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: STEM-ED 210: Knowing and Learning in Mathematics and Science |
| Type of Foundational Studies Course – (Choose One):
  
  [x] 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):

[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. STEM-ED 210 satisfies 3 credits of the Foundational Studies Program's Disciplinary Lens – Social Science requirements. It supports the following University Learning Outcomes, along with a variety of other course-specific goals.

ULO 11. Apply knowledge and the methods of inquiry characteristic of the social sciences to explain and evaluate human behavior and institutions.

STEM-ED 210: Knowing and Learning in Mathematics and Science focuses on the psychology of learning and is designed to engage students in thinking critically about learning theories associated with developing understanding of mathematics and the sciences. This course helps to achieve the goals of the Foundations program by focusing on the following course learning outcomes.

After successful completion of this course, you will be able to:

- Use the clinical interview method to make sense of someone’s reasoning about a topic in mathematics or science.
- Articulate various approaches for teaching and learning in mathematics and science and articulate the implications of these approaches for assessment, especially standardized assessment.
- Articulate what it means to know and learn relative to cognitive structures and describe how what people know changes and develops.
- Describe various paradigms for evaluating science and mathematics knowledge and understanding.
- Describe the links between knowing and developing in learning theory and the content and evolution of scientific and mathematics ideas.
- Express informed opinions on current societal issues and tensions in education, especially as they relate to mathematics and science instruction.
- Explore the affordances offered by various technologies in supporting knowing and learning in mathematics and science.
- Explore the implications of deficit models of learning on issues of equitable instructions and learning environments.

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.)

STEM-ED 220: Knowing and Learning in Mathematics and Science: The instructor will work with the Disabilities Resource Center to provide reasonable accommodations to students upon request. Students making such requests are required to provide documentation from the Disability Resource Center, located in room 114 of the Administration Building.
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: STEM-ED 210: Knowing and Learning Mathematics and Science  

## Course Design Table

<table>
<thead>
<tr>
<th>Foundation ULO 11 Criteria</th>
<th>Foundation ULO 11 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 11.1: Understanding of individuals as members of a particular culture and/or community | * Demonstrates an understanding that members of different cultures and/or communities see, interpret, and experience the world differently  
* Articulates his/her own place within own culture and examines cultural assumptions about people and the world | * Use the clinical interview method to make sense of the variations between how people reason about topics in mathematics or science.  
* Articulate what it means to know and learn relative to cognitive structures and describe how what people know changes and develops according to their culture and society, personal knowledge, and understanding.  
* Describe various paradigms for evaluating science and mathematics understanding | * Quizzes/exams  
* In-class discussions  
* Report and analysis of clinical interviews  
* Final project | * Short lectures  
* Class discussions  
* Small-group work |
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| ULO 11.2: Understanding of historical and/or cultural forces | * Demonstrates an understanding of the historical and/or social forces that shape individuals and institutions  
  * Analyzes the world views and/or philosophical assumptions of a given source  
  * Draws connections between diverse perspectives | * Describe the links between knowing and developing in learning theory and the content and evolution of scientific ideas.  
  * Express informed opinions on current issues and tensions in education, especially as they relate to mathematics and science instruction. | * Quizzes/exams  
  * In-class discussions  
  * Written report | * Short lectures  
  * Class discussions |
| ULO 11.3: Reasoning, inquiry, and problem-solving | * Demonstrates an understanding of the theoretical framework that is behind various approaches to education  
  * Analyzes own and others’ assumptions and evaluates the relevance of contexts  
  * Uses information and analysis to capture the critical elements of the discussion | * Articulate various standards for knowing mathematics and science and articulate the implications of these standards for assessment, especially standardized assessment  
  * Explore the affordances offered by various technologies in supporting knowing and learning in mathematics and science. | * Quizzes/exams  
  * In-class discussions  
  * Analysis of clinical interviews | * Class discussions  
  * Small-group work |
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</table>
| ULO 11.4: Responsibility, personal reflection | Consistently demonstrates, through personal reflection, a complex understanding of the importance of active, meaningful participation in a community | Explore the implications of deficit models of learning on issues of equitable instructions and learning environments | In-class discussions | * Class discussions  
* Small group work |

5-16-2013

Foundational Studies Program Director Signature  
Date