

# BIO 165: VERTEBRATE ZOOLOGY

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## In Workflow

1. BIO Committee Chair (kneitel@csus.edu)
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3. NSM College Committee Chair (tsk@csus.edu)
4. NSM Dean (datwyler@csus.edu)
5. Academic Services (torsetj@csus.edu;%20cnewsome@skymail.csus.edu)
6. Senate Curriculum Subcommittee Chair (curriculum@csus.edu)
7. Dean of Undergraduate (james.german@csus.edu;%20celena.showers@csus.edu)
8. Dean of Graduate (cnewsome@skymail.csus.edu)
9. Catalog Editor (torsetj@csus.edu)
10. Registrar's Office (w lindsey@csus.edu)
11. PeopleSoft (PeopleSoft@csus.edu)

## Approval Path

1. Mon, 06 Jul 2020 21:10:36 GMT  
Jamie Kneitel (kneitel): Rollback to Initiator
2. Mon, 13 Jul 2020 17:34:38 GMT  
Jamie Kneitel (kneitel): Approved for BIO Committee Chair
3. Fri, 28 Aug 2020 19:10:04 GMT  
Jamie Kneitel (kneitel): Approved for BIO Chair
4. Sat, 05 Sep 2020 01:39:09 GMT  
Robin Fisher (rfisher): Approved for ALS College Committee Chair
5. Wed, 16 Sep 2020 23:46:35 GMT  
Thomas Krabacher (tsk): Rollback to Initiator
6. Fri, 02 Oct 2020 16:07:51 GMT  
Jamie Kneitel (kneitel): Approved for BIO Committee Chair
7. Fri, 02 Oct 2020 16:10:04 GMT  
Jamie Kneitel (kneitel): Approved for BIO Chair
8. Wed, 07 Oct 2020 22:16:57 GMT  
Thomas Krabacher (tsk): Approved for NSM College Committee Chair
9. Fri, 09 Oct 2020 00:08:36 GMT  
Robin Fisher (rfisher): Rollback to BIO Chair for ALS College Committee Chair
10. Fri, 09 Oct 2020 15:55:31 GMT  
Jamie Kneitel (kneitel): Approved for BIO Chair
11. Tue, 20 Oct 2020 18:02:16 GMT  
Thomas Krabacher (tsk): Approved for NSM College Committee Chair
12. Tue, 20 Oct 2020 21:31:56 GMT  
Shannon Datwyler (datwyler): Approved for NSM Dean

Date Submitted: Fri, 25 Sep 2020 00:45:27 GMT

**Viewing: BIO 165 : Vertebrate Zoology**

**Last edit: Fri, 09 Oct 2020 00:08:34 GMT**

Changes proposed by: Clint Collins (220284910)

**Contact(s):**

Name (First Last)	Email	Phone 999-999-9999
Clint Collins	clint.collins@csus.edu	912-314-5521

**Catalog Title:**

Vertebrate Zoology

**Class Schedule Title:**

Vertebrate Zoology

**Academic Group: (College)**

NSM - Natural Sciences & Mathematics

**Academic Organization: (Department)**

Biological Sciences

**Will this course be offered through the College of Continuing Education (CCE)?**

Yes

**Please specify:**

CCE Only

**Catalog Year Effective:**

Spring 2021 (2021/2022 Catalog)

**Subject Area: (prefix)**

BIO - Biological Sciences

**Catalog Number: (course number)**

165

**Course ID: (For administrative use only.)**

168455

**Units:**

3

Changes to a course's units impact any related programs. As a result, a corresponding change must also be submitted for those programs

**In what term(s) will this course typically be offered?**

Summer Only

**Does this course require a room for its final exam?**

No, final exam does not require a room (Last Class)

**Does this course replace an existing experimental course?**

No

**This course complies with the credit hour policy:**

Yes

**Justification for course proposal:**

This course was deactivated and was last offered Fall 2007. Collins will use this course title to offer a modern field-based research course as a study abroad. Students will receive upper-division biology credit. This course will be offered through CCE because they are responsible for offering study abroad courses.

Undergraduate research experiences enhance student engagement, understanding, and persistence in science. In particular, field-based experiences dramatically enhance science participation and engagement in historically excluded demographic groups. Yet many universities are offering less field-based research courses in favor of an intense focus on computational, microbiological, and molecular techniques. This course is the study of vertebrate life and structure-function relationships in the field. Students will name, quantify, and master the unique and diverse vertebrates of North America. They will survey and critically test important theories and hypotheses about vertebrate zoology by integrating multiple disciplines (ecology, evolution, and biomechanics) to explore the biology and evolutionary history of vertebrates. Finally, students will use literature reviews, field experiments, analyses, and presentations to acquire the skills and exhibit their newfound mastery of vertebrate zoology to an academic and public audience. This field-based undergraduate research course offers close mentorship with a professor and interaction with collaborators from multiple professional levels in lecture, lab, and remote field settings.

This course will enhance student success by teaching invaluable and tangible scientific skills in a novel, international environment. Students will practice techniques in mapping, biomechanics, attention to detail and planning, mental flexibility, and collaboration. These skills are essential to successful biology jobs and graduate school.

Peer-reviewed research indicates an increased interest in intellectual challenges and confidence in problem-solving as a direct result of field-based undergraduate coursework (Quifero 2019). We focus on 1) scientific practices and discovery, 2) creating broadly relevant or important work, 3) collaboration, and 4) iteration as guiding principles. Students will make observations and collect data (and critique limitations of that data) that help explain key biological and ecological theories through field labs, research, and other activities. Additionally, students will analyze data and write 1500 – 2000-word mini research papers.

Field work distinguishes students by posing unique challenges, teaching resourcefulness and creativity compared to controlled, air-conditioned laboratories. Students think outside of the box to meet the demands of science as a challenging, iterative process. Rather

than a tightly scheduled and controlled processes, field work challenges students with the stochastic nature of natural environments and the variability of wild plants and animals. Students in this course will develop and test their own hypotheses to discover the zoological and functional consequences of this variation and stochasticity. Over the complete summer course students will learn field work techniques, statistics, writing, and presenting. Students learn best by doing. In this course, they will do science as very few have.

This course will internationalize science education at Sacramento State. La Estación de Biología Chamela is a world-renowned research station owned and operated by Universidad Nacional Autónoma de México. Sacramento State students will interact and participate in research with Mexican and other international scholars while working here. This is a unique international experience - whereas many studies abroad students may live in a city and tour cultural places with local guides, students in this course will work side-by-side with scientists from all over the world. Not only will students learn new skills and challenge themselves to grow in a novel, field-based environment, they will also take part in diplomacy and international relationship building through education and science. This will be one of the few science studies abroad courses and the only biology study abroad course offered through Sacramento State University. Therefore, this is an important course offering for the internationalization of the Sacramento State University curriculum.

**Course Description: (Not to exceed 80 words and language should conform to catalog copy.)**

Study of vertebrate life and structure-function relationships. Exploration of the unique and diverse vertebrates of North America. Integrating multiple disciplines (ecology, biology, evolution, and biomechanics) to explore the biology and evolutionary history of vertebrates. Survey and critically test important theories and hypotheses about vertebrate zoology through literature reviews, field experiments, analyses, and presentations. Field trip required.

**Are one or more field trips required with this course?**

Yes

**Fee Course?**

No

**Is this course designated as Service Learning?**

No

**Does this course require safety training?**

No

**Does this course require personal protective equipment (PPE)?**

No

**Does this course have prerequisites?**

Yes

**Prerequisite:**

Bio 1, Bio 2, or Bio 10, or permission of instructor.

**Prerequisites Enforced at Registration?**

Yes

**Does this course have corequisites?**

No

**Graded:**

Letter

**Approval required for enrollment?**

Instructor Approval

**Course Component(s) and Classification(s):**

Discussion  
Laboratory

**Discussion Classification**

CS#02 - Lecture/Discussion (K-factor=1 WTU per unit)

**Discussion Units**

1

**Laboratory Classification**

CS#16 - Science Laboratory (K-factor=2 WTU per unit)

### Laboratory Units

2

#### Is this a paired course?

No

#### Is this course crosslisted?

No

#### Can this course be repeated for credit?

No

#### Can the course be taken for credit more than once during the same term?

No

#### Description of the Expected Learning Outcomes: Describe outcomes using the following format: 'Students will be able to: 1), 2), etc.'

Students will be able to:

- 1) Describe how the scientific method is used to reveal the mechanisms of vertebrate coexistence.
- 2) Explain how structure matches function in vertebrates.
- 3) Critically evaluate experimental design and peer-reviewed literature.
- 4) Develop a field experiment.
- 5) Implement a field experiment at a research station.
- 6) Apply critical thinking and problem-solving skills to make evidence-based decisions.
- 7) Master ecological research and teamwork skills.
- 8) Practice cultural empathy by collaborating with diverse scientists.
- 9) Utilize scientific communication skills through written and oral presentations.

#### Attach a list of the required/recommended course readings and activities:

BIO165\_required\_readings\_v2.docx

#### Assessment Strategies: A description of the assessment strategies (e.g., portfolios, examinations, performances, pre-and post-tests, conferences with students, student papers) which will be used by the instructor to determine the extent to which students have achieved the learning outcomes noted above.

Directed readings and short responses: ELOs 1-3

Paper discussions: ELOs 1-3

Directed and self-directed readings, written proposals: ELOs 1-4

Reading responses, peer-review and modifications, and written proposals: ELOs 1-4

Experimental designs and written proposals: ELOs 1-4

Laboratory and field activities: ELOs: 4-10

Conducting experiment and measuring outcomes: ELOs 4-9

Scientific proposal writing: ELOs 1-4

Presentations: ELOs 6&9

Written reports: ELOs 3,6,7,9

#### Is this course required in a degree program (major, minor, graduate degree, certificate?)

No

#### Does the proposed change or addition cause a significant increase in the use of College or University resources (lab room, computer)?

No

#### Will there be any departments affected by this proposed course?

No

#### I/we as the author(s) of this course proposal agree to provide a new or updated accessibility checklist to the Dean's office prior to the semester when this course is taught utilizing the changes proposed here.

I/we agree

### University Learning Goals

#### Undergraduate Learning Goals:

Competence in the disciplines

Knowledge of human cultures and the physical and natural world

Integrative learning

Personal and social responsibility

Intellectual and practical skills

**Is this course required as part of a teaching credential program, a single subject, or multiple subject waiver program (e.g., Liberal Studies, Biology) or other school personnel preparation program (e.g., School of Nursing)?**

No

### **GE Course and GE Goal(s)**

**Is this a General Education (GE) course or is it being considered for GE?**

No

**Please attach any additional files not requested above:**

Blo165\_SampleSyllabus\_v2.pdf

### **Reviewer Comments:**

**Jamie Kneitel (kneitel) (Mon, 06 Jul 2020 21:10:36 GMT):** Rollback: Hi Clint, this is great to see this moving. However, the other committees look for which SLOs are associated with which assessments. Email me if you have any questions. Also, is this only a CCE class?

**Robin Fisher (rfisher) (Sat, 05 Sep 2020 01:38:50 GMT):** Because this proposal came to the A&L Committee inadvertently, I have been asked to review it and move it on to the next level. The attached syllabus still has GE information in it, which should be removed. I assume that the change to 3 units is connected with the plan to offer it in a summer abroad program, although that is not stated in the Justification. The author repeats the verb 'develop' several times in the list of ELOs, and we would advise more variance in Outcome action verbs to reflect more depth of learning, and he uses a format to connect Assessment Strategies to ELOs that is not familiar to me, but it seems adequate.

**Thomas Krabacher (tsk) (Wed, 16 Sep 2020 23:46:35 GMT):** Rollback: The following issues on the Form A should be addressed: First there are inconsistencies between the Form A and the syllabus: Form A says it's not for GE but syllabus says it is for GE Area B2 (Note: if it is GE it should be Area B5). Also, inconsistency between Form A and syllabus as to whether fees will be charges for the course. Second: you need to indicate which Expected Learning Outcomes are addressed by which assessment strategy. Third: questions were raised as to whether the course classification is correct; check with Assoc. Dean Datwyler, or your dept. chair (Jamie) about this question. Anji Ballerini should be able to assist on these if needed.

**Robin Fisher (rfisher) (Fri, 09 Oct 2020 00:08:36 GMT):** Rollback: Dear Colleague, please communicate with Janett Thorset about this proposal's erroneous path through A&L. It should have moved on to your Dean. Thank you, Robin Fisher

Key: 5284