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

Course Number and Title: ENGR 106: Smartphone Engineering

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: [ ] Yes [x] No

[ ] CID (Communication in the Discipline)
[ ] FF (Finishing Foundations)

Delivery Format(s) – (Check all that apply):
[x] Face to Face
[ ] Fully Online
[ ] Hybrid
[x] 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. ENGR 106 satisfies 3 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.

ENGR 106: Smartphone Engineering is a general interest course having no prerequisite. A basic understanding of the underlying engineering technologies associated with a smartphone and how it has been put to use is developed to promote a better understanding of our present technological society with its energy, environmental, social, and political problems. 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:

- Evaluate different types of smartphones and their calling plans as they relate to cost in dollars and environmental, health, and societal impact.
- Differentiate between technically possible and commercially viable smartphone features.
- Understand and use technical language to describe the smartphone in terms of its construction, operation, and network connections.
- Think critically about the theoretical and practical issues related to smartphone usage.

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.)

ENGR 106: Smartphone Engineering: Materials utilized or distributed in class will also be posted on Blackboard, with sufficient resolution to allow magnification with fidelity. 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 below.
### Boise State University
Foundational Studies Course
Spring 2014

Course Number and Title: **ENGR 106: Smartphone Engineering**

## 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 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 | Evaluate different types of smartphones and their calling plans as they relate to cost in dollars and environmental, health, and societal impact.  
Differentiate between technically possible and commercially viable smartphone features. | * Assessment method: Self-reported analysis; assignment suitable for homework, in class assignment, small group discussion, quiz, or exam question.  
Ask students to explain in paragraph consisting of several sentences, what the map of their smartphone plan shows for cell phone coverage and how does their actual coverage differ? Does it matter to them? Why or why not?  
Develop appropriate rubric, apply to one or two assignments completed by all students; analyze results. | Activities: What does the map of their smartphone plan show for cell phone coverage and how does their actual coverage differ? Does it matter to them? Why or why not? |
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<td><strong>ULO 8.2:</strong> Understanding of Knowledge and Inquiry</td>
<td>Clearly understands the difference between evidence (data) and explanation (theory) Is able to connect evidence &amp; explanation to build an argument * Understands the role of these kinds of arguments in building knowledge in the discipline</td>
<td>Understand and use technical language to describe the smartphone in terms of its construction, operation, and network connections.</td>
<td>* Assessment method: Self-reported analysis; assignment suitable for homework, in class assignment, small group discussion, quiz, or exam question. Ask students to explain in paragraph consisting of several sentences: Using the technical definition of “4G”, determine if your smartphone service provider offers “4G” service. Why or why not? Develop appropriate rubric, noting that student answers will vary with phone type and provider. Apply to one or two assignments completed by all students; analyze results.</td>
<td>Activity: Students will need to compare data rates. In class, using their smartphones, locate data rate website, locate data rate for own phone and provider. Using the definition of true “4G” service = 100 Mb/sec, answer the question. Excellent short quiz. Using the technical definition of “4G”, determine if your smartphone service provider offers “4G” service. Why or why not? Utilize the following vocabulary correctly in your answer: megabits/second, data rate.</td>
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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. | If required, the ideas discussed in “Understanding of Interactions of Science and Technology with Humans and Environment” below could also be used here. |                                                |                                               |
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<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</td>
<td>Think critically about the theoretical and practical issues related to smartphone usage.</td>
<td>Assessment method: Assignment suitable for homework, in class assignment, small group discussion, quiz, or exam question.</td>
<td>Example: An iPhone4 already has tethering capability built into its hardware. What are three reasons this capability is not already available to AT&amp;T customers? In your opinion, which reason is most responsible for the unavailability of this desirable function? Utilize the following vocabulary words correctly in your response: bandwidth, tethering, data plan, cell coverage, system capacity, blocked calls, and dropped calls.</td>
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<td>Able to articulate possible implications of these relationships</td>
<td></td>
<td>As small group activity, after presentation of lecture, with discussion and questions to provide technical and practical reasons why tethering is not enabled, with attention to required vocabulary needed for understanding, and rubric posted and gone over, divide class into random small groups of six or less. After 15 minutes of group time, report out results of group answers in form of large sticky post-its at front of room with written paragraph answer to question. Signed by all group participants.</td>
<td></td>
</tr>
</tbody>
</table>

5-16-2013

Foundational Studies Program Director Signature

Date