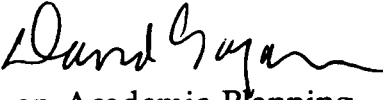


SIMON FRASER UNIVERSITY

OFFICE OF THE VICE-PRESIDENT, ACADEMIC

MEMORANDUM

To: Senate

From: D. Gagan, Chair 
Senate Committee on Academic Planning

Subject: Department of Mathematics and Statistics
Curriculum Revisions

Date: December 11, 1995

Action undertaken by the Senate Graduate Studies Committee and the Senate Committee on Academic Planning gives rise to the following motion:

Motion:

"That Senate approve and recommend approval to the Board of Governors, as set forth in S.96-7 , the following

New courses: STAT 806-4 Lifetime Data Analysis
 STAT 891-2 Seminar."

Agreement has been reached between the Faculty and Library in the assessment of library costs associated with the new courses.

Simon Fraser University

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics and Statistics Course Number: STAT 806

Title: Lifetime Data Analysis

Description: See attached sheet

Credit Hours: 4 Vector: Prerequisite(s) if any: STAT 450 or permission of the instructor

ENROLLMENT AND SCHEDULING:

As STAT 890-4, Statistics: Selected Topics, it was first offered in Summer 93 and will be next offered Summer 95.

Estimated Enrollment: 8 When will the course first be offered: Summer 93 and will be next offered Summer 95.

How often will the course be offered: Once every two years.

JUSTIFICATION:

The topics covered in this course form part of the basic content of modern M.Sc. and Ph.D. programs in applied statistics. In addition, the course is of direct relevance to those who plan to work in biostatistical and engineering fields.

RESOURCES:

Which Faculty member will normally teach the course: C. Dean

What are the budgetary implications of mounting the course: None

Are there sufficient Library resources (append details): Yes

- Appended: (a) Outline of the Course (b) An indication of the competence of the Faculty member to give the course (c) Library resources

Approved: Departmental Graduate Studies Committee: [Signature] Date: May 11, 1995
Faculty Graduate Studies Committee: [Signature] Date: 30 May 1995
Faculty: [Signature] Date: 19 Oct 95
Senate Graduate Studies Committee: [Signature] Date: 28 Nov 95
Senate: [Signature] Date:

STAT 806-4. Lifetime Data Analysis

Statistical methodology used in analyzing failure time data. Likelihoods under various censoring patterns. Inference using parametric regression models including the exponential, Weibull, lognormal, generalized gamma distributions. Goodness-of-fit tests. The proportional hazards family, and inference under the proportional hazards model. Stratification and blocking in proportional hazards models. Time-dependent covariates. Regression methods for grouped data.

Prerequisite: Stat 450

STAT 891-2. Seminar

STAT 806-4

Lifetime Data Analysis

Course Outline

1. **Basic ideas**
Features of lifetime data
Lifetime distribution models
Censoring
Likelihood under various censoring patterns
2. **Some nonparametric and graphical procedures**
Lifetable methods
Nonparametric estimation of a survivor function
Graphical procedures; the empirical cumulative hazard function
Distributional properties of lifetable and product-limit estimates
3. **Review of maximum likelihood large sample theory**
4. **Inference with specific lifetime distributions**
Exponential, Weibull, log-normal and other distributions: one- and k-sample problems
5. **Nonparametric/distribution free methods**
Estimation and test procedures for one- and k-sample problems: non-parametric estimation methods; rank tests for equality of distributions
6. **Regression analysis**
Types of regression models
Regression with fully parametric models
Regression diagnostics
7. **The proportional hazards model**
Proportional Hazards family; concepts of marginal and partial likelihood; justification of the proportional hazards likelihood as a marginal or partial likelihood; inference under the proportional hazards model; diagnostics; the k-sample test; time-dependent covariates; stratification and blocking in proportional hazards models.
8. **Regression methods for grouped data**
9. **Longitudinal studies**
10. **Multivariate and multi-state problems**

Simon Fraser University

New Graduate Course Proposal Form

CALENDAR INFORMATION:

Department: Mathematics and Statistics Course Number: STAT 891

Title: Seminar

Description: A course to be team taught by current and visiting faculty and with topics chosen to match the interests of the students.

Credit Hours: 2 Vector: Prerequisite(s) if any: None

ENROLLMENT AND SCHEDULING:

Estimated Enrollment: 8 When will the course first be offered:

How often will the course be offered:

JUSTIFICATION:

A seminar course is useful for discussing research topics, information about which is rapidly developing and scattered in a variety of statistical books and journals.

RESOURCES:

Which Faculty member will normally teach the course: Faculty members in the area of Statistics: Drs. Dean, Schwarz, Routledge, Lockhart, Weldon, Eaves, What are the budgetary implications of mounting the course: None. This course will be Swartz.

analogous to MATH 896-2, but with a STATISTICS name.

Are there sufficient Library resources (append details):

- Appended: (a) Outline of the Course (b) An indication of the competence of the Faculty member to give the course (c) Library resources

Approved: Departmental Graduate Studies Committee: M. G. ... Date: May 11, 1995 Faculty Graduate Studies Committee: H. D. ... Date: May 30, 1995 Faculty: Chris. Jones Date: 19 Oct 95 Senate Graduate Studies Committee: Prof. H. W. ... Date: 28 Nov 95 Senate: Date: