Board of Trustees of the Nebraska State Colleges

Meeting Date**: November 12, 2026**

Agenda Item: **2.3**

ITEMS FOR DISCUSSION AND ACTION:

Committee: **Academic & Personnel Committee**

Action Item: **Addition of Biological Ecology Minor and Removal of the Organismal Biology Minor - CSC**

The Biological Ecology minor is intended to replace the current Organismal Biology Minor. While the design of the Organismal Biology Minor was well-suited to students desiring a career path in animal or plant conservation, its content was narrowly focused.

The removal of the biology-major courses in General Zoology and General Botany Courses and addition of broader applied biology courses in Environmental Management, Entomology, and Plant Taxonomy makes the minor much more applicable to non-biology majors with an interest in developing a strong skill set for working with common biological organisms important in any form of ecological monitoring, management, or reclamation.

This minor is recommended for students interested in organismal biology and enrolled in a major other than biology such as Agriculture or Criminal Justice or Physical Science areas of foci in Geoscience or environmental chemistry.

The System Office recommends approval of the addition of the biological ecology minor and removal of the organismal biology minor for Chadron State College.

ATTACHMENTS:

- Biological Ecology Minor Addition

Chadron State College

Proposal to Add Biological Ecology Minor

1. Descriptive Information

A. Name of Institution: Chadron State College

B. Name of Program: Biological Ecology Minor

C. Degrees/credentials to be awarded graduates of the program:
- Minor in Biological Ecology

D. Other programs offered in this field by the institution:
- Comprehensive Major in Biology
- Comprehensive Major in Health Sciences
- Field Endorsement in Biology
- Biology Minor
- Human Biology Minor
- Plant Sciences
- Organismal Biology Minor (to be replaced with Biological Ecology Minor)

E. CIP code: 26.0101

F. Administrative units for the program: Department of Biology – School of Business, Math, and Science

G. Proposed delivery site(s) and type(s) of delivery, if applicable: Chadron State College Campus

H. Proposed date (term/year) the program will be initiated: Fall 2027

I. Description of Program:

The Biological Ecology minor is intended to replace the current Organismal Biology Minor. While the design of the Organismal Biology Minor was well-suited to students desiring a career path in animal or plant conservation, its content was narrowly focused. The removal of the biology-major courses in General Zoology and General Botany Courses and addition of broader applied biology courses in Environmental Management, Entomology, and Plant Taxonomy makes the minor much more applicable to a non-biology majors with an interest in developing a strong skill set for working with common biological organisms important in any form of ecological monitoring, management, or reclamation.

This minor is recommended for students interested in organismal biology and enrolled in a major other than biology such as Agriculture or Criminal Justice or Physical Science areas of foci in Geoscience or environmental chemistry.

Code	Title	Credits
BIOL 101 & 101L	GENERAL BIOLOGY I and GENERAL BIOLOGY I LABORATORY	4
BIOL 102 & 102L	GENERAL BIOLOGY II and GENERAL BIOLOGY II LABORATORY	4

Code	Title	Credits
BIOL 336 & 336L	GENERAL ECOLOGY and GENERAL ECOLOGYII LABORATORY	3
BIOL 337	ENVIRONMENTAL MANAGEMENT	3
BIOL 431 & 431L*	ENTOMOLGY and ENTOMOLGY LABORATORY	3
BIOL 438 & 438L*	TAXONOMY OF PLANTS and TAXONOMY OF PLANTS LABORATORY	3
Total Credits		**20**

*Other plant-based or animal-based courses could be substituted, see advisor

BIOL 101 GENERAL BIOLOGY I3 Credits

A survey of cellular principles, including biological chemistry, cell structures and function, cellular metabolism (including photosynthesis), genetic expression, cell division, and an introduction to multicellularity and cell signaling.

Co-requisites: BIOL 101L

BIOL 101L GENERAL BIOLOGY I LABORATORY1 Credit

Laboratory experience to explore cellular principles to integrate with BIOL 101, including scientific inquiry and data analysis skills to investigate biological chemistry, cell structure and function, cellular metabolism, genetic expression, and cell division. Scientific inquiry, microscopic image analysis, and use of manipulative, observational, and case study learning will be utilized.

Co-requisites: BIOL 101

BIOL 102 GENERAL BIOLOGY II3 Credits

Exploration of the diversity and origin of life, classification of living organisms and their interrelatedness, and ecology. Major topics include evolution, speciation, classification, morphology, reproduction, structure and function, and ecology.

Co-requisites: BIOL 102L

BIOL 102L GENERAL BIOLOGY II LABORATORY1 Credit

Laboratory experience in major animal, plant, fungal, and other eukaryotic groups along with their morphology, phylogeny, ecology, and importance. Most activities will involve microscope use, observations, drawings, and identification..

Co-requisites: BIOL 102

BIOL 337 ENVIRONMENTAL MANAGEMENT3 Credits

Ecosystem management, environmental planning, history of environmental protection, the roles of federal and state agencies, environmental law, environmental ethics, and professional skills relevant to those interested in land-management related careers in the public and private sector.

Prerequisites: 9 credits from AGRI, BIOL, CHEM and/or GEOS

BIOL 431 ENTOMOLOGY2 Credits
Taxonomy, morphology, physiology, life history, behavior, ecology and economic importance of insects. Lecture, laboratory and field trips. Primary literature reading and technical writing are required in this course.

Prerequisites: 6 credits of BIOL and/or AGRI
Co-requisites: BIOL 431L

BIOL 431L ENTOMOLOGY LABORATORY1 Credit
Laboratory and field experience in insect morphology and taxonomy. Activities include collecting, identifying, and preparing insect specimens following standard methods, with discussion about conservation. Emphasis on order and family recognition is included. A student insect project is required.

Co-requisites: BIOL 431

BIOL 438 TAXONOMY OF PLANTS2 Credits
Applied taxonomy of vascular plants, with emphasis on families of flowering plants in the northern Great Plains.

Prerequisites: BIOL 243 and 243L or AGRI 141 or AGRI 339 and 339L
Co-requisites: BIOL 438L
Requirements: Field trips required.

BIOL 438L TAXONOMY OF PLANTS LABORATORY1 Credit
Laboratory experience in collecting, identifying and preparing vascular plant specimens, with emphasis on family recognition. A student plant collection project is required.

Co-requisites: BIOL 438

2. Centrality to Role and Mission

Mission statement: Chadron State College provides accessible and transformative education, supports student success, and strengthens the people and places it serves through innovation, partnerships, and service.
Vision statement: Chadron State College will advance as a leading center for lifelong learning, ongoing opportunity, and positive impact in the High Plains region and beyond.

The new minor is aligned with the Chadron State College Mission and Vision Statements. The three upper-level courses especially support the statement: *"leading center for lifelong learning, ongoing opportunity, and positive impact in the High Plains region and beyond"* as all three of these courses are taught from a perspective that especially includes organisms and/or issues that are common the High Plains and adjacent geographic areas. All of the included courses also address the ever-evolving nature of science, which is critical to training students for their futures roles working with science and technology.

3. Evidence of Need and Demand

A. Need for the program:
The biology department at Chadron State College discussed strengthening or modifying the Organismal Biology Minor in Spring and Fall of 2026, as we reviewed program viability and meeting regional needs within our assessment conversations. We determined that the current structure of the minor did not

adequately support the breadth of skills likely needed in the future workforce, especially regarding biological resource management. This minor provides a basic skill set to give students both a fundamental background in biology as well as specific skills in working with commonly encountered organisms of economic and ecological importance, especially in the High Plains region. The background and skills provided in this set of coursework is important for students pursuing a degree in any field involving management and/or monitoring of ecosystems and the resources and organisms within them. Examples of such fields include wildlife or wildlands management, forestry, watershed ecology, and field biology. While the previous minor focused primarily on plants and animals, the new minor focuses on the system interactions of living organisms within their environments, honing skills more specifically and applicably for a diverse range of demands in the future workforce. The sustainability directory indicates that ecological job growth is expanding significantly across diverse sectors, including remediation, sustainable agriculture, renewable energy infrastructure, and eco-tourism as well as global sustainability imperatives with climate change and biodiversity loss (Ecological Job Growth → Area → Sustainability)

B. Demand for the Program:
Very few students completed the Organismal Biology minor over the past several years. The Organismal Biology degree focused narrowly to support career paths in plant and animal conservation; this renovation of the minor supports a broader, more applicable knowledge bank to meet diverse ecological challenges with integrated, cross-disciplinary understanding. The design of the new minor includes 1-3 courses that a number of students in other programs currently take at CSC commonly. We see many of the students who might benefit from this minor currently take most of the required courses as electives to help gain future employment; we anticipate that this minor will better meet their needs and thus provide an additional credential for their resumes.

4. Adequacy of Resources

A. Faculty and Staff Resources:
No new faculty or staff will be required as all courses are currently being offered in our course rotation. Current faculty and supportive collegues include the following:

- Ann Buchmann, Ph. D. Molecular biology, cell biology, and biomedical research
- Mathew Brust, Ph.D. Taxonomy and Ecology of Insects, especially Lepidoptera, Acrididae, Cicindelidae, and Coccinellidae
- Joyce Phillips Hardy, Ph.D. Physiological Ecologist of Grasslands; Biogeographical Distribution of High Plains plants, with specialization in grasslands, anthropologic impacts, and rare habitats
- Steven Rolfsmeir, M.S. Plant taxonomic and distribution, with specialization of vascular, lower vascular, and cryptogamic species
- Will Soto, Ph.D. Bacterial genetics and evolution, immunology
- Additionally, Susan Rolfsmeier, Ph.D. is a community expert in plant taxonomy with specialization in especially the Boraginaceae and museum studies.

B. Physical Facilities:
No new courses will be proposed or taught, so no additional physical facilities are needed.

C. Instructional Equipment and Informational Resources:
No new courses will be proposed or taught, so additional equipment or informational resources are needed.

D. Budget Projections for the first five years of program:

Because no new courses will be proposed or taught, no budgetary changes are expected.

5. **Avoidance of Unnecessary Duplication**
   This request removes a narrowly-focused minor, replacing it with a minor that is dissimilar in structure to any of the other biology minors.

6. **Program Differentiation**
   This minor remains unique in course structure compared to the other biology minors and is very dissimilar in course structure compared to any of the Rangelands minors with no common courses. This minor also aligns well with the biology program's focus of understanding and documenting the unique High Plains natural systems and interactions.

7. **Accreditation, Quality Assurance, and Regulatory Considerations**
   No accreditation or regulatory oversight change required. As the biology program assessment plan continues to evolve to include more deliberate focus on all offerings (including the minors), the productivity and currency of this minor will be assessed through the annual biology program assessment.

8. **Consistency with the Comprehensive Statewide Plan for Postsecondary Education**
   This change aligns with the following strategic priorities:
   1. Affordable Excellence
      a. The proximity of our institution to natural lands – literally across the street to diverse regions within 10 miles of campus – result in our field biology program offering substantial outdoor skills training and experience without the cost of transportation or overnight field trips. Our program remains economically competitive and is staffed by faculty recognized regionally and even broader as the experts in their respective fields.
   2. Retention-Driven Excellence and Engaged Degree Attainment
      a. Engaging students in real learning of natural systems complexity, both in the field and in the laboratory, fosters curiosity, builds skills and competencies, and strengthens self-confidence. These core features drive student retention and success in our natural sciences program.
   3. Open Access and Supportive Pathways
      a. Faculty within the program, especially S. Rolfsmeier and M Brust, frequently have grant-funded research within the High Plains area that are appropriate for student involvement. The student researchers work closely with supervising faculty, perfect field and data collection techniques, and are engaged in natural science museum acquisitioning processes.
   4. Workforce Development and Leadership
      a. The students who will complete this minor are often employed as summer ecology technicians, seek employment in government and conservation agencies, and/or pursue graduate coursework.