits)
- CHEM 3311 Organic Chemistry I (3 Credits)
- CHEM 3312 Organic Chemistry II (3 Credits)
- CHEM 3371 Organic Chemistry I Lab (1 Credit)
- CHEM 3372 Organic Chemistry II Lab (1 Credit)
- CHEM 3507 Analytical Chemistry (3 credits)
- CHEM 3570 Analytical Chemistry Laboratory (1 Credit)
• CHEM 4411 Biochemistry I (3 credits)
• CHEM 4412 Biochemistry II (3 Credits)
• CHEM 4471 Biochemistry Laboratory I (1 Credit)
• CHEM 4472 Biochemistry Laboratory II (1 Credit)

SELECT 3 SEMESTER CREDITS OF UPPER DIVISION (3000/4000)
ELECTIVES APPROVED IN ADVANCE BY A CESS Center for Sustainable Studies ADVISOR.
Clean copy of Proposed Program

Environmental Studies, B.S. major
Environmental Health and Toxicology Emphasis

Required Credits: 66
Required GPA: 2.25

I Required Core Courses

Complete the following courses:

- ENVR 2000 Introduction to Environmental Science (3 credits)
- ENVR 3880 Environmental Controversies (2 credits)
- ENVR 4880 Senior Seminar I (1 credit)

Select 1 of the following courses:

- ENVR 4970 Internship (3 credits)
- ENVR 4990 Thesis (3 credits)

Select 1 of the following courses:

- ENVR 3800 Environmental Data Analysis (3 credits)
- PSY 3401 Basic Stats for Research (4 credits)
- SOC 3001 Social Statistics (3 credits)
- STAT 2610 Applied Statistics (4 credits)

Select 1 of the following courses:

- ENVR 3600 Environmental Justice and Sustainability (3 credits)
- ENVR 4210 Environmental Law and Policy (3 credits)
- ENVR 4610 Sustainability: Theory and Practice (3 credits)

Select 1 of the following courses:

- ENVR 4220 Sampling and Analysis (4 credits)
- GEOL 3120 Soils (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)

ENVIRONMENTAL HEALTH AND TOXICOLOGY EMPHASIS

Select 2 of the following
• GEOL 1110 Physical Geology (4 credits)
• GEOL 1120 Historical Geology (4 credits)
• BIOL 1120 General Biology: Evolution And Ecology (3 credits)
• BIOL 1211 Introductory Biology I (4 credits)
• BIOL 1212 Introductory Biology II (4 credits)
• CHEM 1111 General Chemistry I (4 credits), or CHEM 2211 Principles of Chemistry I (4 credits)
• CHEM 1112 General Chemistry II (4 credits) or CHEM 2212 Principles of Chemistry II (4 credits)

Complete the following courses:

• ENVR 4110 Environmental Chemistry (3 credits)
• ENVR 4220 Sampling and Analysis (4 credits)
• ENVR 4500 Environmental Toxicology (4 credits)
• GEOL 3211 Environmental Hydrology (3 credits)

Select 1 of the following courses:

• MATH 1470 Precalculus (5 credits)
• MATH 2471 Calculus I (5 credits)

Select 19 credits from the following courses:

• ENVR 3040 Environmental Economics (3 credits)
  or ECON 3040 Environmental Economics (3 credits)
• ENVR 3300 Environmental Management and Safety (3 credits)
• ENVR 3600 Environmental Justice and Sustainability (3 credits)
• ENVR 3840 Wetlands Ecology (3 credits)
  or BIOL 3840 Wetlands Ecology (3 credits)
• ENVR 4200 Wastewater Treatment (3 credits)
• ENVR 4210 Environmental Law and Policy (3 credits)
• ENVR 4400 Environmental Microbiology (3 credits)
• GEOG 2100 Introduction to Physical Geography (3 credits)
• GEOG 3231 Introduction to Geographic Information Systems (3 credits)
• GEOG 3232 Intermediate Geographic Information Systems (3 credits)
• GEOG 4130 Biogeography (3 credits)
• GEOG 4140 Landscape Ecology (3 credits)
• GEOL 3120 Soils (4 credits)
• GEOL 3700 Environmental Geophysics (3 credits)
• GEOL 4300 Global Environmental Change
• BIOL 3361 Limnology (4 credits)
• GEOG 3630 Conservation Biology (3 credits)
  or BIOL 3630 Conservation Biology (3 credits)
• CHEM 3311 Organic Chemistry I (3 credits)
• CHEM 3312 Organic Chemistry II (3 credits)
• CHEM 3371 Organic Chemistry I Lab (1 Credit)
CHEM 3372 Organic Chemistry II Lab (1 Credit)
CHEM 3507 Analytical Chemistry (3 credits)
CHEM 3570 Analytical Chemistry Laboratory (1 Credit)
CHEM 4411 Biochemistry I (3 credits)
CHEM 4412 Biochemistry II (3 Credits)
CHEM 4471 Biochemistry Laboratory I (1 Credit)
CHEM 4472 Biochemistry Laboratory II (1 Credit)

Select 3 semester credits of upper division (3000/4000) electives approved in advance by a Center for Sustainable Studies advisor.

SUGGESTED SEMESTER SCHEDULE FOR ENVIRONMENTAL STUDIES MAJOR, B.S. ENVIRONMENTAL HEALTH AND TOXICOLOGY EMPHASIS

The following is a list of Environmental Studies Major Courses arranged by year. This schedule is intended to help students plan their courses in an orderly fashion; however, these are only suggestions and this schedule is flexible.

Freshman

- ENVR 2000 Introduction to Environmental Science (3 credits)
- GEOL 1110 Physical Geology (4 credits)
- CHEM 111 General Chemistry I (4 credits)
  or CHEM 2211 Principles of Chemistry I (4 credits)
- MATH 1470 Precalculus (5 credits)
  or MATH 2471 Calculus I (5 credits)
- Liberal Education Requirements
- Emphasis Electives

Sophomore (with the emphasis already selected)

- ENVR 3880 Environmental Controversies (2 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
  or GEOL 3120 Soils (4 credits)
  or ENVR 4220 Sampling and Analysis (4 credits)
- ENVR 3600 Environmental Justice and Sustainability (3 credits)
  or ENVR 4210 Environmental Law and Policy (3 credits)
  or ENVR 4610 Sustainability: Theory and Practice (3 credits)
- SOC 3001 Social Statistics (3 credits)
  or STAT 2610 Applied Statistics (4 credits)
  or PSY 3401 Basic Statistics for Research (4 credits)
  or ENVR 3800 Environmental Data Analysis (3 credits)
- Liberal Education Requirements
- Emphasis Electives
Junior

- ENVR 4110 Environmental Chemistry (3 credits)
- ENVR 4220 Sampling and Analysis (4 credits)
- Liberal Education Requirements
- Emphasis Electives

Senior

- ENVR 4880 Senior Seminar I (1 credit)
- ENVR 4970 Internship (3 credits)
  or ENVR 4990 Thesis (3 credits)
- ENVR 4500 Environmental Toxicology (4 credits)
- GEOL 3211 Environmental Hydrology (3 credits)
- Liberal Education Requirements
- Emphasis Electives
Jeff, et al.,

I’ve looked through this and discussed it with members from our department and just have a couple of comments.

One of the big changes in this proposal that affects the Chemistry department specifically is moving our courses (along with courses from Biology) from being required to being options that students can select from a list. One common example would be the CHEM 1111/2211 and CHEM 1112/2212 courses, which appear in the majority of emphases included in this proposal. In the old version, students are required to take two semesters of freshman chemistry for the Ecosystems, Environmental Health/Toxicology, and Industrial Ecology Emphases, and additional chemistry courses for the two latter emphases. The fourth emphasis, Geohydrology, requires one semester. In the proposed version, the chemistry courses are listed in a “Pick two courses” list of options including chemistry, biology, physics, geology, etc. depending on the emphasis. We could probably have a discussion on the balance between allowing flexibility in student coursework and academic rigor, but I trust that the environmental studies faculty have already had that discussion and have come up with a proposal that will work well for your majors and the expectations of their future employers. Beyond that, I’d like to point out a couple of additional advising hiccups that could occur as a result of this rearrangement:

1. **Hidden Prerequisites:** ENVR 4110, ENVR 4200, and/or ENVR 4500 are listed as required courses in multiple emphases, and these courses all have CHEM 1112 or 2212 as a prerequisite, both of which, in turn, have CHEM 1111/2211 as a prerequisite. In addition, ENVR 4200 and ENVR 4500 both have BIOL 1212 listed as a prerequisite, which has BIOL 1211 as a prerequisite. “Consent of the instructor” is listed as an option, and that technically takes care of it from the BSU perspective, but with this arrangement, not having all of the prerequisites will become more of a rule than an exception for your students.

2. **Redundant Course Selection:** I’m guessing what will probably happen is that most students will end up taking a chemistry or biology or physics or geology, etc. sequence to satisfy this section (e.g. CHEM 1111/1112). An unintended consequence of grouping the courses in a buffet-style list is that students could take “redundant” courses and still have the requirement satisfied in their DARS report...Using chemistry example, a student could conceivably take CHEM 1111 and CHEM 2211, which basically cover the same material (same is basically true for PHYS 1101/2201). I don’t think that is what the department intended when designing the proposed curriculum, and it probably won’t happen a lot, but I could see this happening on occasion.
Thanks for giving us the opportunity for input. Let me know if you have any questions or if there’s anything further the Chemistry Department can do to help.

KAM

From: Ueland, Jeffrey S <Jeffrey.Ueland@bemidjistate.edu>
Sent: Friday, January 25, 2019 8:42 AM
To: Marek, Keith A <KMarek@bemidjistate.edu>; Wallert, Mark A <Mark.Wallert@bemidjistate.edu>
Cc: Sea, William B <William.Sea@bemidjistate.edu>; Murray, Michael J <Michael.Murray@bemidjistate.edu>
Subject: Environmental Studies Curriculum changes

Keith and Mark,

Attached are some substantial curriculum changes proposed by our Environmental Studies program that involve courses in your department. Please let me know if you have any comments or questions.

thanks - jeff ueland
BSU Curriculum Forms

Form 7
(Updated: 9.15.15)

Program Drop Form

Program to be dropped:
Environmental Studies, B.S. major Industrial Ecology emphasis (emphasis only)
Environmental Studies, B.S. major Environmental Policy and Planning emphasis (emphasis only)

Reason(s) for dropping it:

Industrial Ecology emphasis: to be replaced with the forthcoming proposed new emphasis called Leadership in Sustainability.

Environmental Policy and Planning emphasis: to be replaced with the currently proposed Policy and Planning B.S. joint degree.

Note: Please notify the chair/coordinator of other departments/programs with courses in this dropped program and indicate the following:

The course’s home department/program was notified of the dropping of their course(s) on _________ (date) by ________________ (mail, email, or phone).

Alert:
- Contact the Assistant Vice-President for Academic Affairs regarding notification downstate.
Hi All,

Yes. I approve Robin making the revisions listed below to the curriculum packet.

Warm regards,

Joe

Joseph M. Ritter, Ph.D.
Dean of the College of Individual and Community Health

From: "Bedford, Allen J" <allen.bedford@bemidjistate.edu>
Date: Friday, September 6, 2019 at 3:46 PM
To: "Gullickson, Robin S" <Robin.Gullickson@bemidjistate.edu>, "Ritter, Joseph M" <Joseph.Ritter@bemidjistate.edu>
Cc: "Sea, William B" <William.Sea@bemidjistate.edu>, "Isaacson, Carl W" <Carl.Isaacson@bemidjistate.edu>, "Tews, Bridget E" <Bridget.Tews@bemidjistate.edu>, "Backer, Diane M" <Diane.Backer@bemidjistate.edu>
Subject: RE: Moving forward with curriculum (9.ENVR_18-19)

Hello Robin,

So long as Bill and Carl are in agreement regarding dropping the two emphases and with removing
the pages regarding the Industrial Ecology emphasis, then I approve your taking the actions you
describe below with the proposals.

Thanks,

Allen

Allen J. Bedford, Ph.D.
Associate Vice President for Academic Affairs
307 Deputy Hall
1500 Birchmont Drive NE #3
Bemidji, MN 56601-2699
(218) 755-2016 / (218) 755-3999
allen.bedford@bemidjistate.edu
bemidjistate.edu

From: Gullickson, Robin S <Robin.Gullickson@bemidjistate.edu>
Sent: Friday, September 6, 2019 3:42 PM
To: Bedford, Allen J <allen.bedford@bemidjistate.edu>; Ritter, Joseph M
Re: 9.ENVR_18-19

Allen,

As we talked about just now, please ‘reply all’ with your approval for me to insert two emphasis program drop forms indicated below into the curriculum packet 9.ENVR_18-19. At this same time I will also remove the existing pages within the proposal associated with the Industrial Ecology emphasis. Once approved I will include those emails along with the original curriculum packet paperwork.

Joe,

Please also ‘reply all’ with your approval for me to make the following revisions to this curriculum packet.

Thanks everyone; have a wonderful weekend.

Robin

Robin Gullickson
Assistant Registrar | Curriculum Coordinator
Bemidji State University | 1500 Birchmont Drive NE #12
Bemidji, MN 56601 | 218-755-4248
robin.gullickson@bemidjistate.edu

From: Sea, William B <William.Sea@bemidjistate.edu>
Sent: Friday, September 06, 2019 3:23 PM
To: Gullickson, Robin S <Robin.Gullickson@bemidjistate.edu>; Isaacson, Carl W <Carl.Isaacson@bemidjistate.edu>
Subject: Re: Moving forward with curriculum

Hi Robin,

Carl and I are in agreement with the two approval items you are asking of Allen.

Thank you!

Bill

From: Gullickson, Robin S <Robin.Gullickson@bemidjistate.edu>
Sent: Friday, September 6, 2019 2:31 PM
To: Sea, William B <William.Sea@bemidjistate.edu>
Subject: RE: Moving forward with curriculum

I meet with Allen this afternoon re something else. I will ask him for approval to:

1. Insert the Program Drop form for
   a. Environmental Policy and Planning emphasis
   b. Industrial Ecology emphasis

2. Remove the modification form for the Industrial Ecology emphasis from the packet.

Please confirm that was the decision and I am understanding correctly. Thanks Bill -

Robin
<====<====<====<====<====<====<====<====<====>
Robin Gullickson
Assistant Registrar | Curriculum Coordinator
Bemidji State University | 1500 Birchmont Drive NE #12
Bemidji, MN 56601 | 218-755-4248
robin.gullickson@bemidjistate.edu

From: Sea, William B <William.Sea@bemidjistate.edu>
Sent: Friday, September 06, 2019 1:36 PM
To: Gullickson, Robin S <Robin.Gullickson@bemidjistate.edu>
Subject: Moving forward with curriculum

Hi Robin,

The department decided to move forward with the current undergrad packet you have. What do we need to do next?

Bill
BSU Curriculum Forms

Form 8
Updated: 09.18.15

Signatures

Michael Murray / Chair / 7.13.18 (see attached email re: signature page)_______
Proposer / Title / Date

Michael Murray / Chair / 7.13.18 (see attached email re: signature page)_______
Chair or Director / Department or Program / Date
Note: "All departmental recommendations [on curriculum] must be reviewed and approved by the department's faculty."--IFO/MnSCU Master Agreement 2009-2011, 20.A.3 (p. 80).

At this point, packet goes to Records Office/Curriculum Coordinator to be logged in to the Curriculum Proposal Progress Grid.

Colleen Greer / Arts & Sciences / 7.13.18 (see attached email re: signature page)_______
Dean / College / Date

Note: If proposal is sent back to the Proposer, please notify the Curriculum Coordinator. If approved, packet goes to Academic Affairs Office.