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
Part V. Additional Justification (Optional): .......................................................................................................... 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: MATH 401: Senior Thesis in the Mathematical Sciences

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)
[ ] DLN (Disciplinary Lens – Natural, Physical, and Applied Sciences)
  Includes Lab: [ ] Yes [ ] No
[ ] CID (Communication in the Discipline)
[x] 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 401: Senior Thesis in the Mathematical Sciences satisfies one credit of the Foundational Studies Program Finishing Foundations requirements. It supports the following University Learning Outcomes, along with a variety of other course-specific goals.

- **ULO 1:** Write effectively in multiple contexts for a variety of audiences.
- **ULO 2:** Communicate effectively in speech, both as speaker and listener.
- **ULO 3:** Engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse. Think creatively about complex problems in order to produce, evaluate, and implement innovative possible solutions, often as one member of a team.
- **ULO 7:** Apply knowledge and the methods of reasoning characteristic of mathematics, statistics, and other formal systems to solve complex problems

MATH 401: Senior Thesis in the Mathematical Sciences is designed to introduce students into independent mathematical work in an active and modern subject area of the mathematical sciences. You will select as senior thesis mentor any official research faculty member in the department of mathematics. Under the supervision of this senior thesis mentor you will engage in scholarly activity resulting in a written senior thesis, and you will present your findings in an appropriate public forum. The course helps to achieve the goals of the Foundational Studies Program by focusing on the following course learning outcomes. By completing this course, you will be able to:

- Summarize and describe the main aspects of a problem or subject area of the mathematical sciences in written and oral form
- Read and evaluate original mathematical literature
- Formulate questions and problems, and develop solving strategies, in a subject of the mathematical sciences
- Use technology in an adequate form for the solution of mathematical problems and for the presentation of mathematical content

### 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.)

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 Disabilities 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.

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.

CERTIFIED FOR APPROVAL 10-12-2011

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

<table>
<thead>
<tr>
<th>Foundational Studies Program Director Signature</th>
<th>Date</th>
</tr>
</thead>
</table>
### Boise State University
Boise State University
Foundational Studies Course

Course Number and Title: **MATH 401: Senior Thesis in the Mathematical Sciences**

#### Course Design Table

<table>
<thead>
<tr>
<th>Foundation ULO Criteria</th>
<th>Foundation ULO 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>
<tbody>
<tr>
<td><strong>ULO 1:</strong> Writing</td>
<td>Write effectively in multiple contexts, for a variety of audiences</td>
<td>Describe in writing mathematical contents in language appropriate to the mathematical sciences, at introductory and in depth level</td>
<td>Senior thesis will be evaluated by the mentor and a co-advisor.</td>
<td>Senior thesis mentor will discuss selected examples of effective writing with the student, proof-read and critique drafts and discuss with student before submission of senior thesis.</td>
</tr>
<tr>
<td><strong>ULO 3:</strong> Critical Inquiry</td>
<td>Engage in effective critical inquiry by defining problems, gathering and evaluating evidence, and determining the adequacy of argumentative discourse.</td>
<td>Place the subject of study into various contexts, discuss examples and justify the usefulness of algorithms, arguments etc.</td>
<td>Senior thesis will be evaluated</td>
<td>Senior thesis mentor will guide student in techniques of gathering and evaluating evidence in the mathematical sciences, including finding source materials. Senior thesis mentor will proof-read and discuss with student before submission.</td>
</tr>
<tr>
<td><strong>ULO 4a:</strong> Innovation</td>
<td>Think creatively about complex problems in order to produce, evaluate, and implement innovative possible solutions, often as one member of a team.</td>
<td>Read original literature in the mathematical sciences, fill in necessary details, contribute to open questions in a subject of the mathematical sciences</td>
<td>Consultations with senior thesis mentor, Senior thesis will be evaluated</td>
<td>Discussion with senior thesis mentor, co-advisor and peers working on related problems. Senior thesis mentor will expose student to exemplary examples of creative thought and innovation in the mathematical sciences.</td>
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<tr>
<td><strong>ULO 2:</strong> Communication</td>
<td>Communicate effectively in speech, both as speaker and listener.</td>
<td>Orally describe mathematical content in language appropriate to the mathematical sciences, at introductory and in depth level.</td>
<td>Results of Senior Thesis will be presented to students and faculty. Evaluation by both peers, mentors and other faculty.</td>
<td>Discussion with senior thesis mentor and with peers who are working on related problems. Progress reports presented by the student in senior seminar.</td>
</tr>
</tbody>
</table>