

**ACADEMIC SENATE PROPOSAL TRACKING SHEET**  
**(Document To Be Originated by the Academic Senate Secretary On Canary Color Paper)**

<b>Proposal # 23-15</b>	<b>Title: New Course Proposal - BIOE 4XX Landscape Ecology - Principles &amp; Practice</b>
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(Proposal explanation, submitter and college dean signatures on attached program/degree or course revision form.)

**All proposals MUST have their originating college faculty body (Arts, Sciences & Education; Health Sciences; Technical Sciences) approval and must be signed by the submitter and the college dean before being submitted to the Academic Senate Secretary.**

1. Submit all proposals (using the appropriate Academic Senate program/degree and/or course revision forms or General Education Inclusion form) to the Academic Senate Secretary. **NOTE: Level 1 or Level 2 forms must be submitted concurrent with this proposal where applicable. For Education proposals, PEU approval must be received prior to forwarding the proposal to the Senate.**
2. The Academic Senate Secretary logs and numbers items and forwards them to the appropriate Academic Senate subcommittee(s): General Education (if applicable), or Curriculum. A digital copy of the proposal will be linked on the Academic Senate Proposal page by the Academic Senate Secretary.
3. The Academic Senate subcommittee(s) consider(s) the proposal. If approved, the proposal is returned to the Academic Senate Secretary for forwarding to the next committee. If a committee disapproves the proposal, the committee will provide written rationale to the originator, via the Academic Senate.\* The originator may request that the item be forwarded to the next body for consideration. Upon completion of subcommittee action, the proposal will be returned to the Academic Senate Secretary for consideration at the next Academic Senate meeting.
4. The Academic Senate considers the proposal and recommends approval or disapproval. If approved, the proposal is forwarded to the Provost for consideration within 10 working days. If the Academic Senate disapproves the proposal, the Academic Senate will provide written rationale to the originator. \* The originator may request that the item be forwarded to the Full Faculty for consideration, utilizing procedures set forth in the Senate Bylaws.
5. Approved proposals will be forwarded to the Provost. The Provost approves or disapproves the proposal. If approved, the proposal is then forwarded to the Chancellor. From this point forward, the Provost's Administrative Assistant will update the Proposal page on the website by contacting the webmaster.
7. The Chancellor approves or disapproves the proposal.
8. If approved, the proposal will then either be implemented or referred to MSU for further action. The tracking page on the Provost site will be updated as required.

**Subcommittee and Academic Senate college representatives will notify their respective colleges of the progress of submitted proposals or the proposal may be tracked via the web page -- <http://www.msun.edu/admin/provost/senate/proposals.htm>**

**Documentation and forms for the curriculum process are also available on the web page: <http://www.msun.edu/admin/provost/forms.htm>**

**\* If a proposal is disapproved, it is returned to the Dean of the submitting college who then notifies the originator.**

**See back for tracking form**

	Date	Action Taken	Signature	Date	Comments/Reason for Disapproval	Sent to	Date	Transmittal E-mail sent
Received by Senate Secretary	12/1/2023	Tracking form initiated	<small>DocuSigned by:</small> Brittany Garden	12/1/2023		Sent to Curriculum Committee	12/1/2023	DocuSign
General Education Committee (if applicable)		<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved	<small>7131CC9454D9458</small>					
Curriculum Committee (if applicable)	2/9/2024	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved	<small>DocuSigned by:</small> Casey Donovan	2/9/2024				
Academic Senate	2/25/2024	<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved	<small>DocuSigned by:</small> Valerie Guyant	2/25/2024				
Provost		<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved	<small>1800680/22061478</small>	4/3/24				
Chancellor		<input checked="" type="checkbox"/> Approved <input type="checkbox"/> Disapproved	Gregory O'Keefe	6-4-2024				
MSU		<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved						
BOR		<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved						
NWCCU		<input type="checkbox"/> Approved <input type="checkbox"/> Disapproved						
Provost		Advise originating college and Academic Senate of status. Update Web page.						
Registrar		Catalog/Policy Manual Update						

**NOTE:** The secretary of the Academic Senate will update the Academic Senate Proposal web page from initial receipt until the proposal reaches the Provost. The Provost's Administrative Assistant will ensure that the current status of each proposal is maintained on the Academic Senate Proposal web page from that point forward.

Academic Senate Form 1 (Revised 4/4/2023)

**COURSE REVISION FORM**NEW  DROPPED \_\_\_\_\_ MAJOR REVISION \_\_\_\_\_ FOR INFORMATION ONLY \_\_\_\_\_

- For purposes of this form, "For Information Only" should be used for catalog description or objective changes ONLY

College **Arts, Sciences & Education** Program Area **Biology (B65)**Submitter *Terri Hildbrand, PhD* Signature  
Dean *Beth D. Murphy* Signature (indicates "college" level approval) Date 4-5-24

Please provide a brief explanation &amp; rationale for the proposed revision(s):

**This course is a new required course for students that select the proposed Ecology and Conservation Biology Track.****Course Prefix & No.:** BIOE 4XX**Current Course Title:****Proposed Course Title (when applicable):** Landscape Ecology - Principles and Practice**Current # of Credits:****Proposed # of Credits (when applicable):** 3**[please specify degrees]:****Required by:** Biology – Ecology and Conservation Biology Track**Selective in:****Elective in:****General Education Category:****Lecture:** 3**Lecture/Lab:****Gradable Lab:****Lecture contact hours per week:** 3**Lab contact hours per week:****Current Catalog Description (include all prerequisites):****Proposed or New Catalog Description (include all prerequisites):**

A course for biology majors and students who plan to take additional courses in biology. The study of landscape ecology expands on student knowledge acquired in the General Ecology course. The objective of this course is to introduce students to the transformative era of landscape ecology, including the Anthropocene. Students gain fundamental knowledge of landscapes as examined across spatial and temporal scales. Ecological dynamics such as disturbance, connectivity, range shifts, and epidemiology are examined in relation to the key roles they play in species richness and extinction, community structure, persistence at the landscape scale, and the spread of disease. The human effects on meta-ecosystems and its consequence on landscape function is explored. Included are discussions that focus on adaptation and future directions in the rapidly changing context that currently exists. Prerequisites: BIOE 370/371 General Ecology Lecture and Lab

**Course Outcomes/Objectives:** Students will

1. Identify and describe many of the physical, biological, and anthropogenic processes that influence the distribution of organisms on landscapes.
2. Identify heterogeneity and dynamical concepts used in the description of assemblages.
3. Describe basic concepts in landscape ecology such as island biogeography theory, organismal landscape connectivity, and the role of disturbance in ecosystems.
4. Use introductory methods to glean patterns and scale using landscape metrics and spatial analyses.
5. Understand how landscapes effect organismal population structure.
6. Describe why broad landscape-scale approaches to monitoring ecosystems are important for contemporary conservation and resource management.

**Please note additional instructional resources needed, if any (including library materials, special equipment, and facilities). Approval does not indicate support for new faculty or additional resources.**

A need for additional instructional resources is not anticipated.

*The Earth does not belong to us; we belong to the Earth.*

**LANDSCAPE ECOLOGY SYLLABUS**  
**BIOE 451 Lecture: MWF 9:00 – 9:50 AM**  
**Hagener Science Center 215**

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**INSTRUCTOR INFORMATION**


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Terri Hildebrand, Ph.D.	Office: HSC 205
Office hours: MWF -- 11:00 AM – 12:00 PM	Phone: (406) 265-3700 ext 3329 (office)
T -- 1:00 – 3:00 PM	(435) 868-8800 (mobile)
terri.hildebrand@msun.edu	

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**COURSE INFORMATION**


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**Prerequisites:** BIOE 370/371 General Ecology Lecture & Laboratory

**Textbook:** With, K.A. 2019. Essentials of Landscape Ecology, 1<sup>st</sup> Edition. Oxford University Press  
 ISBN: 978-0198838395

**Description:** The study of landscape ecology expands on student knowledge acquired in the General Ecology course. The objective of this course is to introduce students to the transformative era of landscape ecology, including the Anthropocene. Students gain fundamental knowledge of landscapes as examined across spatial and temporal scales. Ecological dynamics such as disturbance, connectivity, range shifts, and epidemiology are examined in relation to the key roles they play in species richness and extinction, community structure, persistence at the landscape scale, and the spread of disease. The human effects on meta-ecosystems and its consequence on landscape function is explored. Included are discussions that focus on adaptation and future directions in the rapidly changing context that currently exists.

**Learning**

**Outcomes:** Students will

1. Identify and describe many of the physical, biological, and anthropogenic processes that influence the distribution of organisms on landscapes.
2. Identify heterogeneity and dynamical concepts used in the description of assemblages.
3. Describe basic concepts in landscape ecology such as island biogeography theory, organismal landscape connectivity, and the role of disturbance in ecosystems.
4. Use introductory methods to glean patterns and scale using landscape metrics and spatial analyses.
5. Understand how landscapes effect organismal population structure.
6. Describe why broad landscape-scale approaches to monitoring ecosystems are important for contemporary conservation and resource management.

**Teaching**
**Philosophy:**

Students cannot learn ecology just by sitting in a lecture listening to a lecturer; I expect students to take an active role in learning. This requires each student comes to class prepared, ready to participate by asking questions, and by applying information to novel situations. I test on concepts and as well as the interpretation of information and data. It is to the student's advantage to attend lectures as well as labs. I strive to make this course valuable, informative, and enjoyable. Throughout the semester, I encourage discussion of comments or ideas about course content and organization. Because I believe all students have an equal right to learn, any behavior that disrupts the class or creates an environment hostile to learning cannot be condoned. Please respect the rights of others in the class.

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**EVALUATION**


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Students are assessed using lecture exams, assignments, and a landscape project. These contribute to each grade as follows:

Exams (3 @ 100 pts each)	300 pts
Final Exam (cumulative)	150 pts
Landscape Project	200 pts
Assignments	100 pts

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#### Grading Scale

A+	100%	A	95-99%	A-	90-94%	
B+	87-89%	B	84-86%	B-	80-83%	
C+	77-79%	C	74-76%	C-	70-73%	
D+	67-69%	D	64-66%	D-	60-63%	F < 60%

**Exams:** Exams are designed to ensure student understanding of material and the ability to apply and synthesize mycological information. Each exam consists of a combination of objective (fill-in-the-blank, matching, etc.) and short answer questions. The primary source for exam material is derived from lecture, but questions also may focus on book material not covered in lecture. No exam is dropped, and makeup exams are given only in extreme circumstances and with arrangements made well in advance.

**Landscape Project:** A final project assesses student understanding using geospatial (GIS) maps and analyses. Students select an ecological topic of interest and explore questions and hypotheses using QGIS software.

**Assignments:** Lecture assignments focus on accessing the scientific literature, methods used in landscape ecology, problem-solving assessments, and field method analyses.

#### BRIGHTSPACE

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This course uses the Brightspace learning system for course management. It is your responsibility to log onto Brightspace at [www.msunonline.org](http://www.msunonline.org) and become familiar with the program during the first week of class. The most recent browser version of Google Chrome or Microsoft Edge is recommended for Brightspace use. Internet Explorer is NOT supported and will lead to issues. Brightspace is useable over a 56K modem; however, the faster & more reliable your Internet connection speed, the better the experience. The Brightspace login page has a link for you to run a system check.

#### ATTENDANCE POLICY

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I have high expectations for my students, and I want them to succeed in understanding and applying the material presented in the course. The *primary* strategy for success in this course is communication, including the exchange of ideas with others in the class as well as consultations with the instructor. Attendance and participation are highly encouraged. If you cannot attend a class, please let me know in advance. You are responsible for getting a copy of the notes for the missed class. If you become ill or the victim of an emergency, let me know prior to the class meeting and accommodations may be made at my discretion.

#### STUDENT RESPONSIBILITIES

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- Behave in a courteous and respectful manner toward the professor and fellow students. Inappropriate comments (e.g., racial or gender slurs) WILL NOT BE TOLERATED.
- Show up to class on time.
- Turn off cell phones during class. A cell phone present during an exam immediately results in a zero. I will confiscate phones if they are used (including texting) during class.

#### ACADEMIC INTEGRITY

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Academic integrity is a central value in higher education. It rests on two principles: first, that academic work is represented truthfully as to its source and its accuracy, and second, that academic results are obtained by fair and authorized means. "Academic misconduct" occurs when either of these principles is knowingly violated.

The responsibility of academic integrity does not rest solely in the hands of the faculty and administration. It depends also on the attitude and spirit of the student body to create an atmosphere that promotes strong integrity. In other words, the students determine a school's level of character. The job of educators is to foster and encourage a feeling of honesty and quality. In this class, the concept of individual honor is designed to promote mutual trust and respect between students and faculty.

Examples of student academic misconduct include giving or receiving unauthorized assistance on examinations or in the preparation of notebooks, themes, reports, or other assignments; knowingly misrepresenting the source of any academic work; changing grades without authorization; forging signatures; or plagiarizing another's work. Students who are found guilty of academic misconduct are subject to a range of disciplinary actions, including suspension or dismissal. Instructors also are expected to abide by the principles of academic integrity and may be sanctioned for academic misconduct.

## RESOURCES FOR STUDENTS

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**Accessibility Statement:** As directed by Section 504 of the Rehabilitation Act and the Americans with Disability Act (ADA), any students with physical or learning disabilities have access to a variety of services at MSU-Northern. In order to access these services, students are encouraged to meet with the Accessibility Resource Coordinator, Johnna Antonich. During the meeting the student will complete an application, provide documentation of their disability (an IEP from high school, any Veteran or DV, and/or clinical documentation from a licensed professional), and complete accommodations request forms for their courses.

Johnna Antonich, Coordinator of Accessibility Resources  
Cowan Hall 213C, (406) 265-3533  
[johnna.antonich@msun.edu](mailto:johnna.antonich@msun.edu)

**Veterans Statement:** Veterans, Drilling Guard/Reserve Members, and active duty military personnel with special circumstances (e.g., upcoming deployments, drill requirements, disabilities) are welcome and encouraged to communicate these, in advance if possible, to the instructor. The MSU-Northern Office of Veteran Services is committed to serving all the needs of our veterans and assisting them during their transition from military life to that of a student. If you are a student veteran or veteran dependent and need any assistance with your transition, please contact Joshua Gomez, the coordinator of Veteran Services at MSU-Northern.

Katelyn Springer, Veterans Services Coordinator  
Cowan Hall 220, 406.265.4190  
[katelyn.springer@msun.edu](mailto:katelyn.springer@msun.edu)

**Inclusivity Statement:** I support an inclusive learning environment where diversity and individual differences are understood, respected, appreciated, and recognized as a source of strength. I expect that students, faculty, administrators and staff at MSUN will respect differences and demonstrate diligence in understanding how other peoples' perspectives, behaviors, and worldviews may be different from their own.

**Tutoring Central:** Tutoring Central offers professional and peer tutors in a wide range of disciplines, all approved by MSUN faculty. To request tutoring, please visit [www.msun.edu/tutoring/index.aspx](http://www.msun.edu/tutoring/index.aspx) to schedule a tutoring appointment or e-mail [tutoring@msun.edu](mailto:tutoring@msun.edu) and you will be placed with a tutor who specializes in your requested subject area.

**Brightspace Technical Support:** This course uses the Brightspace Learning Management System for course content, communication, and grading. Email [brightspace@msun.edu](mailto:brightspace@msun.edu) or contact Jason Geer or Brittany Garden in the Office of Teaching & Learning Excellence for Brightspace support.

Jason Geer  
Cowan Hall 104, 265-3767  
[Jason.geer@msun.edu](mailto:Jason.geer@msun.edu)

Brittany Garden  
Cowan Hall 104, 265-3701  
[Brittany.garden@msun.edu](mailto:Brittany.garden@msun.edu)

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## TOPICS

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This class consists of eleven (11) focus areas:

1. Core Concepts of Landscape Ecology  
European and North American perspectives, disciplinary needs
2. Importance of Scaling  
Hierarchical theory, extrapolating across scales, uncertainty and forecasting
3. Heterogeneity and Dynamics  
Assemblages, patch dynamics, non-equilibrium, disturbance (abiotic & biotic)
4. Pattern Analysis  
Land surveys, GIS, landscape metrics
5. Connectivity  
Patch-based, graph-theoretic, river networks
6. Behavioral Landscape Ecology  
Movement pathways, home-range analyses, plant dispersal
7. Population Distribution  
Distribution models, source-sink dynamics, metapopulations
8. Range Shifts, Invasions, & Epidemiology  
Climate change, invasive species spread, disease spread
9. Landscape Genetics  
Gene flow, connectivity, barriers, genetic structure
10. Community Structure Effects  
Diversity, gradients, habitat loss, fragmentation
11. Ecosystem Structure & Function  
Productivity, nutrient dynamics, sustainability

**INFORMATION CONTAINED IN THIS SYLLABUS MAY BE SUBJECT TO CHANGE WITH ADVANCE NOTICE AS DEEMED APPROPRIATE BY THE INSTRUCTOR.**

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Earth.”  
Marlee Matlin*