Western Libraries
Collections Management Policy
For Statistical & Actuarial Sciences

Date created: May 2011

Purpose of the Collection:

The Statistical & Actuarial Sciences collection of Western Libraries is intended to support the research activities of faculty, students and staff and the instructional requirements of undergraduate and graduate programs. The collection also provides support for teaching and research in a wide variety of related fields such as Engineering and the Sciences.

The Allyn & Betty Taylor Library is the primary location for material supporting the research and instructional needs of the Statistical & Actuarial Sciences department.

Research Support:

The library supports research by collecting in areas of research interest including:

- Actuarial applications of reliability theory
- Actuarial science
- Analysis of complex survey data
- Analysis of longitudinal data
- Analysis of Markov chains with block-structured transition matrices
- Analysis of missing data
- Applications of stochastic processes to financial and actuarial modelling
- Applications to archaeology and history
- Applied Statistics
- Asymptotic methods in statistics
- Bayesian analysis
- Bayesian methods
- Biostatistical Applications (interval-censoring, multi-state models, mismeasured covariates)
- Bootstrap
- Bootstrapping techniques
- Catastrophe insurance
- Changepoint and changeboundary problems
- Complete convergence
- Computer simulations
- Data mining
• Data visualization
• Distribution theory, special functions
• Econometrics
• Empirical reliability
• Energy finance
• Financial Mathematics
• Forecasting the extent of detected outbreaks of infections
• Functional linear models
• History of probability and statistics
• Industrial statistics: control charts, reliability
• Inference for stochastic processes interacting particle systems, point process
• Inference with incomplete data
• Insured Lives Mortality
• Invariance principle
• Iterative techniques in actuarial science
• Limit theorems
• Limit theory for partial sum sequences and for iterated partial sum sequences
• Long term care
• Massive datasets and data mining
• Mathematical analysis
• Mathematical finance
• Microarray gene expression data analysis
• Modeling and forecasting rates of morbidity and mortality of chronic diseases
• Monitoring methods for early detection of outbreaks of infections
• Multivariate lifetime data analysis
• Multivariate statistical analysis
• Neural networks for forecasting
• Optimal estimation of Markov-modulated models: filtering, smoothing and prediction
• Optimization
• Optimization and mathematical programming
• Options pricing
• Performance analysis and simulation
• Portfolio optimization
• Prediction, estimation and correlation
• Probabilistic models in environmental sciences
• Probability theory
• Quadratic forms, theory and applications
• Quantitative finance
• Queueing theory
• Real options (with application in Defence and Medicine)
• Reliability engineering
• Risk management
• Risk theory
• Sample survey theory and methods
• Serial correlation
• Smoothing techniques
• (Spatial) linear regression models
• Spatial statistics
• Statistical computing
• Statistical education (incorporating technology, service-learning, improving student engagement)
• Statistical graphics
• Statistical inference
• Statistical software development
• Statistics of orientation data
• Stochastic processes
• Strong approximation
• Survival analysis
• Telecommunications applications
• Tests of exponentiality
• Time series analysis
• Time series analysis and forecasting
• Variational analysis
• Wavelet methods for time series

Instructional Support:

A. Graduate Programs

Graduate degrees are offered at the Master of Science and Ph.D. levels. A collaborative program with the Department of Epidemiology and Biostatistics provides the option for a Biostatistics emphasis. A Scientific Computing designation is available for students who opt to take additional numerically intensive courses from the Department of Applied Mathematics. Supervisors are assigned at the point of admission because of the associated financial support. Areas of research specialization are within the areas mentioned above.

Collecting supports these areas of strong research specialties. Collecting is done with attention to the courses listed in the academic calendar which currently include:

Statistical Sciences
• Asymptotic Methods in Statistical & Actuarial Sciences
• Bayesian Statistics and Markov Chain Monte Carlo
• Data Analysis
• Experimental Design Financial Modelling
• Generalized Linear Models
• Likelihood Inference Methodology
• Mathematical Finance
• Mathematical Tools for Statistics
• Multivariate Analysis
• Probability
• Queueing Models in Healthcare
• Regression
• Sampling Theory and Methods
• Statistical Computing
• Statistical Inference
• Statistical Methods in Data Mining
• Teaching Statistics
• Time Series

**Actuarial Sciences**
• Corporate of Finance
• Financial Markets and Investments
• Financial Markets and Quantitative Finance
• Life Contingencies
• Mathematics of Finance
• Mortality Modelling
• Multistate Models
• Probability and Statistics
• Risk Measures & Dependence
• Risk Theory
• Ruin Theory
• Stochastic Processes with Applications in Finance and Actuarial Science
• Survival Analysis

Collecting is also done to support general competence in the field outside the research specialty.

**B. Undergraduate Programs**
The Department offers a variety of programs leading to undergraduate degrees with specializations or majors in Actuarial Sciences, Statistical Sciences and Financial Modeling.

Statistical Sciences courses are fundamental for many science and applied sciences students across the campus. Collecting is done with systematic attention to the courses listed in the academic calendar which currently include:

**Statistical Sciences**
- Applied Probability and Statistics for Engineers
- Applied Statistics and Data Analysis for Engineers
Actuarial Sciences
- Actuarial Practice
- Corporate Finance
- Financial Markets and Investments
- Financial Security Systems
- Life Contingencies
- Loss Models
- Mathematics of Finance
- Mathematics for Financial Analysis
- Life Contingencies
- Survival Analysis

Physical format:

Acquisitions will include monographs, book series, and journals. Resources, particularly journals, in digital format are preferentially selected over their print counterparts. Alternate formats, such as CD-ROM, video, DVD, and microform, are considered on an individual request basis.

Language:
English is the primary language of the collection. Materials in other languages may be acquired upon request to support the research.

**Source of Publication:**

Sources of publication are primarily Canada, the United States, the United Kingdom, and Western Europe. Material published in other regions may be considered on request and will be evaluated for quality and relevance.

**Date of publication:**

Materials with a recent imprint date are preferred. Older material will be considered upon request.

**Exclusions:**

With the exception of individual requests and some selective acquisitions, the following types of material are not acquired: conference proceedings, theses or dissertations from other institutions, and course textbooks.

**Related collections and cooperation:**

The Western Libraries collection for Statistical & Actuarial Sciences is supplemented by collections in related fields, such as Applied Mathematics and Pure Mathematics.

**Gifts:**

The library gratefully accepts gifts of materials in good condition. As considerable expense is incurred by Western Libraries in the receipt and processing, the library only accepts gifts of materials which support current teaching and research needs, or which are not adequately represented in the collection.

**Managing the Collection:**

In order to ensure that collections remain optimally useful for our patrons, it is necessary to analyze collection usage and available space regularly. Items will need to be selectively removed from the active collection from time to time.

Duplicate items that are no longer required to support the curriculum, and damaged items that can no longer be replaced may be removed from the collection at the discretion of the Subject Librarian.

Items that are unique to Western may be transferred to a storage facility. Material housed in these storage facilities is available on request through the Library Catalogue.
Criteria for transfer selection include, but are not limited to, the following:

1) Outdated or previous editions of titles
2) Medium- to low-use items
3) Material that is available in alternate formats, i.e., online
4) Materials that would benefit from storage in a more controlled environment.

Consult the Subject Librarian for Statistical & Actuarial Sciences for further details about these criteria.

**Resources to aid in acquisition of material:**

Subject profiles have been set up in Coutt’s OASIS to facilitate the discovery of new publications. OASIS also enables the ordering of items.

Book reviews and other library’s holdings (via WorldCat) are used to gauge the suitability of titles for the library collection.