UNIVERSITY OF KENTUCKY

Office of the Chair
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Date 2003

TO: Members, University Senate

FROM: University Senate Council

RE: Course/Program Actions: Effective Date: Fall Semester, 2003, UNLESS OTHERWISE NOTED.

The Senate Council circulates for your approval the following curricular actions. Objections will be accepted from University Senators and faculty members and must be received within ten days of receipt of this notice. All other requirements for the courses or programs as approved below must be met.

SENATE COUNCIL

COLLEGE OF ARTS & SCIENCES

Department of Statistics

New Courses:

STA 630 Bayesian Inference (3)
Likelihood principle, sufficiency, natural conjugate and hierarchical Priors, empirical Bavesian analysis for estimation and testing.
Prereq: STA 601

STA 653 Clinical Trials (3)
Design and analysis of Phase 1-111 Clinical trials, interim monitoring of trials, sample size, power, crossover trials, bioequivalence, mixed models, and meta analysis.
Prereq: STA 643

STA 662 Resampling and Related Methods (3)
Theory and application of the bootstrap, iackknife and other resampling methods
Prereq: STA 601, STA 603

STA 700 Foundations of Probability and Inference (3)
Measures on the real line and probability spaces, Lebesgue measure, properties of distribution functions and random variables, integrals and expectations.
Prereq: MA471G - Advanced Calculus l

STA 705 Advanced Computational Inference (3)
Numerical maximization and integration, Resampling Methods, EM Algorithm, Markov Chain Monte Carlo Methods
Prereq: STA 601, STA 624

STA 707 Advanced Data Analysis (3)
Theory and data analysis involving likelihood functions, mixed models, missing responses
Prereq: STA 643

STA 709 Advanced Survival Analysis (3)
Lindberg CLT, Kavlan-Meier and related estimators, Cox proportional hazards and related models, approximations of type I and II error.
Prereq: STA 635, STA 701

Proposal to change the requirements for the doctoral degree in Statistics

Required distribution of courses within

Current:
MA 571, STA 503, 531, 532, 601, 603, 701, 702, 703, 704 and two courses selected by DGS

Proposed:
MA 471G, STA 503, 531, 532, 601, 603, 624, 643, 700, 701, 703, 705, 707, 702 or 709, plus 6 electives, 3 selected by DGS

Rationale:
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 into the core curriculum.

Also, we propose to establish two areas of specialization, 1) statistics/probability and 2) biostatistics. This 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 proposal follows:

Proposal for the new Ph.D. Program in Statistics

Students in the doctoral program in Statistics will choose one of two possible tracts:

Mathematical Statistics/Probability	Biostatistics
STA 701 – Advanced Statistical Inference I	STA 701 – Advanced Statistical Inference I
STA 703 – Advanced Probability	STA 703 – Advanced Probability
STA 705 – Advanced Computational Inference	STA 705 – Advanced Computational Inference
STA 707 – Advanced Data Analysis	STA 707 – Advanced Data Analysis
STA 702 – Advanced Statistical Inference II	STA 709 – Advanced Survival Analysis

All students must take an additional six courses chosen by the student and approved by the DGS. Three of these will complement and supplement the student's specialization area and research interests. STA 715 (Reading courses) may not be used to satisfy this requirement.

The new course schedule can be summarized as follows:

Fall, Year One	STA 503	STA 531	STA 532
Spring, Year One	STA 601	STA 603	STA 624
Fall, Year Two	STA 643	STA 700	Elective
Spring, Year Two	STA 701	STA 703	Elective
Fall, Year Three	STA 707	STA 705	Elective
Spring, Year Three	STA 702/709	Elective	Elective
Fall, Year Four	Elective	Residency	Residency
Spring, Year Four	Elective	Residency	Residency

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.

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