REQUEST FOR CHANGE IN DOCTORAL DEGREE PROGRAM

Program: Statistics  
Department/Division: Statistics  
College: Arts and Sciences  
Degree Title (Old): Ph.D. Statistics  
CIP Code: 27.0501  
Accrediting Agency (if applicable):  

1. PROPOSED CHANGE(S) IN PROGRAM REQUIREMENTS

<table>
<thead>
<tr>
<th>Current</th>
<th>Proposed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Numbers of transfer credits allowed</td>
<td>None</td>
</tr>
<tr>
<td>2. Residence requirement (minimum of one year before and after Qualifying Exams)</td>
<td>One year before and after Quals</td>
</tr>
<tr>
<td>3. Languages(s) and/or skill(s) required</td>
<td>None</td>
</tr>
<tr>
<td>4. Provisions for monitoring progress and Termination criteria</td>
<td>Pass written and oral qualifying exam in two attempts</td>
</tr>
<tr>
<td>5. Total credit hours required (if applicable)</td>
<td></td>
</tr>
<tr>
<td>6. Required distribution of courses within MA 571, STA 503 531 532 601 603 701 532 601 603 624 643 700 702 703 704 and two courses selected by DGS</td>
<td>MA 471G, STA 503 531 532 601 603 624 643 700 701 703 705 707 702 703 704 and two courses selected by DGS</td>
</tr>
<tr>
<td>7. Required distribution of courses within (if applicable)</td>
<td></td>
</tr>
<tr>
<td>8. Minor area of courses outside program Required (if applicable)</td>
<td></td>
</tr>
<tr>
<td>9. Distribution of courses levels required (400G-500/600-700)</td>
<td></td>
</tr>
<tr>
<td>10. Qualifying examination requirements</td>
<td>Successful completion of oral exam.</td>
</tr>
</tbody>
</table>

NOTE: To the extent that changes in 6 or 8 above involve additional courses to other programs, please include documentation from the program(s) pertaining to the availability of such courses.
REQUEST FOR CHANGE IN DOCTORAL DEGREE PROGRAM

11. Any other requirements not covered above

12. RATIONAL FOR CHANGE(S)
If the rational involves accrediting requirements, please include specific references to those requirements.
The core curriculum in statistics currently seeks to provide doctoral candidates with a firm
Foundation in probability theory, inference, and classical methodology. Because of recent
advances in the theory and application of statistical computing, biostatistics, and graphical
and computer based inference, we wish to formally incorporate these areas in the core
curriculum. Also, we propose to establish two areas of specialization,
1) statistics/probability and 2) biostatistics will continue to provide students with a firm
foundation in probability and inference, while allowing students to concentrate
either in advanced topics in probability and mathematical statistics or techniques for
developing biostatistics methodology.

A detailed outline of the proposed doctoral program in Statistics is attached.

Signatures of Approval:

[Signature]

[Signature]

Department Chair

Dean of the College

*Undergraduate Council

*University Studies

*Graduate Council

Academic Council for the Medical Center

Senate Council

*If applicable, as provided by the Rules of the University Senate

ACTION OTHER THAN APPROVAL

Rev 11/98
Proposal for the modification of the Ph.D. Program in Statistics

The proposed doctoral program is structured to strengthen the interplay of foundations, statistical theory and statistical applications, while allowing students the option to concentrate in theoretical statistic/probability or biostatistics. Specifically, the requirement of Advanced Probability I, STA 703 and of Advanced Inference I, STA 701, has been retained for all doctoral candidates. Students concentrating in theoretical statistics/probability will continue to take Advanced Inference II, STA 702, while students concentrating in biostatistics will be required to take Advanced Survival Analysis, STA 709. STA 704, Advance Probability II, will now become an elective for both concentrations. However, some of the topics formerly presented in STA 704 will be covered in other required courses where they are directly applicable; e.g., martingale theory will be covered in STA 709 and Markov processes will be covered in STA 705.

In addition, we propose a new foundations course, STA 700, which introduces probability as a finite measure and rigorously develops properties of random variables and expectation in this context. The mathematics prerequisite for the doctoral level core courses has accordingly been changed from MA 571 to MA 471G. This change reflects a national trend in doctoral education in statistics; i.e., a decreased emphasis on real analysis.

All doctoral students will be required to take two new advanced courses: STA 705, Advanced Computational Inference, and STA 707, Advanced Data Analysis. These additions to the doctoral core strengthens our students’ training in computational inference, statistical computing, and advanced data analysis techniques.

Students in the doctoral program in Statistics will choose one of two possible tracts: Statistics/Probability or Biostatistics

**Common Core**

- STA 701 – Advanced Statistical Inference I
- STA 703 – Advanced Probability
- STA 705 – Advanced Computational Inference
- STA 707 – Advanced Data Analysis

**Tract in Statistics/Probability:**

- **Common Core**
  - STA 702 – Advanced Statistical Inference II
  - Three 600 level electives in Statistics/Probability chosen by the DGS.
  - Three 600 level electives chosen by the student

**Tract in Biostatistics:**

- **Common Core**
  - STA 709 – Advanced Survival Analysis
  - Three 600 level electives in Biostatistics chosen by the DGS.
  - Three 600 level electives chosen by the student
STA 715 (Reading courses) may not be used to satisfy elective requirements.

The new course schedule for students entering the doctoral program without a M.S. in Statistics is shown below.

<table>
<thead>
<tr>
<th>Fall, Year One</th>
<th>STA 503</th>
<th>STA 531</th>
<th>STA 532</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring, Year One</td>
<td>STA 601</td>
<td>STA 603</td>
<td>STA 624</td>
</tr>
<tr>
<td>Fall, Year Two</td>
<td>STA 643</td>
<td>STA 700</td>
<td>Elective</td>
</tr>
<tr>
<td>Spring, Year Two</td>
<td>STA 701</td>
<td>STA 703</td>
<td>Elective</td>
</tr>
<tr>
<td>Fall, Year Three</td>
<td>STA 707</td>
<td>STA 705</td>
<td>Elective</td>
</tr>
<tr>
<td>Spring, Year Three</td>
<td>STA 702/709</td>
<td>Elective</td>
<td>Elective</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fall, Year Four</th>
<th>Elective</th>
<th>Residency</th>
<th>Residency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring, Year Four</td>
<td>Elective</td>
<td>Residency</td>
<td>Residency</td>
</tr>
</tbody>
</table>

Students must successfully complete a common written exam over STA 701 and STA 703 plus respective prerequisites. This exam will normally be offered in June and students will usually sit for the written examination at the end of the second year of the program.

After completion of course requirements and successful completion of the written exam, Students must also successfully complete an oral qualifying exam administered by their committee. A significant part of this exam is to be a dissertation proposal.
INVESTIGATING BODY  Area A  Shelley Steiner  COURSE, MAJOR or DEGREE  STA PhD
(Area, Area Chair) (department or college)
DATE FOR COUNCIL REVIEW  4/19/02  CATEGORY: NEW, CHANGE, DROP

INSTRUCTIONS: This completed form will accompany the course application to the Graduate/Undergraduate Council(s) in order to avoid needless repetition of investigation. The following questions are included as an outline only. Be as specific and as brief as possible. If the investigation was routine, please indicate this. The term "course" is used to indicate one course, a series of courses or a program, whichever is in order. Return the form to Phil Harling, Associate Dean, 231 Patterson Office Tower for forwarding to the Council(s). ATTACH SUPPLEMENT IF NEEDED.

1. List any modifications made in the course proposal as submitted originally and why.

None

2. If no modifications were made, review considerations that arose during the investigation and the resolutions.

3. List contacts with program units on the proposal and the considerations discussed therein.

Dr. Cameron Wood & Area Committee

4. Additional information as needed.

None

5. A&S Area A, Natural & Mathematical Sciences Curriculum Committee Recommendation:

APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

6. A&S Council Recommendation:

APPROVE, APPROVE WITH RESERVATION, OR DISAPPROVE

7. A&S Council Investigator, Dr. Shelley Steiner  Date: 4-5-02

File: InvestigatorRpt