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: PHYS 112: General Physics

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)
[x] DLN (Disciplinary Lens – Natural, Physical, and Applied Sciences)
   Includes Lab: [x] Yes [ ] No
[ ] CID (Communication in the Discipline)
[ ] 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

Boise State's Foundational Studies Program provides undergraduates with a broad-based education that spans the entire university experience. PHYS 112 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 112: General Physics is designed to develop an understanding of the nature of electricity and magnetism, optics, and modern physics. 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:

- Correctly interpret and draw E field diagrams as well as plots of equipotential lines.
- Correctly interpret and solve problems involving electricity and magnetism
- Correctly interpret and solve problems involving optics systems of lenses and mirrors
- Correctly interpret and solve problems involving wave superposition in optics
- Understand the basics precepts of modern physics

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 112: General Physics: 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 112: General Physics**

## 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 | Utilize the scientific method to formulate, implement, and assess a lab experiment or interactive lecture demonstration (ILD) | * Written lab report featuring a testable hypothesis, after summarizing the results of an experiment or demonstration.  
* Response sheets from ILDs | * Student evaluation of model hypothesis  
* Student designed and implemented lab exploration  
* ILDs from text of the same name by Sokoloff, performed during lecture |
| ULO 8.2: Understanding of Knowledge and Inquiry | * Clearly understands the difference between evidence (data) and explanation (theory)  
* Is able to connect evidence & explanation to build an argument  
* Understands the role of these kinds of arguments in building knowledge in the discipline | Assess experimental data to decide whether the data supports or refutes the hypothesis being tested. | Exam questions which probe the ability to recognize a valid hypothesis. | Interactive lecture demonstrations where student predict a result, collect data, and then analyze data to determine whether the data supports or refutes the hypothesis being tested. |
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| ULO 8.3: Communication of Scientific and/or Technological Understandings | * 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. | * Compile and organize student generated data in a coherent manner  
* Represent problems in multiple representations | * Test questions and homework problem requiring the Conversion between motion, magnetic fields, induced current, and word problems  
* Evaluating a circuit diagrams derived from a word problem for correctness  
Write lab reports to be graded with approved rubric  
* Write lab reports to be graded with approved rubric | * Sketch circuit diagrams after discussing a verbal description of motion  
* ILDs involving electrical circuits and electrical / magnetic fields |
| ULO 8.4: Understanding of interactions of science and technology with humans and environment | * Skillfully assesses the potential connection of scientific and/or technological developments to humans and the environment  
* Able to articulate possible implications of these relationships | Understand the physical and technological processes surrounding us and how these ideas relate to and impact social responsibility, particularly nuclear issues | Exam questions evaluating the effects of nuclear fission and fusion | * Compare and contrast the effects of nuclear power vs. coal and the environment |
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</table>
| ULO 8                     | Course specific content, leading toward an expert view of physics in the surrounding world | * Apply the laws of electricity and magnetism to solve real life applied problems  
* Apply the rules of optics to solve real life applied problems  
* Apply the concepts of energy to solve real life applied problems | Solve exam problems which address content specific topics | * Student engage in classroom clicker questions and resulting discussions, which probe understanding as well as mimic exam questions  
* Solve homework problems online for a small amount of credit.  
* Problem solving session in the classroom.  
* Small group activities solving real world problems and the resulting discussions |

5-16-2013

Foundational Studies Program Director Signature

Date