Boise State University
Foundational Studies Program Course Application Form
Due to the Foundational Studies Program by August 19, 2011

After the Foundational Studies Program has approved a course, departments will continue through the regular department and college procedures. The approved course should be submitted to the University Curriculum Committee by October 1, 2011.

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Instructions:

1. Complete one form per course.
2. Attach this Foundational Studies Course Application Form to the back of the University Curriculum Committee “Request for Curriculum Action” form. Both forms should be submitted to the Foundational Studies Program Office by August 19, 2011.

Part I. Course Information:

Course Number and Title: ZOOL 409: Comparative Physiology

Type of Foundational Studies Course – (Choose One):
[ ] DLS (Disciplinary Lens – Social Science)
[ ] DLL (Disciplinary Lens – Literature and Humanities)
[ ] DLV (Disciplinary Lens – Visual and Performing Arts)
[ ] DLM (Disciplinary Lens – Mathematics)
[ ] DLN (Disciplinary Lens – Natural, Physical, and Applied Sciences)
   Includes Lab: [ ] Yes [ ] No
[ ] CID (Communication in the Discipline)
[x] FF (Finishing Foundations)

Delivery Format(s) – (Check all that apply):
[x] Face to Face
[ ] Fully Online
[ ] Hybrid
[ ] Concurrent Enrollment
[ ] Other (briefly describe):
Part II. Syllabus Statement:

In the space below, include the syllabus statement for this course which will appear on the first page of the syllabus for each section of this course. (Template and examples are appended to this application form.)

Boise State's Foundations Program provides undergraduates with a broad-based education that spans the entire university experience. ZOOL 409: Comparative Physiology satisfies four units of the Foundational Studies Program's Finishing Foundations requirement. It supports the following University Learning Outcomes, along with a variety of other course-specific goals:

- Communicate effectively in speech, both as speaker and listener (ULO 2)
- Engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse (ULO 3)
- Think creatively about complex problems in order to produce, evaluate, and implement innovative possible solutions, often as one member of a team (ULO 4)

ZOOL 409: Comparative Physiology is designed to integrate course content with the opportunity to develop oral communication skills, critical inquiry, and innovation, all of which are important in the field of Biological Sciences. This capstone course helps to achieve the goals of the Foundational Studies Program by focusing on the following course learning outcomes. After successful completion of this course, you will be able to:

1. Demonstrate the ability to distill and deliver key aspects of a scientific finding to a target audience.
2. To engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse.
3. Develop problem solving/critical thinking skills that allow one to assess and solve biologically-based questions (i.e. demonstrate the ability to develop testable hypotheses and experiments designed to test the hypothesis).

Part III. Design for Accessibility:

In the space below, briefly describe plans for providing access to course materials and activities (or equivalent alternatives) to all students in adherence with the Americans with Disabilities Act. Although these plans may vary from instructor to instructor, the descriptions provided below should be representative of intended departmental and instructor practices. (See example statements appended to this form.)

ZOOL 409: Comparative Physiology: All posted pdf reading assignments will be checked for readability by a screen reader. (The department will ask Academic Technologies will help with a review of these electronic materials). Whenever available, videos chosen for use in the course will be those that have been close-captioned by the content producer to provide access to students with hearing impairment. PowerPoints used in class lectures, insofar as they contain graphs or other visual representations of content, will be verbally described to students on an as-needed basis. We will add textual descriptions accessible by screen readers to images used on the course web site. Extra time on tests, oral examinations, or other accommodations will be provided to students as needed per the policies of the Disability Resource center.
Part IV. Evidence of Quality Course Design:

Please use the table below (column headings for this table should not be changed) to provide evidence that the course has been carefully designed and is clearly aligned with Foundational Studies Program desired ULOs. All sections of the course should share similar student learning outcomes. Teaching and Learning Activities and Assessment Methods may vary from instructor to instructor. Please use the table to report representative strategies that may be used. Assessment activities used for reporting to the Foundational Studies Program should be consistent across different sections of the course.

Part V. Additional Justification (Optional):

If the brief justification provided to the University Curriculum Committee in the proposal to accompany the “Request for Curriculum Action” is not sufficient to make the case for including the course in the Foundational Studies Program, additional (optional) narrative can be added here.

ZOOL 409: Comparative Physiology is designed to be a capstone course in the Department of Biological Sciences. This course will pull together information learned in the core courses required of all biology majors, as physiologic processes represent an overarching theme in biological sciences. Depending upon the various degree option (i.e. degree emphasis or general degree plan) the student chooses, Biol 415 Microbiology Physiology can satisfy the FF degree requirement. For example, this course can be used to satisfy the FF requirement for the general degree (without emphasis) or for the “Ecology”, the “Environmental Biology”, the “Molecular and Cell Biology”, or the “Zoology” emphases. This course will be redesigned to include presentations, teamwork, and crafting of research proposals which will require students to engage in critical reading, writing and inquiry and to apply discipline-specific knowledge to solving relevant, real-world problems in physiology.

The department has thoroughly considered the best way to meet the Foundational Studies Program Finishing Foundations course requirements, and given the large number of biology majors that must pass through a FF course(s) each year (e.g., ~162 students in academic year ’10/11 prepared to enter a FF course) and the smaller class size (~25 students cap) required to meet the ULOs, the proposed plan is the best option given the existing resources. If the proposed approach is not deemed acceptable, than a significant influx of resources (i.e. special lecturer to free up tenure track faculty’s bandwidth) will be required to develop a new course and offer the necessary sections (~7 sections of 25 students each) to accommodate the large number of senior-level students in the program.
### Course Design Table

<table>
<thead>
<tr>
<th>Foundation ULO Criteria</th>
<th>Foundation ULO Notions of Exemplary Work</th>
<th>Course Learning Outcomes: By the end of this course, each student should be able to…</th>
<th>Assessment Method: Evidence of Student Learning</th>
<th>Planned Teaching &amp; Learning Activities / Pedagogy</th>
</tr>
</thead>
</table>
| **ULO 2: Communication** | • Effective organizational patterns  
• Polished and compelling delivery technique | Demonstrate the ability to distill and deliver key aspects of a scientific finding to a target audience. | • Each student prepares and delivers an oral presentation (using PowerPoint) on a physiologically relevant topic.  
• **All FF courses in the Department of Biological Sciences will use the same rubric for assessment of this learning outcome.** | • Library-sponsored workshop on locating scientific materials relevant to presentation.  
• In-class discussion of attributes of an effective oral presentation. |
| **ULO 3: Critical Inquiry** | • Articulate the problem/question/issue  
• Collect and organize evidence/data/reasoning | To engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse. | • **Synthesis paper:** Assemble and logically present a written synthesis of two different respiratory challenges in animals using at least three primary journal articles.  
• Summarize using text and a conceptual map the physical/chemical/physiological problems and solutions associated with high altitude breathing and diving using specific animal examples.  
• Problem based exam questions related to synthesis papers  
• **All FF courses in the Department of Biological Sciences will use the same rubric for assessment of this learning outcome.** | • In-class discussion and examples of locating scientific information, critically evaluating data, making concept maps and writing concisely using topic sentences, evidence from the literature and concluding sentences.  
• Students work individually to prepare their draft papers, then in teams to finalize a single synthesis paper. Other student teams read and critique two other teams’ final synthesis papers. |
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<tbody>
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<td>ULO 4a &amp; 4b: Innovation and Teamwork</td>
<td>• Takes risks, explores ideas • Innovative thinking (novel, unique) • Contributes to team meetings • Fosters a constructive team climate</td>
<td>Develop problem solving/critical thinking skills that allow one to assess and solve biologically-based questions (i.e. demonstrate the ability to develop testable hypotheses and experiments designed to test the hypothesis).</td>
<td>• Students work in teams and independently to design novel research proposals that test original hypothesis. The proposal is vetted by the instructor and critiqued by classmates to insure the experiment is feasible, conforms to existing animal use protocols and available equipment and is justified by the scientific literature. • Teams conduct their approved proposal and analyze, organize and interpret data collected. • Team-share their results with the class through a final report and oral presentation. • The proposal and presentation are critiqued by classmates and the instructor. • Students use a rubric to evaluate each other’s contribution to the team proposal, experiment and presentation and ability to foster constructive team climate.</td>
<td>• Provide examples of how to design and test hypotheses through lecture, discussion and standardized laboratory experiments that test hypotheses. • Lectures and labs will cover basic physiological principles, connect to current research topics and knowledge gaps that can be tested by students. • Discussion of experimental design, including appropriate use of controls, justification of design and significance of experiment with scientific literature, and how to align hypotheses, experiments, results and interpretation of data.</td>
</tr>
</tbody>
</table>

**All FF courses in the Department of Biological Sciences will use the same rubric for assessment of this learning outcome.**