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Brockport, New York 14420
585-395-2586 * 585-395-2006 (fax)
senate@brockport.edu
brockport.edu/collegesenate

Resolution 2018-19 #17GC College Senate

Supersedes Res #: _____

TO: Dr. Heidi Macpherson, College President

FROM: The College Senate:

- RE: **→** I. Formal Resolution (*Act of Determination*)
 II. Recommendation (*Urging the Fitness of*)
 III. Other, For Your Information (*Notice, Request, Report, etc.*)



SUBJ: **Addition of Graduate Seminar to MS Program in Environmental Science and Biology** (32_18-19GC)

Implementation Effective Date**: _____

Signed: Kathleen Peterson Date: 3 / 7 / 19
(Dr. Kathleen Peterson, 2018-2019 College Senate President)

Signed: Eileen Daniel Date: 3 / 15 / 19
(Dr. Eileen Daniel, Vice Provost, The College at Brockport)

****Implementation of resolution requires final approval from SUNY- State Education Department.**
 ___ YES NO

Please fill out the bottom portion and follow the distribution instructions at the end of this page.

TO: Dr. Kathleen Peterson, College Senate President

FROM: Dr. Heidi Macpherson, College President

RE: **→** I. Decision and Action Taken on Formal Resolution (circle choice)

- a. Accepted
- b. Deferred for discussion with the Faculty Senate on ___/___/___
- c. Unacceptable for the reasons contained in the attached explanation.
- d. Comments:

Signed: Heidi Macpherson Date: 3/26/19
(Dr. Heidi Macpherson, President, The College at Brockport)

DISTRIBUTION:

The College Senate will forward the resolution signed by the College Senate President to the Vice Provost for determination as to whether the implementation of the resolution requires final approval from SUNY-State Education Dept. The Vice Provost will then forward the resolution with that designation to the College President. Upon

approval, the College President will forward copies of resolutions to his/her staff who will, in turn, forward copies to their staff and to the College Senate. The College Senate Office will post resolutions to the College Senate Web at <http://www.brockport.edu/collegesenate/resolutions>.

**COLLEGE SENATE OFFICE
RESOLUTION PROPOSAL COVER PAGE
DEADLINE FOR SUBMISSIONS:
JANUARY 31**

Incomplete proposals will be returned and proposals received after the deadline may not be reviewed until next semester.

Routing Number <i>Routing # assigned by Senate Office</i> 2018-2019	32_18-19GC <i>Use routing number and title in all reference to this proposal.</i>
This Proposal Replaces Resolution	

INSTRUCTIONS

- Use committee guidelines available at brockport.edu/collegesenate/proposal.html.
- Prepare ONE complete document in **Word format or PDF**: include this proposal cover page, the detailed proposal, and any relevant supporting data or documentation, including letters of support from your department chair and dean, if applicable, as well as letters of support or dissent (or evidence that such letters were sought) from all affected programs, departments, or units at the College.
- **Locate the Resolution # and date this proposal will replace at our "Approved Resolutions" page on our Web site.**
- Email completed proposal to senate@brockport.edu.
- **Make revisions on the paperwork emailed to you from the Senate office that shows the assigned routing number on top. Submit updated document to senate@brockport.edu.**
- Questions? Call the Senate office at 395-2586 or the appropriate committee chairperson.

1. **PROPOSAL TITLE:** Please be somewhat descriptive, ie. *Use a course number and/or title, indicate if for GED code, etc.*

Add additional graduate seminars to MS program in Environmental Science and Biology

2. **BRIEF DESCRIPTION OF PROPOSAL:**

Proposal to add three one-credit graduate seminars to MS requirements, with no change in total credits required. This would create a series of four required one-credit seminars (ENV 705, 706, 707, and 708), replacing the two terms of ENV 705 currently required. Graduate students also would be required to take at least one of three graduate-level statistics courses.

3. **WILL ADDITIONAL RESOURCES AFFECTING BUDGET BE NEEDED? X NO _ YES**

4. **DESCRIBE ANY DATA RELATED TO STUDENT LEARNING OUTCOMES ASSESSMENT USED AS PART OF THE RATIONALE FOR THE REQUESTED SENATE ACTION.**

5. **DESCRIBE THE IMPACT, IF ANY, THAT THESE CHANGES WILL HAVE ON STUDENT ELIGIBILITY FOR THE EXCELSIOR SCHOLARSHIP.**

N/A

6. **DESCRIBE THE IMPACT, IF ANY, THAT THESE CHANGES WILL HAVE ON TRANSFER STUDENTS AND THEIR ABILITY TO TRANSFER SEAMLESSLY AS MANDATED BY SUNY POLICY.**

N/A

7. **ANTICIPATED EFFECTIVE DATE:**

Beginning of Fall 2019 term

8. **SUBMISSION & REVISION DATES:** PLEASE DATE ALL REVISED DOCUMENTS TO AVOID CONFUSION.

<i>First Submission</i>	<i>Updated on</i>	<i>Updated on</i>	<i>Updated on</i>
1/28/19			

9. **SUBMITTED BY: (contact person)**

<i>Name</i>	<i>Department</i>	<i>Phone</i>	<i>Email</i>
Christopher Norment	Environmental Science and Ecology	395-5748	cnorment@brockport.edu

10. **COMMITTEES: (Senate office use only)**

Standing Committee	Forwarded To	Dates Forwarded
<input type="checkbox"/> Executive Committee	Standing Committee	01/29/19
<input type="checkbox"/> Enrollment Planning & Policies	Executive Committee	

<input type="checkbox"/> Faculty & Professional Staff Policies	Senate	
<input type="checkbox"/> General Education & Curriculum Policies	Passed GED's go to Vice Provost	
<input checked="" type="checkbox"/> Graduate Curriculum & Policies	College President	
<input type="checkbox"/> Student Policies	OTHER	
<input type="checkbox"/> Undergraduate Curriculum & Policies	REJECTED -WITHDRAWN	
NOTES:		

Proposal to the College Senate Graduate Curriculum Committee

1. A comparison of the new program to the old program.
 - a. Include a side-by side tabular illustration

Old program	Credits	New program	Credits
ENV 705 – Graduate seminar	1	ENV 705 Graduate Seminar	1
ENV 705 – Graduate seminar	1	ENV 706 Graduate Experimental Design	1
		ENV 707 Graduate Scientific Writing	1
		ENV 708 Graduate Professional Development	1
ENV 704 - Thesis	1	ENV 704 - Thesis	1
ENV 614 – Experimental Design	3	One of ENV 537 (Biostatistics), ENV 616 (Multivariate Statistics), ENV 538 (Ecological Data Analysis in R)	3
500-level classes, by advisement	15	500-level classes, by advisement	12-15
600-700 level credits, by advisement	9	600-700 level credits, by advisement	7-10
TOTAL CREDITS	30		30

2. A discussion regarding “Mission”, “Market”, and “Quality”. Specifically address the following issues:

- a. How does the proposal reflect the campus mission focus?

This proposal increases the ability of our program to engage our graduate students with courses tailored for their needs and interests. Curriculum changes will provide more opportunities for graduate-level discussion, where students can learn from each other. These changes, by increasing focus on professional development and statistical skills needed for the workplace, will also ensure that students grow as scientists and citizens of the larger community.

- b. What are the market demand factors that this proposal responds to? Include program competition from other regional colleges.

This proposal does not respond to any specific market demands. At 26 matriculated graduate students our program is near or at capacity.

- c. How is program quality addressed in this proposal?

In December 2017 the Department of Environmental Science and Ecology surveyed current and former graduate students in the MS and combined BS/MS programs. Comments were generally positive, but three areas were identified as ‘needs improvement’ by survey respondents. This proposal modifies the curriculum to address those three issues.

First, students expressed their desire for more graduate-only courses. Most courses graduate students take in ENV are 500-level ‘swing courses’ with co-enrolled undergraduate students. This proposal adds two new graduate-only seminar courses designed to be taken during a student’s second year. Students will now have at least one graduate-only course during each semester of their two years of coursework at Brockport. This will increase the strength of graduate student cohorts, collaboration opportunities, and the quality of the final thesis products.

Second, students felt that the program could use more statistical and experimental design focus. Students have historically been required to take one course, ENV 614 (Experimental Design), which is co-taught with ENV 437 (Biostatistics). Although graduate students had additional assignments and projects, the nature of this course kept it from addressing experimental design as deeply as students would like. Concurrently, ENV 437 (Biostatistics) has become a required course for the ENV BS. Thus many of our MS students have already taken ENV 437, so they cannot then take ENV 614. The modified program would move Experimental Design to a 1-credit graduate only seminar course during the students’ second semester, when they are designing their research. Additionally, students would be required to take one additional statistics-focused course, ensuring that students who have already taken Biostatistics (ENV 437) will take an additional upper-level statistics course (either ENV 538, Ecological Data Analysis in R, or ENV 616, Multivariate Statistics). For students who have not taken Biostatistics (ENV 437) or a similar course, a 500-level graduate option, ENV 537, will be offered concurrently with ENV 437.

Third, students in the survey reported that an increased focus on professional development would increase the utility of the program. In particular, students wanted more help with oral communication, networking, and applying for and acquiring jobs. We have designed a new seminar class, ENV 708, focused on these and other important topics.

3. Description of the new courses.

Three new courses are proposed: ENV 706, ENV 707, and ENV 708.

ENV 706, Experimental Design, was previously co-taught with undergraduate Biostatistics, ENV 437. The course would cover the same material, but be a stand-alone 1-credit seminar meeting weekly for one hour. This course covers topics including research site selection, pseudoreplication, power analysis, data collection, data management, and data manipulation.

ENV 707, Scientific Writing, had previously been taught as the second required semester of the general “705-Graduate Seminar.” This course covers topics including writing structure, grammar, scientific citation and reference formatting, and manuscript preparation.

ENV 708, Professional Development. This new course would cover topics chosen to help graduate students communicate their work, navigate interpersonal professional relationships, and find and acquire a job in environmental science. Topics covered will include oral

communication, interview preparation, CV & resume formatting, scientific ethics, negotiating, networking, and grant writing.

4. Staffing.

The department of Environmental Science and Ecology will have seven full-time tenured or tenure-track faculty starting in AY 19-20, one full-time secretary, and one full time academic support person. The department has sufficient staff and faculty resources to teach the modified curriculum without allocation of additional resources.

5. Academic administration commentary. It is strongly recommended that the department consult with the Graduate Dean EARLY in the process.

Letters of support attached to end of document.

- a. Letter of review/comment from the Graduate Dean
- b. Letter of review/comment from Dean of the School.
- c. Letter of review/comment from Department Chair.

6. Resources, facilities, and non-teaching staff needed to implement the program.

The department has sufficient staff, faculty, and resources to teach the modified curriculum.

Letter of support attached to end of document.

- a. Statement of review and comment from Drake Library.
- b. Statement of review and comment from Academic Computing Services.

7. Letters of support from cooperating departments, agencies, institutions, etc., including a statement of probable/likely impact on departments.

Proposers should refer to the SUNY guidelines for program revisions. See Appendix E of EITHER the Undergraduate or the Graduate program proposal guidelines available at: <http://www.suny.edu/provost/ProgramReview/2003Materials/App-E-Revision.doc>

B. Facilities (address for all proposals)

1. Describe currently available and anticipated increased needs for:

- a. Library holdings (general and departmental) – statement of review and comment from Drake Library
- b. Research and laboratory facilities and equipment
- c. Computer facilities and services – statement of review and comment from Academic Computing Services.

No additional library holdings, research or laboratory facilities, or computer services or facilities will be necessary. We do not anticipate an increase in the number of graduate students with this proposal. The two new graduate seminars will be held in available space in Lennon.

ENV 705 Graduate Research Seminar (1 credit, every Fall). **Note: this course currently is offered as the first or two required semesters of ENV 705, Graduate Research Seminar.**

Purpose of the course

This course helps students understand the requirements for the MS in Environmental Science and Ecology. Students will be introduced to the major milestones and deadlines for the degree, and will undertake the first major steps of the program while in the class (choosing a committee, the plan of study, and initial design of the research question and approach).

Text

How to do ecology, 2nd edition. Karban, Huntzinger, and Pearse 2014.

Environmental Science MS Program Learning Outcomes

- Design and execute an original research study involving data collection.
- Develop professional skills necessary to succeed in the environmental science and ecology fields.

Course Student Learning Objectives

By the conclusion of ENV 705, students will:

- Develop an understanding of the basic skills needed to succeed in the MS program in Environmental Science and Biology
- Think about how to do research in ecology and environmental science
- Continue the process of professional development in their chosen field
- Choose their committee
- Complete the Plan of Study

Course Outline

- I. Introduction to the program
- II. The Environmental Science and Ecology graduate handbook
- III. Important dates and deadlines; Time management
- IV. The plan of study
- V. Choosing a committee
- VI. Choosing a question
- VII. Approaching & conducting experiments
- VIII. Funding your research
- IX. Working with other people
- X. Communication

ENV 706 Experimental Design (1 credit, every Spring, previously ENV 614)

Purpose of the course

This course will present a framework for designing hypothesis-driven experiments that will result in publishable data and analyses. The primary deliverable from this course will be a complete, statistically and experimentally rigorous thesis proposal.

Text

Experiments in Ecology by A.J. Underwood

Environmental Science MS Program Learning Outcomes addressed in this course

- Design and execute an original research study involving data collection.
- Summarize, analyze, and interpret scientific data using relevant quantitative skills and applying major environmental concepts.
- Employ decision-making and problem-solving skills, such as evaluating competing explanations or applying scientific knowledge to environmental problems.
- Summarize, organize, and communicate scientific data and analyses in oral and written formats.
- Develop professional skills necessary to succeed in the environmental science and ecology fields.

Course Student Learning Objectives

By the conclusion of ENV 706, students will:

- Translate a scientific question into testable hypotheses
- Design logical experiments
- Understand and avoid common pitfalls of experimental design
- Understand and apply data management and quality control

Course Outline

- I. Hypothesis testing
- II. Logical design
- III. Pseudoreplication
- IV. Ideal vs real experiments
- V. Site & sample selection, Randomization
- VI. Power analysis
- VII. Data collection
- VIII. Data management & quality control
- IX. Databases
- X. Data manipulation & ethics

ENV 707 Scientific Writing (1 credit, every Fall; previously ENV 705)

Purpose of the course

This course will improve students' technical writing skills and introduce them to the format requirements of the Environmental Science thesis. It also will teach students how to write, submit, and review scientific manuscripts.

Text

The Elements of Style by Strunk and White

Environmental Science MS Program Learning Outcomes addressed in this course

- Summarize, organize, and communicate scientific data and analyses in oral and written formats.
- Develop professional skills necessary to succeed in the environmental science and ecology fields.

Course Student Learning Objectives

By the conclusion of ENV 707, students will:

- Upgrade technical writing skills in English
- Learn skills necessary for writing sections of a thesis
- Learn how to convert a thesis into a journal manuscript
- Learn the practice of serving as a journal manuscript reviewee

Course Outline

- I. Discussion of writing philosophy
- II. Grammar
 - a. Parts of speech; Phrases and clauses
 - b. Agreement; Using pronouns, verbs, and modifiers correctly
 - c. Punctuation
 - d. Common errors
 - e. Sentence and paragraph construction
- III. Format requirements for ENV graduate thesis
- IV. Journal format requirements
- V. Literature Cited
- VI. Writing the Methods, Results, Discussion, Introduction, Abstract, and Acknowledgements
- VII. Conversion of a thesis to a manuscript
- VIII. Journal submission and review process
- IX. How to serve as a journal manuscript reviewer

ENV 708 Professional Development (1 credit, every Spring)

Purpose of the course

This course will cover topics chosen to help graduate students prepare for careers in their chosen profession, and potentially for entering a PhD program. Topics covered include communicating results of their research, navigating and developing interpersonal professional relationships, and obtaining a job in the environmental science or a related field.

Environmental Science MS Program Learning Outcomes

- Summarize, organize, and communicate scientific data and analyses in oral and written formats.
- Develop professional skills necessary to succeed in the environmental science and ecology fields.

Course Student Learning Objectives

By the conclusion of ENV 708, students will:

- Develop a 5-year career plan.
- Improve oral communication skills.
- Understand how to maximize career and educational opportunities.
- Attend and present at a scientific research conference.
- Develop effective grant-writing skills.
- Improve networking skills.
- Become an active member of a scientific community.

Course Outline

- I. Course overview
- II. Career planning
- III. Developing a resume / CV & creating an effective online presence
- IV. Networking, and becoming an active member of the scientific community
- V. Preparing for successful application to a PhD program
- VI. Developing effective oral communication skills
- VII. Attending a scientific research conference (Northeast Natural History Conference)
- VIII. Preparing for an effective job interview
- IX. Grant writing
- X. Professional ethics (scientific, workplace, etc.)



The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK

School of Arts and Sciences

January 25, 2019

Dr. Kathy Peterson
President, College Senate
The College at Brockport
Brockport, NY 14420

Dear Dr. Peterson:

I have reviewed the changes that the Department of Environmental Science and Ecology is proposing to its MS and combined BS/MS degree programs. Specifically, the Department is proposing to add four one-credit graduate seminar courses as requirements. This change will not alter the total credits required for either degree program, as the four one-credit seminars (ENV 705, 706, 707, and 708) would replace the two terms of ENV 705 (one-credit per term) currently required and at the same time students would have flexibility with the number of elective credits. The proposed revisions will strengthen the programs by allowing students a greater breadth of topics without increasing the total number of credits. Importantly, these changes were identified by graduate students in the programs and alumni as needed to better prepare students. Finally, no new resources are needed to implement the proposed revisions. Given these reasons, I support the proposed changes to the MS and combined BS/MS programs in Environmental Science and Biology.

Sincerely,

Dr. Jose Maliekal
Dean
School of Arts and Sciences

350 New Campus Drive • Brockport, New York 14420-2983 • (585) 395-5806 • Fax: (585)395-5808 • www.brockport.edu



The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK
CENTER FOR GRADUATE STUDIES

To: College Senate Graduate Curriculum and Policies Committee
From: Kathleen Groves, Director, Center for Graduate Studies *Kathleen Groves*
Re: Curriculum Changes in MS and BS/MS in Environmental Science & Biology Programs
Date: January 17, 2019

I offer strong support of the curriculum changes requested by the Department of Environmental Science and Ecology in their Master of Science in Environmental Science and Biology and their BS/MS program. The changes to the curriculum address the need for more professional development, experimental design, and advanced statistical skills identified by graduate students in the program and alumni, and will strengthen the master's degree. The changes also are designed to support a higher quality product in the students' final theses.

The new curriculum is designed to graduate students with increased strength in their field, which can assist in employment in the chosen field and the overall reputation of the program. Therefore, the curricular changes proposed by the faculty in the Department of Environmental Science and Ecology have my full endorsement.



The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK

Department of Environmental Science and Ecology

January 28, 2019

To: College Senate
From: Christopher Norment, Chair, Environmental Science and Ecology
RE: College Senate proposal

I fully support the proposal to add graduate seminar credits to the MS and BS/MS programs in Environmental Science and Biology. The resulting changes will strengthen both programs and will not result in an increase in the number of required credit hours.

Sincerely,
Christopher Norment

Christopher Norment, PhD
Professor and Chair



The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK

1/23/2019

Dr. Christopher Norment,
Professor and Chair, Environmental Science and Ecology

Dear Chris,

Thank you for providing me with the two companion senate proposals of your department to create a series of four required one-credit seminar courses for the MS and combined BS/MS programs in Environmental Science.

I have no concerns and support your two proposals.

Sincerely,

A handwritten signature in black ink, which appears to read 'Markus Hoffmann'. The signature is written in a cursive style and is positioned above the printed name.

Markus M. Hoffmann, Professor and Chair



The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK

Department of the Earth Sciences
geology ☞ meteorology ☞ earth science ☞ water resources

TO: Dr. Christopher Norment, Professor and Chair
Environmental Science and Ecology

FROM: Dr. Scott M. Rochette, Associate Professor and Chair
Earth Sciences

DATE: 23 January 2019

SUBJECT: Support Letter for JSI College Senate Proposals

I am writing to offer my support of Dr. Norment's two College Senate proposals, which introduce a series of required one-credit courses for the MS and combined BS/MS programs in Environmental Science. I have reviewed the proposals and have no concerns, and believe that the new courses will be beneficial to the students in question.

Thank you for the opportunity to review the proposals.



The College at
BROCKPORT
SUNY UNIVERSITY OF NEW YORK

Drake Memorial Library

Dr. Christopher Norment
Department of Environmental Science and Ecology
The College at Brockport
State University of New York
350 New Campus Drive
Brockport, NY 14420

January 22, 2019

To Whom It May Concern:

Drake Memorial Library supports the proposals to adjust the MS and combined BS/MS programs. As the proposal describes, it will be supported through the existing library collection and allocations. Drake Memorial Library looks forward to working collegially with the Department of Environmental Science and Ecology in continuing to improve the learning experience for all our students.

Sincerely,

Jennifer C. L. Smathers, MLS
Interim Director