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 301: Analog Electronics**

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)

[ ] FF (Finishing Foundations)

Delivery Format(s) – (Check all that apply):
[ ] 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 301 satisfies 3 credits of the Foundational Studies Program's Communication in the Discipline requirements. It supports the following University Learning Outcomes, along with a variety of other course-specific goals.

ULO 1. Write effectively in multiple contexts for a variety of audiences
ULO 2. Communicate effectively in speech, both as a speaker and listener
ULO 3. Engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse.

*PHYS301: Analog Electronics* is designed to integrate course content with the opportunity to develop communication skills important in the field of scientific/technical instrumentation. 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:

- Use written and verbal communication to describe electronics circuits from a simple RLC circuit to the present day digital circuits.
- Articulate the physical theories of various applied circuits that have been the basis of the current scientific instruments.

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.)

*PHYS301: Analog Electronics:* 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 301: Analog Electronics

## Course Design Table

<table>
<thead>
<tr>
<th>Foundation ULO 1 &amp; 2 Criteria</th>
<th>Foundation ULO 1 &amp; 2 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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</thead>
<tbody>
<tr>
<td>ULO 1.1-1.6: Write effectively</td>
<td>* Focuses narrowly on a clear purpose</td>
<td>* Create and interpret graphs and plots; use appropriate scientific terminology in written descriptions and explanations.</td>
<td>* Lab reports</td>
<td>* L1. DC voltage divider</td>
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<td>* Adopts an appropriate voice, tone, and level of formality</td>
<td>* Use appropriate sources of evidence for determining the currents and voltages of given circuits; relate the analysis to real applications</td>
<td>* Exams</td>
<td>* L2. Kirchhoff’s law</td>
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<td>* Uses the text conventions of writing in a field professionally</td>
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<td>* In-Class activities</td>
<td>* L3. AC Voltage divider</td>
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<td>* Evaluates and synthesizes ideas from sources well; documents sources according to disciplinary conventions</td>
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<td>(report: distribution of scores)</td>
<td>* L4. RC &amp; RL Transients I</td>
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<td>* Improves across a series of drafts that are the result of drafting, revising, and editing in response to feedback</td>
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<td>* L5. RC integrators and differentiators</td>
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<td>* Controls mechanical features such as syntax, grammar, and punctuation</td>
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<td>* L6. Phase Shifts</td>
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<td>* L7. Series RLC tuned circuits</td>
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<td>* L8. RC Filters</td>
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<td>* L9. Bandpass &amp; Notch Filters</td>
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<td>* L10. RLC Transients</td>
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<td></td>
<td>* L11 Diodes Characteristics</td>
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<td>* L12 Rectification</td>
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<td></td>
<td>* L13. Diode circuit and Zener Diodes</td>
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</table>
| ULO 1.7-1.10: Write in Multiple Contexts | * Use genres appropriate to the discipline well  
* Responds well to the needs of different rhetorical situations  
* Uses wide variety of resources to locate sources  
* Exploits wide range of communication strategies appropriate to contexts (including electronic ones) | Categorize the diverse components of circuits and use observable data to apply the understanding to the other circuits. | * Lab reports  
* In-Class activities  
* Exams (report: distribution of scores on concept mapping report questions) | * L14. BJT Characteristics  
* L15. Biasing and Emitter Followers  
* L16. FET Characteristics  
* L17. JFET Circuits  
* L18. MOSFET Circuit  
* L19. Audio & Modulation  
* L20. LED & Photoresistors  
* L21. Photo-Transistors  
* L22. Op Amp I  
* L23. Op Amp II |
| ULO 1.11: Write for a Variety of Audiences | * Responds well to the needs of different audiences  
* Addresses professionally the expectations of disciplinary audiences | Write the procedure of the circuit analysis, approaches, and through discussion with other students during the lab. | * Lab reports  
* In-Class activities (report: distribution of scores on lab report questions) | * L24. Op Amp III  
* L25. 555 Timers  
* L26. Oscillators  
* L27. DC Power Supplies |
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<td>ULO 2.1-2.5: Communicate Effectively as Speaker</td>
<td>*Focuses on a compelling central message that is precisely stated, appropriately repeated, memorable, and strongly supported</td>
<td>* Relate each of the circuit elements to overall circuit functions for obtaining comprehensive understanding of electronics. The circuit elements include (not limited to) resistors, capacitors, inductors, diodes, transistors, operation amplifiers, timers, et cetera.</td>
<td>* Exams</td>
<td>Individual project</td>
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<td>* Offers a variety of supporting materials that are relevant to the central message, appropriate to the occasion, and in a variety of appropriate media (oral, written, media-supported) and establish the speaker’s credibility and authority</td>
<td>* While the students find the relationship between the individual elements and overall functions, they will be imaginative and memorable.</td>
<td>* Lab reports</td>
<td></td>
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<td>* Uses an organizational pattern that is clear and consistently observable and makes content cohesive in creative ways</td>
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<td>* In-Class activities (report: distribution of scores on lab report questions)</td>
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<td>* Makes imaginative, memorable, and compelling language choices with a tone appropriate to the audience and occasion</td>
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<td>* Uses compelling and appropriate delivery techniques (posture, vocal expressiveness, audience interaction) so that the speaker appears prepared, polished, and confident</td>
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| ULO 2.6: Communicate Effectively as Listener | Responds with critical understanding of oral communication of ideas | * Describe the characteristics and uses of circuit theory as a listener  
* Explain their measurement data as supporting evidence of the theory | In-Class activities (report: distribution of scores on lab report questions) | * Individual project  
* Demonstration |

5-16-2013

Foundational Studies Program Director Signature  Date