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 departmental and college procedures. The approved course should be submitted to the University Curriculum Committee by October 1, 2011.

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:</th>
<th>MATH 123 Quantitative Reasoning</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of Foundational Studies Course - (choose one):</td>
<td></td>
</tr>
<tr>
<td>[ ] DLS (Disciplinary Lens – Social Science)</td>
<td>[ ] DLL (Disciplinary Lens – Literature and Humanities)</td>
</tr>
<tr>
<td>[X] DLM (Disciplinary Lens – Mathematics)</td>
<td>[ ] DLN (Disciplinary Lens – Natural, Physical and Applied Sciences)</td>
</tr>
<tr>
<td>[ ] FF (Finishing Foundations)</td>
<td></td>
</tr>
<tr>
<td>Delivery Format(s) - (check all that apply):</td>
<td></td>
</tr>
<tr>
<td>[X] Face to Face</td>
<td>[ ] Fully Online</td>
</tr>
<tr>
<td>[ ] Concurrent Enrollment</td>
<td>[ ] Other (briefly describe):</td>
</tr>
</tbody>
</table>

1
Part II. Syllabus Statement

Boise State's Foundational Studies Program provides undergraduates with a broad-based education that spans the entire university experience. MATH 123 Quantitative Reasoning satisfies three credits of the Foundational Studies Program's Disciplinary Lens-Mathematics (DL-M) requirement. It supports the following University Learning Outcomes, along with a variety of other course-specific goals:

7. Apply knowledge and the methods of reasoning characteristic of mathematics, statistics, and other formal systems to solve complex problems.

MATH 123: Quantitative Reasoning is designed to introduce students to the methods of reasoning used in science and mathematics. 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:

- assess data for reasonableness
- create and interpret graphical information
- identify deductive and inductive arguments
- appreciate the statistical techniques used in studies and experiments
- recognize the characteristics of exponential growth

Part III. Design for Accessibility

MATH 123 Quantitative Reasoning: 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

See attached table.

Part V. Additional Justification (optional)

If the brief justification provided to the University Curriculum Committee in the proposal to accompany the “Request for Curriculum Action” is not sufficient to make the case for including the course in the Foundational Studies Program, additional (optional) narrative can be added here.

Please see comment on page 6. The proposal is certified with the understanding that the phrasing referenced below (p. 6) will be revised to reflect an assessable statement.

CERTIFIED FOR APPROVAL 9-9-2011.

Electronically signed by Vicki Stehe,
Director, Foundational Studies Program
Boise State University

Foundational Studies Program, Director Date
### Foundation ULO 7
Criteria and Notions of Exemplary Work

**Course Learning Outcomes**
*By the end of this course, each student should be able to...*

<table>
<thead>
<tr>
<th><strong>Apply quantitative reasoning methods to draw appropriate conclusions</strong></th>
<th><strong>Assessment Method:</strong> Evidence of Student Learning</th>
<th><strong>Planned Teaching &amp; Learning Activities/Pedagogy</strong></th>
</tr>
</thead>
</table>
| - use quantitative and statistical reasoning to examine reports and data for flaws or misrepresentations.  
- use benchmarks and a sense of scale to spot questionable figures, including financial figures.  
- identify different types of reasoning and their common uses.  
- appreciate the risks inherent in inferential reasoning methods. | - Paper analyzing an article or study  
- Exam questions  
- Short essay question | - Short lectures  
- Class Discussions |

<table>
<thead>
<tr>
<th><strong>Communicate mathematical ideas</strong></th>
<th><strong>Assessment Method:</strong> Evidence of Student Learning</th>
<th><strong>Planned Teaching &amp; Learning Activities/Pedagogy</strong></th>
</tr>
</thead>
</table>
| - understand information presented in a variety of graphical formats.  
- create a graph that correctly displays and communicates information.  
- interpret mathematical notation including symbolic representation of unknowns, sigma notation as a representation for summation and subscripts used to designate individual values. | - Quizzes/exams  
- Homework/exams | - Group work  
- Short lecture  
- Class discussion |

<table>
<thead>
<tr>
<th><strong>Select and carry out appropriate strategies when solving problems</strong></th>
<th><strong>Assessment Method:</strong> Evidence of Student Learning</th>
<th><strong>Planned Teaching &amp; Learning Activities/Pedagogy</strong></th>
</tr>
</thead>
</table>
| - reason about situations involving chance.  
- distinguish between and be able to compute the odds and the probability of an event.  
- interpret information from graphical format that is new or unfamiliar.  
- make progress toward a solution to an unfamiliar problem using standard or non-standard yet viable techniques. | - Report on in-class explorations  
- Exam | - In-class explorations  
- Internet search  
- In-class collaboration  
- Group work |
<table>
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<th>Foundation ULO 7</th>
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<tr>
<td>Criteria and Notions of Exemplary Work</td>
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</table>

**Course Learning Outcomes**

“By the end of this course, each student should be able to…”

- appreciate how standard statistical techniques are used to determine if a hypothesis is supported by given data.
- appreciate how statistical techniques are used to find a point estimate and a confidence interval for an unknown parameter.
- recognize similarities in growth and decay functions used in a variety of applications.

**Assessment Method:** Evidence of Student Learning

- Project or paper

**Planned Teaching & Learning Activities/Pedagogy**

- Short Lecture
- Readings
- In-class exploration
- Group work
- Class discussion

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<th>Formulate and justify generalizations</th>
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<tbody>
<tr>
<td>Exploits mathematical connections and structure across problems and contexts; creates logical arguments to support claims</td>
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</table>

- **Course Learning Outcomes**

  - use technology to create a graphical presentation of data.
  - use technology to generate a regression equation for data.
  - use technology to determine the mean, median and mode of a data set.
  - use technology to determine the standard deviation of a data set.
  - use technology to explore growth and decay functions and their inverses.

  **Assessment Method:** Evidence of Student Learning

  - Homework
  - Inclusion in paper or project

  **Planned Teaching & Learning Activities/Pedagogy**

  - Classroom or online demonstrations

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<th>Use technology appropriately</th>
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<td>Selects appropriate tools; uses tools effectively; evaluates the reasonableness of technological outputs</td>
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- **Course Learning Outcomes**

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  **Assessment Method:** Evidence of Student Learning

  - Homework
  - Inclusion in paper or project

  **Planned Teaching & Learning Activities/Pedagogy**

  - Classroom or online demonstrations
Boise State University

Foundational Studies Review Committee: Course Application Evaluation Form

Fall 2011

Course Information

<table>
<thead>
<tr>
<th>Course Number and Title: <strong>MATH 123 Quantitative Reasoning</strong></th>
<th>Number of Credits: 3</th>
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Type of Foundational Studies Course (choose one)

- □ DLS (Disciplinary Lens – Social Science)
- □ DLL (Disciplinary Lens – Literature and Humanities)
- □ DLM (Disciplinary Lens – Math)
- □ DLN (Disciplinary Lens – Natural, Physical and Applied Science)
- □ DLV (Disciplinary Lens – Visual and Performing Arts)
- □ FF (Finishing Foundations)
- □ CID (Communication in the Discipline)

Review Committee Checklist

- **X** Syllabus Statement - statement introduces the student to the purpose and role of the course in the Foundational Studies Program curriculum.
- **X** An appropriate number of Course Learning Outcomes are specified for the course and are clearly designed to support the Foundational Studies Program ULOs.
- **X** Course Learning Outcomes are appropriately designed for level of the course and address both content mastery and skill-based outcomes.
- **X** The types and numbers of assessments planned for the course are appropriate for measuring the content or skills being assessed.
- **X** Course learning activities are likely to promote the achievement of the stated outcomes.
- **X** Course design and materials have considered best practices for accessibility to course materials and ideas by all students (e.g., alternatives to auditory and visual content).
Feedback from Review Committee: Overall the proposal is well done. We recommend this proposal be accepted as written. The DL-M committee discussed the technology resources needed for this proposal – including the potential need for students to purchase graphing calculators ($145) for this class. It may take time for the campus-wide Mobile Initiative to relieve this burden to the students.

Feedback from Foundational Studies Program:
I concur with the committee’s review.

I note the inclusion of a learning outcome regarding the criterion, “draws reasonable conclusions from numerical and graphical information” and suggest the revision of the accompanying outcome statement to replace the word “appreciate” in the following statement: “appreciate the risks inherent in inferential reasoning methods.”

Since it is very difficult to assess a student’s appreciation, the use of a measurable term is suggested. Perhaps, “explain risks inherent in inferential reasoning methods”