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| For Academic Affairs and Research Use Only |
| Proposal Number |  |
| CIP Code:  |  |
| Degree Code: |  |

**New or Modified Course Proposal Form**

**[ ] Undergraduate Curriculum Council**

**[X] Graduate Council**

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| --- |
| **[ ]New Course, [ ]Experimental Course (1-time offering), or [X]Modified Course (Check one box)** |

Signed paper copies of proposals submitted for consideration are no longer required. Please type approver name and enter date of approval.

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| Virginie Rolland 3/1/2022**Department Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**COPE Chair (if applicable)** |
| Stephen J. Mullin 3/1/2022**Department Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Head of Unit (if applicable)**   |
| John Hershberger 3/16/2022**College Curriculum Committee Chair** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Undergraduate Curriculum Council Chair** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Director of Assessment (new courses only)** | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**Graduate Curriculum Committee Chair** |
| Lynn Boyd 3/17/2022**College Dean** | Alan Utter 4/28/2022**Vice Chancellor for Academic Affairs** |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Enter date…**General Education Committee Chair (if applicable)**   |  |

1. **Contact Person (Name, Email Address, Phone Number)**

Travis D. Marsico, tmarsico@astate.edu, 870-680-8191

1. **Proposed starting term and Bulletin year for new course or modification to take effect**

2022-2023

**Instructions:**

*Please complete all sections unless otherwise noted. For course modifications, sections with a “Modification requested?” prompt need not be completed if the answer is “No.”*

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|  | **Current (Course Modifications Only)** | **Proposed (New or Modified)** *(Indicate “N/A” if no modification)* |
| **Prefix** | **BIO** | **BIO** |
| **Number\*** | **5813 and 5823** | **5833** |
| **Title** (include a short title that’s 30 characters or fewer) | **Curation of Collections and Natural History Collections Research Design** | **Collections Curation and Research Design** |
| **Description\*\*** | **BIO 5813. Curation of Collections** Current, appropriate museum-quality specimen curation for a range of taxa including the collection and preservation of specimens of vascular plants, fungi, mussels, fish, reptiles and amphibians, and mammals.**BIO 5823. Natural History Collections Research Design** Evaluation and development of research questions using current, peer-reviewed literature as a basis for discussion supported by natural history specimens and data. Research topics include taxonomy, biogeography, ecology, and global change biology. Activities demonstrate hypothesis testing in biodiversity science. | Museum-quality specimen curation including the collection and preservation of specimens and associated data. The evaluation and development of research questions and hypotheses in taxonomy, biogeography, ecology, global change biology, and biodiversity using natural history collections and data as research sources.  |

 ***\**** Confirm with the Registrar’s Office that number chosen has not been used before and is available for use. For variable credit courses, indicate variable range. *Proposed number for experimental course is 9*.

\*\*Forty words or fewer (excepting prerequisites and other restrictions) as it should appear in the Bulletin.

1. **Proposed prerequisites and major restrictions** **[Modification requested? Yes/No] Yes**

(Indicate all prerequisites. If this course is restricted to a specific major, which major. If a student does not have the prerequisites or does not have the appropriate major, the student will not be allowed to register).

1. **Yes / No** Are there any prerequisites? NO.
	1. If yes, which ones?

Enter text...Why or why not?

Biology graduate students will have sufficient background necessary to be successful in the course without prerequisites.

1. **Yes / No** Is this course restricted to a specific major? Yes.
	1. If yes, which major? Yes, Biology
2. **Proposed course frequency [Modification requested? Yes/No] No.**

(e.g. Fall, Spring, Summer; if irregularly offered, please indicate, “irregular.”) *Not applicable to Graduate courses.*

1. **Proposed course type [Modification requested? Yes/No] No.**

Will this course be lecture only, lab only, lecture and lab, activity (e.g., physical education), dissertation/thesis, capstone, independent study, internship/practicum, seminar, special topics, or studio? Please choose one.

This course is a lecture, activity, and discussion course. If only one can be selected, then lecture only would be appropriate.

1. **Proposed grade type [Modification requested? Yes/No] No.**

What is the grade type (i.e. standard letter, credit/no credit, pass/fail, no grade, developmental, or other [please elaborate])

Standard letter.

1. **Yes / No** Is this course dual-listed (undergraduate/graduate)? Yes. With BIO 4833.
2. **Yes / No** Is this course cross-listed? **No.**

*(If it is, all course entries must be identical including course descriptions. Submit appropriate documentation for requested changes. It is important to check the course description of an existing course when adding a new cross-listed course.)*

**a.** – If yes, please list the prefix and course number of the cross-listed course.

 **b.** – **Yes / No** Can the cross-listed course be used to satisfy the prerequisite or degree requirements this course satisfies?

1. **Yes / No** Is this course in support of a new program? **No.**

a. If yes, what program?

 No.

1. **Yes / No** Will this course be a one-to-one equivalent to a deleted course or previous version of this course (please check with the Registrar if unsure)? **No.**

a. If yes, which course?

**Course Details**

1. **Proposed outline** **[Modification requested? Yes/No] YES.**

(The course outline should be topical by weeks and should be sufficient in detail to allow for judgment of the content of the course.)

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| **Week** | **Topic** |
| 1 | Introduction to collections and curation. What is a museum/collection? What is a specimen/object/lot? What do museums do? Importance (why do we need more collections?). Types of collections. Overview of semester projects. |
| 2 | Important collections, best practices. History and origin of important collections, which are the biggest ones today? Acquisition of specimens, preservation (e.g., preventative actions, pests); organization; documentation; cataloging; accessibility. |
| 3 | Taxonomy: organization, types, synonyms, identification |
| 4 | The herbarium: Types of specimens (algal, moss, gymnosperm, angiosperm, wood, spirit), specimen characteristics, storage, information obtained, flow of information (images, data) and elements (specimens)  |
| 5 | Introduction to fieldwork: General practices (field notebook and field preparation), collecting  |
| 6 | Specimen preparation: materials and techniques, labels. |
| 7 | Databasing: importance and building a database, imaging (review for mid-term) |
| 8 | Georeferencing: techniques and uses |
| 9 | Hypotheses and underutilized resources |
| 10 | SPRING BREAK |
| 11 | Describing new species and taxonomic revisions |
| 12 | Collections in population genetics |
| 13 | Collections in global change biology research |
| 14 | Collections in ecological research |
| 15 | Collections in biogeography |
| 16 | FINAL EXAM AND DISCUSSION |

1. **Proposed special features** **[Modification requested? Yes/No] No.**

(e.g. labs, exhibits, site visitations, etc.)

1. **Department staffing and classroom/lab resources**

Biological sciences retains the appropriate staff and active learning classroom to teach the modified course.

1. Will this require additional faculty, supplies, etc.?

No; the opposite. This curricular modification collapses two lecture courses into a single lecture course. See 16 below.

1. **Yes / No** Does this course require course fees? NO

 *If yes: please attach the New Program Tuition and Fees form, which is available from the UCC website.*

**Justification**

**Modification Justification (Course Modifications Only)**

1. Justification for Modification(s)

This course modification is slated to take 6 student credit hours of coursework association with the curation of natural history collections and how natural history collections are used in scientific research and collapse the two courses into a single 3-credit course. Both content areas are justified in the Biological Sciences curriculum, but with a variety of graduate elective offerings across sub-disciplines, it is time to compress the material covered from 6 student credit hours to 3. This compression is made straightforward by the ability to focus on curation within the Arkansas State University Arkansas Center for Biodiversity Collections for half a semester (instead of the whole semester) and discussing the same research design topics as the previous 3-credit research design course with fewer examples. Through this modification, we are able to maintain content and interest in this important facet of biodiversity science with a more streamlined department curricular offering.

**New Course Justification (New Courses Only)**

1. Justification for course. Must include:

 a. Academic rationale and goals for the course (skills or level of knowledge students can be expected to attain)

 Enter text...

b. How does the course fit with the mission of the department? If course is mandated by an accrediting or certifying agency, include the directive.

 Enter text...

c. Student population served.

Enter text...

d. Rationale for the level of the course (lower, upper, or graduate).

Enter text...

**Assessment**

**Assessment Plan Modifications (Course Modifications Only)**

1. **Yes / No** Do the proposed modifications result in a change to the assessment plan? NO.

 *If yes, please complete the Assessment section of the proposal*

**Relationship with Current Program-Level Assessment Process (Course modifications skip this section unless the answer to #18 is “Yes”)**

1. What is/are the intended program-level learning outcome/s for students enrolled in this course? Where will this course fit into an already existing program assessment process?

Enter text...

1. Considering the indicated program-level learning outcome/s (from question #19), please fill out the following table to show how and where this course fits into the program’s continuous improvement assessment process.

*For further assistance, please see the ‘Expanded Instructions’ document available on the UCC - Forms website for guidance, or contact the Office of Assessment at 870-972-2989.*

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| **Program-Level Outcome 1 (from question #19)** | Type outcome here. What do you want students to think, know, or do when they have completed the course? |
| Assessment Measure | Please include direct and indirect assessment measure for outcome.  |
| Assessment Timetable | What semesters, and how often, is the outcome assessed? |
| Who is responsible for assessing and reporting on the results? | Who (person, position title, or internal committee) is responsible for assessing, evaluating, and analyzing results, and developing action plans? |

 *(Repeat if this new course will support additional program-level outcomes)*

 **Course-Level Outcomes**

1. What are the course-level outcomes for students enrolled in this course and the associated assessment measures?

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| **Outcome 1** | Type outcome here. What do you want students to think, know, or do when they have completed the course? |
| Which learning activities are responsible for this outcome? | List learning activities. |
| Assessment Measure  | What will be your assessment measure for this outcome?  |

*(Repeat if needed for additional outcomes)*

**Bulletin Changes**

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| **Instructions**  |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Please include a before (with changed areas highlighted) and after of all affected sections.** **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**  |

**Page 417—Before**

**BIO 5613. Conservation Biology** A study of global and local biological resources, including the diversity of life, the value of biodiversity, the importance of diversity to humans and human cultures, and interdisciplinary strategies to conserve biological resources. Lecture three hours per week. Prerequisites, BIO 3023 or permission of professor.

**BIO 5623. Environmental Microbiology** A study of the physiology and diversity of microorganisms and their role in cycling of nutrients and mineralization of pollutants in the world. Prerequisites, CHEM 1023 and BIO 2103, or 4014, or 4133.

**BIO 5633. Environmental Toxicology: Mechanisms and Impacts** Understanding the basic principles behind the study of impacts and the mechanisms of physiological disturbances associated with environmental toxicant exposure to natural systems. Prerequisites, BIO 4131, BIO 4133 and CHEM 4232 or permission of professor. Lecture three hours per week.

**BIO 5684. Biological Data Analyses** Use of statistical tests and models (regression, ANOVA, generalized linear models, and mixed-effect models, PCA) to analyze ecological/biological data. Applications using a free statistical program. Prerequisite, Applied Statistics or equivalent.

**BIO 5704. Plant Systematics** A study of the systematics, nomenclature, morphology, and identification terminology for vascular plants with an emphasis on dichotomous key-based identification of flowering plants of Arkansas.

**BIO 5714. Dendrology** A study of the systematics, nomenclature, morphology, phenology, geographic range, and natural history of woody plants with an emphasis on field recognition throughout the year.

**~~BIO 5813. Curation of Collections~~** ~~Current, appropriate museum-quality specimen curation for a range of taxa including the collection and preservation of specimens of vascular plants, fungi, mussels, fish, reptiles and amphibians, and mammals. Dual listed as BIO 4813. Prerequisites, BIO 1301, BIO 1303, BIO 1501 and BIO 1503 or with the instructor approval.~~

**~~BIO 5823. Natural History Collections Research Design~~** ~~Evaluation and development of research questions using current, peer-reviewed literature as a basis for discussion supported by natural history specimens and data. Research topics include taxonomy, biogeography, ecology, and global change biology. Activities demonstrate hypothesis testing in biodiversity science. Dual listed as BIO 4823. Prerequisite, BIO 5813 or instructor approval.~~

**BIO 6001. Biological Seminar** Required of all graduate students.

**BIO 6003. Scientific Methods and Research Design** A focus on the understanding and development of the scientific method as it pertains to research. Required of the graduate life sciences major, including students studying within the Biology, Botany, Wildlife Management and Zoology emphasis.

**BIO 6013. Evolutionary Biology** A summary of current theories concerned with evolution of biological organisms. An elective course particularly directed to the needs of biological science majors including students of Biology, Botany, Zoology, and Wildlife Management.

**BIO 6113. Advanced Cell Biology** Study of recent advances in cell biology through critical analysis of current literature. Focusing on eukaryotic cell structure and function, topics may include, but not be restricted to, cellular structures and organelles; cell cycling; signal transduction; gene regulation; and intracellular trafficking. Perquisites: A course in cell biology or permission of the professor.

**BIO 6123. Specialized Biochemistry** An advanced study of biochemical pathways leading to specialized biologically active metabolites. Emphasis will be on specialized pathways in plants and their counterparts in animals, and microorganisms.

**BIO 6143. Introduction to Biotechnology & Research Design** Study of molecular biological techniques and experimental designs through oral and written review of scientific literature. Career preparation by construction of curriculum vitae and work portfolios. Prerequisites: Students must be graduate students in a biological field of science.

Page 417—After

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