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.

Table of Contents (Click title to go to that section)

Instructions: ..............................................................................................................................................1
Part I. Course Information .....................................................................................................................................1
Part II. Syllabus Statement ........................................................................................................................................2
Part III. Design for Accessibility ..............................................................................................................................2
Part IV. Evidence of Quality Course Design ........................................................................................................3
Course Design Table ...............................................................................................................................................4

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

<table>
<thead>
<tr>
<th>Course Number and Title: PHYS 104: Planets and Astrobiology</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Foundational Studies Course – (Choose One):</td>
</tr>
<tr>
<td>[ ] DLS (Disciplinary Lens – Social Science)</td>
</tr>
<tr>
<td>[ ] DLL (Disciplinary Lens – Literature and Humanities)</td>
</tr>
<tr>
<td>[ ] DLV (Disciplinary Lens – Visual and Performing Arts)</td>
</tr>
<tr>
<td>[ ] DLM (Disciplinary Lens – Mathematics)</td>
</tr>
<tr>
<td>[x] DLN (Disciplinary Lens – Natural, Physical, and Applied Sciences)</td>
</tr>
<tr>
<td>Includes Lab: [x] Yes [ ] No</td>
</tr>
<tr>
<td>[ ] CID (Communication in the Discipline)</td>
</tr>
<tr>
<td>[ ] FF (Finishing Foundations)</td>
</tr>
<tr>
<td>Delivery Format(s) – (Check all that apply):</td>
</tr>
<tr>
<td>[x] Face to Face</td>
</tr>
<tr>
<td>[ ] Fully Online</td>
</tr>
<tr>
<td>[ ] Hybrid</td>
</tr>
<tr>
<td>[ ] Concurrent Enrollment</td>
</tr>
<tr>
<td>[ ] Other (briefly describe):</td>
</tr>
</tbody>
</table>
Part II. Syllabus Statement

Boise State's Foundational Studies Program provides undergraduates with a broad-based education that spans the entire university experience. PHYS 104 satisfies 4 credits of the Foundational Studies Program's Disciplinary Lens – Natural, Physical and Applied Science requirements. It supports the following University Learning Outcomes, along with a variety of other course-specific goals.

ULO 8. Apply knowledge and methods characteristic of scientific inquiry to think critically about and solve theoretical and practical problems about physical structures and processes.

**PHYS 104: Planets and Astrobiology** is designed to develop an understanding of the nature of planetary systems and explore the relationship between biological activity and astronomical environments. This 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:

- Identify the standard parts of a planetary system and relate their evolution to physical theories
- Understand the discovery and nature of extrasolar planetary systems and compare them to our own
- Have a good understanding of the nature of life on Earth, and its relationship to the astronomical environment
- Critically assess the chances for life elsewhere, whether in our solar system or beyond

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.)

**PHYS 104: Planets and Astrobiology:** All instructors are committed to working with the university's Disability Resource Center (DRC) to meet the needs of students with documented disabilities. Students that feel they may need accommodations will be met with privately, and steered to the DRC for further coordination. Approved accommodations may include (but are not limited to): checking pdf reading assignments for readability by a screen reader, 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, graphics in PowerPoint presentations used in class lectures will be verbally described to students on an as-needed basis, providing textual descriptions accessible by screen readers to images used on the course web site, extra time on tests and oral examinations, or other accommodations.
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 below.
Boise State University  
Foundational Studies Course  
Spring 2014  

Course Number and Title: PHYS 104: Planets and Astrobiology

# Course Design Table

<table>
<thead>
<tr>
<th>Foundation ULO 8 Criteria</th>
<th>Foundation ULO 8 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 8.1: Process of Inquiry and Analysis in Response to Evidence or Observation | * Skillfully and thoroughly formulates a research question or testable hypothesis.  
* Constructs a model to test evidence and observations  
* Skillfully uses model to either confirm existing explanations or formulate new hypotheses | * Use appropriate sources of evidence for determining the motions and positions of astronomical objects; relate properties of other bodies to Earth properties and motions  
* Categorize the diverse components of our solar system and use observable data to evaluate a testable model of solar system formation.  
* Evaluate the probability and potential locations of extra solar life | * Exams  
* Lab reports  
* In-class activities (Report: distribution of scores on multiple choice exam questions, exams #1, #2, and #3 or multiple choice concept mapping exam questions) | Labs:  
* Earth motions lab  
* Solar systems lab  
* Planetary motions lab  
* Lunar phases/eclipses lab  
* Night observing lab  
* Comet motions lab  
* Solar system scale lab  
* Lunar features lab  
* Complexity lab  
* Drake equation lab  
* Greenhouse effect lab  
* Extremophile activity  
* Planetary temperature vs. distance activity (in class or take home)  
* In-class activities in which students consider the concepts of angular size and parallax  
* Lecture material  
* Assigned reading |
<table>
<thead>
<tr>
<th>Foundation ULO 8 Criteria</th>
<th>Foundation ULO 8 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>
<tbody>
<tr>
<td>ULO 8.2: Understanding of Knowledge and Inquiry</td>
<td>* Clearly understands the difference between evidence (data) and explanation (theory)</td>
<td>* Describe the characteristics and uses of electromagnetic radiation; Use electromagnetic signatures as evidence in the exploration of astronomical objects</td>
<td>* Exams * Lab reports * In-class activities (Report: distribution of scores on multiple choice exam questions, exams #1 and #2 or multiple choice concept mapping exam questions)</td>
<td>Labs: * Spectra lab * Doppler Effect lab * Extra-solar planets lab * Drake equation lab * Lecture material * Assigned reading</td>
</tr>
<tr>
<td>ULO 8.3: Communication of Scientific and/or Technological Understandings</td>
<td>* Produces clear, accurate, well-organized written and oral communications about scientific and technological understandings * Use of scientific language, representational tools, and notation covered in the course is skillful.</td>
<td>Create and interpret graphs and plots; use appropriate scientific terminology in written descriptions and explanations</td>
<td>* Lab reports * Exams (Report: distribution of student success in graph creation and terminology usage on lab report #12 – greenhouse effect)</td>
<td>* All labs * Lecture material * Assigned reading</td>
</tr>
<tr>
<td>Foundation ULO 8 Criteria</td>
<td>Foundation ULO 8 Notions of Exemplary Work</td>
<td>Course Learning Outcomes: By the end of this course, each student should be able to…</td>
<td>Assessment Method: Evidence of Student Learning</td>
<td>Planned Teaching &amp; Learning Activities / Pedagogy</td>
</tr>
<tr>
<td>---------------------------</td>
<td>----------------------------------------------</td>
<td>--------------------------------------------------------------------------------</td>
<td>-----------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>ULO 8.4: Understanding of interactions of science and technology with humans and environment</td>
<td>* Skillfully assesses the potential connection of scientific and/or technological developments to humans and the environment  * Able to articulate possible implications of these relationships</td>
<td>* Relate each of the following to current needs for sustaining life on Earth or in extra-solar locations: basic chemical and biological characteristics of life on Earth and the relationship between the history of life on Earth and the astronomical environment  * Evaluate the probability and potential locations of extra solar life</td>
<td>* Exams  * Lab reports  * Activity assignment (Report: distribution of student scores on two multiple choice questions on exam #4 and distribution of scores on short explanation final exam question)</td>
<td>Labs:  * Greenhouse effect lab  * Complexity lab  * Extrasolar planet lab  * Drake equation lab  * Impact of extrasolar life activity  * Lecture material  * Assigned reading</td>
</tr>
</tbody>
</table>

5-16-2013

______________________________  _____________________________
Foundational Studies Program Director Signature  Date