Proposed Change to an Existing Degree: Academic Component

Please answer all relevant questions below. Consultation with the appropriate Associate Provost on a draft of the proposal is recommended.

Using the relevant template, please submit a budget even if no additional resources are needed.

Title of Degree (e.g., Bachelor of Arts in History):

MS in Statistical Practice

1. Please provide the name, title, email address, and phone number of the primary contact person for this academic program:

Professor Eric Kolaczyk, Director, Program in Statistics, Dept of Mathematics and Statistics
kolaczyk@bu.edu (617) 353-520

2. Please describe briefly the proposed change to the existing degree:

This proposal is to replace three of the existing core required courses for the MS in Statistical Practice with three equivalent new courses that cover the same material but which are designed to optimally serve students in this program.

3. Please provide a rationale for the proposed change to the existing degree:

When the MS in Statistical Practice program was proposed in 2014, the curriculum, with the exception of the statistics practicum courses (GRS MA 675, 676), was built out of already existing courses. In particular the current three core required lecture courses, GRS MA 681, 684 and 685, are courses originally designed to serve a broad population of graduate students not enrolled in a statistics degree program who nevertheless require a significant knowledge of statistics, usually as their research uses statistical methods. As enrollment in the MS in Statistical Practice has grown, we now have a sufficient number of students to offer separate sections of these three courses for students in the MS in Statistical Practice and to tailor these sections to the specific needs to these students. Doing this has caused confusion among other students who don’t understand why they can’t enroll in the course sections intended for
students in the Statistical Practice program. In order to minimize confusion and provide better course descriptions of the courses intended for the Statistical Practice students, we propose creating separate course numbers and titles for the versions of these courses open only to students in the Statistical Practice program. To make this change we must formally change the requirements of the MS in Statistical Practice, replacing the three core courses with the new versions only open to students in the program, even though the content of these courses is essentially unchanged.

4. Please describe how the proposed change(s) advances the Strategic Plans of the department, of the school/college, and of the University:

This change is essentially administrative. However it is important as the MS in Statistical Practice is integral to the strategic plans of the Department of Math and Statistics and of the College and Graduate School of Arts and Sciences, creating viable professional masters programs that enhance the school’s reputation and prepare students for a professional career.

5. Please list all the program requirements for the current and revised programs so that review committees can easily see the changes: (expand the table as needed and denote new courses in bold print)

<table>
<thead>
<tr>
<th>Current program (32 credits)</th>
<th>Revised program (32 Credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GRS MA 675: Statistics Practicum 1</td>
<td>Same</td>
</tr>
<tr>
<td>GRS MA 676: Statistics Practicum 2</td>
<td>Same</td>
</tr>
<tr>
<td>1 4-credit elective graduate course in Statistics</td>
<td>Same except excluding GRS MA 681, 684, and 685.</td>
</tr>
<tr>
<td>2 course sequence (8 credits) in statistics or a complementary discipline chosen from an approved list</td>
<td>Same</td>
</tr>
<tr>
<td>Final Report from Statistics practicum</td>
<td>Same</td>
</tr>
</tbody>
</table>

6. Is this change a result of program learning outcomes assessment and/or academic program review? If yes, please describe:

No
7. Please list learning outcomes for the revised program:

Learning Outcomes for the program remain unchanged. They are:

Students will lay a foundation in statistical theory, which will include a knowledge (as demonstrated through standard coursework) of discrete probability, basic elements of mathematical statistics (e.g., sampling distributions, decision theory, estimation theory, and testing theory), and their relation to certain canonical statistical methods, including linear models and time series.

Students will obtain training in statistical methods, which will include exposure to and experience with (through standard coursework) linear and generalized linear models, analysis of variance, multivariable and multivariate methods, and some elements of related topics (e.g., survival analysis).

Students will develop a familiarity (through the statistics practicum sequence) with performing statistical analysis in three common statistical software environments (i.e., R, SAS, and SPSS). In addition, they will be exposed to interact with standard databases and perform fundamental data mining operations through these statistical software environments.

Students will receive training (through the statistics practicum sequence) in various “soft skills” critical to working in collaborative environments, including communication, speaking, team work, writing, and presenting.

Students will gain extensive experience doing practical statistics, wherein all of the above skills are combined in a dynamic fashion, through participation in the faculty-led statistical consulting program, servicing clients from areas across the university.

Overall, we expect that the typical student completing our proposed program would leave with a level of mathematical background somewhere between that of our minor and major, a level of training in statistical theory and methods somewhere between that of our major and our traditional MA, and a level of experience in the practice of statistics that would exceed that of our traditional MA.

8. How does the change place your program in the context of programs at peer institutions?

We completed a comprehensive comparison to programs at other institutions that was included in our 2014 proposal to create the MS in Statistical Practice.

9. How does the change affect other academic units and existing programs at the University?
This change has no effect on other programs at the University. We will continue to offer the same number of sections of MA GRS 681, 684 and 685 as we have always done for students in other graduate programs.

10. How will you notify current students of the proposed changes and implement the requirements? How will you assure that current students are able to complete their programs under the requirements that were in place at the time of their matriculation?

The MS in Statistical Practice students are a close knit cohort who complete the degree in two or three semesters. As the changes are in course number rather than course content, implementing the changes will not cause any problems.

11. Please document any implications that the change has on professional accreditation or licensure at the program or school/college level:

Not applicable

12. If the change includes a new course or courses, please indicate who will teach the course and how the rest of that faculty member’s course load will be affected (courses(s) redistributed to other faculty, taught less frequently, no longer taught, etc.). Please be specific about affected courses. This information should be reflected in the budget form that accompanies the proposal, e.g. the cost for a new faculty member to teach the new course or a redistributed course:

While technically the change involves new courses, in practice we are simply changing the numbers and titles of the courses already being taught. Thus there is no impact on faculty workloads.

13. Please list other resources needed including new staff, IT, technology enhanced classrooms, office space, and other facilities. This information should be reflected in the budget:

No new resources are required.

14. Please describe the budgetary impact that the proposed change will have:

This proposal has no budgetary impact.

15. Please provide the bulletin copy (exactly as it should appear) related to the proposed change, including all text connected to the program (requirements, description, learning outcomes) [NOTE: this bulletin copy is in a final form and cannot be changed]:

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MS in Statistical Practice

The Master of Science in Statistical Practice is designed for students who want to acquire fundamental training in statistics and how it is applied in fields like economics, education, law, management, science, and social science, to real-world problems. It is suitable for students with backgrounds in fields like biology, bioinformatics, economics, management, neuroscience, psychology, and various areas of engineering.

Course Requirements

In order to complete the Master of Science in Statistical Practice, students must successfully complete eight one-semester courses (32 credits). The specific course requirements are as follows:

- GRS MA 675 Statistics Practicum 1
- GRS MA 676 Statistics Practicum 2
- GRS MA 677 Conceptual Foundations of Statistics
- GRS MA 678 Applied Statistical Modeling
- GRS MA 679 Applied Statistical Machine Learning
- 1 Statistics elective at the level of 500 or above excluding GRS MA 681, 684 and 685.
- 1 Two-semester elective sequence from statistics or a complementary discipline, which must be chosen from the approved list

Language Requirement

There is no foreign language requirement for this degree.

Final Report

In addition to the course requirements above, students must successfully complete a final report about the consulting work that they have carried out as a central component of the Statistics Practicum course, GRS MA 675–676.