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: MATH 123 Quantitative Reasoning

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)
[x] 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:

In the space below, include the syllabus statement for this course which will appear on the first page of the syllabus for each section of this course. (Template and examples are appended to this application form.)

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:

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.)

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:

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.
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 3. The proposal is certified with the understanding that the phrasing referenced below (p. 3) will be revised to reflect an assessable statement.

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.”

   o 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”
CERTIFIED FOR APPROVAL 9-8-2011.

Foundational Studies Program Director Signature  Date

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

Course Number and Title: **Math 123 Quantitative Reasoning**  

## Course Design Table

<table>
<thead>
<tr>
<th>Foundation ULO 7 Criteria</th>
<th>Foundation ULO 7 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 7: Apply quantitative reasoning methods to draw appropriate conclusions | • Draws reasonable conclusions from numerical and graphical information | • 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 |
| ULO 7: Communicate mathematical ideas | • Presents ideas logically, making appropriate use of representations; interprets and uses information presented in various formats | • 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>ULO 7: Select and carry out appropriate strategies when solving problems</th>
<th>Devise solution methods for unfamiliar problems; solves complex problems; correctly interprets results</th>
<th>Reason about situations involving chance.</th>
<th>Report on in-class explorations</th>
<th>In-class explorations, Internet search, In-class collaboration, Group work</th>
</tr>
</thead>
<tbody>
<tr>
<td>ULO 7: Formulate and justify generalizations</td>
<td>Exploits mathematical connections and structure across problems and contexts; creates logical arguments to support claims</td>
<td>Appreciate how standard statistical techniques are used to determine if a hypothesis is supported by given data.</td>
<td>Project or paper</td>
<td>Short Lecture, Readings, In-class exploration, Group work, Class discussion</td>
</tr>
</tbody>
</table>

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

- Devise solution methods for unfamiliar problems.
- 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.
- Exemplary Work each student should be able to…

### Assessment Method:
Evidence of Student Learning

- Exam

### Planned Teaching & Learning Activities / Pedagogy

- In-class explorations
- Internet search
- In-class collaboration
- Group work
<table>
<thead>
<tr>
<th>Foundation ULO 7 Criteria</th>
<th>Foundation ULO 7 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 7:** Use technology appropriately | • Selects appropriate tools; uses tools effectively; evaluates the reasonableness of technological outputs | • 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. | • Homework  
• Inclusion in paper or project | • Classroom or online demonstrations |