Boise State University
Foundational Studies Program Course Application Form
Due to the Foundational Studies Program by August 19, 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: MATH 170 Calculus I

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)
[ ] 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 Foundations Program provides undergraduates with a broad-based education that spans the entire university experience. Math 170: Calculus I satisfies four credits of the Foundation Program's Disciplinary Lens-Mathematics (DL-M) requirement. It supports the following University Learning Outcomes, along with a variety of other course-specific goals.

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

Math 170: Calculus I is designed to introduce students to the principles, techniques and applications of derivatives and integrals. 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:

- Recognize and illustrate the geometric relationships between the derivative and integral of a function and the graph of the function, and relate this geometric information to solutions derived through formulas.
- Identify the relevant data contained in problems presented in verbal, tabular and/or graphical formats.
- Present solutions clearly in logical and mathematically correct terms.
- Formulate and implement solution strategies for problems drawn from the sciences and engineering, and draw meaningful conclusions from the resulting answers.
- Recognize that the derivative is a rate of change, and be able to apply this insight to analyze and solve problems.
- Recognize that the integral can be approximated by finite sums, and be able to apply this insight to analyze and solve problems.

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 170: Calculus I. 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.

**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 with the following change: 1) Developer needs to individualize the activities for each ULO to allow for insight into how the activities/pedagogy link to the anticipated outcomes. The committee thinks that adding “student presentations” will require further definition and guidance for the instructors teaching the course.

**Feedback from Foundational Studies Program Director:**

While I understand the committee’s desire for more specificity in terms of the assessment of the course outcomes and the ULOs, it is understood that specific questions, tests, and quizzes would be developed for each area of these outcomes.

Per the note attached to the course design chart, it is requested that the italicized bullets describing the ULOs which are written in the spirit of the rubric, but not using the language of the rubric, either be noted as such or be moved to the column labeled “Course Outcomes.”

Certified for approval assuming notation added per comment on Course Design chart. See p. 5
Boise State University  
Foundational Studies Course  

Course Number and Title: Math 170 Calculus I  

## 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: Application of quantitative reasoning methods**  
  • Apply quantitative reasoning methods (regardless of context) to draw appropriate conclusions | • Draws reasonable conclusions from numerical and graphical information  
  • Recognize and illustrate the geometric relationships between the derivative and integral of a function and the graph of the function, and relate this geometric information to solutions derived through formulas. | Methods may include:  
  • graph-sketching problems assigned as homework or included in quizzes, exams or worksheets;  
  • student presentations. | Activities may include:  
  • examples in lecture;  
  • homework assignments;  
  • in-class question / peer discussion / response;  
  • individual or group worksheets or projects. |
| **ULO 7: Communication of mathematical ideas through multiple representations**  
  • Interpret and communicate (orally and visually) mathematical problem elements | • Presents ideas logically, making appropriate use of representations; interprets and uses information presented in various formats  
  • Identify the relevant data contained in problems presented in verbal, tabular and/or graphical formats.  
  • Present solutions clearly in logical and mathematically correct terms. | Methods may include:  
  • problems assigned as homework or included in quizzes, exams or worksheets;  
  • student presentations. | Activities may include:  
  • examples in lecture;  
  • homework assignments;  
  • in-class question / peer discussion / response;  
  • individual or group worksheets or projects. |

Comment [V3]: Please add a note below table to indicate that italicized criteria draw upon the Foundational Studies but do not reflect the precise wording of the Foundational Studies ULOs. Alternatively, you can move these statements to the Course Outcomes column.
<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>ULO 7: Recognizing and solving problems</td>
<td>• Apply the appropriate strategy when solving mathematical problems</td>
<td>• Devise solution methods for unfamiliar problems; solves complex problems; correctly interprets results • Formulate and implement solution strategies for problems drawn from the sciences and engineering, and draw meaningful conclusions from the resulting answers.</td>
<td>Methods may include: • problems assigned as homework or included in quizzes, exams or worksheets; • student presentations.</td>
<td>Activities may include: • examples in lecture; • homework assignments; • in-class question / peer discussion / response; • individual or group worksheets or projects.</td>
</tr>
<tr>
<td>ULO 7: Formulate and justify generalizations</td>
<td>• Analyze a problem type and apply the appropriate technique in new situations.</td>
<td>• Exploits mathematical connections and structure across problems and contexts; creates logical arguments to support claims • Recognize that the derivative is a rate of change, and be able to apply this insight to analyze and solve problems. • Recognize that the integral can be approximated by finite sums, and be able to apply this insight to analyze and solve problems.</td>
<td>Methods may include: • problems assigned as homework or included in quizzes, exams or worksheets; • student presentations.</td>
<td>Activities may include: • examples in lecture; • homework assignments; • in-class question / peer discussion / response; • individual or group worksheets or projects.</td>
</tr>
<tr>
<td>ULO 7: Use technology appropriately</td>
<td>• Select and apply appropriate technological tools and interpret the results.</td>
<td>• Selects appropriate tools; uses tools effectively; evaluates the reasonableness of technological outputs</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>