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.

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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 254 Applied Statistics with Computers

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
[x] 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. MATH254: Applied Statistics with Computers satisfies three credits of the Foundational Studies Program’s Disciplinary Lens-Mathematics (DL-M) requirements. 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.

MATH254: Applied Statistics with Computers is designed to engage students in the ways in which information (data) are collected, analyzed and interpreted assisted by statistical software. 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:

- Identify appropriate descriptive and inferential techniques to be used in given situations.
- Apply statistical techniques to real data and interpret the results of estimation, hypothesis testing and regression.
- Use a conventional computer statistics package to perform the more common calculations of statistics.
- Explain the role of probability in inferential statistics.
- Report results of statistical analysis in a clear written form.
- Identify fundamental assumptions necessary for use of specific statistical techniques.

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 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 as written. The committee would like to highlight that the prerequisite for this class will be MATH 143.

In addition, the committee requests that the University make two changes in our AP and ACT acceptance levels. We propose that only an AP Statistics exam score of 4 or 5 should be allowed to meet this class (MATH 254) requirement and that an ACT score >27 be required to take the place of the MATH 143 requirement.

Feedback from Foundational Studies Program:
I concur, the proposal is very well done. Regarding University changes to AP and ACT acceptance levels – those issues are beyond the scope of this review process.

Note. Credits changed from 4 to 3 on 10-13-2011
Meets minimum requirements for DLM. VS
# Boise State University
## Foundational Studies Course
### Course Number and Title: MATH 254 Applied Statistics with Computers

## Course Design Table

<table>
<thead>
<tr>
<th>ULO 7: Application of quantitative reasoning methods</th>
<th>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>• Apply quantitative reasoning methods (regardless of context) to draw appropriate conclusions</td>
<td>• Apply elementary statistical techniques to real data to summarize the data properly or make correct statistical inference; • Explain the role of probability in inferential statistics. • Identify and explain fundamental assumptions necessary for use of specific statistical techniques.</td>
<td>• Approximately weekly homework assignments or quizzes; • Several exams; • A comprehensive final exam; • Individual or group projects in which students set up hypotheses as research questions in their own discipline/major, then obtain appropriate data sets and conduct data analysis using learned statistical techniques in the class; • Scores from selected Final exam problems or projects will be used for reporting student learning outcomes.</td>
<td>• Instructor’s classroom presentation of topics and methods; • Extensive and rigorous student engagement and practice; • Students’ presentations and discussions of specific topics, or projects.</td>
<td></td>
</tr>
<tr>
<td>ULO 7: Communication of mathematical ideas through multiple representations</td>
<td>• Interpret and communicate (orally and visually) mathematical problem elements</td>
<td>• Use appropriate tables, plots for numerical summary to communicate; • Correctly interpret and clearly report results of estimation, hypothesis testing and regression.; • Use correct statistical terminology and symbols.</td>
<td>• Instruments as above with emphasis on written and oral presentations.</td>
<td>• Students’ presentations and discussions of specific topics, projects, media reports; Multimedia presentation of excellent scientific papers or media reports involving good statistics.</td>
</tr>
</tbody>
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<tr>
<th>ULO 7: Recognizing and solving problems</th>
<th>ULO 7: Formulate and justify generalizations</th>
<th>ULO 7: Use technology appropriately</th>
<th>Assessment Method: Evidence of Student Learning</th>
<th>Planned Teaching &amp; Learning Activities / Pedagogy</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Apply the appropriate strategy when solving mathematical problems</td>
<td>• Analyze a problem type and apply the appropriate technique in new situations.</td>
<td>• Select and apply appropriate technological tools and interpret the results.</td>
<td>• Instruments as above with emphasis on statistical problem solving strategy</td>
<td>• Instructor’s classroom presentation of the pre-calculus based descriptive and inferential statistics; • Extensive and rigorous student engagement and practice on selecting appropriate descriptive and inferential techniques.</td>
</tr>
<tr>
<td>• Identify appropriate descriptive and inferential techniques to be used in given situations. • Recognize the role of statistics as a tool to aid in research and decision making. • Critically evaluate statistical reports written by other people, including other students, researchers, businesses, and reporters.</td>
<td>• Recognizes common structure across data sets, statistical problems and contexts; • Creates logical arguments to support or argue against claims.</td>
<td>• Effectively use a conventional computer statistics package to perform the more common statistical calculations Examples of package: ○ Excel, R, SPSS, SAS. • A instructor selects one package and students use the selected package for the course.</td>
<td>• Assignments that cannot be done without proper use of software tools; • Proper use of software involves selecting appropriate descriptive and inferential statistics, assessing assumptions, and producing correct output in numerical summary, tables or graphical display.</td>
<td>• Classroom demonstration of data analysis using statistical software; • Student computer lab activities using the software to solve assigned problems.</td>
</tr>
</tbody>
</table>