Boise State University
Foundational Studies Program Course Application Form

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: BOT 401: Plant 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. BOT 401: Plant 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:

1. Communicate effectively in speech, both as speaker and listener (ULO 2)
2. Engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse (ULO 3)
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)

BOT 401: Plant 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:

- Demonstrate the ability to distill and deliver key aspects of a scientific finding to a target audience.
- To engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse.
- 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.)

BOT 401: Plant 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.

Please see table below.

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.

| BOT 401: Plant Physiology | has been re-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”, or the “Molecular and Cell Biology” emphases. This course will also be the required FF course for the “Botany” emphasis. This course will be re-designed 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.

<table>
<thead>
<tr>
<th>Foundational Studies Program Director Signature</th>
<th>Date</th>
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</table>
Boise State University  
Foundational Studies Course  

Course Number and Title: **BOT 401: Plant Physiology**

### 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>
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</table>
| ULO 2 Oral 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. | • Students prepare a 20-minute presentation based on a semester long project that the students conduct in small groups. The presentation includes background information related to the project, a description of experimental techniques and approaches used in the study, and a discussion of the results including limitations of the research and comparison of the results with published data.  
  • **All FF courses in the Department of Biological Sciences will use the same rubric for assessment of this learning outcome.** | • Students are given examples of posters presented at professional meetings and guidelines to prepare their presentations.  
  • Students discuss with the instructor the format and content of their PowerPoint file prior to the presentation. |
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<tr>
<td>ULO 3 Critical Inquiry</td>
<td>• Articulate the problem/question/issue • Collect and organize evidence/data/reasoning</td>
<td>• To engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse.</td>
<td>• Students discuss and solve problem sets and present their results to the class. • Project reports are also evaluated for logical presentation of hypotheses, findings, and correct interpretation of data. • <strong>All FF courses in the Department of Biological Sciences will use the same rubric for assessment of this learning outcome.</strong></td>
<td>• During the lecture and laboratory, students analyze experimental results from primary literature and their own experiments and reach conclusions based on their analyses and interpretations. • The labs include problem sets, where students apply their knowledge of plant physiology to answer questions in ecology and agriculture. • Several of the laboratory exercises are guided-inquiry experiments that give the students the opportunity to modify the experimental conditions to test various hypotheses.</td>
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| ULO 4a & 4b Innovation and Teamwork | • Takes risks, explores ideas  
• Innovative thinking (novel, unique)  
• Contributes to team meetings  
• Fosters a constructive team climate | • 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). | • Teams of two or three students formulate a hypothesis, develop an experimental plan to test this hypothesis, and carry out the experiment.  
• Research groups are evaluated and critiqued by the instructor and classmates based on the ingenuity of the proposed project, the quality of experimental design and implementation, and interpretation of results.  
• All FF courses in the Department of Biological Sciences will use the same rubric for assessment of this learning outcome. | • Students are provided with examples of hypotheses and experimental approaches that could be used to address questions in plant sciences.  
• Discussion of physiological principles and techniques and their relationship to current research topics and knowledge gaps.  
• Research groups identify a research question and compile a literature review to justify this question.  
• Discussion of experimental design and alignment of experiments with hypotheses |