Acadia University

Wolfville, Nova Scotia BOP 1XO
Department of Mathematics

The Mathematics Department offers an undergraduate degree (Honours or general) in statistics. Students are trained in the use of statistical computer packages (such as Minitab, SAS, GAUSS and SPSS). In addition a statistical consulting centre has recently been established. Our strength lies in our emphasis on teaching and in our small class sizes. At present the graduate program in statistics is under review.

Le Département de mathématiques offre un B.Sc. ou un B.Sc. spécialisé en statistique. Les étudiants apprennent à se servir de progiciels statistiques, comme Minitab, SAS, GAUSS et SPSS. En outre, le département a récemment mis sur pied un centre de consultation statistique. Notre programme met en valeur l'enseignement et les petites classes. A présent, le programme en statistique aux cycles supérieurs passe en revue.

Faculty/Le personnel enseignant:

P. Cabilio, Professor, Ph.D. (*Columbia, 1973*)

Students supervised/Étudiants dirigés: M.Sc. 2

Grants/Subventions: NSERC Operating Grant (1986–1989)

Selected Publications/Publications choisies:

- Alvo, M., Cabilio, P., and Feigin, P. (1982), Asymptotic Theory for Measures of Concordance with Special Reference to Average Kendall Tau. *Annals of Statistics*, **10**, 1269–1276.
- Alvo, M., and Cabilio, P. (1989, to appear), Sampling Designs for the Estimation of the Difference Between Two Means of a Bivariate Normal. *Journal of Statistical Planning and Inference*.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

J.S. Chawla, Associate Professor, Ph.D. (*McMaster*)

Selected Publications/Publications choisies:

- Chawla, J.S. (1988), A Note on General Ridge Estimator. *Communications in Statistics A*, **17**.

- Chawla, J.S. (1988), The Existence Theorem in General Ridge Regression. *Statistics and Probability Letters*, **7**.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Probability Theory; Théorie des probabilités

V.R. Huse, Assistant Professor, Ph.D. (*Carleton, 1988*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Huse, V.R. (1988), Asymptotic properties for the sequential CUSUH procedure. *Statistics and Probability Letters*, **7**, 73-88.
- Huse, V.R., and Steinebach, J. (1985), On an improved Erdős-Rényi-type law toi increments of partial sums. *Canadian Journal of Statistics*,**13**, 311–315.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Mathematical Statistics; Statistique mathématique

J. Masaro, Associate Professor, Ph.D. (*Windsor, 1983*)
Grants/Subventions: NSERC Operating Grant (1987–1990)

Selected Publications/Publications choisies:
- Wong, C.S. and Masaro, J.C. (1984), A-optimal Design Matrices. *Discrete Mathematics*, **50**, 295–315.
- Cheng, C.S., Masaro, J.,C. and Wong, C.S. (1985), Optimal Weighing Designs. *SIAM Journal of Algebraic and Discrete Methods*, **6**, 259–267.

Fields of interest/Domaines d'intérêt:
- Combinatorial Theory; Mathématiques combinatoires
- Optimal Design of Experiments; Planification optimale d'expériences

The University of Alberta

Edmonton, Alberta T6G 2G1
Department of Statistics and Applied Probability

The Department of Statistics and Applied Probability of the University of Alberta includes thirteen full-time continuing faculty members whose areas of research include Theoretical and Applied Probability, Martingale Theory, Diffusions, Weak Convergence, Stochastic Processes, Filtering, Smoothing and Prediction, Nonparametric Inference, Asymptotic Distributions, Decision Theory, Multivariate Analysis, Empirical Bayes Theory, Distribution Theory, Statistical Modelling, Robust Inference, Sampling Theory and Variance Components Models.

The Department offers a full range of degree programs including the B.Sc. (Honors and Specialization), the M.Sc. (Thesis and Non-thesis routes), and the Ph.D. Graduate Assistantships are available and carry stipends of from $8,000 to $10,000 for 8 months. Summer graduate student support of approximately $2,000 is generally available.

The Mathematics and Statistics Library, which is located in the same building as the Department, contains over 30,000 books and subscribes to 400 journals. The University of Alberta has one of the largest computer facilities in Canada operating an AMDAHL 5870 with 32 million bytes of memory under the Michigan Terminal System and also shares with the other Alberta Universities the facilities of the Cyber 205 super-computer located at the University of Calgary.

Through consultations with both internal and external clients, the Statistical Services Centre operated by the Department seeks to generate research problems leading to methodological advances in Statistics and Applied Probability, to provide statistical advice to faculty and graduate student researchers throughout the University and to promote collaborative research projects with them, to serve as a training facility for graduate students in applied statistics and to provide a statistical consulting resource for external clients in business, government and industry.

Le personnel enseignant du département de statistique et de probabilités appliquées de l'université d'Alberta se compose de 13 membres qui poursuivent des recherches dans des domaines comme les probabilités appliquées et théoriques, la théorie martingale, les diffusions, la convergence faible, les processus stochastiques, le filtrage, l'ajustement et la prédiction, l'inférence non paramétrique, les distributions asymptotiques, la théorie de la décision, l'analyse multidimensionnelle, la théorie empirique de Bayes, la théorie des fonctions de répartition, la modélisation statistique, l'inférence robuste, la théorie de l'échantillonnage et les modèles des composantes de la variance. Le département

offre une gamme de programmes: B.Sc. spécialisé, M.Sc. (avec thèse ou par moyen des cours) et Ph.D. Aux cycles supérieurs, des traitements de $8,000 à $10,000 sont disponibles aux étudiants pour une période de 8 mois et en été le montant se chiffre à $2,000.

La bibliothèque de mathématiques et de statistique, située dans le même édifice que le département a une collection de plus de 30,000 livres et 400 abonnements aux revues. L'université d'Alberta a l'une des plus grandes installations d'ordinateurs au Canada. Son ordinateur AMDAHL 5870 a 32 million multiplets de mémoire et son système d'exploitation est Michigan Terminal System. L'université d'Alberta partage avec les autres universités de la province le super-ordinateur CYBER 205, situé sur le campus de l'université de Calgary.

Par moyen de la consultation auprès de ses clients, le centre de services statistiques du département essaie de soulever des problèmes de recherche qui mèneront à des avances dans la méthodologie de la statistique et des probabilités appliquées. Il donne conseil en statistique au personnel enseignant et aux étudiants-chercheurs de l'université et encourage la collaboration entre ceux-ci et le personnel du centre dans des projets de recherche. En outre, la centre offre aux étudiants la possibité d'acquérir une formation en statistique appliquée. De plus, il sert comme ressource de consultation statistique auprès des clients dans le gouvernement, dans l'industrie et dans le milieu des affaires.

Faculty/Le personnel enseignant:

A.N. Al-Hussaini, Professor, Ph.D. (*Alberta, 1964*)

Students supervised/Étudiants dirigés: M.Sc. 1

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Al-Hussaini, A.N. (1978), Potential Operators and Equimeasurability. *Pacific Journal of Mathematics,* 1–7.
- Al-Hussaini, A.N. and Elliott, R.J. (1987), An Extension of Ito's Differentiation Formula, *Nagoya Mathematics Journal,* 9–8.

Fields of interest/Domaines d'intérêt:

- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

E.E. Aly, Associate Professor, Ph.D.

Students supervised/Étudiants dirigés: M.Sc. 1

Grants/Subventions: NSERC Operating Grant (1986–88)

Selected Publications/Publications choisies:

- Aly, E.E. (1986), Strong Approximations of the Q-Q Process. *Journal of Multivariate Analysis,* **20**, 114–128.
- Aly, E.E., Beirlant, J. and Howath, L. (1984), Strong and Weak Approximations of k-Spacings Processes, *W. Wahrsch Verw. Gebiete,* **66**, 461–484.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

R. Elliott, Professor, Ph.D. (*Cambridge 1965*)
Students supervised/Étudiants dirigés: Ph.D. 4, M.Sc. 3
Grants/Subventions: NSERC Operating Grant (1986–1989), AFOSR (Sept. 1986–89), A.R.O. (1987–89)

Selected Publications/Publications choisies:
- Elliott, R. (1987), *Viscosity Solutions and Optimal Control*. Longman: New York.
- Elliott, R. and Kalton, N. (1973), The Existence of value in Differential Games. *Memoir of the American Mathematical Society* Providence, R.I.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

E. Gombay, Assistant Professor, Ph.D.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

P. Hooper, Associate Professor, Ph.D. (*Illinois, 1981*)
Students supervised/Étudiants dirigés: M.Sc. 2
Grants/Subventions: NSERC Operating Grant (1987–89)

Selected Publications/Publications choisies:
- Hooper, P.M. (1988) Simultaneous estimation and prediction using the expected coverage measure criterion. *Annals of Statistics,* **16**, 265–277.
- Hooper, P.M. (1989), Experimental randomization and the validity of normal theory inference. *Journal of the American Statistical Association.*

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Multivariate Analysis; Analyse multidimensionnelle

R.J. Karunamuni, Assistant Professor, Ph.D. (*Michigan State, 1985*)
Grants/Subventions: NSERC Operating Grant (1986–1988)

Selected Publications/Publications choisies:
- Karunamuni, R.J. (1988), On Empirical Bayes Testing with Sequential Components, *Annals of Statistics,* **16**, 1270–1282.
- Gilliland, D. C. and Karunamuni, R.J. (1986), Bayes with Sequential Components, to appear in *Annals of the Institute of Statistical Mathematics.*

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

D. Kelker, Associate Professor, Ph.D. (*Oregon, 1968*)
Students supervised/Étudiants dirigés: M.Sc. 5

Selected Publications/Publications choisies:
- Kelker, D. and Langenberg, W. (1987), A Mathematical Model for Orientation Data from Macroscopic Elliptical Conical Folds. *Mathematical Geology*, 729–743.
- Kelker, D. (1970), Distribution Theory of Sperical Distributions and a Location-Scale Parameter Generalization. *Sankya,* 419–430.

Fields of interest/Domaines d'intérêt:
- Applications
- Mathematical Statistics; Statistique mathématique

J.R. McGregor, Professor, Ph.D. (*1959*)
Students supervised/Étudiants dirigés: Ph.D. 1, M.Sc. 18
Grants/Subventions: NSERC Operating Grant (1987–89), NSERC Infrastructure Grant (1987–89), Muttart Foundation Research Grant (1987–88)

Selected Publications/Publications choisies:
- McGregor, J.R. (1962), The Approximate Distribution of the Correlation Between Two Stationary Linear Markov Series, *Biometrika,* **47**, 111–119.
- Marliss, G.S., and McGregor, J.R. (1971), The Construction of Limiting Distributions of Response Probabilities. *Journal of Applied Probability,* **8**, 757–766.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

K.L. Mehra, Professor, Ph.D. (*California, 1962*)
Students supervised/Étudiants dirigés: Ph.D. 5, M.Sc. 8

Selected Publications/Publications choisies:
- Mehra, K.L., Rao, M.S. and Reddy, M.K. (1988) Weak Convergence in D_q-metric of multidimensional empirical processes under strong-mixing. *Sankhya* (to appear).
- Mehra, K.L. and Rao, M.S. (1975), Weak Convergence of Generalized Empirical Processes Relative to dq Under Strong Mixing. *Annals of Probability,* **3**, 979–991.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Nonparametrics; Statistique non paramétrique

N.G. Narasimha Prasad, Assistant Professor, Ph.D. (*Carleton, 1985*)
Grants/Subventions: NSERC Operating Grant (1986–88)

Selected Publications/Publications choisies:
- Prasad, N.G.N. and Rao, J.N.K. (1986). On the Estimation of Mean Square Error of Small Area Predictors, *Proceedings of the American Statistical Association* , 108–116.

- Prasad, N.G.N. and Rao, J.N.K. (1988), Robust Tests and Confidence Intervals for Error Variance in a Regression Model and for Functions of Variance Components in an Unbalanced Random One-way Model. *Communication in Statistics A,* **17**, 1111–1133.

Fields of interest/Domaines d'intérêt:
- Sampling; Théorie de l'échantillonnage
- Techniques of Inference; Techniques de l'inférence statistique

B. Schmuland, Assistant Professor, Ph.D. (*1987*)
Grants/Subventions: NSERC Operating Grant (1987–90)

Selected Publications/Publications choisies:
- Schmuland B. (1988), Some Regularity Results on Infinite Dimensional Diffusions via Dirichlet Forms. *Stochastic Analysis and Applications,* **3**, 327–348.
- Schmuland B. (1988), Modulii of Continuity for some Hilbert Space Valued Omstein-Uhlenbeck Processes. *C.R. Math. Rep. Acad. Sci. Canada,* **X**, 197–201.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

J.N. Sheahan, Assistant Professor, Ph.D. (*Calgary, 1980*)
Students supervised/Étudiants dirigés: Ph.D. 1, M.Sc. 1
Grants/Subventions: NSERC Operating Grant (1981–1989) (except 1986–87)

Selected Publications/Publications choisies:
- Sheahan, J.N. (1988), Robust Estimation of Regression and Scale Parameters in the Linear Model with Asymmetric Error Distributions. To appear in *Mathematische Operationsorschung and Statistik - Series Statistics*, **19**, No. 1.
- Hylnka, M. and Sheahan, J.N. (1987), Controlling Rates in a Double Queue. To appear in *Naval Research Logistics,* **34**.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

D. Wiens, Associate Professor, Ph.D. (*Calgary, 1982*)
Students supervised/Étudiants dirigés: Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1986–88)

Selected Publications/Publications choisies:
- Wiens, D. (1986), Minimax Variance M-Estimators of Location in Kolmogorov Neighbourhoods. *Annals of Statistics,* **14**, 724–732.
- Wiens, D. and Zheng, Z. (1986), Robust M-Estimators of Multivariate Location and Scatter in the Presence of Asymmetry. *Canadian Journal of Statistics,* **14**, 161–176.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

Theses/Thèses (1983 to present/1983 à présent):

1) S.P. Upadrasta (1986), On the Asymptotic Normality of a Linear Combination of Induced Order Statistics with Application to a Conditional Quantile Estimation, Ph.D. Thesis.

2) S.E. Mills (1983), Outliers in Life-Testing Distributions, Ph.D. Thesis.

3) B.A. Schmuland (1983), Martingale-like Processes, M.Sc. Thesis.

4) Md.Z. Islam (1983), Estimation of Quantile in Finite Population with Super-Population Model, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:

15

The University of British Columbia

Vancouver, British Columbia V6T 1W5
Department of Statistics

The Department of Statistics offers graduate programs leading to the M.Sc. and Ph.D. degree. The programs combine study of the theory of statistics with training in applied statistics. Financial support is available through fellowships and research and teaching assistantships.

An undergraduate degree in statistics or mathematics is desirable. Students with a strong undergraduate degree in other disciplines are also encouraged to apply. Applicants should have completed undergraduate courses in advanced calculus, matrix algebra, and basic statistics and probability.

The M.Sc. program provides training and practical experience in statistical methods that are valuable for employment as a professional statistician. The program can also serve as preparation for the Ph.D. program. It normally requires two years for completion, but students with strong backgrounds in statistics and mathematics may be able to complete it in one year. The Statistics Consulting and Research Laboratory provides students with the opportunity to gain valuable practical experience working with scientists and researchers in a variety of areas. The Ph.D. program, normally 3 to 4 years beyond the M.Sc. is designed to provide advanced training in statistical theory and develop the capacity for independent scholarship. Graduates will be well qualified for research positions in government, industry, and academia.

The Department has distinguished and active faculty with a wide variety of research interests. It has strong ties to Medicine, Health Care and Epidemiology, Animal Resource Ecology, Mathematics and Management Science, through joint and associate appointments. The Statistics Consulting and Research Laboratory, supervised by a member of the Department, undertakes study design and analysis, and collaborative research, in various substantive areas.

The Department is one of three centres, involved in a collaborative Canada-U.S. statistical study of acid rain. The project is funded by the Environment Protection Agency through SIMS, an agency of SIAM.

Le département de statistique offre des programmes de niveau supérieur conduisant à la maîtrise en sciences (M.Sc.) et au doctorat (Ph.D.). Ces programmes permettent aux étudiants d'acquérir une formation dans les aspects théoriques et appliqués de la statistique. Des bourses et des postes de chargé de cours ou d'assistant de recherche sont disponibles.

Il est souhaitable que l'étudiant ait un dîplome de premier cycle spécialisé en statistique ou en mathématiques. Cependant, les étudiants qualifiés avec des spécialisations dans d'autres domaines sont encouragés de faire leur demande d'admission aussi. Il est nécessaire que le candidat ait complété des cours de premier cycle en calcul approfondi, en algèbre des matrices, et en statistique et probabilités élémentaires.

Le programme de maîtrise pourvoit l'étudiant d'une formation et de l'expérience pratique d'une grande utilité dans l'exercice de ses fonctions comme statisticien professionnel. Le programme de M.Sc. prépare l'étudiant pour le programme de doctorat aussi. D'habitude, l'on peut compléter la maîtrise en deux ans, mais les étudiants qui sont forts en statistique et en mathématiques pourraient le compléter en un an. Le laboratoire de recherche et de consultation en statistique offre aux étudiants la possibilité d'acquérir une précieuse expérience pratique en travaillant avec des scientifiques et des chercheurs dans des domaines variés. Le programme de doctorat (Ph.D.) qui prend normalement trois à quatre ans à compléter a comme but la formation approfondie de l'étudiant en théorie statistique et le développement chez l'étudiant de l'aptitude à la recherche. Les diplômés se trouveront bien qualifiés pour les postes de chercheur au gouvernement, à l'industrie et à l'université.

Le personnel enseignant du département poursuit activement des recherches variées avec distinction, certains professeurs étant rattachés à d'autres départements aussi. C'est ainsi que les liens entre le département de statistique et ceux de médicine, de sciences de la santé, d'épidémiologie, d'écologie de la ressource des animaux, de mathématiques et de sciences de la gestion sont resserés. Le laboratoire de consultation et de recherche en statistique, sous la direction d'un membre du département, entreprend la planification et l'analyse de projets et la recherche collaborative dans des domaines variés.

Le département est l'un des trois centres qui conduisent une enquête statistique canadienne-américaine sur la pluie acide. Le projet est subventionné par l'agence de protection de l'environnement et SIMS qui est une agence de SIAM.

Faculty/Le personnel enseignant:

N. Glick, Associate Professor, Ph.D. (*Stanford, 1969*)

Students supervised/Étudiants dirigés: M.Sc. 2

Selected Publications/Publications choisies:

- Glick, N. (1978), Breaking records and breaking boards. *American Mathematical Monthly,* **85**, 2–26.
- Glick, N. (1978), Sample-based classification procedures related to empiric distributions. *IEEE Transactions On Information Theory,* IT-22: 454–461.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Mathematical Statistics; Statistique mathématique

N.E. Heckman, Assistant Professor, Ph.D. (*Michigan, 1982*)
Students supervised/Étudiants dirigés: M.Sc. 1
Grants/Subventions: NSERC Operating Grant (1986–89)

Selected Publications/Publications choisies:
- Heckman, N.E. (1986), Spline Smoothing in a Partly Linear Model. *Journal of the Royal Statistical Society B,* **48**, 244–248.
- Heckman, N.E. (1988), Minimax estimates in a semiparametric model. *Journal of the American Statistical Association*, **83**.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Nonparametrics; Statistique non paramétrique

H. Joe, Associate Professor, Ph.D. (*Florida State, 1982*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NSERC Operating Grant (1987–1989)

Selected Publications/Publications choisies:
- Joe, H. (1987), Majorization, randomness and dependence for multivariate distributions. *Annals of Probability*, **15**, 1217–1225.
- Joe, H. (1987), Estimation of quantiles of the maximum of N observations. *Biometrika*, **74**, 347–354.

Fields of interest/Domaines d'intérêt:
- Techniques of Inference; Techniques de l'inférence statistique
- Multivariate Dependence; Dépendance multidimensionelle

J. Liu, Assistant Professor, Ph.D. (*Colorado State, 1987*)

Selected Publications/Publications choisies:
- Liu, J. and Brockwell, P.J. (1988), On the general bilinear time series model. *Journal of Applied Probability*, **25**.
- Liu, J. (1985), Admissible estimation for the parameters of linear models. *Journal of Mathematical Research and Exposition*, **1**, 103–107.

Fields of interest/Domaines d'intérêt:
- Time Series Analysis; Analyse des séries chronologiques
- Linear models; Modèles linéaires

A.J. Petkau, Professor, Ph.D. (*Stanford, 1975*)
Students supervised/Étudiants dirigés: M.Sc. 5, Ph.D. 1
Grants/Subventions: NSERC Operating Grant (1986–1989), SIMS (EPA) Cooperative Research Agreement (1984–1987), NSERC Infrastructure Grant (1986– 1989), SERC (UK) Visiting Research Fellowship (1986–1991)

Selected Publications/Publications choisies:
- Chernoff, H. and Petkau, A.J. (1986), Numerical solutions for Bayes sequential decision problems. *SIAM Journal on Scientific and Statistical Computing,* **7**, 46–59.

- Cote, C. and Petkau, A.J. (1985), Theopental requirements may be increased in children re-anesthetized at least one year after recovery from extensive thermal injury. *Anesthesia and Analgesia,* **64**, 1156–1160.

Fields of interest/Domaines d'intérêt:
- Applications
- Sequential Design and Analysis; Plan et analyse progressive

M. Schulzer, Professor, Ph.D./M.D. (*Washington, 1967/UBC, 1963*)
Students supervised/Étudiants dirigés: M.Sc. 5
Grants/Subventions: Low Tension Glaucoma — a collaborative study — Glaucoma Foundation, San Francisco

Selected Publications/Publications choisies:
- Schulzer, M. and Drance, S.M. (1987), Intraocular pressure, systemic blood pressure and age: a correlational study. *British Journal of Opthalmology,* **71**, 245–249.
- Schulzer, M., Enarson, D.A., Grzybowski, S. et al. (1987), An analysis of pulmonary tuberculosis data in Taiwan and Korea. *International Journal of Epidemiology*, **16**, 584–589.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Applications (health; santé)

R.H. Zamar, Assistant Professor, Ph.D. (*Washington, 1985*)
Grants/Subventions: NSERC (1987-1990)

Selected Publications/Publications choisies:
- Yohai, V.J. and Zamar, R.H. (1988), High breakdown-point estimates of regression by means of the minimization of an efficient scale. *Journal of the American Statistical Association*, **83**, 406–413.
- Zamar, R.H. (1989), Robust estimation in the errors in variables model. *Biometrika*.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

J.V. Zidek, Professor & Head, Ph.D. (*Stanford, 1975*)
Students supervised/Étudiants dirigés: M.Sc. 7, Ph.D. 3
Grants/Subventions: NSERC Operating (1985–88), NSERC Equipment (1986–87), SIMS/EPA Co-operative Research Agreement (1985–88)

Selected Publications/Publications choisies:
- Zidek, J.V with D. deWaal, P.C.N. Groenwald, and J.M. van Zyl (1986), Multi-Bayesian estimation theory. *Statistics and Decision,* **4**, 1–18.
- Zidek, J.V. and Y. Haitovsky (1986), Approximating hierarchical normal priors using a vague component. *Journal of Multivariate Analysis,* **19**, 48–66.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Bayesian decision theory; Théorie de la décision bayésienne

Department of Mathematics

P.E. Greenwood, Professor, Ph.D. (*Wisconsin, 1963*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Greenwood, P.E. & Shiryaez, A.N. (1985), *Contiguity and the Statistical Invariance Principle*. Gordon and Breach.
- Greenwood, P.E. & Hooghiemstra, G. (1989, to appear) Domain of attraction of an operator between supremum and sum.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Probability Theory; Théorie des probabilités

Theses/Thèses (1983 to present/1983 à présent):

1) J. Chang (1988), Analysis of Ordered Categorical Data, M.Sc. Thesis.

2) L. Kan (1988), Identification of Risk Groups: Study of Infant Mortaility in Sir Lanka, M.Sc. Thesis.

3) S. Wu (1988), Trend Analysis of Monthly Acid Rain Data '80–'86, M.Sc. Thesis.

4) I. Yee (1988), Local Parametric Poisson Models for Fisheries Data, M.Sc. Thesis.

5) R. Bencivenga (1987), A Statistical Analysis of Electroencephalographic Spikes in Benign Rolandic Epilepsy of Childhood, M.Sc. Thesis.

6) R.E. Lee (1987), A Statistical Analysis of Finding the Best Predictor of Success in First Year Calculus at The University of British Columbia, M.Sc. Theses.

7) P.H. Ma (1987), Disagreement: Estimation of Relative Bias or Discrepancy Rate, M.Sc. Thesis.

8) M. Thompson (1987), Statistical Modelling of Sediment Concentration, M.Sc. Thesis.

9) A. Coldman (1987), The Development of Resistance to Anticancer Agents, Ph.D. Thesis.

10) L. Dunn (1986), Modelling Survival Rates in Bilateral Breast Cancer, M.Sc. Thesis.

11) P.M. Kottegoda (1986), Statistical Analysis of Survival Data: An Application to Peripheral Vascular Bypass Surgery, M.Sc. Thesis.

12) N.D. Le (1986), Statistical Analysis of the Temporal-Spatial Structure of pH Levels From the MAP3S/PCN Monitoring Network, M.Sc. Thesis.

13) H.W. Ma (1986), Smoothing Locally Regular Processes by Bayesian Nonparametric Methods, With Applications to Acid Rain Data Analysis, M.Sc. Thesis.

14) R. Sitter (1986), The Design of Quantal Response Experiments & The Modelling of Quantal Response Experiments Over Time, M.Sc. Thesis.

15) B. Leroux (1985), Likelihood Ratios in Asymptotic Statistical Theory, M.Sc. Thesis.

16) E. Avelino (1984), The Index of Dispersion, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:
6 M.Sc., 2 Ph.D.

The University of Calgary

Calgary, Alberta T2N 1N4
Department of Mathematics and Statistics

The Department of Mathematics and Statistics at the University of Calgary has a Statistics Division consisting of nine faculty members with a wide range of interests in both pure and applied statistics and probability. Three graduate degree programs are offered: an M.Sc. degree by thesis, an M.Sc. degree by coursework, and a Ph.D. degree.

Le département de mathématiques et de statistique de l'université de Calgary a une division de statistique dont le corps enseignant comprend neuf membres. Le personnel poursuit des recherches en statistique théorique et appliquée et en probabilités. Aux cycles supérieurs, le département offre trois programmes: M.Sc. avec thèse, M.Sc. par moyen des cours, et Ph.D.

Faculty/Le personnel enseignant:

M.D. Burke, Associate Professor, Ph.D. (*Carleton, 1976*)
Students supervised/Étudiants dirigés: M.Sc. 5; Ph.D. 1
Grants/Subventions: NSERC Operating Grant (1987–1990)

Selected Publications/Publications choisies:

- Burke, M.D., Csörgo, S. and Horváth, L. (1981), Strong approximations of some biometric estimates under random censorship. *Z. Wahrscheinlichkeitstheorie verw. Gebiete,* **56**, 87–112.
- Burke, M.D. and Horváth, L. (1986), Estimation of influence functions. *Statistics and Probability Letters*, **4**, 81–85.

Fields of interest/Domaines d'intérêt:

- Probability Theory; Théorie des probabilités
- Nonparametrics; Statistique non paramétrique

J.R. Collins, Professor, Ph.D. (*Berkeley, 1973*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1986–1989)

Selected Publications/Publications choisies:

- Collins, J.R. (1986), Maximum asymptotic variances of trimmed means under asymmetric contamination. *Annals of Statistics*, **14**, 348–354.

- Collins, J.R., Sheahan, J.N., and Zheng, Z. (1986), Robust estimation in the linear model with asymmetric error distributions. *Journal of Multivariate Analysis,* **20**, 220–243.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Robust Statistics; Statistique robuste

C. Dean, Assistant Professor, Ph.D.
Grants/Subventions: University of Calgary Starter Grant

Selected Publications/Publications choisies:
- Dean, C. and Lawless, J.F. (1989, to appear), Tests for detecting overdispersion in Poisson regression models. *Journal of the Americal Statistical Association*.
- Dean, C. and Lawless, J.F. (1989, to appear), Discussion of 'An Extension of Quasi-Likelihood Estimation', by Godambe and Thompson. *Journal of Statistical Planning & Inference*.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Techniques of Inference; Techniques de l'inférence statistique

P.F. Ehlers, Assistant Professor, Ph.D.
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Enns, E.G. and Ehlers, P.F.(1988), Chords through a convex body generated from within an embedded body. *Journal of Applied Probability*, **25**, 320–328.
- Enns, E.G., Smith, B.R. and Ehlers, P.F. (1984) Hitting spheres with straight-line motion or Brownian motion. *Journal of Applied Probability*, **21**, 70.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Stochastic Geometry; Géométrie stochastique

E.G. Enns, Professor, Ph.D. (*British Columbia, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 10; Ph.D. 1
Grants/Subventions: NSERC Operating Grant (1987–1990)

Selected Publications/Publications choisies:
- Enns, E.G. and Ehlers, P.F. (1988), Chords through a Convex body generated from within an Embedded body. *Journal of Applied Probability*, **25**, 320–328.
- Ferenstein, E.Z. and Enns, E.G. (1988), Optimal Sequential Selection from a Known Distribution with Holding Costs. *Journal of the American Statistical Association*, **83**, 382–386.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Stochastic Geometry; Géométrie stochastique

D.P. Johnson, Associate Professor, Ph.D. (*MIT, 1966*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 1

Selected Publications/Publications choisies:
- Johnson, D.P. (1979), Representations of General Stochastic Processes. *Journal of Multivariate Analysis*, **1**, 16–58.
- Johnson, D.P. (1985), Hilbert Space Representations of General Discrete Time Stochastic Processes. *Stochastic Processes and their Applications*, **19**, 183–187.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

J.K. Wani, Professor, Ph.D. (*McGill, 1967*)
Students supervised/Étudiants dirigés: M.Sc. 3; Ph.D. 1

Selected Publications/Publications choisies:
- Wani, J.K. and Lo, H.P. (1986), Selecting a power-series distribution for goodness of fit. *Canadian Journal of Statistics* , **14**, 347–353.
- Wani, J.K. and Lo, H.P. (1983), A characterization of invariant power-series abundance distributions. *Canadian Journal of Statistics*, **11**, 317–323.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Mathematical Statistics; Statistique mathématique

Theses/Thèses (1983 to present/1983 à présent):

1) K. Ravindran (1988), A Markovian Decision under Competition, M.Sc. Thesis.

2) C. Evardone (1988), Goodness-of-fit Tests Based on the Empirical Process, M.Sc. Thesis.

3) X. Zhov (1987), Robust Testing and Estimation for the Non-i.i.d. Case, M.Sc. Thesis.

4) D. Tomkins (1987), The Winner Takes it All – A Day at the Races, M.Sc. Thesis.

5) F. Famoye (1986), Inference Theory for Some Generalized Discrete Probability Models, Ph.D. Thesis.

6) E. Gombay (1986), Applications of Nonparametric Kernel-Type Density Estimates, Ph.D. Thesis.

7) G. Laszlo (1986), On General Stochastic Processes, Ph.D. Thesis.

8) M. Islam (1985), Bayesian Estimation of Some Generalized Probability Distributions, Ph.D. Thesis.

9) Y. Kwon (1984), Strategies in Sequential Stochastic Games, M.Sc. Thesis.

10) X. Wu (1983), Theory and Applications of Stirling Numbers of the First Kind, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:
9 M.Sc., 4 Ph.D.

Carleton University

Ottawa, Ontario K1S 5B6
Department of Mathematics and Statistics

The Department of Mathematics and Statistics at Carleton University offers programs of study and research leading to M.Sc. and Ph.D. degrees. These degrees are offered through the Institute for Graduate Studies and Research in Mathematics and Statistics which is jointly administered by the Department of Mathematics and Statistics at Carleton University and the Department of Mathematics at the University of Ottawa.

Two options for the M.Sc. program are available: eight one-term courses (or equivalent) and a thesis *or* ten one-term courses (or equivalent). An M.Sc. stream in Applied Statistics involving a statistical internship spent in the Statistical Consulting Centre or coop terms in industry or government is available. This program emphasizes practical training through work experience, along with sound training in statistical theory and methods. A student can choose one or two work terms for his/her program.

The requirements for the Ph.D. program include a minimum of six one-term graduate courses (or equivalent) and a thesis. A comprehensive examination also should be completed within 18 months of initial registration into the Ph.D. program in the case of a full-time student and within 36 months in the case of a part-time student.

The principal research interests of the faculty in probability and statistics include: estimation theory, linear models and experimental design, sample survey theory and methods, nonparametric and robust inference, categorical data analysis, asymptotic theory, fundamental aspects of inference, strong approximations, quantile processes, stochastic processes and time series analysis, reliability and analysis of survival data.

A Laboratory for Research in Statistics and Probability was established in 1982. Since 1983, the Laboratory has hosted more than 50 visiting scientists for extended periods and over 100 visiting scientists for short periods. The Laboratory also sponsors international symposia, workshops, Statistics Days and seminars. It has published more than 100 research monographs, lectures and research preprints.

Le département de mathématiques et de statistique de l'université Carleton offre des programmes conduisant à la maîtrise (M.Sc.) et au doctorat (Ph.D). Ces dîplomes sont décernés par l'Institut des études supérieures et de la recherche en mathématiques et en statistique qui est administré concurrement par le département de mathématiques

et de statistique de l'université Carleton et par le département de mathématiques de l'université d'Ottawa.

Le candidat à la maîtrise peut choisir entre deux options: soit faire sa maîtrise en suivant 8 cours d'un trimestre chacun (ou l'équivalent) et en rédigeant une thèse ou en suivant 10 cours d'un trimestre chacun (ou l'équivalent), soit faire sa maîtrise en suivant le programme qui est disponible en régime coopératif. Ce programme s'offre en collaboration avec le gouvernement fédéral. En plus d'une formation solide en théorie statistique et en méthodes statistiques, l'étudiant peut acquérir de l'expérience pratique comme statisticien dans le cadre d'un ou deux stages.

Le candidat au doctorat doit suivre un minimum de 6 cours d'un trimestre chacun (ou l'équivalent) et rédiger une thèse. Dans un délai maximum de 18 mois après s'être inscrit à plein temps au programme de doctorat, l'étudiant doit avoir réussi un examen général de synthèse. Un délai maximum de 36 mois est accordé aux étudiants inscrits à temps partiel.

Le personnel enseignant poursuit des recherches en probabilités et en statistique dans des domaines d'intérêt qui comprennent: la théorie d'estimation, les modèles linéaires et le plan d'expérience, la théorie et les méthodes de sondage, l'inférence non paramétrique et robuste, l'analyse de données catégoriques, la théorie asymptotique, les aspects fondamentaux de l'inférence, les approximations fortes, les processus quantiles, les processus stochastiques et l'analyse des séries chronologiques, la fiabilité et l'analyse de données de survie.

Un laboratoire de recherche en statistique et en probabilités a été mis sur pied en 1982. Depuis 1983, le laboratoire a reçu plus de 50 scientifiques invités pendant des périodes prolongées et plus de 100 scientifiques invités pour de courtes périodes. Le laboratoire présente aussi des symposia internationales, des ateliers, des journées de statistique et des séminaires. En outre, il a publié plus de 100 monographies, conférences et rapports de recherches.

Faculty/Le personnel enseignant:

A. Bose, Associate Professor, Ph.D. (*Carleton, 1977*)

Grants/Subventions: NSERC Operating Grant (1986–88)

Selected Publications/Publications choisies:

- Bose, A. (1986), Laws of large numbers for scaled age distributions of critical linear birth and death processes. *Canadian Journal of Statistics*, **14**, 233–244.
- Bose, A. (1983), Entrance laws for Feller diffusions on $[0, \infty[$ and Doob's h-path transformation. *Journal of Multivariate Analysis,* **13**, 442–463.

Fields of interest/Domaines d'intérêt:

- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

M. Csörgő, Professor, Ph.D. (*McGill, 1963*)
Students supervised/Étudiants dirigés: M.Sc. 10, Ph.D. 10
Grants/Subventions: NSERC Operating Grant (1988–1991), NSERC International Scientific Exchange Award (1987), EMR CANADA, Earth Sciences (1988–1989).

Selected Publications/Publications choisies:
- Csörgő, M. and Révész, P. (1981), Strong Approximations in Probability and Statistics. Academic Press. New York 1981 - Akadémiai Kiadó. Budapest 1981.
- Csörgő, M. (1983), Quantile Processes with Statistical Applications, CBMS - NSF Regional Conference Series in Applied Mathematics **42**, *SIAM,* Philadelphia.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

D.K. Dale, Professor, M.S. (*North Carolina, 1958*)
Students supervised/Étudiants dirigés: Ph.D. 2

Fields of interest/Domaines d'intérêt:
- Sampling; Théorie de l'échantillonnage
- Linear Statistical Models; Modèles linéaires et statistiques

D. Dawson, Professor, Ph.D. (*MIT, 1963*)
Students supervised/Étudiants dirigés: M.Sc. 15, Ph.D. 16
Grants/Subventions: NSERC Operating Grant (1988–91), International Scientific Exchange Award (1987–88)

Selected Publications/Publications choisies:
- Dawson, D.A. and Gartner, J. (1987), Large deviations from the McKean-Vlasov limit for weakly interacting diffusions. *STOCHASTICS,* **20**, 247–308.
- Dawson, D.A. (1986), Measure-valued stochastic processes: construction, qualitative behavior and stochastic geometry. Proceedings of the Conference on Stochastic Spatial Processes (Heidelberg, September 1984), *Lecture Notes in Mathematics,* 1212, Springer-Verlag, 69–93.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

J. Graham, Professor, Ph.D. (*Iowa State, 1963*)
Students supervised/Étudiants dirigés: M.Sc. 4

Selected Publications/Publications choisies:
- Graham, J. (1979), Survey Sampling; Theory and Practice. (With J.N.K. Rao) *Mathematical Association of America, Studies in Statistics* (R.V. Hogg Editor) **19**, 107–167.
- Graham, J. (1973), Composite estimation in two cycle rotation Sample Designs. *Communications in Statistics,* **1**, 419–431.

Fields of interest/Domaines d'intérêt:
- Applications
- Sampling; Théorie de l'échantillonnage

R.M. Herz-Fischler, Associate Professor, Ph.D. (*1965*)
Students supervised/Étudiants dirigés: 1
Grants/Subventions: NRC, SSHRC, CFH

Selected Publications/Publications choisies:
- Herz-Fischler, R.M. (1976), Convergence faible avec indices aléatoires. *Annals Institute Henri Poincaré.* **12**, 391–399.
- Herz-Fischler, R.M. (1974), Quelques Théorèmes Limites du Calcule des probabilités dont la valeur limite dépend d'une variable aléatoire. *Annals Institute Henri Poincaré.* **9**, 395–399.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

A.B.M.L. Kabir, Associate Professor, Ph.D. (*Western, 1966*)

Selected Publications/Publications choisies:
- Kabir, A.B.M. Lutful (1968), Estimation of Parameters of a Finite Mixture of Distributions. *Journal of the Royal Statistical Society, B,* **30**, 472–482.
- Chan, L.K. and Kabir, A.B.M. Lutful (1969), Optimum quantiles for the linear estimation of the parameters of the extreme value distribution in complete and censored samples. *Naval Research Logistics Quarterly*, **16**, No. 2, 381–404.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

E. Kreyszig, Professor, D.Sc. (*1949*)
Students supervised/Étudiants dirigés: 14
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Kreyszig, E. (1988), *Statistische Methoden und ihre Anwendungen.* Vandenhoeck & Ruprecht: Goettingen.
- Kreyszig, E. (1988), *Introductory Mathematical Statistics: Principles and Methods.* Wiley: New York.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Mathematical Statistics; Statistique mathématique

S. Mills, Associate Professor, Ph.D. (*Alberta, 1983*)
Grants/Subventions: NSERC Operating Grant, GR-5, Research Leadership

Selected Publications/Publications choisies:

- Mills, S. (1986), Modelling of Annual Occupational Dose of Radiation. *Technical Report # 93,* Laboratory for Research Statistics and Probability, Carleton University.
- Mills, S. (1987), Fixed-width distribution-free confidence interval estimation of quantiles of localized historical acoustical data from a Fixed-Site Airport Noise Monitoring System. *Technical Report SSC 15EZ.T8080–6–2525*, Transport Canada.

Fields of interest/Domaines d'intérêt:

- Data Analysis; Analyse des données
- Techniques of Inference; Techniques de l'inférence statistique

J.N.K. Rao, Professor, Ph.D. (*Iowa State, 1961*)
Students supervised/Étudiants dirigés: M.Sc. 12, Ph.D. 11
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Rao, J.N.K. and Scott, A.J. (1984), On chi-squared tests for multi-way contingency tables with cell proportions estimated from survey data. *Annals of Statistics,* **12**, 46–60.
- Rao, J.N.K., Roberts, G. and Kumar, S. (1987), Logistic regression analysis of sample survey data. *Biometrika,* **74**, 1–12.

Fields of interest/Domaines d'intérêt:

- Design & Analysis of Experiments; Planification & analyse d'expériences
- Sampling; Théorie de l'échantillonnage

A.K.Md. Ehsanes Saleh, Professor, Ph.D. (*Western, 1965*)
Students supervised/Étudiants dirigés: 6 M.Sc., 4 Ph.D.
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Saleh, A.K.Md. Ehsanes (1985), On some shrinkage estimators of multivariate locations. *Annals of Statistics,* **13**, 272–281.
- Saleh, A.K.Md. Ehsanes, (1986), On shrinkage R-estimation in a multiple regression model. *Communications in Statistics A* , **15**, 2229–2244.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Multivariate Analysis; Analyse multidimensionnelle

Theses/Thèses (1983 to present/1983 à présent):

1) Bickis, M.G. (1988), On the Computation of Size and Power for Toxicological Bioassays, Ph.D. Thesis.

2) Huse, V.R. (1988), On Some Non-Parametric Methods for Changepoint Problems, Ph.D. Thesis.

3) Murdoch, D.J. (1988), Models and Methods in the Risk Assessment of Chemical Carcinogens, Ph.D. Thesis.

4) Rengarajan, S. (1988), Topics in State Independent Queues and Queueing Networks, Ph.D. Thesis.

5) Ahmed, S.E. (1987), Various Strategies of Point Estimation under Uncertain Prior Information.

6) R.A. Kasonga (1987), Asymptotic Parameter Estimation Theory for Stochastic Differential Equations, Ph.D. Thesis.

7) Lavallée, P. (1987), Some Contributions to Optimal Stratification, M.Sc. Thesis

8) Remillard, B. (1987), Large Deviations and Laws of the Iterated Logarithm for Multidimensional Diffusion Processes with Applications to Diffusion Processes with Random Coefficients, Ph.D. Thesis.

9) Schmuland, B.A. (1987), Dirichlet Forms and Infinite Dimensional Ornstein-Uhlenbeck Processes, Ph.D. Thesis.

10) Vaillancourt, J. (1987), Interacting Fleming-Viot Processes and Related Measure-Valued Processes.

11) C.F.-J. Chung (1986), Confidence Bands for Quantile Function and Percentile Residual Lifetime Under Random Censorship, Ph.D. Thesis.

12) N.G.N. Prasad (1986), Small Area Estimation and Measurement of Response Error Variance in Surveys, Ph.D. Thesis.

13) S.G. Bleuer (1985), Confidence Intervals for Quantile-Quantile Plots and Testing for Normality, Ph.D. Thesis.

14) G.R. Roberts (1985), Contributions to Chi-Squared Tests with Survey Data, Ph.D. Thesis. C. Cutler (1985), Some Topological and Measure-theoretic Results for Measure-valued and Set-valued Stochastic Processes, Ph.D. Thesis.

15) Rengarajan, S. (1983), Analysis of Inventory Systems with Failures, M.Sc. Thesis

Current student enrolment/Étudiants inscrits présentement:
11 M.Sc., 17 Ph.D.

Concordia University

Montréal, Québec H4B 1R6
Department of Mathematics and Statistics

The mathematics department of Concordia University offers a Bachelors degree in Statistics with major, honors and specialization programs. It also has a graduate program in statistics. Students completing the graduate program in statistics are offered a M.A. or M.Sc. degree in mathematics. A student may complete a master's program within two to three years either by writing a thesis or taking more graduate courses in pure and applied mathematics. We hope to get a separate master's program in statistics in a couple of years. A Ph.D. is also offered through a Special Individual Program.

The department of mathematics has a group of seven full-time faculty members for teaching statistics. They conduct and supervise research in the areas of linear models, reliability, econometrics, sampling, probability and stochastic process.

Le département de mathématiques de l'université Concordia offre des programmes avec majeur ou spécialisation en statistique qui mèneront au baccalauréat en statistique. Il y a aussi un programme d'études supérieures en statistique qui conduira à la maîtrise (M.A. ou M.Sc.) en mathématiques. Le candidat à la maîtrise peut finir son programme dans deux à trois ans en rédigeant une thèse ou en suivant davantage de cours de niveau supérieur en mathématiques pures et appliquées. Nous espérons établir un programme de maîtrise en statistique dans deux ans. Le programme de doctorat (Ph.D.) est offert dans le cadre d'un programme spécial et individuel.

Parmi son personnel enseignant à plein temps le département de mathématiques a sept membres qui enseignent la statistique. Ils poursuivent et dirigent des recherches dans les domaines des modèles linéaires, de la fiabilité, de l'économétrie, de la théorie de l'échantillonnage, des probabilités et des processus stochastiques.

Faculty/Le personnel enseignant:

M.M. Belinsky, Associate Professor, Ph.D. (*Montréal, 1981*)

Fields of interest/Domaines d'intérêt:

- Applications
- Multivariate Analysis; Analyse multidimensionnelle

Y.P. Chaubey, Associate Professor, Ph.D. (*Rochester, 1977*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NSERC Operating Grant (1987–1989)

Selected Publications/Publications choisies:
- Rao, P.S.R.S. and Chaubey, Y.P. (1978), Three Modifications of the Principle of MINQUE. *Communications in Statistics A*, **11**, 1659–1670.
- Chaubey, Y.P. and Singh, B. (1988), Almost Unbiased Estimation in Multiplicative Models, *Metrika*, **35**, 13–28.

Fields of interest/Domaines d'intérêt:
- Applications
- Linear Models; Modèles linéaires

T.D. Dwivedi, Professor, Ph.D. (*Clarkson, 1974*)
Students supervised/Étudiants dirigés: 4
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Dwivedi, T.D., Srivastava, V.K. and Hall, R.L. (1980), Finite sample properties of Ridge Estimators. *Technometrics*, **22**, 205–212.
- Dwivedi, T.D. and Srivastava, V.K. (1984), Exact finite sample properties of Double K-Class Estimators. *Journal of Econometrics*, **25**, 263–284.

Fields of interest/Domaines d'intérêt:
- Applications (econometrics; économétrie)
- Techniques of Inference; Techniques de l'inférence statistique

J. Garrido, Assistant Professor, Ph.D. (*Waterloo, 1987*)

Selected Publications/Publications choisies:
- Garrido, J. (1986), Weak Convergence of Risk Processes. *NATO-ASI Series C*, **171**, 349–360.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Foundations of Inference; Fondements de l'inférence

Z.S. Khalil, Professor, Ph.D. (*Moscow, 1968*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Khalil, Z.S. (1979), On the Asymptotic distribution of a standby system with delayed repair. *IEEE Transactions on Reliability*, **26**.
- Khalil, Z.S. and Katsademas (1987), On the reliability of a number of s-p reducible graphs. *Microeloctrince Reliability*, **27**, 493–505.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

G.S. Lingappaiah, Associate Professor, M.Sc. (*Mysore, 1950*)
Grants/Subventions: NSERC Operating Grant (1977–1986)

Selected Publications/Publications choisies:

- Lingappaiah, G.S. (1977), On some inflated generalized descrete distributions. *Communications in Statistics A*, **6**, 231–241.
- Lingappaiah, G.S. (1985), A study of shifting models in life tests via Bayesian approach using semi-or-used priors (SOUPS). *Annals of Institute of Statistical Mathematics*, **37**, 151–163.

Fields of interest/Domaines d'intérêt:

- Applications
- Distribution Theory; Théorie des fonctions de répartition

T.N. Srivastava, Associate Professor, Ph.D. (*Gorakhpur, 1969*)

Selected Publications/Publications choisies:

- Srivastava, T.N. (1983), On the exact distribution of Votaw's Criterion $\bar{H}_1(m)$. *Metron,* **30**, 6, 155–169.
- Srivastava, T.N. (1984), On the exact distribution of the likelihood ratio test statistics for complexe multivariate normal populations. *Journal of Statistical Research,* **18**, 37–44.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique

Y.H.F. Wang, Associate Professor, Ph.D. (*Ohio State, 1977*)
Students supervised/Étudiants dirigés: 3
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Wang, Y.H. and Srivastava, V.K. (1980), A characterization of the exponential and Related distributions by linear Regression. *Annals of Statistics*, **8**, 217–220.
- Wang, Y.H. (1986), Coupling methods in Approximations. *Canadian Journal of Statistics*,**14**, 69–74.

Fields of interest/Domaines d'intérêt:

- Probability Theory; Théorie des probabilités

Theses/Thèses (1983 to present/1983 à présent):

1) H.A. Shaheen (1987), Estimation of Reliability Parameters of a rendundant system with one standby and one repair facility, M.Sc. Thesis.

2) S.L. Katsademas (1986), Overall Network reliability and chromatic polynomials of special structures, M.Sc. Thesis.

3) C.L. Santana (1986), The Reliability of Networks with Special Structures, M.Sc. Thesis.

4) L.S.W. Li Vong Shing (1985), The Use of Auxiliary Information for Estimation in Finite Population Sampling, M.Sc. Thesis.

5) A.B.M.N.E. Talukder (1983), Tests of Homogeneity of Variances of Normal Linear Models, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:

7 M.Sc.

Dalhousie University

Halifax, Nova Scotia B3H 3J5
Department of Mathematics, Statistics
and Computing Science

Statistics degrees are offered at both the Masters and Ph.D. level. There is an active Statistical Consulting Service with a full time Consultant. During the term, Consulting Workshops are held on a regular basis to consider current consulting problems. The Department has a VAX785 and, a SUN workstation and several microcomputers available for graduate student use. The interest of the Faculty range from applied data analysis to mathematical statistics. Master's students must complete three full credit classes, a theses and participate in the Consulting Service activities and seminars. Ph.D. students must complete a comprehensive examination, participate in seminars and the Consulting Service and complete a theses. The Department is divided into three divisions with a Director for each. Further information can be obtained from the Director of Statistics. There are a number of graduate student fellowships available and are currently (1987–88) in the range of $11,000-$12,000.

Dalhousie University has more than 10,000 students in a full range of faculties, including Graduate Studies, Medicine, Law, and Health Professions. It is among the major research institutions in Canada, with grants and contracts to faculty and students amounting to more than twenty million dollars annually.

The University is centrally located in a pleasant residential area in Halifax, and its facilities include a Student Union Building, and Arts Centre for music, theatre, and an art gallery, and excellent facilities for physical recreation. Dalhousie is in close proximity to the Technical University of Nova Scotia, the Atlantic Regional Laboratory of NRC, the Bedford Institute of Oceanography, the Defence Research Establishment Atlantic, and major provincial hospitals.

Halifax is a cosmopolitan city with a diversity of entertainment and cultural activities and restaurants. There are about 250,000 people in the metro area. Nova Scotia is a picturesque province with miles of beautiful coastline and a rather mild climate.

Le département offre les programmes de maîtrise et de doctorat. Le service de consultation statistique du département emploie un consultant à plein temps. Pendant le trimestre, des ateliers de consultation ont lieu régulièrement pour considérer les problèmes actuels de la consultation. Les étudiants de cycles supérieurs ont accès à un ordinateur VAX 785, une sous-station SUN4/280 et plusieurs micro-ordinateurs. Le

personnel enseignant du département poursuit des recherches dans des domaines qui s'étendent de l'analyse appliquée des données à la statistique mathématique. Les candidats à la maîtrise doivent s'inscrire à 3 crédits de cours, rédiger une thèse de maîtrise, et participer aux séminaires et aux activités du service de consultation. Les candidats au doctorat devront réussir un examen général de synthèse, participer aux séminaires et aux service de consultation et rédiger une thèse de doctorat. Le département est divisé en trois divisions, chacune sous la direction d'un directeur. Addressez-vous au directeur de statistique pour de plus amples renseignements. Un nombre de bourses d'une valeur de $11,000 à $12,000 en 1987–88 sont disponibles aux étudiants.

L'université Dalhousie a plus de 10,000 étudiants qui se sont inscrits dans une variété de facultés, y comprise celles des études supérieures, de médecine, de droit et des professions de la santé. L'université figure parmi les majeurs instituts de recherche au Canada. Les subventions et les contrats que reçoivent le corps enseignant et les étudiants s'élèvent à plus de vingt million dollars par an.

L'université est située au centre d'un agréable quartier résidentiel à Halifax. Sur le campus il y a un centre communautaire pour les étudiants, un centre des arts pour la musique, un théâtre et un musée d'art, et d'excellents équipements sportifs. Dalhousie est près de l'université technique de la Nouvelle Écosse, du laboratoire régional de l'Atlantique du CRN, de l'institut Bedford de l'océanographie et du centre de recherche pour la défence / Atlantique et des hopîtaux majeurs.

Halifax est une ville cosmopolite qui offre un grand choix d'attractions, d'activités culturelles et de restaurants. La ville a une population de 250,000. La Nouvelle Écosse est une province pittoresque avec un beau et long littoral et un climat assez doux.

Faculty/Le personnel enseignant:

B.J. Eastwood, Assistant Professor, Ph.D. (*North Carolina*)
Grants/Subventions: NSERC Operating Grant (1988-90)

Selected Publications/Publications choisies:

- Bloomfied, P. and Eastwood B. (1987), A Statistical Test for Synergism of Two Cell Growth Inhibitors. *Toxicology*, **46**, 237–245.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

C. Field, Professor, Ph.D. (*Northwestern, 1968*)
Students supervised/Étudiants dirigés: M.Sc. 3; Ph.D. 3
Grants/Subventions: NSERC Operating Grant, NSERC Infrastructure

Selected Publications/Publications choisies:

- Field, C. (1985), Approach to Normality of Mean and M-Estimators of Location. *Canadian Journal of Statistics*, **13**, 201–210.
- Field, C. (1985), Concepts of Robustness. *ISI Centenary Volume*, 369–376, Springer-Verlag.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Robustness, Bootstrapping; Robustesse, Auto-amorçage

G. Gabor, Associate Professor, Ph.D. (*EOTVOS, 1975*)
Students supervised/Étudiants dirigés: M.Sc. 1
Grants/Subventions: NSERC Operating Grant (1986–89)

Selected Publications/Publications choisies:
- Gabor, G., and Gyorfi, Z. (1986), Recursive Source Coding. A Theory for the Practice of Waveform coding, Springer-Verlag, New York.
- Gabor, G, and Gyorfi, Z. (1988), On the higher order distributions of speech signals. *IEEE Transactions on Acoustics Speech, and Signal Processing*, **36**.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Information Theory; Théorie de l'information

R.P. Gupta, Professor, Ph.D. (*Delhi, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 6; Ph.D. 1
Grants/Subventions: NSERC Operating Grant (1987-90)

Selected Publications/Publications choisies:
- Gupta, R.P. (1987), Estimation of Multiple Correlation Coeff. When Observations are Missing on one of the Variables. *Communications in Statistics, A*, **16**, 353–360.
- Gupta, R.P. (1987), Competitors of the Kendall-Tau Test for Testing Independence Against Positive Quadrant Dependence. *Biometrika*, **74**.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Multivariate Analysis; Analyse multidimensionnelle

D. Hamilton, Associate Professor, Ph.D. (*Queen's, 1980*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NSERC Operating Grant (1987–1990)

Selected Publications/Publications choisies:
- Hamilton, D.C. (1987), Sometimes $R^2 > r^2_{yx_1} + r^2_{yx_2}$ (Correlated Variables Are Not Always Redundant). *The American Statistician*, **41**, 129–132.
- Hamilton, D.C. (1986), Confidence Regions for Parameter Subsets in Nonlinear Regression. *Biometrika*, **73**, 57–64.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Design & Analysis of Experiments; Planification & analyse d'expériences

L. Manchester, Assistant Professor, Ph.D. (*Toronto, 1985*)
Grants/Subventions: NSERC Operating Grant (1987–1989)

Selected Publications/Publications choisies:

- Manchester, L. (1988), A Technique for Comparing Graphical Methods. *Canadian Journal of Statistics*.
- Manchester, L. (1987), Robustness of Graphical Displays of Data. *Proceedings of the Section on Statistical Graphics, American Statistical Association*.

Fields of interest/Domaines d'intérêt:

- Statistical Computing; Calcul statistique
- Statistical Graphics; Infographie statistique

K. R. Thompson, Assistant Professor, Ph.D. (*Liverpool, 1979*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1987–1989), Supply & Services Canada

Selected Publications/Publications choisies:

- Middleton, J.F. and K.R. Thompson (1986), Return Periods of Extreme Sea Levels From Short Records. *Journal of Geophysical Research*, **91**, 11707–11716.
- Thompson, K.R. and Page, F.H. (1987), Detecting Synchrony of Recruitment using Short, Autocorrelated Time Series. Submitted to *Canadian Journal of Fisheries and Aquatic Sciences*.

Fields of interest/Domaines d'intérêt:

- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Applications

B. Smith, Assistant Professor, Ph.D.
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Enns, E.G., Smith, B.R. and Ehlers, P.F. (1984), Hitting Spheres with straight-line motion or Brownian motion. *Journal of Applied Probability*,**21**, 70–79.
- Enns, E.G. and Smith, B.R. (1984), Optimal platform strength in the presence of moving ice. *Ocean Engineering*, **11**, 239–244.

Fields of interest/Domaines d'intérêt:

- Applications (biology; biologie)
- Time Series Analysis; Analyse des séries chronologiques

Theses/Thèses (1983 to present/1983 à présent):

1) M. Raad (1988), A Comparison of ordinal Categorical Data Analyses of Paediatric Data, M.Sc. Thesis.

2) W. Yung (1988), Multivariate Prediction Regions in the Presence of Missing Values, M.Sc. Thesis.

3) N. Lee (1988), Errors-in-variables Models, M.Sc. Thesis.

4) M.A. Tingley (1986), Robust Confidence Intervals, Ph.D. Thesis.

5) E.Wu (1986), Methods of Constructing Confidence Regions in a first order Autoregressive Model, M.Sc. Thesis.

6) S.M. Middleton (1985), Robust Methods for the One Way Random Effects Model, M.Sc. Thesis.

7) E.A. Medova-Dempster (1983), A Bayesian Procedure for Resource Evaluation of Petroleum Provinces in the Early Stages of Development, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:

4 M.Sc., 2 Ph.D.

École Polytechnique

Montréal, Québec H3C 3A7
Département de mathématiques appliquées

Le département de mathématiques appliquées de l'Ecole Polytechnique offre un programme conduisant à la maîtrise en sciences appliquées (M.Sc.A.). Le programme est constitué de 15 crédits de cours et de 30 crédits pour la rédaction d'un mémoire. Le mémoire peut porter sur une application des probabilités-statistiques en ingénie ou sur un aspect plus théorique.

Le département offre également un programme d'études en "mathématiques de l'ingénieur" conduisant au Ph.D. Ce programme, qui est une orientation spécifique du programme de Ph.D. (mathématiques) de l'Université de Montréal, résulte d'une entente de collaboration avec le département de mathématique et statistique de l'Université de Montréal.

The department of applied mathematics at École Polytechnique offers a program leading to a master's in applied science (M.Sc.A.). The program consists of 15 course credits and of 30 credits for the preparation of a thesis. The thesis may be about an application of probability or statistics to engineering or about a more theoretical aspect.

The department also offers a Ph.D. program in "Engineering Mathematics". This program, which is an orientation in the Ph.D. program in mathematics at the Université de Montréal, is a collaboration with the Département de mathématiques et statistique at the Université de Montréal.

Faculty/Le personnel enseignant:

B. Clément, Professeur titulaire, Ph.D. (*Montréal, 1972*)
Students supervised/Étudiants dirigés: M.Sc. 6
Grants/Subventions: FCAR

Selected Publications/Publications choisies:

- Moise, A., Clément, B. and Saltiel, J. (1988), Clinical and Angiometric Correlates and Prognostic Significances of the Coronary Extent Score. *The American Journal of Cardiology*, **15**, 1255–1259.
- Moise, A., Clément, B. and Saloman, R. (1988), A Test for Crossing Receiver Operating Characteristic (ROC) Curves. *Communications in Statistics A*,**17**, 1985–2003.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Multivariate Analysis; Analyse multidimensionnelle

G. Deslauriers, Professeur titulaire, Ph.D. (*Montréal, 1975*)
Students supervised/Étudiants dirigés: M.Sc. 3; Ph.D. 2
Grants/Subventions: FCAR

Selected Publications/Publications choisies:
- Deslauriers, G. (1984), Période d'activité pour un processus de file d'attente M/M/n. *Cahiers du C.E.R.O.*, **26**, No. 1–2, 11–16.
- Deslauriers, G., Dubuc, S. (1987), Transformées de Fourier de courbes irrégulières. *Ann. Sc. Math. du Québec*, **11**, No. 1.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

M. Lefebvre, Professeur adjoint, Ph.D. (*Cambridge, 1983*)
Grants/Subventions: CRSNG, FCAR

Selected Publications/Publications choisies:
- Lefebvre, M. (1988), Utilisation des densités de premier passage en commande optimale stochastique. *Advances in Applied Probability*, **20**, 231–234.
- Lefebvre, M. (1987), Optimal investment policy. *International Journal of Systems Science*, **18**, 75–81.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

M. Moore, Professeur titulaire, Ph.D. (*Montréal, 1971*)
Students supervised/Étudiants dirigés: M.Sc. 7; Ph.D. 3
Grants/Subventions: CRSNG, FCAR

Selected Publications/Publications choisies:
- Moore, M. (1988), Spatial Linear Processes. *Communications in Statistics-Stochastic Models*, **4**, 45–75.
- Moore, M. (1987), Exponential smoothing to predict iceberg trajectories. *Canadian Regions Science and Technology*, **41**, 263–272.

Fields of interest/Domaines d'intérêt:
- Spatial Statistics; Statistiques spatiales
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

M.A. Moran, Professeur agrégé, M.Sc. (*Montréal, 1965*)

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Sampling; Théorie de l'échantillonnage

Theses/Thèses (1983 to present/1983 à présent):

1) N. St-Pierre (1987), Adjustement de fonctions de transfert et applications, Mémoire M.Sc.A.

2) J.P. Mongeau (1986), Une méthode numérique pour le calcul de la dimension de Hausdorff. Mémoire M.Sc.A.

3) J. Denis (1985), Modélisation de la corrélation spatiale, Mémoire M.Sc.A.

4) P. Mongeau (1985), Etude statistique de mouvement des glaciers, Mémoire M.Sc.A.

5) M. Meunier (1983), Etude de la plasticité synaptique comme base de la mémoire à court terme, Mémoire de M.Sc.A.

Current student enrolment/Étudiants inscrits présentement:

2 M.Sc., 4 Ph.D.

University of Guelph

Guelph, Ontario N1G 2W1
Department of Mathematics and Statistics

Departmental research emphasizes applied statistics and applied mathematics with an emphasis on interdisciplinary research. Specializations in statistics include linear and non-linear models, reliability, multivariate analysis, survival analysis, time-series analysis, growth-curve models and bioassay. These specializations have links with the disciplines of biochemistry, toxicology, pharmacy, genetics and zoology.

Currently there are 11 students enrolled in the M.Sc. degree in statistics. Generally, students are awarded Graduate Teaching Assistantships for helping with undergraduate courses. In addition there is a limited number of University Scholarships available. Because of the applied nature of the department, funds are available from contract work and consulting.

A research pool of computing machinery is located within the department. These facilities are for the use of the graduate students as well as faculty. Most of the computers are joined by a high-speed local-area network. The Research Pool is built around a network of workstations that combine high quality graphics with computational power. The equipment in the department includes 4 Appolo workstations, 1 AT, several XT's, a laserwriter, HP plotter and a Tektronix flat bed plotter. In addition many of the faculty members' computers are networked into this pool. There is a college microcomputer facility consisting of approximately 60 XT's, as well as a main-frame computer.

Les recherches poursuivies par les membres du département sont surtout en statistique appliquée et en mathématiques appliquées. On accorde une importance particulière aux recherches multidisciplinaires. Les domaines de recherche en statistique comprennent les modèles linéaires et non linéaires, la fiabilité, l'analyse multidimensionnelle, l'analyse de survie, l'analyse des séries chronologiques, les modèles de la courbe de croissance et le bioessai. Les recherches dans ces domaines sont liées aux disciplines de la biochimie, de la toxicologie, de la pharmacie, de la génétique et de la zoologie.

Au présent, 11 étudiants sont inscrits dans le programme de maîtrise (M.Sc.) en statistique. En général, les étudiants font de l'assistant. De plus, un nombre limité de bourses et des fonds venant de la consultation et des contrats de recherche des professeurs sont disponibles pour soutenir financièrement les étudiants.

Le département met ses ordinateurs à la disposition de son personnel enseignant et de ses étudiants des cycles supérieurs. Un réseau local de haute vitesse lie la plupart des ordinateurs. Il y a un réseau de postes de travail où les graphiques de haute qualité

sont unies à la puissance mathématique. Le département a 4 postes de travail Appolo, 1 AT, plusieurs XT, une imprimante à laser, un traceur HP et un traceur Tektronix. De plus, beaucoup de micro-ordinateurs du personnel enseignant sont reliés au réseau. L'université a un centre d'ordinateurs où il y a 60 XT et une unité centrale.

Faculty/Le personnel enseignant:

O.B. Allen, Associate Professor, Ph.D. (*Cornell, 1979*)
Students supervised/Étudiants dirigés: M.Sc. 7
Grants/Subventions: NSERC Operating 1986-89; NSERC Infrastructure 1988- 91; NSERC Strategic 1986-89

Selected Publications/Publications choisies:
- Allen, O.B., Marie, B.A. and Ormrod, D.P. (1987), Relative efficiency of factorial designs for estimating response surfaces with reference to gaseous pollutant mixtures. *Journal of Environ. Qual.*, **16**, 316–320.
- Newcombe, P.A. and Allen, O.B. (1988), A three-class procedure for acceptance sampling by variables. *Technometrics*, **30**.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Techniques of Inference; Techniques de l'inférence statistique

E.M. Carter, Associate Professor, Ph.D. (*Toronto, 1975*)
Students supervised/Étudiants dirigés: M 6
Grants/Subventions: NSERC Operating Grant (1986-89)

Selected Publications/Publications choisies:
- Carter, E.M. and Hubert, J.J. (1985), Analysis of parallel-line assays with multivariate responses. *Biometrics*, **41**, 703–710.
- Carter, E.M. and Hubert, J.J. (1984), A growth curve model approach to multivariate quantal bioassay. *Biometrics*, **40**, 699–706.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Multivariate Analysis; Analyse multidimensionnelle

A.F. Desmond, Assistant Professor, Ph.D. (*Waterloo, 1983*)
Students supervised/Étudiants dirigés: M.Sc. 2
Grants/Subventions: NSERC Operating Grant (1986-89)

Selected Publications/Publications choisies:
- Desmond, A.F. (1988), The Theory of Estimating Equations. *Encyclopedia of Statistical Sciences, Supplement Volume*, 92–96.
- Desmond, A.F. (1987), On the distribution of the time to fatigue failure for the simple linear oscillator. *Journal of Probabilistic Engineering Mechanics*, **2**, 214–218.

Fields of interest/Domaines d'intérêt:
- Techniques of Inference; Techniques de l'inférence statistique
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

W.G.S. Hines, Professor, Ph.D.
Students supervised/Étudiants dirigés: 2 M.Sc.
Grants/Subventions: NSERC

Selected Publications/Publications choisies:
- Hines, W.G.S. (1987), Evolutionarily Stable Strategies A Review of Basic Theory. *Thers. Pop Biol.*, **31**, 195–272.
- Hines, W.G.S. and Bishop, T.D. (), Can and Will a Sexual Population Evolve to an ESS. *Journal of Theoretical Biology*, **III**, 667–686.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

J-S. Huang, Associate Professor, Ph.D. (*1970*)
Students supervised/Étudiants dirigés: 2

Selected Publications/Publications choisies:
- Huang, J-S. (1981), On a Lack of Memory Property. *Annals of the Institute of Statistical Mathematics*,**33**, 131–134.
- Huang, J-S. (To appear), Moment Problem of Order Statistics, a Review. *Inst. Statist. Rev.*.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Mathematical Statistics; Statistique mathématique

J.J. Hubert, Associate Professor, Ph.D. (*SUNY, Buffalo, 1974*)
Students supervised/Étudiants dirigés: M.Sc. 13
Grants/Subventions: NSERC

Selected Publications/Publications choisies:
- Carter, E.M. and Hubert, J.J., A growth curve model approach to multivariate quantal bioassary. *Biometrics*, **40**, 699–706.
- Carter, E.M. and Hubert, J.J. (1985), Analysis of parallel-line assays with multivariate responses. *Biometrics*, **40**, 703–710.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Applications (health; santé)

K. Mullen, Professor, Ph.D. (*Virginia Polytech, 1966*)
Students supervised/Étudiants dirigés: M.Sc. 8
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Mullen, K. and Ennis, D. (1988), Multivariate Models for the Triangular and Duo-Trio Methods. *Biometrics*.
- Mullen, K. and Ennis, D. (1987), Mathematical Formulation of the Multivariate Euclidean Models for Discrimination Methods. *Psychometrika*, **52**, 235–249.

Fields of interest/Domaines d'intérêt:

- Applications
- Applications (health; santé)

R.S. Singh, Associate Professor, Ph.D. (*Michigan, 1974*)

Students supervised/Étudiants dirigés: M 1

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Singh, R.S. and Manzook, A. (1987), Modified nonparametric kernel estimates of a regression function and their consistencies with rates. *Annals of the Institute of Statistical Mathematics*,**39**, 549–562.
- Singh, R.S. (1987), MISE of kernel estimates of a density and its derivatives. *Statistics and Probability Letters*, **5**, 153–159.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

Theses/Thèses (1983 to present/1983 à présent):

1) A.R. Kronlund (1988), Dose-Time Response Models, M.Sc. Thesis.

2) D.A.J. Ryan (1988), A Restricted Regression Approach to Multivariate Response Surfaces, M.Sc. Thesis.

3) F. Nabugoomu (1988), The Analysis of Fixed Effects in Mixed Linear Models, M.Sc. Thesis.

4) D.J. Hubbard (1987), Application of the Sequential Probability Ratio Test to the Negative Binomial Distribution, M.Sc. Thesis.

5) T.G. Lesnick (1987), Joint Action Toxicity Models, M.Sc. Thesis.

6) C. Thompson (1987), Semivariogram Estimation with an Application to Soil Science, M.Sc. Thesis.

7) Z. Yang (1987), Predictive inferences for Two Fatigue Life Distributions: The Inverse Gaussian and the Birnbaum-Saunders, M.Sc. Thesis.

8) A.M. Ali (1986), A Comparative Study of Paired Comparison Methods, M.Sc. Thesis.

9) J.K. Chan (1986), Interval Estimation for Radioimmunoassay and Calibration, M.Sc. Thesis.

10) J.P. Dick (1986), Estimation in Repeated Surveys Subject to Sampling Errors, M.Sc. Thesis.

11) L.P. Fanning (1986), Secondary Production Estimation in Marine Plankton. A Simulation Study, M.Sc. Thesis.

12) T. Krasowski (1986), Modelling Redhead Parasitism on Canvasback Nests Using the Negative Binomial Distribution, M.Sc. Thesis.

13) P. Laffey (1986), The Estimation of Size and Mortality Rates of Fish Populations, M.Sc. Thesis.

14) M.N. Walsh (1986), Analysis of Parabolic assays, M.Sc. Thesis.

15) G.A. Darlington (1985), A comparison of two methods for Modelling Extra Binomial Variation, M.Sc. Thesis.

16) J.D. Smith (1985), The Analysis of Ordered Categorical Data with Applications to Animal Breeding, M.Sc. Thesis

17) S.E. Ahmed (1984), Recurrence Relations between the Expected Values of Order Statistics, M.Sc. Thesis.

18) P.A. Brown (1984), Three-Class Procedure for Acceptance Sampling by Variables, M.Sc. Thesis.

19) K.G. Gerow (1984), An Algorithm for Random Balanced Sampling, M.Sc. Thesis.

20) I. Mian (1984), Accelerated Life Testing, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:

11 M.Sc.

Université Laval

Cité Universitaire, Québec GIK 7P4
Département de Mathématiques et de Statistique

Doyenne des universités canadiennes, l'université Laval occupe un vaste campus en banlieue de Québec, joyau du patrimoine mondial et bastion de la culture française en Amérique. Centre d'enseignement et de recherche de réputation internationale, l'université accueille chaque année plus de 33,000 étudiants, dont près de 5,000 à ses quelque 130 programmes de deuxième et de troisième cycles. La Faculté des sciences et de génie, à laquelle est rattaché notre département, est l'une des plus grosses au pays, tant par sa clientèle que par son volume de recherche subventionnée et contractuelle. Conscientes des importants besoins en statistique des centres de recherche et des organismes gouvernementaux québécois, et désireuses d'exploiter leurs liens privilégiés avec le Bureau de la statistique du Québec, les autorités de la Faculté et du département ont fait du développement de la statistique l'une de leurs priorités depuis une dizaine d'années.

En 1980, l'université Laval devenait la première au Canada à offrir en langue française un programme de baccalauréat spécialisé en statistique. Une vingtaine d'étudiants sont formés annuellement dans le cadre de ce programme qui jouit d'une excellente réputation auprès des employeurs. Témoin de la vitalité du programme, l'association des étudiants en statistique organise chaque année plusieurs activités, dont une journée de la statistique qui attire un grand nombre de participants.

En 1984, un Service de consultation statistique a été mis sur pied. Moteur de la recherche appliquée en statistique à l'université Laval, le Service permet de répondre au besoin d'expertise statistique au sein de la communauté universitaire, grâce au concours de deux consultants professionnels, des professeurs et des étudiants des deuxième et troisième cycles du département. Subventionnées par le C.R.S.N.G., les activités du Service l'amènent à collaborer avec de nombreux groupes de recherche de la région de la vieille capitale. En 1988-89 seulement, le Service répondra à plus de 150 demandes de consultation et participera à une vingtaine de projets de recherche multidisciplinaires.

A l'heure actuelle, les études de deuxième et de troisième cycles en statistique se font dans le cadre des programmes de mathématiques. Depuis 1970, une trentaine de diplômes supérieurs en statistique ont ainsi été décernés et une vingtaine d'étudiants sont actuellement inscrits à cette option. Par ses activités de recherche et d'enseignement, le département met l'accent sur l'approfondissement des connaissances, tant en statistique fondamentale qu'en statistique appliquée. Les domaines de recherche privilégiés sont l'analyse des données, l'analyse multidimensionnelle, l'échantillonnage, la statistique non paramétrique, séquentielle et robuste,

l'inférence bayésienne, ainsi que la théorie des probabilités. Les chercheurs en statistique disposent, pour réaliser leurs travaux, d'un vaste réseau de postes de travail Sun départemental et facultaire qui donne accès aux progiciels statistiques les plus modernes. En plus des programmes de prêts-bourses fédéraux et provinciaux et de l'assistanat, les subventions et les contrats de recherche des professeurs permettent largement de soutenir financièrement les étudiants.

Laval University, the dean of Canadian universities, is situated on a large campus in the suburbs of Québec City which is a bastion of French culture in America and has been designated a jewel of world heritage by UNESCO. The university, which has an international reputation as a teaching and research centre, each year welcomes more than 33,000 students of which nearly 5,000 go into the approximately 130 graduate programs. Our Department is part of the Faculty of Science and Engineering which is one of the largest in the country in terms of number of students as well as volume of its funded and contract research. Because they are aware of the important needs that research centres and Quebec governmental organizations have for statistics and also to cultivate their special ties with the Québec Bureau of Statistics, the Faculty and Department have made the development of statistics one of their priorities for the past ten years.

In 1980 Laval University became the first in Canada to offer an Honours Statistics B.Sc. program in French. About 20 students are trained every year in this program which enjoys an excellent reputation with employers. Each year the Association of Statistics Students organizes several activities among which the Statistics Day attracts a great number of participants.

In 1984 a Statistical Consulting Service was established. The Service is the driving force behind applied research in statistics at Laval University and responds to the need for expertise in statistics by the university community, thanks to the assistance of two professional consultants, professors and graduate students from the department. The activities of the Statistical Consulting Service, which are funded by NSERC, have led to collaboration between the Service and numerous research groups in the Québec City region. In 1988-89, the Service expects to respond to 150 requests for consultation and participate in about 20 multidisciplinary research projects.

At the present time, graduate studies in statistics are offered within the mathematics program. Since 1970 approximately 30 graduate degrees in statistics have been awarded and about 20 students are now enrolled in this option. By means of its research activities and teaching, the Department emphasizes in-depth knowledge in fundamental and applied statistics. Research is carried out in the following fields: data analysis; multivariate analysis; sampling; nonparametric, sequential and robust statistics; bayesian inference; probability theory. Researchers in statistics have a vast network of departmental and faculty SUN workstations and the most modern statistical packages at their disposal to carry out their work. In addition to federal and provincial grants and bursaries, and assistantships, the professors' grants and research contracts provide in large part for the financial support of the students.

Faculty/Le personnel enseignant:

P. Capéraà, Professeur titulaire, Doctorat (*Paris, 1968*)
Students supervised/Étudiants dirigés: M 3; Ph.D. 1
Grants/Subventions: C.R.S.N.G. (1986-89); F.C.A.R. (1987-90)

Selected Publications/Publications choisies:
- Capéraà, P. and Van Cutsem, B. (1988), *Méthodes et modèles en statistique non paramétrique*. Dunod, Paris.
- Capéraà, P. (1988), Tail ordering and asymptotic efficiency of rank tests. *The Annals of Statistics*, **16**, 470–478.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Nonparametrics; Statistique non paramétrique

J.P. Carmichael, Professeur agrégé, Ph.D. (*SUNY/Buffalo, 1976*)
Students supervised/Étudiants dirigés: M 3; Ph.D. 1
Grants/Subventions: C.R.S.N.G. (1988-90); F.C.A.R. (1988-90)

Selected Publications/Publications choisies:
- Carmichael, J.P., Massé, J.-C. and Theodorescu, R. (1987) , Multivariate reciprocal stationary Gaussian processes. *Journal of Multivariate Analysis*,**23**, 47–66.
- Carmichael, J.P., Massé, J.-C. and Theodorescu, R. (1988) , Representations for multivariate reciprocal Gaussian processes. *IEEE Transactions on Information Theory*, **34**, 155–157.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

R. Côté, Professeur agrégé, Ph.D. (*North Carolina, 1971*)

Selected Publications/Publications choisies:
- Maziade, M., Bernier, H., Thivierge, J. and Côté, R. (1989, to appear) The relationship between family functioning and demographic characteristics in an epidemiological study. *Canadian Journal of Psychiatry*.
- Thivierge, J., Capéraà, P. Boudreault, M., Côté, R. and Maziade, M. (1989, to appear), Reliability and principal component analysis (PCA) of the Conners Teacher Questionnaire (CTQ). *Attention Deficit Disorder: New Treatments, Psychopharmacology, Attention Research*, L.M. Bloomingdale (ed.), Spectrum Publications, Inc. New York.

Fields of interest/Domaines d'intérêt:
- Applications
- Data Analysis; Analyse des données

C. Genest, Professeur adjoint, Ph.D. (*British Columbia, 1983*)
Students supervised/Étudiants dirigés: M 2
Grants/Subventions: C.R.S.N.G. (1988-91); F.C.A.R. (1987-90)

Selected Publications/Publications choisies:
- Genest, C. and Zidek, J.V. (1986), Combining probability distributions: A critique and an annotated bibliography. *Statistical Science*, **1**, 114–148.
- Genest, C. (1987), Frank's family of bivariate distributions. *Biometrika*, **74**, 549–555.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Multivariate Analysis; Analyse multidimensionnelle

J.-C. Massé, Professeur agrégé, Ph.D. (*Montréal, 1975*)
Students supervised/Étudiants dirigés: M 3
Grants/Subventions: C.R.S.N.G. (1988-90)

Selected Publications/Publications choisies:
- Carmichael, J.P., Massé, J.-C. and Theodorescu, R. (1987) , Multivariate Reciprocal Stationary Gaussian Processes. *Journal of Multivariate Analysis*,**23**, 47–66.
- Carmichael, J.P., Massé, J.-C. and Theodorescu, R. (1988) , Representations for multivariate Reciprocal Gaussian Processes. *IEEE Transactions on Information Theory*, **34**, 155–157.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

H. Morin, Professeur Agrégé, M.Sc. (*Alberta, 1970*)
Students supervised/Étudiants dirigés: 1

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Sampling; Théorie de l'échantillonnage

L.P. Rivest, Professeur agrégé, Ph.D. (*McGill, 1978*)
Students supervised/Étudiants dirigés: M.Sc. 5
Grants/Subventions: Subvention pour dépenses courantes, CRSNG; Subvention d'infrastructure, CRSNG; Subvention de groupe, FCAR

Selected Publications/Publications choisies:
- Rivest, L.P. (1986), Bartlett's Cochran's and Hartley's tests on variances are liberal when the underlying distribution is long tailed. *Journal of the American Statistical Association*, **81**, 124–128.
- Rivest, L.P., Crête, M., Jolicoeur, H., Brassard, J-M, and Messier, F. (1986), Predicting and correcting helicopter counts of moose with observations made from fixed-wing aircraft in Southern Québec. *Journal of Applied Ecology*, **23**, 751–761.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Sampling; Théorie de l'échantillonnage

R. Theodorescu, Professeur titulaire, Doctorat d'état (*Bucarest, 1967*)
Students supervised/Étudiants dirigés: M 12; Ph.D. 5
Grants/Subventions: C.R.S.N.G. (1987-90); F.C.A.R. (1987-90)

Selected Publications/Publications choisies:
- Bertin, E. and Theodorescu, R. (1987), The single humpedness of the likelihood function revisited. *Statistics*, **18**, 629–636.
- Benzing, H., Kalin, D. and Theodorescu, R. (1989, to appear), On a sequential two-action decision model with unbounded reward function. *Optimization*.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

Theses/Thèses (1983 to present/1983 à présent):

1) C. Laberge (1988), Estimation robuste des paramètres du modèle ar (1): application à des données environnementales, thèse de maîtrise.

2) M. N'Zi (1988), Contribution à l'étude de la condition d'Anscombe, thèse de maîtrise.

3) P. Foy (1986), La régression non-linéaire par les moindres carrés, thèse de maîtrise.

4) G. Therrien (1986), Quelques procédures séquentielles pour les lois binomials et multinomials, thèse de maîtrise.

5) S. Gingras (1986), Régression logistique, thèse de maîtrise.

6) E. Castonguay-Lacoste (1985), Analyse statistique des données de composition, thèse de maîtrise.

7) N. Bélanger (1985), Classification automatique et données binaires, thése de maîtrise.

8) J-R. Boudreau (1984), Stationnarité pour une classe de systèmes aléatoires à liaisons complètes, thèse de maîtrise.

9) B. Rémillard (1984), Propriétés d'invariance d'une classe de processus de diffusion gaussiens, thèse de maîtrise.

10) M-F. Germain (1984), Estimation de la variance de statistiques obtenues par des plans complexes, thèse de maîtrise.

11) J-P Morin (1984), Comparaison sur de petits échantillons de deux tests pour une contrainte linéaire des paramètres de la loi multinomiale, thèse de maîtrise.

12) M. Fluet (1983), L'analyse discrimante à but descriptif, thèse de maîtrise.

13) M. Provencher (1983), Mesures d'association; un modèle de prévision, thèse de maîtrise.

Current student enrolment/Étudiants inscrits présentement:
15 M; 3 Ph.D.

The University of Manitoba

Winnipeg, Manitoba R3T 2N2
Department of Statistics

Statistics has a long history at The University of Manitoba. In 1937, Statistics was recognized as a part of the Department of Actuarial Mathematics and, in 1949, the name was changed to the Department of Actuarial Mathematics and Statistics; in 1967, a separate Department of Statistics was created. The Department still maintains a close relationship with the Department of Actuarial and Management Sciences through joint programs and research projects.

The research interests in the Department include statistical quality control, reliability, multivariate analysis, large deviations, statistical inference, sampling theory, stochastic processes and design of experiments.

Graduate students are trained in both theoretical and applied statistics. They can also gain practical consulting experience by working for the Statistical Advisory Service, which was formed in 1973, or by assisting in the presentation (to industry) of workshops in statistical quality control. Senior graduate students are also encouraged to gain teaching experience by teaching courses in the regular or summer sessions.

A variety of graduate courses are offered on specific topics each year. But, in addition, two seminar courses are given, these courses being jointly taught by all members of the Department. These courses provide an opportunity for graduate students to become exposed to the research activities of members of the Department and for faculty members to get to know the graduate students.

La statistique a une longue histoire à l'université de Manitoba. En 1937, la statistique est devenue une partie du département de mathématiques actuarielles et en 1949 le nom du département a été changé au département de mathématiques actuarielles et de statistique. En 1967, le département de statistique a été créé. Le département entretient toujours des relations étroites avec le département d'actuariat et de sciences de la gestion en entreprenant des programmes et des projets de recherche en commun.

Le personnel enseignant du département poursuit des recherches sur le contrôle statistique de la qualité, la fiabilité, l'analyse multidimensionnelle, les larges écarts, l'inférence statistique, la théorie de l'échantillonnage, les processus stochastiques et la planification d'expériences.

Les étudiants des cycles supérieurs reçoivent une formation en statistique théorique et appliquée. Ils ont la possibilité d'acquérir de l'expérience comme consultants en travaillant pour le Service consultatif en statistique qui a été formé en 1973, ou en aidant à la présentation à l'industrie des ateliers sur le contrôle statistique de la qualité.

Le département encourage les étudiants d'acquérir de l'expérience dans l'enseignement en leur offrant des cours à enseigner pendant les sessions regulières ou d'été.

Une variété de cours supérieurs sont offerts sur des sujets précis chaque année. De plus, deux séminaires sont enseignés en commun par tout le personnel enseignant du département. Ainsi, les étudiants se familiarisent avec les recherches des membres du département et le personnel enseignant a l'occasion de connaître les étudiants.

Faculty/Le personnel enseignant:

J.F. Brewster, Associate Professor, Ph.D. (*British Columbia, 1972*)
Students supervised/Étudiants dirigés: 3
Grants/Subventions: NSERC Infrastructure plus 3 Contracts

Selected Publications/Publications choisies:
- Johnston, B. and Brewster, J.F. (1982), The use and analysis of a BIBD in a sample survey. *Applied Statistics*, **31**, 101–107.

Fields of interest/Domaines d'intérêt:
- Applications
- Foundation of Inference; Fondements de l'inférence statisque

L.K. Chan, Professor, Ph.D. (*Western, 1967*)
Grants/Subventions: NSERC

Selected Publications/Publications choisies:
- Chan, L.K. (1985), Proceedings of the Conference on Advances in Statistical Quality Control. Special Issue Editor for *Communications in Statistics A*, **14**.
- Chan, L.K. (1986), The bounds of bivariate distributions that limit the value of last-survival annuities (with discussion). *Transactions of the Society of Actuaries*, **XXXVIII**, 55–74.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Quality Assurance; Contrôle de la qualité

S.W. Cheng, Professor, Ph.D. (*Western, 1973*)
Students supervised/Étudiants dirigés: 1

Selected Publications/Publications choisies:
- Cheng, S.W., Chan, L.K. and Spiring, F.A. (1988), A New Measure of Process Capability: Cpm. *Journal of Quality Technology*, **20**, 162–175.
- Cheng, S.W. and Chan, L.K. (1988), Linear Estimation of the Location and Scale Parameters Based on Selected Order Statistics. *Communications in Statistics A*,**17**, 2259–2278.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

J.C. Fu, Professor, Ph.D. (*John Hopkins, 1971*)
Students supervised/Étudiants dirigés: 1
Grants/Subventions: NSERC

Fields of interest/Domaines d'intérêt:
- Statistical Computing; Calcul statistique
- Techniques of Inference; Techniques de l'inférence statistique

B. Johnston, Professor, Ph.D. (*North Carolina, 1968*)

B.D. MacPherson, Associate Professor, Ph.D.

Selected Publications/Publications choisies:
- MacPherson, B.D. and Fuller, W.A. (1983), Consistency of the Least Squares Estimator of the First Order Moving Average Parameter. *The Annals of Statistics*, **11**, 326–329.
- Chan, L.K., Hapuarachchi, K.P. and MacPherson, B.D. (1988), Robustness of $\bar{X}$ and R Charts. *IEEE Transactions on Reliability*, **37**.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Quality Assurance; Contrôle de la qualité

K. Mount, Associate Professor, Ph.D. (*Iowa State, 1969*)
Grants/Subventions: Agriculture Canada Grant

Selected Publications/Publications choisies:
- Mount, K., Dyck, G.W., Swierstra, E. and McKay, R.M. (1987), Effect of Location of the Teat Suckled, Breed and Parity on Piglet Growth. *Canadian Journal of Animal Science*, **67**, 929–939.
- Mount, K., Castell, A.G. and Neden, L. (1988), Potential of Field Pea Screenings as Feed for Market Pigs. *Canadian Journal of Animal Science*, **68**, 577–579.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Design & Analysis of Experiments; Planification & analyse d'expériences

M. Samanta, Professor, Ph.D. (*Arizona, 1969*)
Students supervised/Étudiants dirigés: Ph.D. 1
Grants/Subventions: NSERC

Selected Publications/Publications choisies:
- Samanta, M. (1988), A unified approach to minimum variance unbiased estimation of a probability function. *Communications in Statistics A*, **17**, 3413–3426.
- Samanta, M. (1989), Non-parametric estimation of conditional quantiles. *Statistics and Probability Letters*, **7**.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Nonparametrics; Statistique non paramétrique

C.J. Schwarz, Assistant Professor, Ph.D.
Grants/Subventions: NSERC

Selected Publications/Publications choisies:
- Schwarz, C.J., Burnham, K.P. and Arnason, A.W. (1988), Post-release stratification in bird-recovery models. *Biometrics*, **44**, 765–785.
- Schwarz, C.J. and Arnason, A.N. (1988), The use of tag-recovery information in migration and movement studies. *Proceeding of the International Symposium and Educational Workshop on Fish Marking Techniques*.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Data Analysis; Analyse des données

S.K. Sinha, Professor, Ph.D.
Students supervised/Étudiants dirigés: M 2; Ph.D. 1
Grants/Subventions: NSERC (1986-1988)

Selected Publications/Publications choisies:
- Sinha, S.K. (1986), Reliability and Life Testing. Wiley Eastern/Halsted Press.
- Sinha, S.K. and Hapuarachchi, K.P. (1989), Bulk Sampling - A Bayesian Approach. *Sankhya(B)*.

Fields of interest/Domaines d'intérêt:
- Applications
- Techniques of Inference; Techniques de l'inférence statistique

A. Thavaneswaran, Assistant Professor, Ph.D. (*Waterloo, 1985*)
Students supervised/Étudiants dirigés: 1 Ph.D.

Selected Publications/Publications choisies:
- Thavaneswaran, A. and Thompson, M.E. (1988), A criterion for filtering in semi-martingale models. *Stochastic Processes and their Applications*, **28**, 259–265.
- Tharaneswaran, A. and Thompson, M.E. (1986), Optimal estimation for semi-martingales.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Time Series Analysis; Analyse des séries chronologiques

Theses/Thèses (1983 to present/1983 à présent):

1) C.J. Schwarz (1988), Post-release stratification and migration models in band-recovery and capture-recapture models, Ph.D. Thesis.

2) K.P. Hapuarachchi (1988), Contributions to Statistical Quality Control, Ph.D. Thesis.

3) E. Awuku-Darkoh (1988), On the inadmissibility of the MLE of a matrix of Poisson Means under a multiplicative model for complete and incomplete data problems, Ph.D. Thesis.

4) F.A. Spiring (1988), Statistical process control methodologies for quality improvement, Ph.D. Thesis.

5) L.R. Neden (1986), Bayesian one-sided credibility bounds for a proportion using a two-stage sampling plan involving imperfect and perfect classification, M.Sc. Thesis.

6) G.M.T. Weiss (1983), A large deviation study of consistent estimation of a translation invariant location parameter, Ph.D. Thesis.

7) R.K. Amoh (1983), Classification procedures associated with the inverse Gaussian distribution, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:
12 M, 5 Ph.D.

McGill University

805 ouest rue Sherbrooke Street West
Montréal, Québec H3A 2K6
Department of Mathematics and Statistics

In 1983, the Department of Mathematics at McGill University changed its name to the Department of Mathematics and Statistics. This change coincided with a trend throughout North America to recognize Statistics as not merely a subdiscipline of Mathematics.

The Department each year has between 5 and 10 students registered in graduate programs in Statistics. While there is no undergraduate degree in Statistics at either the honours or majors level, there is a wide selection of statistics courses that many students take. A minor in Statistics can be taken by mathematics majors and students in other programs. Undergraduates are permitted, under special circumstances, to take graduate level courses. The Department shares some of the teaching of service courses in Statistics on campus. Most graduate students receive some financial assistance through part-time lecturing or marking. These stipends are augmented by internal and external scholarships and by grants. A limited number of visa tuition bursaries are available.

Research programs in statistics conducted by the Faculty include those in the following areas: multivariate statistical analysis, applied probability modelling, distribution theory, medical statistics, linear models, inference for stochastic processes, spatial statistics, information theory, characterizations and matrix applications.

Each member of the Statistics group has access to McGill University's mainframe computer through full screen terminals. All the most common statistical packages are available, but most use is made by us of GLIM and GENSTAT. Together with two other departments, our department shares a computer laboratory which contains 40 IBM PC's for student and staff use. Members of the statistics group have recently applied for support from NSERC and FCAR for four SUN-3 workstations and a file server which we hope will arrive next year. Although one member of the Statistics group is currently engaged in consulting activity within the University, particularly with the Montreal Neurological Institute, no formal consulting service has yet been set up.

The Montreal Statistics Colloquium, which holds weekly seminars attended by statisticians from the four Montreal universities, is organized by our group. In addition, one member of our group is currently the president of the Statistical Society of Montreal, which holds monthly lunchtime seminars aimed mainly at statisticians from industry and management. The Statistical Society of Montreal is the newly

revived Regional Association of the SSC/Montreal Chapter of the ASA. The IMS Bulletin is edited and prepared for printing by a member of our group.

En 1983, le département de mathématiques a changé son nom pour celui de "Département de mathématiques et de statistique". Ce changement coincidait avec une tendance à travers le continent nord-américain à reconnaître que la statistique n'est pas simplement une partie des mathématiques, mais une discipline à part entière.

Le département comprend entre 5 et 10 étudiants enregistrés chaque année dans le cadre de son programme d'études supérieures en statistique. Quoiqu'il n'y ait pas de programme de premier cycle en majeure ou en spécialisation, il existe un grand choix de cours de statistique suivis par de nombreux étudiants. Dans certains cas, il est accordé à des étudiants du premier cycle de prendre des cours d'études supérieures. Le département offre des cours au niveau général sur le campus. La plupart des étudiants gradués reçoivent une aide financière en s'acquittant des tâches de chargé de cours. Ces traitements sont augmentés par des bourses internes et externes, ainsi que par des subventions. Un nombre limité de bourses pour les étudiants venant de l'étranger sont aussi disponibles.

Les programmes de recherche menés par le personnel du département comprennent les domaines suivants: l'analyse statistique multidimensionnelle, les probabilités appliquées, la théorie des fonctions de répartition, la statistique médicale, les modèles linéaires, l'inférence pour les processus stochastiques, la statistique spatiale, les théories de l'information, les caractérisations et applications matricielles.

Chaque membre du groupe a accès à l'ordinateur central à l'aide de terminaux. La plupart des programmes statistiques les plus connus sont disponibles, mais GLIM et GENSTAT sont les plus utilisés. Avec deux autres départements, nous partageons un laboratoire informatique équipé de 40 ordinateurs IBM pour l'usage des étudiants et de la faculté. Les membres du groupe ont récemment fait une demande de financement auprès du NSERC et FCAR pour 4 SUN-3 stations de travail et une fiche de service. Un des membres est consulté au sein de l'Université, et plus particulièrement par l'Institut Neurologique de Montréal, quoique aucun service de consultation n'ait été officiellement formé.

Le Colloque de Statistique de Montréal qui offre des séminaires hebdomadaire, attirant des statisticiens des quatre universités Montréalaises, est organisé par notre groupe. De plus, un membre de notre groupe est présentement le président de la Société Statistique de Montréal, qui tient, mensuellement, des divers séminaires intéressant les statisticiens de l'industrie et de l'administration. La Société Statistique de Montréal est l'Association Régionale de la SSC/Section de Montréal de l'ASA, nouvellement rétablie. The IMS Bulletin est rédacté et préparé pour l'imprimerie par un membre de notre groupe.

Faculty/Le personnel enseignant:

W.J. Anderson, Associate Professor, Ph.D. (*McGill, 1970*)
Students supervised/Étudiants dirigés: M.Sc. 5
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Anderson, W.J. (1984), A multitrap model for high intensity reciprocity failure in the photographic grain. *Journal of Applied Probability*, **21**, 464–478.
- Anderson, W.J. (1984), Hedge portfolios and the Block-Scholes equations. *Stochastic Analysis and Applications*, **2**, 1–12.

Fields of interest/Domaines d'intérêt:
- Applied Probability; Probabilités appliquées
- Stochastic processes; Processus stochastiques

Ming-Gao Gu, Assistant Professor, Ph.D. (*Columbia, 1987*)

Selected Publications/Publications choisies:
- Gu, M-G and Lai, T.L. (1989), Functional laws of the iterated logarithm for the product-limit estimator under random censorship and truncation. *The Annals of Probability*, in press.
- Gu, M-G, Lai, T.L. and Lau, K.K.G. (1989), Rank tests based on censored data and their sequential analogues. *American Journal of Mathematical and Management Sciences*, in press.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

A.M. Mathai, Professor, Ph.D. (*Toronto, 1964*)
Students supervised/Étudiants dirigés: Ph.D. 4; M.Sc. 21
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Mathai, A.M. and Haubold, H.J. (1988), *Modern Problems in Nuclear and Neutrino Astrophysics*. Akademic -Verlag, Berlin.
- Mathai, A.M. and Kounias, S. (1988), Maximizing the sum of integers when the sum of squares is fixed. *Optimization*, **19**, 123–131.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Multivariate Analysis; Analyse multidimensionnelle

V. Seshadri, Professor, Ph.D. (*Oklahoma State, 1961*)
Students supervised/Étudiants dirigés: Ph.D. 2; M.Sc. 7
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Ramachandran, B. and Seshadri, V. (1988), On a property of strongly reproductive families on R. *Statistics and Probability Letters*, **6**, 171–174.
- Seshadri, V. (1963), Combining unbiased estimators. *Biometrics*, **19**, 163–170.

Fields of interest/Domaines d'intérêt:
- Statistical inference; Inférence statistique
- Distribution Theory; Théorie des fonctions de répartition

G.P.H. Styan, Professor, Ph.D. (*Columbia, 1969*)
Students supervised/Étudiants dirigés: Ph.D. 2; M.Sc. 14
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Scott, A.J. and Styan, G.P.H. (1985), On a separation theorem for generalized eigenvalues and a problem in the analysis of sample surveys. *Linear Algebra and its Applications*, **70**, 209–224.
- Hartwig, R.E. and Styan, G.P.H. (1987), Partially ordered idempotent matrices. *Proc. of the Second International Tampere Conference on Statistics*, (Tampere, Finland, June 1987), T. Pukkila and S. Puntanen, eds., Dept. Mathematical Sciences, University of Tampere, 361–383.

Fields of interest/Domaines d'intérêt:
- Linear models; Modèles linéaires
- Matrix Methods; Méthodes matricielles

D.B. Wolfson, Associate Professor, Ph.D. (*Purdue, 1974*)
Students supervised/Étudiants dirigés: Ph.D. 2; M.Sc. 8
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Léger, C. and Wolfson, D.B. (1987), Hypothesis testing for a nonhomogeneous Poisson process. *Stochastic Models*, **3**, 439–455.
- Clarkson, D.B. and Wolfson, D.B. (1985), A displaced Poisson process applied to screening for breast cancer in stratified samples with false negatives. *Statistica Neerlandica*, **39**, 361–373.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

K.J. Worsley, Associate Professor, Ph.D. (*Auckland, 1978*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Worsley, K.J. (1986), Confidence regions and tests for a change-point in a sequence of exponential family random variables. *Biometrika*, **73**, 91–104.
- Tyler, J.L., Strother, S.C., Zattore, R.J., Alivisatos, B. , Worsley, K.J., Diksic, M. and Yamamoto, Y.L. (1988), Stability of regional glucose metabolism in the normal brain measured by PET. *Annals of Neurology*, **29**, 631–642.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Change-points; Points de rupture

School of Computer Science

L. Devroye, Professor, Ph.D. (*Texas, 1976*)
Students supervised/Étudiants dirigés: Ph.D. 2; M.Sc. 5
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Devroye, L. (1986), *Non-Uniform Random Variate Generation*. Springer-Verlag, New York.
- Devroye, L. (1987), *A Course in Density Estimation*. Birkhäuser, Boston.

Fields of interest/Domaines d'intérêt:
- Statistical Computing; Calcul statistique
- Nonparametrics; Statistique non paramétrique

Department of Psychology

J.O. Ramsay, Professor, Ph.D. (*Princeton, 1966*)
Students supervised/Étudiants dirigés: Ph.D. 5; M.Sc. 1
Grants/Subventions: NSERC Operating Grant; FCAR subvention d'équipe

Selected Publications/Publications choisies:
- Ramsay, J.O. (1982), Some statistical approaches to multidimensional scaling data (with discussion). *Journal of the Royal Statistical Society Series A*, **145**, 285–312.
- Ramsay, J.O. (1989), Monotone regression splines in action. *Statistical Science*, **3**, pp.425-461.

Fields of interest/Domaines d'intérêt:
- Psychometrics; Psychométrie
- Data Analysis; Analyse des données

Faculty of Management

G.A. Whitmore, Professor, Ph.D. (*Minnesota, 1968*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Pullum, G.G., Chown, M. and Whitmore, G.A. (1988), Reliability analysis of a multipath switching network. *Microelectronics and Reliability*, **28**, 619–633.
- Whitmore, G.A. (1986), Normal-gamma mixtures of inverse Gaussian distributions. *Scandinavian Journal of Statistics*, **13**, 211–220.

Fields of interest/Domaines d'intérêt:
- Reliability Theory; Théorie de la fiabilité
- Data Analysis; Analyse des données

Theses/Thèses (1983 to present/1983 à présent):

1) L. Joseph (1989), The multi-path change point, Ph.D. Thesis.
2) C.S. Ling (1989), On the theory of elliptically contoured distributions, M.Sc. Thesis.

3) D. Morin-Wahhab (1989), On some functions of quadratic forms and related topics, Ph.D. Thesis.

4) M.M. Njoroge (1989), On Jacobians connected with matrix variate random variables, M.Sc. Thesis.

5) D.B. Boothroyd (1988), On some properties of balanced incomplete block designs, M.Sc. Thesis.

6) A. Huntsman (1988), Combining correlated tests, M.Sc. Thesis.

7) D.N. Jairu (1988), Distributions of Some Random Volumes and their Connection to Multivariate Analysis, M.Sc. Thesis.

8) L. Nilakantan (1988), Estimation for non-homogeneous Poisson processes, M.Sc. Thesis.

9) J.M. Zielinski (1988), Clustering procedures for sample paths from Poisson processes, Ph.D. Thesis.

10) D. Latour (1987), Equalities and inequalities for canonical correlation coefficients, with special emphasis on the two-way layout of experimental design, M.Sc. Thesis.

11) S. Puntanen (1987), On the relative goodness of ordinary least squares estimation in the general linear model, Ph.D. Thesis. (University of Tampere)

12) J. Adam (1986), Branching Processes in Random Environments, M.Sc. Thesis.

13) C.G. Brewer (1986), A comparative study of iterative and noniterative factor analytic techniques in small to moderate sample sizes, M.Sc. Thesis.

14) A. Diodati-Nolin (1985), Predicting the power of an intraocular lens implant: an application of model selection theory, M.Sc. Thesis.

15) N. Khan (1985), Test of independence of subvectors in multivariate analysis, M.Sc. Thesis.

16) J. Thiffault (1985), Estimation for homogeneous Poisson processes, M.Sc. Thesis.

17) L. Joseph (1984), Screening for breast cancer: an assessment of various stochastic models, M.Sc. Thesis.

18) S.B. Provost (1984), Distribution problems connected with multivariate linear functional relationship models, Ph.D. Thesis.

19) G. Sampson (1984), On multiple correlation and its generalizations, M.Sc. Thesis.

20) P. Merkouris (1983), Distribution of the volume content of randomly distributed points, M.Sc. Thesis.

Department of Epidemiology and Biostatistics

The department of Epidemiology and Biostatistics is part of the Faculty of Medicine with graduate programs administered through the Faculty of Graduate Studies and Research. Over 60 students are enrolled in the various programs at any one time. The department is broadly based, with a strong methodologic core. It also has both community and clinical components, and has links to the Federal Bureau of Epidemiology in Ottawa. The recently-established program in pharmaco-epidemiology will focus on clinical trials and post-marketing surveillance. The setting offers a valuable opportunity for those with quantitative training to learn and apply biostatistical skills to a wide array of health problems and to develop further biostatistical methods. Students may also take courses for credit in the Department of Mathematics and Statistics or in other departments at McGill or at the three other universities in Montreal. There are more than 40 faculty members; those with more quantitative research interests include:

J.C. BAILAR III: Environmental hazards and risk assessment;cancer epidemiology: inference in science. G. BRAVO: Survival analysis, stopping rules for clinical trials. A. CIAMPI: Analysis of large data sets. Classification. Mathematical modelling. J.A. HANLEY: Assessing observer variation and the accuracy of medical diagnostic tests. G.B. HILL: Cancer: statistical methods and mathematical models. F.D.K. LIDDELL: Research design in the health sciences; simplification of analytical procedures. O.S. MIETTINEN: Development of theoretical epidemiology and the theory of applied clinical sciences. S.H. SHAPIRO: Clinical trials; health services research. S. SUISSA: Clinical trials; methodology for design and analysis, statistical inference. C. WOLFSON: Stochastic models of disease prognosis. Neuroepidemiology (especially Multiple Sclerosis)

Le département d'épidémiologie et de biostatistique fait partie de la faculté de médecine. Ses programmes d'études supérieures sont administrés par la faculté d'études supérieures et de recherche. Plus de 60 étudiants sont inscrits dans les divers programmes. Le département a une grande base et est fort en méthodologie. Il a des liens avec le bureau féderal d'épidémiologie à Ottawa. Récemment un programme en pharmacologie et épidémiologie a été mis sur pied et se concentrera sur des essais cliniques et sur la surveillance post-marketing. Ceux avec une une formation quantitative ont la possibilité d'apprendre et d'appliquer des compétences biostatistiques à une grande gamme de problèmes de santé et de développer davantage de méthodes biostatistiques. Les étudiants ont la possibilité de suivre des cours de crédit du département de mathématiques et de statistique ou des cours d'autres départements à McGill ou aux trois autres universités à Montréal. Le département a plus de 40 membres du personnel enseignant: ceux avec des domaines d'intérêt plus quantitatifs sont:

J.C. BAILAR III: les risques écologiques et l'estimation des risques; l'épidémiologie du cancer; l'inférence en sciences. G. BRAVO: l'analyse de survie, les règles pour arrêter les essais cliniques. A. CIAMPI: l'analyse de larges ensembles de données, la classification, la modélisation mathématique. J.A. HANLEY: l'évaluation de la variation entre observeurs et de la précision des analyses diagnostiques médicales. G.B. HILL: le cancer: les méthodes statistiques et les modèles mathématiques. F.D.K. LIDDELL: la planification des recherches dans les sciences de la santé, la simplification des procédés analytiques. O.S. MIETTINEN: Le développement de l'épidémiologie théorique et la théorie des sciences cliniques appliquées. S.H. SHAPIRO: les essais cliniques, les recherches sur les services de la santé. S. SUISSA: les essais cliniques, la méthodologie de planification et d'analyse, l'inférence statistique. C. WOLFSON: les modèles stochastiques du prognostic des maladies, la neuroépidémiologie (en particulier, la sclérose en plaques).

Faculty/Le personnel enseignant:

B.G. Armstrong, Assistant Professor, Ph.D. (*London, l983*)
Students supervised/Étudiants dirigés: M.Sc. 5
Grants/Subventions: NHRDP Project/Grant l988-89

Selected Publications/Publications choisies:
- Armstrong, B.G. and Sloan, M. (l989), Ordinal regression models for epidemiological data. *American Journal of Epidemiology*, **129**.
- Armstrong, B.G., Whittemore, A.S. and Howe, G.R. (l989), Analysis of case-control data with covariate measurement error: application to diet and colon cancer. *Statistics in Medicine*.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)

John C. Bailar III, Associate Professor, M.D./Ph.D. (*Yale, 1955/American, 1973*)
Students supervised/Étudiants dirigés: Ph.D. 6

Selected Publications/Publications choisies:
- Bailar, J.C. and Smith, E.M. (1986), Progress against Cancer? *New England Journal of Medicine*, **314**, l226–l232.
- Bailar, J.C. and Mosteller, F.M. (1988), Guidelines for Statistical Reporting in Articles for Medical Journals. *Annals of Internal Medicine*, **108**, 266–273.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

G. Bravo, Assistant Professor, Ph.D. (*Sherbrooke, l987*)
Grants/Subventions: NSERC Operating Grant (l988-l99l)

Selected Publications/Publications choisies:

- Bravo, G. and MacGibbon, B. (l988), Improved shrinkage estimators for the mean vector of a scale mixture of normals with unknown variance. *Canadian Journal of Statistics*, **16(3)**.
- Bravo, G. and MacGibbon, B. (l988), Improved estimation for the parameters of an inverse guassian distribution. *Communications in Statistics A*.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Multivariate Analysis; Analyse multidimensionnelle

A. Ciampi, Associate Professor, Ph.D. (*Queen's, Rome*)
Students supervised/Étudiants dirigés: l
Grants/Subventions: MRC; NSERC

Selected Publications/Publications choisies:

- Ciampi, A., Chang. C.H., Hogg, S.A. and McKinney, S.M. (l987), Recursive partition: A versatile method for exploratory data analysis in biostatistics. *Biostatistics* (I.B. MacNeill and G.J. Umphrey, eds) D. Reidel Publishing Company, Holland, 23–50.
- Etezadi-Amoli, J. and Ciampi, A. (l987), Extended hazard regression for censored survival data with data with covariates: A spline approximation for the baseline hazard function. *Biometrics*, **43**, l8l–l92.

Fields of interest/Domaines d'intérêt:

- Applications (biology; biologie)
- Applications (health; santé)

J.A. Hanley, Associate Professor, Ph.D. (*Waterloo, 1973*)
Students supervised/Étudiants dirigés: Ph.D. l; D.Sc. l;
Grants/Subventions: NSERC Operating Grant; FRSQ Grant

Selected Publications/Publications choisies:

- Hanley, J.A. (1988), The Robustness of the "Binormal" Assumptions Used in Fitting ROC Curves. *Medical Decision Making*, **8**.
- Hanley, J.A., Alternative Approaches to Receiver Operating Characgteristic Analyses 1. *Radiology*, **168**.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

Gerry B. Hill, Professor, M.Sc. (*London, 1967*)
Students supervised/Étudiants dirigés: M.Sc.
Grants/Subventions: NHRDP

Selected Publications/Publications choisies:

- Hill G.B. (1985), Cancer in Canada: An Epidemiological Perspective. *Canadian Family Physician*, **3l**, l2l9–l228.

- Hill G.B. (1983), Controlled Clinical Trials—The Emergence of a Paradigm. *Clinical Inv. Medicine*, **6**, 25–32.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

F.D.K. Liddell, Professor, Ph.D. (*London, l978*)
Students supervised/Étudiants dirigés: Ph.D. 5; M.Sc. 2

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)

Olli S. Miettinen, M.D.&Ph.D. (*Helsinki, Minnesotta*)
Students supervised/Étudiants dirigés: 40

Selected Publications/Publications choisies:
- Miettinen, O.S. (l985), Theoretical Epidemiology: Principles of Occurrence Research in Medicine. John Wiley and Sons, New York.
- Miettinen, O. and Nurminen M. (l985), Comparative Analysis of two rates. *Statistics in Med.*, **4**, 2l3–226.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Design & Analysis of Experiments; Planification & analyse d'expériences

S.H.Shapiro, Associate Professor, Ph.D. (*Stanford, 1972*)
Students supervised/Étudiants dirigés: M.Sc. 7; Ph.D. l
Grants/Subventions: NIH l986-l989, NSERC l985-l988

Selected Publications/Publications choisies:
- Shapiro, S.H. and Louis, T.A. (l983), Clinical Trials. Marcel Dekker New York.
- Shapiro S.H. (l982), Collapsing Contingency Tables–A Geometric Approach. *American Statistician*, **36**, 43–46.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

S. Suissa, Assistant Professor, Ph.D. (*Florida, 1982*)
Students supervised/Étudiants dirigés: M.Sc.2; Ph.D. l
Grants/Subventions: NSERC Operating Grant (l988–l99l)

Selected Publications/Publications choisies:
- Suissa S. and Salmi R.LO. (1989, to appear), Unidirectional multiple comparisons of Poisson variables. *Statistics in Medicine*.
- Suissa, S., Levinton, C., Esdaile, J. (1989, to appear), Modelling percentage change: A potential linear mirage. *Journal of Clinical Epidemiology*.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Design & Analysis of Experiments; Planification & analyse d'expériences

C. Wolfson, Assistant Professor, Ph.D. (*McGill*)

Students supervised/Étudiants dirigés: Diploma l

Grants/Subventions: NHRDP Research Grant l987-l989. Foundation Pierre Saintonge l986-l987; l987-l988. FRSQ, l985-l987. Canadian Heart Foundation l985-l987.

Selected Publications/Publications choisies:

- Wolfson, C. and Confavreux, C. (1985), A Markov Model of the Natural history of Multiple Sclerosis. *Neuroepidemiology*, **4**, 227–239.
- Boyd, N.F., Wolfson, C., Moskowitz, M. Et al. (l986), Observer variation according to bias in the classification of mammographic parenchymal patterns. *J.C.D.*, **39**, 465–472.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

McMaster University

Hamilton, Ontario, L8S 4K1
Department of Mathematics & Statistics
&
Department of Clinical Epidemiology & Biostatistics

The M.Sc. Program in Statistics has operated since 1975 under an inter-Faculty Committee. The present Committee brings together statisticians and probabilists from the departments of Mathematics and Statistics, Clinical Epidemiology and Biostatistics, and Chemical Engineering, as well as the National Water Research Institute in nearby Burlington. This structure gives the Program great flexibility and allows students to concentrate on fundamental theory and methods, or applications to specific subject areas.

Special strengths at McMaster include applications to clinical trials, survival analysis, occupational health, process control, fisheries, water quality and pollution, and fundamental work on robustness, order statistics, distribution theory, time series, combinatorics and applied probability.

The M.Sc. may be completed by course work with thesis or project in 12 months of full-time study. Some students opt for 4 to 6 months more, to take additional courses in Medical Statistics or Computer Science or to spend more time writing a thesis. A student whose first degree is not in Statistics will usually require 2 years to complete the M.Sc.

Most graduate students receive research stipends paid from faculty members' research grants and contracts. Students interested in leading undergraduate tutorials may apply for teaching assistantships. The Committee has funds to award to the top-ranked students each year, as entrance scholarships for Canadian students or bursaries to help cover the tuition fee differential of visa students. A limited number of scholarships and differential fee waivers are awarded by the University in campus-wide competition.

Students interested in Biostatistics may be able to work with teams on major Health Sciences projects. This is a unique opportunity to develop communication and teamwork skills.

McMaster boasts excellent library and computing facilities. All major statistics packages are available, including SAS on an IBM VM system and IMSL and GLIM on a VAX 8650. The Department of Mathematics and Statistics has two UNIX machines, a Sun 3/60 workstation and an Ardent Titan super-computer, and plans to acquire more. Software includes New S for data analysis and PRO-MATLAB

for numerical analysis integrated with advanced graphics. IBM OS/2 and Apple Macintosh microcomputers are available for student use.

Ph.D. students are admitted through the Department of Mathematics and Statistics. The number of places is very limited.

Le programme de maîtrise (M.Sc.) en statistique est dirigé depuis 1975 par un comité dont les membres viennent de plusieurs facultés. Le comité actuel réunit des statisticiens et des probabiltistes des départements de mathématiques et de statistique, d'épidémiologie clinique et de biostatistique, et de génie chimique aussi bien que de l'Institut national de recherche sur les eaux. Cette structure donne au programme une grande flexibilité et permet aux étudiants de se concentrer sur la théorie fondamentale et les methodes, ou sur des applications aux domaines particuliers.

Le programme de maîtrise de McMaster est fort en applications aux essais cliniques, à l'analyse de survie, à la santé occupationnelle, au contrôle des processus, aux pêcheries, à la qualité des eaux et à la pollution et en travail fondamental sur la robustesse, les fonctions de l'ordre des observations, la théorie des fonctions de répartition, les séries chronologiques, les combinatoires, et les probabilités appliquées.

Un étudiant à plein temps peut obtenir sa maîtrise (M.Sc.) en 12 mois en suivant des cours et en rédigeant une thèse ou en faisant un projet. Il est possible aussi pour les étudiants de prolonger leurs études de 4 à 6 mois afin de suivre davantage de cours en statistique médicale ou en informatique ou pour passer davantage de temps sur la rédaction de leur thèse. Un étudiant dont le diplôme de premier cycle n'est pas en statistique prend 2 ans d'habitude pour obtenir sa maîtrise.

La plupart des étudiants diplômés sont soutenus financièrement par les subventions de recherche et des contrats de professeurs. Les étudiants intéressés peuvent poser leur candidature pour faire de l'assistanat. Le comité a des fonds qu'il attribue aux meilleurs étudiants chaque année, soit en tant que bourses d'entrée pour les étudiants canadiens, soit en tant que bourses pour les étudiants venant de l'étranger afin d'aider à couvrir la différence dans les frais de scolarité de ces étudiants. Un nombre limité de bourses et de renonciations aux frais différentiels de scolarité sont décernées par l'université dans un concours qui englobe tout le campus.

Les étudiants qui s'intéressent à la biostatistique pourront travailler avec des équipes sur des projets majeurs dans les sciences de la santé. L'étudiant pourra ainsi profiter de cette occasion unique de développer de l'habileté en communication et en collaboration d'équipe.

McMaster est fier de posséder une bibliothèque excellente et des ressources excellentes en ordinateurs. Tous les progiciels statistiques principaux sont disponibles, y compris SAS qui est installé sur un système IBM VM et IMSL et GLIM qui sont sur un VAX 8650. Le département de mathématiques et de statistique a deux machines UNIX, un poste de travail SUN 3/60 et un super–ordinateur ARDENT TITAN, et il projette acquérir d'autres ordinateurs. Les logiciels disponibles comprennent NEW S pour l'analyse des données et PRO–MAT LAB pour l'analyse numérique avec l'infographie

avancée. Les étudiants ont accès aux micro–ordinateurs Apple Macintosh et à OS/2 de IBM.

Les étudiants de troisième cycle sont inscrits dans le département de mathématiques et de statistique. Le nombre d'étudiants que l'on peut accepter dans ce programme est très limité.

Faculty/Le personnel enseignant:

Department of Mathematics and Statistics

N. Balakrishnan, Associate Professor, Ph.D. (*IIT Kanpur, 1981*)
Students supervised/Étudiants dirigés: M.Sc. 5, Ph.D. 1
Grants/Subventions: NSERC Operating Grant, McMaster University SERB Grant

Selected Publications/Publications choisies:
- Tiku, M.L., W.Y. Tan & N. Balakrishnan (1986), Robust Inference, Marcel Dekker, New York.
- Arnold, B.C. & N. Balakrishnan (1989), *Relations, Bounds and Approximations for Order Statistics. Lecture Notes in Statistics*, Springer-Verlag, New York.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

M. Behara, Professor, Ph.D. (*Saarbruechen, 1963*)
Students supervised/Étudiants dirigés: M.Sc. 3, Ph.D. 2
Grants/Subventions: NSERC Conference Grant

Selected Publications/Publications choisies:
- Behara, M. (1985), Polynomial entropy. In: *Contributions to Econometrics and Statistics Today*, pp. 46-51, Springer-Verlag, New York.
- Behara, M. & N. Giri (1983), Generalized variance statistics in the testing of hypothesis in complex multivariate Gaussian distributions. *Archiv der Mathematik*, **41**, 538-543.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Information Theory; Théorie de l'information

I.Z. Chorneyko, Associate Professor, Ph.D. (*Alberta, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 7, Ph.D. 1

Selected Publications/Publications choisies:
- Chorneyko, I.Z. & L. Zing (1985), An application of group testing to computer networks with priority in system. *Congressus Numerantium*, **49**, 315-320.
- Chorneyko, I.Z. & S.G. Mohanty (1975). On the enumeration of certain sets of planted plane trees. *Journal of Combinatorial Theory (B)*, **18**, 209-221.

Fields of interest/Domaines d'intérêt:
- Combinatorial Theory; Mathématiques combinatoires
- Mathematical Statistics; Statistique mathématique

C.W. Dunnett, Professor Emeritus, D.Sc. (*Aberdeen, 1960*)
Students supervised/Étudiants dirigés: M.Sc. 8
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Dunnett, C.W. (1980), Pairwise multiple comparisons in the homogeneous variance, unequal sample size case. *Journal of the American Statistical Association*,**75**, 789-795.
- Dunnett, C.W. (1960), On selecting the largest of k normal population means. *Journal of the Royal Statistical Society B*,**22**, 1-30.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

F.M. Hoppe, Professor, Ph.D. (*Princeton, 1975*)
Students supervised/Étudiants dirigés: Ph.D. 1
Grants/Subventions: NSERC Operating Grant, NSERC Major Equipment Grant, National Science Foundation (USA), Air Force Office of Scientific Research (USA), Sloan Foundation

Selected Publications/Publications choisies:
- Hoppe, F.M. (1987), The sampling theory of neutral alleles and an urn model in population genetics. *Journal of Mathematical Biology*, **25**, 123-159.
- Hoppe, F.M. (1986), Size-biased filtering of Poisson-Dirichlet samples with an application to partition structures in genetics, *Journal of Applied Probability*,**23**, 1008-1012.

Fields of interest/Domaines d'intérêt:
- Applications
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

P.D.M. Macdonald, Professor, D.Phil. (*Oxford, 1971*)
Students supervised/Étudiants dirigés: M.Sc. 8
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Macdonald, P.D.M., H.D. Smith & L. Jantz (1987), The utility of Babine smolt enumerations in management of Babine and other Skeena River sockeye salmon (Oncorhynchus nerka) stocks. In: *Sockeye Salmon (Oncorhynchus nerka) Population Biology and Future Management* [Ed. H.D. Smith, L. Margolis, C.C. Wood], pp. 280-295. Canadian Special Publications in Fisheries and Aquatic Sciences, 96
- Klein, B. & P.D.M. Macdonald (1980), The multi-type continuous-time Markov branching process in a periodic environment. *Advances in Applied Probability*, **12**, 81-93.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Statistical Computing; Calcul statistique

E.R. Mead, Associate Professor, Ph.D. (*Western Ontario, 1969*)
Students supervised/Étudiants dirigés: M.Sc. 2

Selected Publications/Publications choisies:
- Chan, F.Y., L.K. Chan & E.R. Mead (1982), Properties and modifications of Whittaker-Henderson graduation. *Scandinavian Actuarial Journal*, 1982, 57-61.
- Chan, L.K., N.N. Chan & E.R. Mead (1971), On the best linear unbiased estimates of the parameters of the logistic distribution based on selected order statistics. *Journal of the American Statistical Association*,**66**, 889-892.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Mathematical Statistics; Statistique mathématique

S.G. Mohanty, Professor, Ph.D. Alberta (*1961*)
Students supervised/Étudiants dirigés: M.Sc. 7, Ph.D. 1
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Watanabe, T. & S.G. Mohanty (1987), On an inclusion-exclusion formula based on the reflection principle. *Discrete Mathematics*, **64**, 281-288.
- Csáki, E. & S.G. Mohanty (1986), Some joint distributions for conditional random walks. *Canadian Journal of Statistics*,**14**, 19-28.

Fields of interest/Domaines d'intérêt:
- Combinatorial Theory; Mathématiques combinatoires
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

M.L. Tiku, Professor, D.Sc. (*Aberdeen, 1984*)
Students supervised/Étudiants dirigés: M.Sc. 12
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- N. Balakrishnan & M.L. Tiku (1988), Robust classification procedures based on dichotomous and continuous variables. *Journal of Classification*, **5**, 53-80.
- Tiku, M.L. (1988), Modified maximum likelihood estimation for the bivariate normal. *Communications in Statistics A*,**17**, 893-910.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Multivariate Analysis; Analyse multidimensionnelle

DEPARTMENT OF CLINICAL EPIDEMIOLOGY AND BIOSTATISTICS

M. Gent, Professor, M.Sc. Durham (*1957*)

Grants/Subventions: Various medical research grants

Selected Publications/Publications choisies:

- Gent, M. (1988), Single studies and overview analyses: Is aspirin of value in cerebral ischemia? *Stroke*, **18**, 541-544.
- Turpie, A.G.G., M.N. Levine, J. Hirsh, C.J. Carter, R.M. Jay, P.J. Powers, M. Andrew, H.N. Magnani, R.D. Hull & M. Gent (1987), A double-blind randomized trial of Org 10172 low molecular weight heparinoid in the prevention of deep vein thrombosis in patients with thrombotic stroke. *The Lancet*, **1(8532)**, 523-526.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Clinical Trials; Essais cliniques

C.H. Goldsmith, Professor, Ph.D. (*North Carolina State, 1969*)

Students supervised/Étudiants dirigés: M.Sc. 11, Ph.D. 2

Grants/Subventions: Conn Smythe Foundation, National Health Research and Development, Ontario Ministry of Health, Ontario Ministry of the Environment, Ontario Thoracic Society, Ontario Ministry of Labour, National Cancer Institute (USA), Anaquest Pharmaceuticals

Selected Publications/Publications choisies:

- Goldsmith, C.H. & D.W. Gaylor (1970), Three-stage nested designs for estimating variance components. *Technometrics*, **12**, 487-498. [1970 Frank J. Wilcoxon Award]
- Stokes, B.A., A. Helewa, C.H. Goldsmith, J.D. Groh & G.R. Kraag (1988), Reliability of spinal mobility measurements in ankylosing spondylitis patients. *Physiotherapy Canada*, **40**, 338-344.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Design & Analysis of Experiments; Planification & analyse d'expériences

R.A. Milner, Associate Professor, MIS (*London, 1967*)

Students supervised/Étudiants dirigés: M.Sc. 6

Grants/Subventions: Medical Research Council, Health and Welfare Canada

Selected Publications/Publications choisies:

- Canadian Collaborative CVS-Amniocentesis Clinical Trial Group (1989), Multicentre randomized clinical trial of chorion villus sampling and amniocentesis. *The Lancet*, **1989**, 1-6.
- Paes, B., M. Andrew, R.A. Milner & A. Mohamoud (1987), Development changes for red cell creatine and free erythrocyte protoprophyrin in the healthy preterm infants in the first six months of life. *Journal of Pediatrics*, **111**, 745-747.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

R.S. Roberts, Professor, M.Tech (*Brunel, 1970*)
Students supervised/Étudiants dirigés: M.Sc. 8
Grants/Subventions: Ontario Ministry of Health, Health and Welfare Canada, Ontario Ministry of Labour and INCO Metals Ltd.

Selected Publications/Publications choisies:
- Guyatt, G.H., D.L. Sackett, D.W. Taylor, J. Chong, R.S. Roberts & S. Pugsley (1986), Determining optimal therapy - Randomized trials in individual patients. *New England Journal of Medicine*, **314**, 889-892.
- Ramsdale, E.H., R.S. Roberts, M.M. Morris & F.E. Hargreave (1985), Differences in responsiveness to hyperventilation and methacholine in asthma and chronic bronchitis. *Thorax*, **40**, 422-426.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

H.S. Shannon, Associate Professor, Ph.D. (*London, 1978*)
Students supervised/Étudiants dirigés: M.Sc. 12
Grants/Subventions: Various occupational health and other medical research grants

Selected Publications/Publications choisies:
- Shannon, H.S., T. Haines, C. Bernholz, J.A. Julian, D.K. Verma, E. Jamieson & C. Walsh (1988), Cancer morbidity in lamp manufacturing workers. *American Journal of Industrial Medicine*, **14**, 281-290.
- Knox, E.G. & H.S. Shannon (1986), A model basis for the control of whooping-cough. *International Journal of Epidemiology*, **15**, 544-552.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

D.W. Taylor, Associate Professor, M.A. (*Western, 1971*)
Grants/Subventions: Various medical research grants

Selected Publications/Publications choisies:
- Barnett, H.J.M., A. Fox, V. Hachinski, R.B. Haynes, S.J. Peerless, D.L. Sackett & D.W. Taylor (1986), Further conclusions from the extracranial-intracranial bypass trial. *Surgical Neurology*, *26*, 227-235.
- Evans, C.E., R.B. Haynes, N.J. Birkett, J.R. Gilbert, D.W. Taylor, D.L. Sackett, M.E. Johnston & S.A. Hewson (1986), Does a mailed continuing education program improve physician performance? Results of a randomized trial in hypertensive care. *Journal of the American Medical Association*, **225**, 501-504.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Statistical Computing; Calcul statistique

S.D. Walter, Professor, Ph.D. (*Edinburgh, 1972*)

Students supervised/Étudiants dirigés: M.Sc. 20, Ph.D. 4

Grants/Subventions: NSERC Operating Grant; Collaborative grants for clinical and epidemiologic studies from Health and Welfare Canada, Ontario Ministry of Health and other health agencies

Selected Publications/Publications choisies:

- Walter, S.D. & L.M. Irwig (1988), Estimation of test error rates, disease prevalence and relative risk from misclassified data: a review. *Journal of Clinical Epidemiology*, **41**, 923-937.
- Walter, S.D. (1984), Required sample size for categorical matching. *Journal of the American Statistical Association*,**79**, 662-667.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

Department of Chemical Engineering

J.F. MacGregor, Professor, Ph.D. (*Wisconsin, 1972*)

Students supervised/Étudiants dirigés: M.Eng. 36, Ph.D. 11

Grants/Subventions: NSERC Operating Grant, various NSERC Group and Group Strategic Grants, various industrial grants-in-aid.

Selected Publications/Publications choisies:

- MacGregor, J.F. (1988), On-line statistical quality control. *Chemical Engineering Progress*, **84**, 21-31.
- Harris, T.J. & J.F. MacGregor (1987), Design of discrete multivariable linear-quadratic controllers using transfer function matrices. *American Institute of Chemical Engineers Journal*, **33**, 1481-1495.

Fields of interest/Domaines d'intérêt:

- Applications (engineering; génie)
- Time Series Analysis; Analyse des séries chronologiques

Theses/Thèses (1983 to present/1983 à présent):

1) Y.Y. Hsieh (1988), On bivariate two-sample Kolmogorov-Smirnov type test statistics. M.Sc.

2) C.C.W. Ma (1988), A comparative study of various tests for equality of population variances. M.Sc.

3) F. Matarise (1988), Time series analysis for unequally-spaced data. M.Sc.

4) K-H. Wong (1988), Half logistic distribution: order statistics and some estimation methods. M.Sc.

5) R.S. Ambagaspitiya (1987), Order statistics from mixture- and outlier-exponential models and some applications. M.Sc.

6) R. Fan (1987), Derivation of moments during a busy period. M.Sc.

7) I.F. Nuamah (1987), Attributable risk estimation in matched case-control studies. M.Sc.

8) P. Sengeh (1987), Analysis of categorical data for cluster sample surveys. M.Sc.

9) D.C. Vaughan (1987), Hermite polynomial expansion of the distribution of the product of two normal variables. M.Sc.

10) E.K. Duku (1986), The identification of prognostic factors in patients suffering from thromboembolic stroke. M.Sc.

11) W.S. Lai (1986), Goodness-of-fit test for multivariate normal distribution. M.Sc.

12) E. Ng (1986), Prognostic measures for infertile couples: analysis of data from an infertility clinic. M.Sc.

13) N. Shrowthi (1986), Testing linear contrast of means. M.Sc.

14) Y. Sarraf (1985), Approximate conditional inference for location-scale models. M.Sc.

15) D.A. Callfas (1984), Rank order statistics under special alternatives. M.Sc.

16) P.E.J. Green (1984), An analysis of mark-recapture data from coded-wire tagging of hatchery-raised salmon, using log-linear models and graphics. M.Sc.

17) L. Pieck (1984), An analysis of a set of medical data using the bootstrap procedure. M.Sc.

18) N.C. Ryan (1984), Survival analysis of dialysis data: comparison of a parametric and three non-parametric techniques. M.Sc.

19) M. Song (1984), Statistical simulation of patient compliance. M.Sc.

20) F. van den Enden (1984), Latin square: a comparative analysis. M.Sc.

21) P. Bhasin (1983), An analysis of data on the health status of handicapped children. M.Sc.

22) M.E. Lewis (1983), Spatial analysis applied to archaeological data. M.Sc.

Current student enrolment/Étudiants inscrits présentement:
10 M.Sc., 1 part-time M.Sc., 1 Ph.D.

Memorial University of Newfoundland

St. John's, Newfoundland A1C 5S7
Department of Mathematics and Statistics

The Department of Mathematics and Statistics has 55 faculty members of which 10 are Statisticians. At undergraduate level in Statistics, the Department offers Honours degrees in Statistics and Joint Honours in Statistics and Pure Mathematics, Computer Science, and Biology. At graduate level in Statistics, the Department offers M.Sc. as well as MAS (Masters in Applied Statistics) degree. Also, Statisticians of the Department operate a Statistical Consulting Laboratory which serves the University research community, local industry and government.

Le département de mathématiques et de statistique, dont le personnel enseignant compte 55 membres, a 10 statiticiens. Au premier cycle en statistique, le département offre les programmes de baccalauréat spécialisé en statistique et de baccalauréat spécialisé bidisciplinaire en statistique et maths pures, informatique et biologie. Aux cycles supérieurs en statistique, le département offre les programmes de M.Sc. et de MAS (maîtrise en statistique appliquée). De plus, les statisticiens du département dirigent un laboratoire de consultation statistique pour la communauté de chercheurs de l'université, de l'industrie et du gouvernement.

Faculty/Le personnel enseignant:

U. Balasooriya, Associate Professor, Ph.D. (*Western, 1982*)

Selected Publications/Publications choisies:

- Balasooriya, U. and Chan, L.K. (1983), The Prediction of Future Order Statistics in the Two Parameter Weibull Distribution—A Robust Study. *Sankhya: The Indian Journal of Statistics*, **45, Series B**, 320–329.
- Balasooriya, U. (1987), A Comparative Study on the Prediction of Future Order Statistics in the Two-Parameter Gamma Distribution. *IEEE Transactions on Reliability* **R-35, 5**, 591–594.

Fields of interest/Domaines d'intérêt:

- Applicatons (engineering; génie)
- Techniques of Inference; Techniques de l'inférence statistique

R.F. Bartlett, Associate Professor, Ph.D. (*Waterloo, 1983*)
Students supervised/Étudiants dirigés: 1 M.Sc. in progress
Grants/Subventions: NSERC Operating Grant; Infrastructure Grant; NHRDP Grant

Selected Publications/Publications choisies:
- Bartlett, R.F. (1986), Estimating the total of a continuous population. *Journal of Statistical Planning and Inference*, **13**, 51–66.
- Bartlett, R.F. (1986), Sampling a finite population in the presence of trend and correlation: estimation of total 305-lactation production in cattle. *Canadian Journal of Statistics*, **14**, 201–210.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Sampling; Théorie de l'échantillonnage

C. Dalzell, Assistant Professor, Ph.D. (*Carnegie–Mellon, 1985*)
Students supervised/Étudiants dirigés: M.Sc. 1, 1 in progress
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Dalzell, C. (1988), Statistical Analysis of an Atom probe study of Iron Chromium. *Journal de Physique* Special Conference issue.

Fields of interest/Domaines d'intérêt:
- Spline Functions
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

L. Dionne, Associate Professor, Ph.D. (*Montreal, 1976*)

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique

K.P. Hapuarachchi, Assistant Professor, Ph.D. (*Manitoba, 1988*)
Grants/Subventions: President's NSERC

Selected Publications/Publications choisies:
- Hapuarachchi, K.P., Chan, L.K. and MacPherson, B.D. (1988), Robustness of $\bar{X}$ and $R-$Charts. *IEEE Transactions on Reliability*, **37**, 117–123.
- Hapuarachchi, K.P. (1988), Sampling Errors of Analytic Statistics: An Empirical Investigation. *Communications in Statistics B*, **17**, 549–567.

Fields of interest/Domaines d'intérêt:
- Quality Assurance; Contrôle de la qualité
- Sampling; Théorie de l'échantillonnage

R.K. Jain, Associate Professor, Ph.D. (*Western, 1976*)
Students supervised/Étudiants dirigés: M.Sc. 1

Selected Publications/Publications choisies:
- Jain, R.K. (1986), On Gini's Diversity Measure. *Communications in Statistics A*, **15**, 987–990.

- Jain, R.K. (1985), Ridge Regression and its Application to Medical Data. *Computers and Biomedical Research,* **18**, 363–368.

Fields of interest/Domaines d'intérêt:
- Applications
- Data Analysis; Analyse des données

C.C. Lee, Associate Professor, Ph.D. (*Oregon State, 1975*)
Grants/Subventions: NSERC Operating Grant; Infrastructure Grant

Selected Publications/Publications choisies:
- Lee, C. (1987), Chi-squared tests for and against an order restriction on multinomial parameters. *Journal of the American Statistical Association*, **82**, 611–618.
- Lee, C. (1988), Quadratic loss of order restricted estimators for treatment means with a control. *Annals of Statistics*, **16**, 751–758.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

A. Luong, Assistant Professor, Ph.D. (*Waterloo, 1986*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Luong, A., and Thompson, M.E. (1987), Minimum distance methods based on quadratic distance for transforms. *Canadian Journal of Statistics*, **15**, 239–251.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

T.K. Mak, Associate Professor, Ph.D. (*Western, 1978*)
Grants/Subventions: NSERC

Selected Publications/Publications choisies:
- Mak, T.K. and Li, W.K. (1988), A new method for estimating subgroup means under misclassification. *Biometrika*, **75**, 105–111.
- Mak, T.K. and Chan, L.K. (1985), On polynomial functional relationships. *Journal of the Royal Statistical Society B*, **48**, 510–518.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Techniques of Inference; Techniques de l'inférence statistique

B.C. Sutradhar, Associate Professor, Ph.D. (*Western, 1984*)
Students supervised/Étudiants dirigés: M.Sc. 2 (in progress)
Grants/Subventions: NSERC Operating Grant; Infrastructure Grant

Selected Publications/Publications choisies:
- Sutradhar, B.C., MacNeill, I.B. & Sahrmann, H.F. (1987), Time Series Valued Experimental Designs: One-Way Analysis of Variance with Autocorrelated Errors. *Advances in the Statistical Sciences*, **3** (eds. I.B. MacNeill & G.J. Umphrey), D. Reidel Publishing Co., 113–130.

• Sutradhar, B.C. (1986), On the Characteristic Function of Multivariate Student t-distribution. *The Canadian Journal of Statistics*, **14**, 329–337.

Fields of interest/Domaines d'intérêt:

• Multivariate Analysis; Analyse multidimensionnelle
• Time Series Analysis; Analyse des séries chronologiques

Current student enrolment/Étudiants inscrits présentement:

4 M.Sc.

Université de Montréal

Montréal, Québec H3C 3J7
Département de Mathématiques et de Statistique

Le Département de mathématiques et de statistique offre les programmes suivants:

Un B.Sc. spécialisé avec quatre orientations partageant un tronc commun de 30 crédits, soit: Actuariat, Mathématiques Fondamentales, Mathématiques Appliquées, Statistique.

Trois B.Sc. bidisciplinaires: mathématiques-informatique, mathématiques-physique et mathématiques-sciences économiques.

Un programme Majeur et un programme Mineur en mathématiques.

Une Maîtrise (M.Sc.) avec orientations en Mathématiques Fondamentales, Mathématiques Appliquées, Statistique.

Un Doctorat (Ph.D.) avec les mêmes orientations plus une en Mathématiques de l'Ingénieur en collaboration avec le Département de mathématiques appliquées de l'Ecole Polytechnique qui l'administre.

Le candidat à la Maîtrise avec mémoire en statistique doit s'inscrire à au moins 18 crédits de cours de niveau M.Sc. dont 12 au moins en statistique, et rédiger un mémoire sous la direction d'un professeur. (Un cours de 3h/sem. durant un trimestre ou un séminaire de 1h30/sem. durant deux trimestres vaut 3 crédits.)

Au Doctorat, orientation statistique, l'étudiant doit prendre au moins 15 crédits de cours de niveau supérieur, dont un cours obligatoire (Math 6720, en science statistique approfondie: Tests d'hypothèses) et à 3 crédits de séminaire. Il devra en plus réussir un examen général de synthèse et rédiger une thèse de Ph.D. sous la direction d'un professeur.

Les étudiants peuvent se voir confier des tâches de démonstrateur ou de chargé de cours. Une démonstration de 2h/sem. durant un trimestre rapporte environ 1200$. Un cours de 3h/sem. durant un trimestre rapporte environ 3500$.

The Department of Mathematics and Statistics offers the following programs:

A B.Sc. with four orientations sharing 30 credits, Actuarial Science, Applied Mathematics, Pure Mathematics, Statistics.

Three Double Majors combining Mathematics and Economics, Computer Science, Physics.

A Major and a Minor in mathematics.

A Master's (M.Sc.) with three orientations: Applied Mathematics, Pure Mathematics, Statistics.

A Ph.D. with the same orientations plus a joint one in Engineering Mathematics administered by the Department of Applied Mathematics of the Ecole Polytechnique.

Students doing a Master's with a thesis in statistics must take at least 18 course credits at the Master's level (at least 12 of which must be in statistics) and write a thesis under the supervision of a professor. (A course lasting 3hrs/wk for one term or a seminar course lasting 1.5hrs/wk for two terms is worth 3 credits.)

For a Ph.D. with a concentration in statistics, students must take at least 15 graduate level course credits, including one compulsory course (Mat 6720, in advanced statistical science: Hypothesis Testing) and three seminar credits. Students must also pass a comprehensive exam and write a Ph.D. thesis under the supervision of a professor.

Students may be awarded positions as tutors or lecturers. A 2hr/wk tutorial lasting one term pays approximately $1,200. A 3hr/wk course for one term pays about $3,500.

Faculty/Le personnel enseignant:

M. Bertaud, Professeur agrégé, Doctorat 3e cycle (*Paris, 1962*)
Students supervised/Étudiants dirigés: M.Sc. 13

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences

G. Ducharme, Professeur agrégé, Ph.D. (*Montréal, 1983*)
Students supervised/Étudiants dirigés: M.Sc. 9
Grants/Subventions: C.R.S.N.G., F.C.A.R. Apple Foundation

Selected Publications/Publications choisies:
- Ducharme, G. (1985), Bootstrap confidence cones for directional data. *Biometrika*, **72**. 637–646.
- Ducharme, G. (1987), Spatial median and directional data. *Biometrika*, **74**, 212–215.

Fields of interest/Domaines d'intérêt:
- Directional Data; Données directionnelles
- Bootstrap methods; Méthodes d'auto-amorçage

D. Dufresne, Professeur Adjoint, Ph.D.
Grants/Subventions: C.R.S.N.G. (Dépenses Courantes)

Selected Publications/Publications choisies:
- Dufresne, D. (1988), Moments of Pension Contributions and Fund Levels when Rates of Return are Random. *Journal of the Institute of Actuaries*.
- Dufresne, D. (1988), Comparison of Funding Methods in a Static Environment. *Proceedings of the 23rd Actuarial Congress*, Helsinki.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

R. Duncan, Professeur agrégé, Ph.D. (*San Diego, 1970*)
Students supervised/Étudiants dirigés: M.Sc. 5; Ph.D. 2

Selected Publications/Publications choisies:
- Duncan, R., & Szynal, D., A note on the weak and Hsu-Robbins law of large numbers. *Bulletin of the Polish Academy of Sciences*.
- Duncan, R., and Szynal, D., Pointwise convergence theorems for some classes of operators on $L^p(\mu), 1 < p < \infty$. *Proceedings of the fourth Pannonian symposium on Mathematical Statistics*.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités

N.C. Giri, Professeur titulaire, Ph.D. (*Stanford, 1961*)
Students supervised/Étudiants dirigés: M.Sc. 26; Ph.D. 13
Grants/Subventions: C.R.S.N.G.; F.C.A.R.

Selected Publications/Publications choisies:
- Giri, N.C., Kariya, T. and Perron, F. (), Invariant estimation of a mean vector μ of $N(\mu, \Sigma)$ with $\mu'\Sigma^{-1}\mu = 1$ or $\Sigma^{-\frac{1}{2}}\mu = C$ or $\Sigma = \sigma^2\mu'\mu I$. *Journal of Multivariate Analysis*,**27**.
- Giri, N.C. (), Locally minimax tests in symmetrical distribution. *Annals of the Institute of Statistical Mathematics*,**40**, 381–394.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Multivariate Analysis; Analyse multidimensionnelle

M. Goldstein, Professeur agrégé, Ph.D. (*Wisconsin, 1969*)
Students supervised/Étudiants dirigés: M.Sc. 8; Ph.D. 1

Selected Publications/Publications choisies:
- Goldstein, M.I. & Hoppe, I.M. (1981), Necessary and sufficient lifetime conditions for normed convergence of critical age- dependent braching processes with infinite variance. *Annals of Probability*, **9**, 490–497.
- Sankoff, D. & Goldstein, M.I. (1988), Probabilistic models of genome shuffling. *Bulletin of Mathematical Biology*.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

A. Joffe, Professeur titulaire, Ph.D. (*Cornell, 1959*)
Students supervised/Étudiants dirigés: M.Sc. 8; Ph.D. 3
Grants/Subventions: C.R.S.N.G.

Selected Publications/Publications choisies:
- Joffe, A., and Waugh, W.A. (1982), Exact distribution of kin numbers in a Galton-Watson process. *Journal of Applied Probability*, **19**, 767–775.

- Joffe, A., and Métivier, M. (1986), Weak convergence of Sequences of Semimartingales with application to multitype branching processes. *Advances in Applied Probability*, **18**, 20–65.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

Y. Lepage, Professeur titulaire, Ph.D. (*Montréal, 1971*)
Students supervised/Étudiants dirigés: M.Sc. 42; Ph.D. 2
Grants/Subventions: C.R.S.N.G.; F.C.A.R. (1981, 1983)

Selected Publications/Publications choisies:
- Lepage, Y. and Lambert, B. (1986), Le laser $C0_2$ dans la contrôle de la néoplasie cervicale intra-épithéliale (NIC). *Le journal de Gynécologie-Obstétrique et Biologie de la Reproduction*, **15**.
- Lepage, Y., Lambert, B., Rousseau, D. et Déry, J.P. (1985), Metaplastic vaginal lozenges: possible malignant transformations and clinical profile. *Cervix*, **3**,

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Nonparametrics; Statistique non paramétrique

S. Lessard, Professeur-chercheur agrégé, Ph.D. (*Montréal, 1977*)
Grants/Subventions: C.R.S.N.G.

Selected Publications/Publications choisies:
- Lessard, S., Le Q.I. et l'hérédité, ou les pièges de la statistique. Partie I. Tests t'aptitudes et analyse factorielle. *La Gazette des Sciences Mathématiques du Québec*.
- Lessard, S., Evolution in two-sex populations. *Interdisciplinary Aspects of Complex Adaptive Systems*, Santa Fe Institute, New Mexico.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Probability Theory; Théorie des probabilités

F. Perron, Professeur adjoint, Ph.D. (*Montréal, 1987*)

Selected Publications/Publications choisies:
- Perron, F. (1986), Test sur l'indépendance avec information, submitted/soumis.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Multivariate Analysis; Analyse multidimensionnelle

C.E. Särndal, Professeur titulaire, Ph.D. (*Lund, 1972*)
Students supervised/Étudiants dirigés: M.Sc. 5; Ph.D. 7
Grants/Subventions: C.R.S.N.G.

Selected Publications/Publications choisies:

- Särndal, C.E., Cassel, C.M. and Wretman, J.M. (1977), Foundations of Inference in Survey Sampling. New York, Wiley.
- Särndal. C.E. (), *A general view of estimation for two phases of selection with applications to two-phase sampling and nonresponse*.

Fields of interest/Domaines d'intérêt:

- Foundation of Inference; Fondements de l'inférence statisque
- Sampling; Théorie de l'échantillonnage

S. Tardif, Professeur agrégé, Ph.D. (*Montréal, 1978*)
Students supervised/Étudiants dirigés: M.Sc. 9
Grants/Subventions: C.R.S.N.G.; F.C.A.R.

Selected Publications/Publications choisies:

- Tardif, S. (1980), On the asymptotic distribution of a class of aligned rank order test statistics in randomized block designs. *La Revue Canadienne de Statistique*, **8**, 7–25.
- Tardif, S. (1987), Efficiency and optimality for tests based on weighted rankings. *Journal of the American Statistical Association*, **82**, 637–644.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Nonparametrics; Statistique non paramétrique

C. van Eeden, Professeure titulaire, Ph.D. (*Amsterdam, 1958*)
Students supervised/Étudiants dirigés: M.Sc. 19; Ph.D. 12
Grants/Subventions: C.R.S.N.G.; F.C.A.R.

Selected Publications/Publications choisies:

- van Eeden, C. (1985), Mean integrated squared error of kernel estimators when the density and its derivative are not necessarily continuous. *Annals of the Institute of Statistical Mathematics*, **37**. 461–472.
- Charras, A. and van Eeden, C. (1988), Bayes- and admissibility properties of estimators in truncated parameter spaces, submitted/soumis.

Fields of interest/Domaines d'intérêt:

- Mathematical statistics; Statistique mathématique
- Nonparametrics; Statistique non paramétrique

Theses/Thèses (1983 to present/1983 à présent):

1) François Perron (1987), Application de l'invariance en théorie de la décision, thèse de doctorat.

2) Sahnoun Dahel (1985), Estimation et inférence pour la moyenne d'une loi multinormale avec information additionnelle, thèse de doctorat.

3) Alain Theberge (1985), Les modèles linéaires et la théorie de l'estimation pour l'échantillonnage en plusieurs occasions, thèse de doctorat.

4) Dominique Colin (1984), L'étude de tests asymptotiquement non paramétriques en régression linéaire multiple, thèse de doctorat.

5) S. Froda (1984), Etude non paramétrique de questions d'estimation et de tests d'hypothèses relatives au problème d'un échantillon, thèse de doctorat.

6) G. Hudon (1984), Tests concernant la moyenne d'une population normale multivariée, thèse de doctorat.

7) L. Baghagha (1983), Estimation par le maximum de vraisemblance dans les modèles des réponses aléatoires, thèse de doctorat.

8) G. Ducharme (1983), La collapsabilité de tableaux de contingence, thèse de doctorat.

Current student enrolment/Étudiants inscrits présentement:
19 M.Sc., 4 Ph.D.

Département d'informatique et de recherche opérationnelle

Le Département d'informatique et de recherche opérationnelle englobe deux grandes orientations: l'informatique (architecture des ordinateurs, infographie, informatique de gestion, informatique théorique, intelligence artificielle, robotique, télécommunications, VLSI, etc.) d'une part et la recherche opérationnelle (optimisation et statistique-informatique) d'autre part.

Le Département offre une gamme complète de programmes de premier cycle: B.Sc. spécialisé en informatique (avec les deux orientations), majeur, mineur, Certificat en informatique appliquée, et B.Sc. spécialisé en mathématiques-informatique qui est le programme permettant entre autre une concentration de côté statistique.

Aux cycles supérieurs, le Département offre les programmes de maîtrise (M.Sc.) et de doctorat (Ph.D.). Ces programmes permettent à l'étudiant d'acquérir une formation polyvalente avec des cours de statistique, d'optimisation et d'informatique. Les étudiants deviennent donc capables de traiter un problème au complet, c'est-à-dire du développement théorique jusqu'à la réalisation informatique.

Les étudiants ont accès aux ordinateurs du Centre de calcul (ordinateurs CYBER et VAX) et à ceux du Département (VAX, sous-stations SUN, micro-ordinateurs et équipements spécialisés).

En 1972, le Département a mis sur pied un service de consultation pour les professeurs, les chercheurs et les étudiants des cycles supérieurs de l'Université. Ce service continue à fleurir avec le concours actif des statisticiens et de leurs étudiants gradués du Département.

The Department of computer science and operations research covers two areas: computer science (computer architecture, computer graphics, computing in management science, theoretical computer science, artificial intelligence, robotics, telecommunication, VLSI, etc.) and operations research (optimization and statistical computing).

The Department offers a complete range of undergraduate programs: Honours B.Sc. in computer science (with the two areas), major, minor, certificate in applied computer science, and Honours B.Sc. in mathematics-computer science which is the program that can lead among other things to a concentration in statistics.

At the graduate level, the Department offers programs leading to Master's (M.Sc.) and Doctorate (Ph.D.) degrees. These programmes provide the students with a varied training through courses in statistics, optimization and computer science. The students are then able to deal with a problem completely, from theoretical development to carrying it out on the computer.

The students have access to the Computer centre's CYBER and VAX computers and to the Department's VAX, SUN workstations, microcomputers and specialized facilities.

In 1972, the Department established a consulting service for the professors, researchers and graduate students of the University. This service continues to do well with the help of the Department's statisticians and their graduate students.

Faculty/Le personnel enseignant:

R. Cleroux, Professeur titulaire, Ph.D. (*Montréal, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 24, Ph.D. 5
Grants/Subventions: CRSNG (dépenses courantes), CRSNG (thématique), FCAR (équipe), FCAR (actions spontanées), Loto-Québec.

Selected Publications/Publications choisies:
- Cleroux, R., Dubuc, S., and Tilquin, C. (1979), The Age Replacement Problem with Minimal Repair and Random Repair Costs. *Operations Research*, **27**, 1158–1167.
- Cleroux, R., Robert, P., and Ranger, N. (1985), Some Results on Vector Correlation. *Computational Statistics and Data Analysis*, **3**, 25–32.

Fields of interest/Domaines d'intérêt:
- Statistical Computing; Calcul statistique
- Reliability Theory; Théorie de la fiabilité

U. Maag, Professeur titulaire, Ph.D. (*Toronto, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 14, Ph.D. 1
Grants/Subventions: FCAR (équipe), Loto-Québec

Selected Publications/Publications choisies:
- Dufour, R., Maag, U.R. and van Eeden, C. (1984), Correcting a proof of a characterization of the exponential distribution. *Journal of the Royal Statistical Society, B*, **46**, 238–241.
- Laberge-Nadeau, C., Saint-Pierre, M.-H, Maag, U., Bourbeau, R. and Beaucaire, C. (1986), La ceinture de sécurité: Son rendement chez les groupes d'accidents-occupants homogènes. *Publication # 475 du Centre de recherche sur les transports, Université de Montréal.*

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Multivariate Analysis; Analyse multidimensionnelle

R. Roy, Professeur titulaire, Ph.D. (*Montréal, 1965*)
Grants/Subventions: CRSNG individuelle; CRSNG infrastructure; FCAR équipe; FCAR centre

Selected Publications/Publications choisies:
- Roy, R., and Mélard, G. (1984), Sur un test d'égalité des autocovariances de deux séries chronologiques. *Revue Canadienne de Statistique*, **12**, 333–342.
- Roy, R., and Dufour, J.-M. (1986), Generalized portmanteau statistics and tests of randomness. *Communications in Statistics A*, **15**, 2953–2972.

Fields of interest/Domaines d'intérêt:
- Applications
- Time Series Analysis; Analyse des séries chronologiques

Theses/Thèses (1983 to present/1983 à présent):

1) H. Boudjellaba (1988), Tests de causalité dans les modèles ARMA multivariés, thèse de doctorat.

2) A. Latour (1986), Etude des autocovariances et des autocorrélations échantillonnales des modèles saisonniers, thèse de doctorat.

3) D. Ait Kadi (1985), Contribution au problème de remplacement préventif: politiques optimales de remplacements périodiques à plusieurs actions correctives, thèse de doctorat.

4) M. Gendreau (1984), Etude approfondie d'un modèle d'équilibre pour l'affectation des passagers dans les réseaux de transport en commun, thèse de doctorat.

5) P. L'Ecuyer (1983), Processus de décision Markoviens à étapes discrètes: application à des problèmes de remplacement d'équipement, thèse de doctorat.

Current student enrolment/Étudiants inscrits présentement:

7 M.Sc., 6 Ph.D.

University of New Brunswick

Fredericton, New Brunswick E3B 5A3
Department of Mathematics and Statistics

The Department of Mathematics and Statistics offers scholarships to most graduate students. Supervision of Masters and Doctoral theses is in the areas of distribution theory, mathematical statistics, multivariate analysis, reliability theory, sampling, stochastic processes, statistical computing, and time series, with applications in biology and engineering.

Two members of the Department hold joint appointments with the School of Computer Science, and statistical computing is a departmental strength. Close ties have also been established with the Faculty of Administration. Recently, graduate students in Engineering and Forestry have written statistically oriented theses. Members of the Department take an active interest in statistical consulting, both on and off campus.

The principal computing resources are an IBM 3090-180VF and an IBM 9370. There is also a Departmental microcomputer laboratory.

Le département de mathématiques et de statistique offre des bourses à la plupart des étudiants des cycles supérieurs. La direction des thèses de maîtrise et de doctorat se fait dans les domaines suivants: la théorie des fonctions de répartition, la statistique mathématique, l'analyse multidimensionnelle, la théorie de la fiabilité, la théorie de l'échantillonnage, les processus stochastiques, le calcul statistique, et les séries chronologiques, avec des applications à la biologie et à l'ingénierie.

Deux membres du département sont rattachés au département d'informatique. L'un des points forts du département est le calcul statistique. Des liens étroits ont été établis avec la faculté d'administration. Récemment, des étudiants diplômés en ingénierie et en syviculture ont rédigé des thèses avec une orientation statistique. Les membres du département s'intéressent vivement à la consultation statisque dans le milieu universitaire et ailleurs.

Les ressources principales pour le calcul sont un IBM 3090-180 VF et un IBM 9370. Le département a aussi un laboratoire de micro-ordinateurs.

Faculty/Le personnel enseignant:

P.K. Banerjee, Professor (*1971*)
Grants/Subventions: NSERC

Selected Publications/Publications choisies:

- Arcelus, F. and Banerjee, P.K. (1985), Selection of the most economical production plan in a tool-wear process. *Technometrics*, **27**, 433–437.
- Banerjee, P.K. and Sinha, B. (1985), Optimal and Adaptive strategies in discovering new species. *Sequential Analysis*, **4**, 111–122.

Fields of interest/Domaines d'intérêt:

- Applications (engineering; génie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

R.D. Gupta, Professor, Ph.D. (*Dalhousie, 1973*)

Students supervised/Étudiants dirigés: Masters 2

Grants/Subventions: NSERC, UNB Research Fund

Selected Publications/Publications choisies:

- Gupta, R.D. and Richards, D. (1987), Multivariate Louiville Distributions. *Journal of Multivarite Analysis*, **23**, 233–256.
- Gupta, R.D. and Gupta, R.C. (1988), Estimation of $P(Y_P > MAX(Y_1, Y_2, \ldots, Y_{P-1}))$ in the exponential case. *Communications in Statistics A*, **17**, 911–924.

Fields of interest/Domaines d'intérêt:

- Multivariate Analysis; Analyse multidimensionnelle
- Reliability Theory; Théorie de la fiabilité

W. Knight, Professor, Ph.D. (*Toronto, 1959*)

Selected Publications/Publications choisies:

- Knight, W. (1969), Asymptotic growth: An example of nonsense disguised as mathematics. *Journal of the Fisheries Research Board of Canada*, **26**, 3069–3072.
- Knight, W. (1965), A lemma for multiple inference. *Annals of Mathematical Statistics*, **36**, 1873–1874.

Fields of interest/Domaines d'intérêt:

- Applications (biology; biologie)
- Statistical Computing; Calcul statistique

R.A. Mureika, Associate Professor, Ph.D. (*Cath U Am, 1969*)

Students supervised/Étudiants dirigés: 3

Selected Publications/Publications choisies:

- Mureika, R.A. and Feuerverger, A. (1977), The Empirical Characteristic Function and Its Application. *Annals of Statistics*, **5**, 88–97.
- Mureika, R.A. (1972), The Maximization of Entropy of Discrete Denumerably-Valued Random Variables with Known Mean. *Annals of Mathematical Statistics*, **43**, 541–552.

Fields of interest/Domaines d'intérêt:

- Distribution Theory; Théorie des fonctions de répartition
- Sampling; Théorie de l'échantillonnage

M. Tingley, Assistant Professor, Ph.D. (*Dalhousie*)

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Robust Statistics; Statistique Robuste

T.R. Turner, Associate Professor, Ph.D. (*Michigan, 1971*)

Selected Publications/Publications choisies:
- Caneron, M.A. and Turner, T.R. (1987), Fitting models to spectra using regression packages. *Applied Statistics*, **36**, 47–57.
- Turner, T.R. and Foulds, R.A. (1987), Decision schemes for assessing dark fibre concentration in top. *Textile Research Journal*, **57**, 710–720.

Fields of interest/Domaines d'intérêt:
- Statistical Computing; Calcul statistique
- Time Series Analysis; Analyse des séries chronologiques

Theses/Thèses (1983 to present/1983 à présent):

1) A.M. Warner (1988), Stochastic Modelling of Interest and Benefits in Insurance, M.A. Thesis.

2) J. Leonard (1988), Estimation of System Reliability, M.A. Thesis.

3) K-F Lam (1988), Optimal Replacement Policy, M.A. Thesis.

4) R. Butler (1988), The Estimation and Testing of the Mean of a Normal Distribution with Known Coefficient of Variation, M.A. Thesis.

5) L. Mach (1987), Estimation of the Proportion of a Population Having Certain Unobservable Characteristics, Ph.D. Thesis.

6) J. Earl (1985), Testing for Differences Between the Mortality Rates of Two Populations, M.A. Thesis.

7) A. Armenakis (1985), Statistical Calibration and Prediction Using The Structural Inference, M.A. Thesis.

8) L. Mach (1983), Stratification Using Cluster Analysis, M.A. Thesis.

Current student enrolment/Étudiants inscrits présentement:

9 M.A., 4 Ph.D.

Ontario Institute for Studies in Education (OISE)

252 Bloor St. West
Toronto, Ontario M5S 1V6
Department of Measurement, Evaluation & Computer Applications (MECA)

The Department of Measurement, Evaluation and Computer Applications (MECA) is a department within the graduate Department of Education. Statistical applications focus principally on measurement and to a lesser degree on evaluation.

Le département de mesure, d'évaluation, et d'applications de l'informatique est un département du département d'études supérieures en éducation. Les applications statistiques concentrent sur la mesure principalement, et à un moindre degré sur l'évaluation.

Faculty/Le personnel enseignant:

S.A. Alvi, Associate Professor, Ph.D. (*Indiana*)

D.F. Burrill, Associate Professor, Ph.D. (*Cornell, 1969*)
Students supervised/Étudiants dirigés: M 1; Ph.D. 1

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Applications

M.D. Ellis, Associate Professor, Ed.D. (*Toronto*)

A. Even, Associate Professor, Ph.D. (*Toronto*)

S.B. Khan, Associate Professor, Ph.D. (*Florida State*)

L.D. McLean, Professor, Ph.D. (*Wisconsin, 1964*)
Students supervised/Étudiants dirigés: M 1; Ph.D. 3

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Design & Analysis of Experiments; Planification & analyse d'expériences

S. Nishisato, Professor, Ph.D. (*North Carolina, 1966*)
Students supervised/Étudiants dirigés: M 8; Ph.D. 9

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle

R.E. Traub, Professor, Ph.D. (*Princeton, 1964*)
Students supervised/Étudiants dirigés: M 6; Ph.D. 15

Fields of interest/Domaines d'intérêt:
- Applications

M.W. Wahlstrom, Associate Professor, Ph.D. (*Alberta*)

J. Weiss, Associate Professor, Ph.D. (*Chicago*)

Theses/Thèses (1983 to present/1983 à présent):

1) J.A. Halliday (1989), Study of the construct validity of Caribbean Examinations Council mathematics multiple choice examinations, M.A. Thesis.

2) P. Moyls (1989), Continuous sports data: Innovative techniques in coding and analysis, Ph.D. Thesis.

3) J. B. Cousins (1988), Factors influencing school principals' use of performance appraisal results, Ph.D. Thesis.

4) D. Day (1988), Investigating the validity of interpretations of the Myers Briggs type indicator in French and English, Ph.D. Thesis.

5) H.M. Chipuer (1987), Dual scaling of several sets of categorical data, M.A. Thesis.

6) P. Chow (1987), A simulation study to evaluate Wainer's version of computerized adaptive testing, Ph.D. Thesis.

7) M.G. Simon (1987), Statistical and subjective item-bias analyses of translated educational achievement items, Ph.D. Thesis.

8) C.F. Vetterli (1987), Efficacy of different item detection methods in detecting multidimensional item bias, M.A. Thesis.

9) M.E. Gessaroli (1986), A Monte Carlo investigation of the Type I error rates of three multivariate tests applied to categorical data. Ph.D. Thesis.

10) C. Parent-Goeffroy (1986), The assessment of academic self-concept, Ph.D. Thesis.

11) T.R.I. Wiggins (1986), An evaluatoin of The Boys and Girls Clubs in Canada: A case study, M.A. Thesis.

12) D.R. Lawrence (1985), Dual scaling of multidimensional data structures: An extended comparison of three methods, Ph.D. Thesis.

13) H. Lei (1985), Structural analysis of moment matrices and its applications, Ph.D. Thesis.

14) J. Sachs (1985), Approximating an underlying continuous variable with dual scaling, M.A. Thesis.

15) G.R. Somer (1985), Measuring schizophrenics' understanding of schizophrenia: Instrument construction and validation, M.A. Thesis.

16) S.F. Halpine (1984), A dual scaling analysis of student course evaluations, M.A. Thesis.

17) D.D. Djap (1983), Proverbial understanding and the development of part-whole reasoning skills, Ph.D. Thesis.

18) R. Gupta (1983), Cigarette smoking and personality: A multivariate classification approach, M.A. Thesis.

19) P. Miceli (1983), The covariance structure analysis of event related potentials, M.A. Thesis.

20) D. Rachman (1983), Evaluation of a method for analyzing individual differences in bilevel data from quasi- and non-experimental designs, Ph.D. Thesis.

21) W.-J. Sheu (1983), Development of new algorithms in dual scaling for multi-way classification, Ph.D. Thesis.

22) O. Wain (1983), The validity of written simulated patient-management-problems for assessing the skills of baccalaureate nursing student in solving nursing-care problems, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:

15 Masters, 8 Ph.D.

University of Ottawa

Ottawa, Canada K1S 5B6
Department of Mathematics

The departments of Mathematics and Statistics at Carleton and Ottawa Universities combined their resources in 1984 with the founding of the Ottawa- Carleton Institute for Graduate Studies and Research in Mathematics and Statistics. The two departments also cooperate in organizing the Laboratory for Research in Statistics and Probability which was created in 1982.

Ottawa is a leading centre of research in statistics and probability which is a great benefit to the Graduate Program of the Joint Institute. The combined strengths of the two departments enable the Institute to offer a wide range of advanced courses while attracting leading researchers from many parts of the world to visit and carry on collaborative research with members of the Institute.

At the M.Sc. level, the newly introduced stream in Applied Statistics complements the theoretical work and enables the Institute to capitalize on the proximities of Statistics Canada, Health and Welfare, and Energy, Mines and Resources in the National Capital Area.

Les départements de mathématiques et de statistique de l'université Carleton et de l'université d'Ottawa ont joint leurs ressources en 1984 en fondant l'institut Ottawa-Carleton des études supérieures et de la recherche en mathématiques et en statistique. Les deux départements ont aussi coopéré à la mise sur pied du laboratoire de recherche en statistique et en probabilités en 1982.

Ottawa est un des centres les plus importants dans la recherche en statistique et en probabilités ce qui est dans l'intérêt du programme des études supérieures de l'institut Ottawa-Carleton. La conjugaison des points forts des deux départements permet à l'institut d'offrir une grande gamme de cours avancés, tout en attirant des chercheurs principaux du monde entier pour visiter et mener de la recherche en collaboration avec les membre de l'institut.

Au niveau de la M.Sc., la nouvelle orientation statistique appliquée est le complément du travail théorique et permet à l'institut de tirer parti de la proximité de Statistique Canada, du Ministère de la santé et du bien-être social et du Ministère de l'énergie, des mines et des ressources dans la région de la capitale nationale.

Faculty/Le personnel enseignant:

M. Alvo, Associate Professor, Ph.D. (*1972*)
Grants/Subventions: NSERC; Ontario Ministry of the Environment

Selected Publications/Publications choisies:
- Alvo, M. and Cabilio, P. (1988), Sampling Designs for the Estimation of the Difference between two means of a Bivariate Normal.
- Alvo, M. and Feigin, P. (1986), Intergroup Diversity and Concordance for Ranking Data: An Approach via Metrics for Permutations.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Mathematical Statistics; Statistique mathématique

A.R. Dabrowski, Assistant Professor, Ph.D. (*Illinois, 1982*)
Grants/Subventions: NSERC Operating Grants

Selected Publications/Publications choisies:
- Dabrowski, A.R. (1987), Invariance Principles in Probability for Stable Processes Generated by a Class of Dependent Sequences. *Canadian Journal of Statistics*, **15**, 253–267.
- Berkes, I.; Dabrowski, A.R.; Dehling, H. and Philipp, W. (1986), A Strong Approximation Theorem for Sums of Random Vectors in the Domain of Attraction to a Stable Law. *Acta Mathematica Hungarica*, **48**, 349–360.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Probability Theory; Théorie des probabilités

C.M. Deo, Professor, Ph.D. (*1965*)
Students supervised/Étudiants dirigés: M.Sc. 3

Selected Publications/Publications choisies:
- Deo, C.M. (1975), A Functional Central Limit Theorem for Stationery Random Fields. *Annals of Probability*, **3**, 708–716.
- Deo, C.M. (1966), Prediction Theory for Nonstationery Processes. *Sankhya A*, **27**, 113–132.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

B.G. Ivanoff, Associate Professor, Ph.D. (*Carleton, 1976*)
Students supervised/Étudiants dirigés: 1
Grants/Subventions: NSERC Individual Operating Grant

Selected Publications/Publications choisies:
- Brown, T.C., Ivanoff, B.G. and Weber, N.C. (1986), Poisson convergence in two dimensions with application to row and column exchangeable arrays. *Stochastic Processes and their Applications*, **23**, 307–318.

- Ivanoff, B.G. (1987), The multitype branching random walk: spatial and temporal limit theorems.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

D.R. McDonald, Associate Professor, Ph.D. (*1976*)

Students supervised/Étudiants dirigés: 1

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- M^{c}Donald, D.R. (1978), On Semi-Markov and Semi-Regenerative Processes. *I.Z. Wahrscheinlichkeitstheorie verw Gebiete*, **42**, 261–277.
- Iscoe, I. and M^{c}Donald, D.R. (1989,to appear), Large deviations of l^2-valued Ornstein-Uhlenbeck processes. *Annals of Probability*.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

B.B. Winter, Associate Professor, Ph.D. (*Oregon, 1972*)

Students supervised/Étudiants dirigés: 1

Grants/Subventions: NSERC Operating Grants

Selected Publications/Publications choisies:
- Winter, B.B. (1987), Nonparametric estimation with censored data from a distribution with decreasing density. *Communications in Statistics A*,**16**, 93–120.
- Winter, B.B. and Földes, A. (1989, to appear), A product-limit estimator for use with length-biased data. *Canadian Journal of Statistics*

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

Theses/Thèses (1983 to present/1983 à présent):

1) D.J. Murdoch (1988), Models and Methods in the Risk Assessment of Chemical Carcinogens, Ph.D. Thesis.

2) V. Huse (1988), On Some Nonparametric Methods for Changepoint Problems, Ph.D. Thesis.

3) R. Srinivasan (1988), Topics in State Independent Queues and Queueing Networks, Ph.D. Thesis.

4) M.G. Bickis (1988), On the Computation of Size and Power for Toxicological Bioassays, Ph.D. Thesis.

5) S.E. Ahmed (1987), Various Strategies of Point Estimation under Uncertain Prior Information, Ph.D. Thesis.

6) B. Remillard (1987), Large Deviations and Laws of the Iterated Logarithm for Multidimensional Diffusion Processes, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:
Carleton – 14 M.Sc., 13 Ph.D./Ottawa – 1 M.Sc., 3 Ph.D.

Department of Epidemiology & Community Medicine

The Department of Epidemiology and Community Medicine is a department of the Faculty of Health Sciences. There are currently 8 full-time faculty (3 of them with a major interest in biostatistics), 5 cross-appointed faculty, 4 part-time faculty and 12 adjunct members. The Department teaches undergraduate medical students and some other health science students, and operates a residency program training physicians to be specialists in community medicine. A Master of science degree in epidemiology was introduced in 1988, in which students can undertake biostatistically oriented theses. The Department's research program is mainly in the applied fields of health promotion, environmental epidemiology and health services evaluation. The Department has a formal affiliation with the Ottawa-Carleton Regional Health Department, in the form of a Teaching Health Unit, which provides unusual opportunities for applied community health research. A Health Services Research Unit provides similar opportunities in that field.

Le Département d'épidémiologie et de médecine sociale relève de la Faculté des sciences sociales. En ce moment, il compte huit professeurs à temps plein (dont trois ont un intérêt marqué pour la biostatistique), cinq professeurs avec une affectation double, quatre professeurs à temps partiel et treize professeurs auxiliaires. Les cours s'adressent aux étudiants de médecine du premier cycle et d'autres secteurs des sciences de la santé; de plus, il y a un programme de résidence destiné à former des médecins en médecine sociale. On offre depuis 1988 une maîtrise ès sciences en épidémiologie ou il est possible de faire une thèse sur la biostatistique. Le programme de recherche du Département porte essentiellement sur les domaines appliqués de la promotion de la santé, de l'épidémiologie environnementale et de l'évaluation des services de santé. Le Département d'épidémiologie est affilié officiellement aux Services de santé régionaux d'Ottawa-Carleton, affiliation qui prend la forme d'une unité d'enseignement des soins de santé et qui donne des occasions exceptionnelles de recherche appliquée en santé sociale. Il y a aussi une unité de recherche en services de santé qui permet le même genre de travaux.

Faculty/Le personnel enseignant:

C. Dulberg, Assistant Professor, Ph.D. (*1976*)

Selected Publications/Publications choisies:

- Raman, S., Dulberg, C., Spasoff, R.A. (1987), Mortality Among Canadian Military Personnel Exposed to Low-dose Radiation. *Canadian Medical Association Journal*, **136**, 1051-1056.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Design & Analysis of Experiments; Planification & analyse d'expériences

R.C. Nair, Associate Professor, Ph.D. (*Cornell, 1976*)
Grants/Subventions: Ontario Heart Foundation, National Institute of Health, NHRDP.

Selected Publications/Publications choisies:
- Federer, W.T., Nair, R.C., and Raghavaras D. (1975), Some row-column augmented Designs. *Biometrics*, **31**, 361–374.
- Howe, G.R., Nair, R.C., Newcombe, H.B., Miller , A.B., and Abbott, J.D. (1987), Lung Cancer mortality in relation to Radon Daughter Exposure in a Cohort of Workers. *Journal of the National Cancer Institute*, **79**, 1255–1260.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

S. Raman, Associate Professor, Ph.D. (*1971*)
Grants/Subventions: Grant from the Atomic Energy Control Board

Selected Publications/Publications choisies:
- Raman, S., Mousseau, G. and Levine, D.Z. (1977), Statistical models for Renal Micropuncture Studies. *American Journal of Physiology*, **233**, F349-F357.
- Raman, S., Dulberg, C.S., Spasoff, R.A., Scott, T. (1987), Mortality among Canadian Military Personnel Exposed to Low-dose Radiation. *Canadian Medical Association Journal*, **136**, 1051-1056.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Statistical Computing; Calcul statistique

Queen's University

Kingston, Ontario K7L 3N6
Department of Mathematics and Statistics

Statistics has been taught at Queen's since 1931, when the late Professor G.L. Edgett introduced the subject in the Department of Mathematics. Statistics programs were developed considerably in the seventies, and in 1977 the department was renamed the Department of Mathematics and Statistics. Students may obtain degrees in statistics at the Honours Bachelor's, Master's and Doctoral levels, and are supported by assistantships, research funds and scholarships.

The M.Sc. in Statistical Consulting is a program unique to Queen's. It is designed for students with backgrounds in the natural and social sciences, engineering and industry who wish to become proficient in statistics as related to their discipline. It also attracts students having a degree in mathematics and statistics who desire practical training. In addition to taking courses in consulting, linear models and other areas of statistical methodology, students complete a consulting project. The project, which involves a client (researcher) from outside the department, requires the analysis of the data and the presentation of a report. The project normally takes about three months, allowing the degree to be complete in one year.

The areas available for specialization in doctoral and research Master's theses include categorical data analysis, experimental design, inference on stochastic processes, nonlinear estimation, shrinkage estimation, survival data analysis, time series analysis and applications in many fields including engineering and biology.

Members of the department have convenient access to Queen's IBM mainframe computer with its large software library including SAS, BMDP, SPSS-X, GLIM and MINITAB, and electronic mail facilities. MS-DOS microcomputers are well supported, both for private use and in a departmental cluster.

The George L. Edgett Statistical Laboratory (Queen's STATLAB), the statistical consulting facility at the university, is associated with the department. Graduate students earn assistantship support by consulting in STATLAB, and students doing consulting projects for course credit have an opportunity to interact with STATLAB clients.

Depuis 1931 la statistique est enseignée à l'université Queen's. C'était le défunt professeur G.L. Edgett qui avait introduit le sujet au département de mathématiques. Dans les années 70, les programmes de statistique ont été développés considérablement, et en 1977 le département a changé son nom à celui de département de mathématiques et de statistique. Le département offre des programmes de B.Sc. spécialisé en statistique,

de maîtrise et de doctorat. L'assistanat, les fonds de recherche et les bourses permettent de soutenir financièrement les étudiants.

Queen's est la seule université d'offrir le programme de maîtrise (M.Sc.) en consultation statistique. Ce programme est destiné aux étudiants qui ont une formation en sciences, en sciences sociales, en génie ou en industrie et qui veulent devenir compétents dans l'application de la statistique à leur discipline. Les étudiants qui sont diplômés en mathématiques et en statistiques et qui désirent acquérir une formation pratique s'inscrivent dans le programme aussi. En plus de suivre des cours de consultation, de modèles linéaires et d'autres aspects des méthodes statistiques, les étudiants ont un projet de consultation à faire. Il faut analyser des données et présenter un rapport au client (un chercheur) qui ne fait pas partie du département. D'habitude le projet prend trois mois à finir, de sorte que l'on puisse obtenir son diplôme dans un an.

Les domaines dans lesquels les thèses de maîtrise ou de doctorat peuvent se spécialiser comprennent: l'analyse de données catégoriques, la planification d'expériences, l'inférence des processus stochastiques, l'estimation non linéaire, l'estimation de contraction, l'analyse des séries chronologiques, et des applications à beaucoup de domaines, y compris l'ingénierie et la biologie.

Les membres du département ont à leur disposition l'unité centrale IBM de Queen's et sa grande collection de logiciels, y compris SAS, BMDP, SPSS-X, GLIM et MINITAB. Les membres ont accès au courrier électronique aussi. Le départment a beaucoup de micro-ordinateurs MS-DOS.

Le centre de consultation statistique de l'université, appelé le laboratoire George L. Edgett, est associé au département. Les étudiants des cycles supérieurs font de la consultation au labo et y gagnent leur soutien financier et les étudiants qui font des projets de consultation pour crédit ont l'occasion de collaborer avec les clients du laboratoire.

Faculty/Le personnel enseignant:

L.H. Broekhoven, Professor, Dip. Stat. (*University College, 1953*)

Students supervised/Étudiants dirigés: Ph.D. 2; M 4

Grants/Subventions: NSERC Operating Grant (1987-90); Infrastructure Grant

Selected Publications/Publications choisies:

- Broekhoven, L.H., Brooker, B., Czigler, M. and Donald, M.W. (1983), Maximum Likelihood Estimation of the Accuracy of Auditory Discrimination in the Absence of an Overt Response to Every Stimulus. *Behaviour Research Methods and Instrumentation*, 483–486.
- Bacon, D.W. and Broekhoven, L.H., Time series forecasting. Chapter in refereed book: *Statistical Methods for Digital Computers*, 442–443.

Fields of interest/Domaines d'intérêt:

- Applications (engineering; génie)
- Applications (health; santé)

M. Griffin, Associate Professor, Ph.D. (*1965*)
Students supervised/Étudiants dirigés: 2

Selected Publications/Publications choisies:
- Griffin, M. (1983), How much evolutionary advantage does sex have. *Journal of Theoretical Biology*, **102**, 447–458.
- Griffin, M. Pearce, Antfin and Kolisnik (1987), Magmatic crystal stratigraphy and constraints on magma chamber dynamics : laser interference results on individual phenocrysts. *Journal of Geophysical Research*, **92**, 13745–13752.

Fields of interest/Domaines d'intérêt:
- Applications
- Data Analysis; Analyse des données

A.M. Herzberg, Professor, Ph.D. (*Saskatchewan, 1966*)
Students supervised/Étudiants dirigés: M.Sc. 14; Ph.D. 1
Grants/Subventions: NSERC Operating Grant (1988-90)

Selected Publications/Publications choisies:
- Embrechts, P., Herzber, A.M. and Ng, A.C.K. (1986), An Investigation of Andrews' Plots to Detect Period and Outliers in Time Series Data. *Communications in Statistics B*, **15**, 1027–1051.
- Herzberg, A.M. (1988), Some further results for the equivalence of ordinary least squares estimators: An advantage for rotatable designs. *Optimal Design and Analysis of Experiments*, edited by Y. Dodge, V.V. Federov and H.P. Wynn, Amsterdam, North Holland, 185–193.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Multivariate Analysis; Analyse multidimensionnelle

M.A. Maes, Assistant Professor, Ph.D. (*Calgary, 1985*)
Grants/Subventions: NSERC Industrial Research Fellow (1986-88)

Selected Publications/Publications choisies:
- Maes, M.A. and Muir, L.R. (1988), Variability of Environmental Loads. *Journal of Ocean Engineering*, **15**, 171–187.
- Jordaan, I.J. and Maes, M.A. (1984), Probability Exchangeability and Extremes with a discussion of Iceberg Loadings. *Civil Engineering Systems*, **1**, 234–241.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

W.H. Ross, Assistant Professor, Ph.D. (*Queens, 1985*)
Students supervised/Étudiants dirigés: M 1; Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1987-90)

Selected Publications/Publications choisies:
- Ross, W.H. (1987), The expectation of the likelihood ratio criterion. *International Statistical Review*, **55**, 315–330.

- Ross, W.H. (1987), The geometry of case deletion and the assessment of influence in nonlinear regression. *Canadian Journal of Statistics*, **15**, 91–103.

Fields of interest/Domaines d'intérêt:
- Applications
- Time Series Analysis; Analyse des séries chronologiques

J.T. Smith, Associate Professor, Ph.D. (*Johns Hopkins, 1972*)
Students supervised/Étudiants dirigés: M 1

Selected Publications/Publications choisies:
- Smith, J.T. and Colgan, P. (1986), Statistical analysis of feeding behaviour in fish. *Quantitative Methods in Ethology*, P.W. Golgan and R. Zayan editors, 47–61.
- Smith, J.T. and Geramita, J.M. (1985), Using the correct standard errors in comparing subpopulation survival rates in marked populations. *Biometrics*, **41**, 281–285.

Fields of interest/Domaines d'intérêt:
- Applications
- Data Analysis; Analyse des données

H.A. Still, Associate Professor, Ph.D. (*Queen's, 1961*)

Selected Publications/Publications choisies:
- Blyth, C.R. and Still, H.A. (1983), Binomial Confidence Intervals. *Journal of the American Statistical Association*, **78**, 108–116.

Fields of interest/Domaines d'intérêt:
- Applications
- Combinatorial Theory; Mathématiques combinatoires

T.W.F. Stroud, Associate Professor, Ph.D. (*Stanford, 1968*)
Students supervised/Étudiants dirigés: M 6; Ph.D. 1
Grants/Subventions: NSERC Operating Grant (1988-91)

Selected Publications/Publications choisies:
- Rubin, D.B. and Stroud, T.W.F. (1987), Bayesian break-point forecasting in parallel time series, with application to university admissions. *Canadian Journal of Statistics*,**15**, 1–19.
- Stroud, T.W.F. (1984), Bayesian shrinkage estimates for regression coefficients in m populations. *Communications in Statistics A*,**13**, 2085–2109.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Techniques of Inference; Techniques de l'inférence statistique

M.T. Wasan, Professor, Ph.D. (*Illinois, 1960*)
Students supervised/Étudiants dirigés: M 11; Ph.D. 2
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Wasan, M.T. (1987), Analysis of one-way classification model based on sample paths of standard Brownian motion. *Bos. of Sympom optimization, Design of Experiments and Graph Theory*, 110–116.

- Wasan, M.T. (1988), One-way classification model based on ostho functions of sample paths of Standard Brownian motion. *Journal of Management Science and Applied Cybernetics*, **17**, 1–5.

Fields of interest/Domaines d'intérêt:
- Applications
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

D.G. Watts, Professor, Ph.D. (*Imperial, 1962*)
Students supervised/Étudiants dirigés: Ph.D. 5; M 9
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Bates, D.M. and Watts, D.G. (1988), Nonlinear Regression Analysis and Its Applications.
- Jenkins, G.M. and Watts, D.G. (1968), Spectral Analysis and Its Applications. Holden-Day.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Techniques of Inference; Techniques de l'inférence statistique

Department of Chemical Engineering

D.W. Bacon, Professor, Ph.D. (*Wisconsin, 1965*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Tade, M.O. and Bacon, D.W. (1984), Analysis of the dynamic behaviour of a petroleum fractionation unit using multiple time series analysis. *Canadian Journal of Chemical Engineering,* **62**, 764–772.
- Tade, M.O., Bayoumi, M.M. and Bacon, D.W. (1986), Adaptive decoupling of a class of multivariable dynamics systems using output feedback. *IEE Proceedings D,* **133**, 265–275.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Design & Analysis of Experiments; Planification & analyse d'expériences

Theses/Thèses (1983 to present/1983 à présent):

1) B. Granger (1988), Mixed Variable Discrimination, M.Sc. Thesis.

2) L.H. Lam (1988), Graphical Methods for Summarizing Inferential Results about ARIMA Models, M.Sc. Thesis.

3) R. Jahan (1988), Survival Time Models and Residuals Analysis, Ph.D. Thesis.

4) Y. Zhu (1987), Multiresponse Design for the Havriliak-Negami Model, M.Sc. Thesis.

5) W.H. Ross (1985), Measuring Influence in Nonlinear Regression, Ph.D. Thesis.

6) F. Nebebe (1984), Bayes and Empirical Bayes Shrinkage Estimates for Regression Coefficients, with Application to WISC Data, Ph.D. Thesis.

7) E. Bortey (1984), Confidence Limits for Nonlinear Models, M.Sc. Thesis.

8) J. Lindsey (1984), Cluster Analysis using Projections and Quantile-Quantile Plots, M.Sc. Thesis.

9) R. Jahan (1984), A Review of Univariate Time Series Research, M.Sc. Thesis.

10) B.B. Smith (1983), Factor Analysis: Survey of Methods and some Experimental Exploration, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:
11 M.Sc., 5 Ph.D.

University of Regina

Regina, Saskatchewan S4S 0A2
Department of Mathematics and Statistics

The University of Regina does not have a formal graduate program in Statistics, but the Department of Mathematics and Statistics is authorized to offer both master's and doctoral degrees in statistics as part of the graduate program in Mathematics. The Department of Mathematics and Statistics has twenty-one permanent faculty members, of whom three hold doctorates in Statistics; their areas of interest include sampling theory, experimental design and probability theory.

L'université de Régina n'a pas de programme d'études supérieures en statistique comme tel, mais le département de mathématiques et de statistique a l'autorisation d'offrir la maîtrise et le doctorat en statistique dans le cadre du programme d'études supérieures en mathématiques. Le département de mathématiques et de statistique a vingt et un membres permanents du personnel enseignant dont trois détiennent un doctorat en statistique. Leurs domaines d'intérêt comprennent la théorie d'échantillonnage, le plan expérimental et la théorie des probabilités.

Faculty/Le personnel enseignant:

A. Adatia, Assistant Professor, Ph.D. (*Western, 1981*)

Selected Publications/Publications choisies:

- Adatia, A. (1981), Relations between stratified, Group and Selected Order Statistics Samples. *Scandanavian Actuarial Journal,* 193–202.
- Adatia, A. (1985), Robust Estimators of the 3-Parameter Weibull Distribution. *IEEE Transactions on Reliability,* **R-34**, 347–351.

Fields of interest/Domaines d'intérêt:

- Sampling; Théorie de l'échantillonnage
- Techniques of Inference; Techniques de l'inférence statistique

A.I. Duthie, Associate Professor, Ph.D. (*Windsor, 1971*)

Selected Publications/Publications choisies:

- Duthie, A.I. (1984), A note on the construction of some lattices for the hypercubic association scheme. *Canadian Journal of Statistics,* **12**, 165-167.

- Duthie, A.I. (1983), Operator's Expected Gain for a Certain Carnival Game. *Mathematics & Computer Education,* **17**, 199-203.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Mathematical Statistics; Statistique mathématique

G. Larson, Assistant Professor, M.Sc. (*Waterloo, 1968*)

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Probability Theory; Théorie des probabilités

R.J. Tomkins, Professor & Head, Ph.D. (*Purdue, 1970*)
Students supervised/Étudiants dirigés: Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1987–1990)

Selected Publications/Publications choisies:
- Tomkins, R.J. (1980), Limit theorems without moment hypotheses for sums of independent random variables. *Annals of Probability*, **8**, 314–324.
- Tomkins, R.J. (1986), Regular Variation and the Stability of maxima. *Annals of Probability,* **14**, 984–995.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

J. H. Weston, Associate Professor, Ph.D. (*Lehigh, 1967*)
Students supervised/Étudiants dirigés: M.Sc. 4

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

Theses/Thèses (1983 to present/1983 à présent):

1) Li, Zhi-Fang (1988), Contributions to the Limit Theory of Extreme Order Statistics, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:

2 Ph.D.

Royal Military College of Canada

Kingston, Ontario K7K 5L0
Department of Mathematics and Computer Science

The College caters to the needs of the Department of National Defence, and admission to civilians is not normally open.

Candidates for the degree of Master of Science are admitted under general regulations. Normally, six semester courses, plus a thesis, are required. This usually amounts to twenty one months of full-time effort.

Graduate research may be pursued in areas of stochastic process, operations research, mathematical statistics, computer science and numerical analysis.

Le collège pourvoit aux besoins du département de la défense nationale et l'admission au programme n'est pas ouverte aux civils normalement.

Les candidats à la maîtrise (M.Sc.) sont acceptés sous les règlements généraux. Normalement, six cours d'un trimestre chaque et une thèse sont requis. D'habitude, il prend vingt et un mois d'effort continu pour compléter le programme.

Les recherches au niveau supérieur pourront se faire dans les domaines suivants: processus stochastiques, recherche opérationnelle, statistique mathématique, informatique et analyse numérique.

Faculty/Le personnel enseignant:

M.L. Chaudhry, Professor, Ph.D. (*Kurukshetra, 1966*)

Students supervised/Étudiants dirigés: M.Sc. 7, Ph.D. 1

Grants/Subventions: CRAD (1983 – to date), DREV (1985 - 1989)

Selected Publications/Publications choisies:

- Chaudhry, M.L., Jain, J.L., and Templeton, J.G.C. (1987), Numerical analysis for a bulk-arrival queueing system: root finding and steady-state probabilities in GI^R/M/I ques. *Annals of Operational Research*, **8**, 307–320.
- Chaudhry, M.L., Madill, B.R., and Buckholtz, P.G. (1985), On the Diophantine Queueing System, $D/D^{a,b}/1$. *Journal of the Operational Research Society*, **36**, 531–535.

Fields of interest/Domaines d'intérêt:

- Applications
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

E.B. Manoukian, Professor, Ph.D. (*Toronto, 1971*)
Grants/Subventions: CRAD (1979 – to date)

Selected Publications/Publications choisies:

- Manoukian, E.B. and Nadeau (1988), A Note on the Hyperbolic-Secant Distribution. *The American Statistician,* **42**, 77-79.
- Manoukian, E.B., Maurais, J., and Ouimet, R. (1986), Exact Critical Values of Bartlett's Test of Homogeneity of Variances for Unequal Sample Sizes for two Populations and Power of the Test. *Metrika*, **33**, 275–289.

Fields of interest/Domaines d'intérêt:

- Applications
- Mathematical Statistics; Statistique mathématique

Theses/Thèses (1983 to present/1983 à présent):

1) G. Brière (1988), Computational Analysis of Single-Server Bulk Queues, Master's Thesis.

2) B.R. Madill (1983), On the Queueing System $GI/M^{a,b}/I$ - Master's Thesis.

Saint Mary's University

Halifax, Nova Scotia B3H 3C3
Department of Mathematics and Computing Science

The Department of Mathematics and Computing Science at Saint Mary's University does not offer any specialized programs in statistics. At present three courses in statistics at B.Sc. (senior undergraduate) and B.Sc. (Honours) level are offered.

Le département de mathématiques et d'informatique de l'université Saint Mary's n'offre pas de programmes spécialisés en statistique. Présentement, trois cours de premier cycle en statistique au niveau genéral et spécialisé sont offerts.

Faculty/Le personnel enseignant:

D.G. Kabe, Professor (*Wayne State, 1964*)

Students supervised/Étudiants dirigés: M.Sc. 2, Ph.D. 2

Grants/Subventions: NSERC (1966–1988)

Selected Publications/Publications choisies:

- Kabe, D.G. (1984), On the Maximal Invariance of MANOVA step down procedure statistics. *Communications in Statistics A,* **13**, 2571–2581.
- Kabe, D.G. (1986), On solving two variables continuous parameter linear and quadratic programming problems. *Utilitas Mathematica* **30**, 181–189.

Fields of interest/Domaines d'intérêt:

- Design & Analysis of Experiments; Planification & analyse d'expériences
- Multivariate Analysis; Analyse multidimensionnelle

University of Saskatchewan

Saskatoon, Saskatchewan S7N 0W0
Department of Mathematics

Programs in statistics at the University of Saskatchewan are offered by the Department of Mathematics. Undergraduate courses are given both to major and honours students in mathematics with possible specialization in statistics. Graduate study at both the M.Sc. and Ph.D. levels is available. Although there is no formal consulting facility in operation, faculty members of the department do engage in collaborative work with researchers on campus in areas such as agriculture, medicine, physical education, toxicology, and veterinary science. It is possible for graduate students to become involved in such projects as part of their thesis research. The department has a small but sophisticated computer lab including Zenith micros, MacIntoshes, a MicroVAX, and three Suns. Computing power is also available on the Universities two 8650 VAX's. Graduate students without other support are normally offered university scholarships or graduate teaching fellowships.

Le département de mathématiques de l'université de Saskatchewan offre des programmes de statistique. Les cours de premier cycle de statistique sont donnés aux étudiants qui font un B.Sc. spécialisé ou avec majeur en mathématiques. Il existe la possibilité de faire une concentration de côte statistique. Aux cycles supérieurs, le département offre des programmes de maîtrise et de doctorat. Bien qu'il n'y ait pas de service de consultation statistique comme tel, des membres du personnel enseignant du département travaillent en collaboration avec des chercheurs de l'université dans des disciplines comme l'agronomie, la médecine, l'éducation physique, la toxicologie, et les sciences vétérinaires. Les étudiants diplômés ont la possiblité de s'engager dans de tels projets quand cela fait partie de leurs recherches pour leur thèse. Dans le laboratoire d'ordinateurs du département l'on trouve des micro-ordinateurs Zenith et MacIntosh, un micro-VAX, et trois SUN. Le département a accès aux deux VAX 8650 de l'université aussi. Les étudiants diplômés, qui n'ont pas d'autre soutien financier, reçoivent normalement des bourses universitaires ou font de l'assistanat.

Faculty/Le personnel enseignant:

M. G. Bickis, Assistant Professor, Ph.D. (*Carleton, 1988*)

Selected Publications/Publications choisies:

- Krewski, D., Brennan, J. and Bickis, M. (1984), The power of the Fisher permutation test for 2 x k tables. *Communications in Statistics B*, **13**, 433–448.
- Krewski, D., Bickis, M., Kovar, J. and Arnold, D. (1986), Optimal experimental designs for low dose extrapolation. The case of zero background. *Utilitas Mathematica*, **29**, 245–262.

Fields of interest/Domaines d'intérêt:

- Design & Analysis of Experiments; Planification & analyse d'expériences
- Probability Theory; Théorie des probabilités

W. H. Laverty, Associate Professor, Ph.D. (*Toronto, 1972*)

Students supervised/Étudiants dirigés: Masters 6

Fields of interest/Domaines d'intérêt:

- Applications
- Design & Analysis of Experiments; Planification & analyse d'expériences

C.D. O'Shaughnessy, Associate Professor, Ph.D. (*Saskatchewan,*)

Students supervised/Étudiants dirigés: Masters 3

Fields of interest/Domaines d'intérêt:

- Combinatorial Theory; Mathématiques combinatoires
- Design & Analysis of Experiments; Planification & analyse d'expériences

R. Singh, Professor, Ph.D. (*Illinois, 1960*)

Students supervised/Étudiants dirigés: Masters 5

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

R. Srinivasan, Assistant Professor, Ph.D. (*Carleton, 1988*)

Fields of interest/Domaines d'intérêt:

- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Probability Theory; Théorie des probabilités

Theses/Thèses (1983 to present/1983 à présent):

1) P. Sheng (1988), The waiting-time distribution in queuing systems, M.Sc. Thesis.

2) X. Wang (1988), A metric space associated with a probability space, M.Sc. Thesis.

3) M. E. Ghitany (1987), Optimal robust designs for linear regression problems, M.Sc. Thesis.

4) N. Udin (1985), N-Squared designs, M.Sc. Thesis.

5) S. El Kurz (1985), Optimal designs in linear models, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:

1 MSc 2 PhD

Université de Sherbrooke

Sherbrooke, Québec J1K 2R1
Département de mathématiques et d'informatique

Faculty/Le personnel enseignant:

J-F. Angers, Professeur adjoint, Ph.D. (*Purdue, 1987*)
Grants/Subventions: CRSNG, dépenses courantes

Selected Publications/Publications choisies:
- Angers, J.F. and Colin, B. (1985), Information et famille contaminée de mesures de probabilité a priori. *Pub. Inst. Stat. Univ. de Paris*, **30**, Fasc. 3.
- Angers, J.F. and Berger, J.O., The stein Effect and Bayesian Analysis: A Reexamination. *Communications in Statistics A*,**15**, 2005–2023.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

A. Boulanger (*1979*)
Students supervised/Étudiants dirigés: M 1

Fields of interest/Domaines d'intérêt:
- Nonparametrics; Statistique non paramétrique
- Applications

M. Brisebois, Professeur Titulaire, M.Sc. (*1959*)
Students supervised/Étudiants dirigés: M 3

Fields of interest/Domaines d'intérêt:
- Techniques of Inference; Techniques de l'inférence statistique
- Teaching; Enseignement

B. Colin, Professeur Titulaire, Doctorat (*Paris, 1971*)
Students supervised/Étudiants dirigés: M.Sc. 8; Ph.D.2
Grants/Subventions: FCAR (Équipes)

Selected Publications/Publications choisies:
- Angers, J.F. and Colin, B. (1985), Information et famille contaminée de mesures de probabilité a priori. *Pub. Inst. Univ. de Paris*, **30**, Fasc. 3.
- Colin, B., Coupal, B. and Frayce, D. (1987), Considerations of the effects of winds on the drift oil stickes at sea, Statistical and temporal aspect of wind velocity direction and persistence. *Wind Engineering*, **11(1)**.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Techniques of Inference; Techniques de l'inférence statistique

J.G. Dion (*1976*)
Students supervised/Étudiants dirigés: M 6

Fields of interest/Domaines d'intérêt:
- Decision Theory; Théorie de la décision

G. Giroux, Professeur Titulaire, Ph.D. (*, 1970*)
Students supervised/Étudiants dirigés: M 4
Grants/Subventions: CRSNG (1986–1988); FCAR (1986–1988)

Selected Publications/Publications choisies:
- Gauvin, B. and Giroux, G. (1989), A Geometric Rate of Convergence to the Equilibrium for Boltzmann Processes with multiple particles interactions. *Journal of Applied Probability*,
- Ferland, R. and Giroux, G. (1987), Cutoff-type Boltzmann Equations: Convergence of the solution. *Advances in Applied Mathematics*.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

J. Vaillancourt, Professeur adjoint, Ph.D. (*Carleton, 1987*)
Grants/Subventions: NSERC/CRSNG

Selected Publications/Publications choisies:
- Vaillancourt, J., On the existence of random McKean-Vlasov limits for triangular arrays of exchangeable diffusions. *Stochastic Analysis and Applications*.
- Vaillancourt, J. (1988), Measure-value limits for some exchangeable systems of particles. *C.R. Math. Rep. Acad. Sci. Canada*, **X, No. 5**.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

Current student enrolment/Étudiants inscrits présentement:
6 M, 2 Ph.D.

Simon Fraser University

Burnaby, British Columbia V5A 1S6
Department of Mathematics and Statistics

We have traditional graduate programs in statistics at both the Masters and Doctoral levels, and have developed over the past few years a strong M.Sc. program in applied statistics. Three recent M.Sc. students have subsequently enrolled in Ph.D. programmes, two here and one at the University of Wisconsin. Others have found employment in local government agencies, the University of British Columbia Computer Centre, and Statistics Canada. One recent graduate received certification as a quality engineer in training just before graduation, and is now working in Southern Ontario.

The M.Sc. program provides, through course work, an opportunity for students to become familiar with the more important aspects of modern applied statistics, and, through a research project, a chance to practice the art of applying this knowledge to gain insight in quantitative research. We provide opportunities for students to take graduate-level courses in the following areas: theory and methods for constructing statistical inference procedures, multivariate analysis, survival analysis, nonparametric procedures and discrete data analysis, time series analysis, and applied probability models. In addition, many students study other specialized topics through specially arranged reading courses. Students are also permitted to take a limited number of advanced undergraduate courses in such fields as linear models and sampling theory.

An integral part of the M.Sc. program is the Statistical Consulting Service. This service, which is supported by an NSERC infrastructure grant, serves academic researchers from many disciplines here at S.F.U. It is also beginning to serve an increasing number of industrial and governmental clients. Larry Weldon, with help from others, is working toward expanding the service into a self-supporting operation. All M.Sc. students in applied statistics are required to participate actively in the consulting process; most also use it as the source for their research project.

Nous avons des programmes traditionnels d'études supérieures au niveau de la maîtrise et du doctorat. Nous avons développé dans les dernières années un bon programme de maîtrise (M.Sc.) en statistique appliquée. Trois diplômés se sont inscrits dans des programmes de doctorat, deux se sont inscrits ici et l'autre à l'université de Wisconsin. D'autres ont trouvé de l'emploi chez des agences gouvernmentales locales, chez le centre d'ordinateurs de l'université de la Colombie Britannique, et chez Statistique Canada. Un diplômé récent a été certifié comme ingénieur en formation du contrôle

de la qualité juste avant la remise des diplômes et travaille maintenant dans le sud de l'Ontario.

Par moyen des cours, les étudiants dans le programme de maîtrise (M.Sc.) ont l'occasion de se familiariser avec les aspects importants de la statistique appliquée moderne. Par moyen d'un projet de recherche, les étudiants ont l'occasion de mettre en pratique ces connaissances afin de mieux comprendre la recherche quantitative. Les étudiants peuvent suivre des cours dans les domaines suivants: la théorie et les méthodes de la construction des procédés d'inférence statistique, l'analyse multidimensionnelle, l'analyse de survie, les procédés non paramétriques et l'analyse de donnés discontinues, l'analyse des séries chronologiques, et les modèles de probabilités appliquées. En outre, beaucoup d'étudiants étudient d'autres sujets spécialisés en suivant des séminaires de lectures individuelles. On permet aussi aux étudiants de suivre un nombre limité de cours avancés de premier cycle dans des domaines comme les modèles linéaires et la théorie de l'échantillonnage.

Une partie intégrale du programme de maîtrise (M.Sc.) est le service de consultation statistique. Ce service, qui reçoit une subvention du CRSNG, sert les chercheurs académiques de beaucoup de disciplines à l'université Simon Fraser. Il commence aussi à servir un nombre croissant de clients venant de l'industrie et du gouvernement aussi. Larry Weldon, avec l'aide des autres, développe le service pour qu'il devienne financièrement indépendant. Tous les candidats à la maîtrise (M.Sc.) en statistique appliquée sont exigés de participer activement au processus de consultation. La plupart y trouve aussi la source de leur projet de recherche.

Faculty/Le personnel enseignant:

D.M. Eaves, Associate Professor, Ph.D. (*Washington, 1966*)
Students supervised/Étudiants dirigés: M.Sc. 8
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Eaves, D.M. (1986), On Maximising information about a hypothesis, *Journal of the Royal Statistical Society B*, **47**, 263–266.
- Levesque, A., Rahe, J., Eaves, D.M. (1987), Effects of Glyphosate on Fusarium SPP: Its impact on root colonization of weeds, propagule levels in the soil, and crop emergence. *Canadian Journal of Microbiology*, **33**, 354–360.

Fields of interest/Domaines d'intérêt:

- Applications
- Multivariate Analysis; Analyse multidimensionnelle

R. Lockhart, Associate Professor, Ph.D. (*Berkeley, 1979*)
Students supervised/Étudiants dirigés: M.Sc. 6
Grants/Subventions: NSERC Operating Grant (1986-1988)

Selected Publications/Publications choisies:

- Guttorp, P. and Lockhart, R.A. (1988), On the asymptotic distribution of quadratic forms in uniform order statistics. *Annals of Statistics*, **16**, 433–449.
- Lockhart, R.A. (1982), On the non-existence of consistent estimates in Galton-Watson processes. *Journal of Applied Probabiltiy*, **19**, 842–846.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

R. Routledge, Associate Professor, Ph.D. (*Dalhousie, 1975*)

Students supervised/Étudiants dirigés: M.Sc. 5

Grants/Subventions: NSERC Operating Grant (1986–88)

Selected Publications/Publications choisies:

- Routledge, R.D. (1989 to appear), The removal method for estimating natural populations: incorporating auxiliary information. *Biometrics*.
- Routledge, R.D. (1987), The impact of soil degradation on the expected present net worth of future timber harvests. *Forest Science*, **33**, 823–834.

Fields of interest/Domaines d'intérêt:

- Applications (biology; biologie)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

M.A. Stephens, Professor, Ph.D. (*Toronto, 1962*)

Students supervised/Étudiants dirigés: M.Sc. 6, Ph.D. 2

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- d'Agostino, R.B., Stephens, M.A. (1986), Goodness of Fit Techniques. Marcel Dekker: New York.
- Stephens, M.A. (1982), Use of the von Mises distribution to analyse continuous proportions. *Biometrika*, **69**, 197–203.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Goodness of Fit; Test de validité

T. Swartz, Assistant Professor, Ph.D. (*Toronto, 1986*)

Students supervised/Étudiants dirigés: M.Sc. 1

Grants/Subventions: President's Research Grant (1986–1988) NSERC Operating Grant (1986–1988)

Selected Publications/Publications choisies:

- Evans, M., and Swartz, T. (1988), Sampling from Gauss rules. *SIAM J. Sci. Stat. Comput.*, **9**, 950–961.
- Evans, M., and Swartz, T. (1988), Monte Carlo computation of some multivariate normal probabilities. *J. Statist. Comput. Simul.*, **30**, 117–128.

Fields of interest/Domaines d'intérêt:
- Statistical Computing; Calcul statistique
- Techniques of Inference; Techniques de l'inférence statistique

C. Villegas, Emeritus Professor, Ing. Ind. (*Uruguay, 1953*)
Grants/Subventions: NSERC Grant

Selected Publications/Publications choisies:
- Villegas, C. (1981), Inner statistical inference II. *Annals of Statistics*, **9**, 768–776.
- Villegas, C. (1982), Maximum likelihood and least squares estimation in linear and affine functional models. *Annals of Statistics*, **10**, 256–265.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Multivariate Analysis; Analyse multidimensionnelle

K.L. Weldon, Associate Professor, Ph.D. (*Stanford, 1969*)
Students supervised/Étudiants dirigés: M.Sc. 2

Selected Publications/Publications choisies:
- Weldon, K.L. (1986), Statistics: A Conceptual Approach. *Prentice-Hall*.
- MacLean, L.C., and Weldon, K.L. (1983), Estimation of multivariate random effects. *Proceedings of the Business and Economics Section of the American Statistical Association*, p. 567.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Foundation of Inference; Fondements de l'inférence statisque

Theses/Thèses (1983 to present/1983 à présent):

1) A. Choudhury (1986), Regression Analysis Procedures with Higher Order Moving Average Errors, M.Sc. Thesis.

2) J. Croal (1986), Testing for Normality in Linear Regression and Autoregressive Time Series Models, M.Sc. Thesis.

3) G. McLaren (1985), Some contributions to Goodness-of-Fit, Ph.D. Thesis.

4) G. McLaren (1983), Estimation of Variance Components in Linear Models, M.Sc. Thesis.

5) D. Hutchinson (1983), Modern Developments in Chi-Squared Goodness-of-Fit Testing, M.Sc. Thesis.

6) C. Mah (1983), Time Series Analysis: A Review of the Time Domain Theory with Implications for Non-Linear Time Series Modelling, M.Sc. Thesis.

7) E.G. Johnson (1983), A New Estimator for Line Transect Sampling Based on Grouped, Perpendicular Distances, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:

10 M.Sc., 2 Ph.D.

University of Toronto

Toronto, Canada M5S 1A1
Department of Statistics

The Department of Statistics offers a Graduate Program of great breadth. The Department has a complement of 15 faculty with research interests in many fields. These include: Statistical Computing; robust estimation; graphical methods; multivariate analysis; mathematical statistics; probability; estimation and inference; actuarial mathematics; stochastic methods in finance; risk theory; time series; asymptotic method; inference; foundations; estimation and inference methods; design of experiments; linear models; Bayesian inference; statistical model selection; non-parametric statistics; credibility models; applied probability; survival analysis; policy-holder costs; sequential; resampling methods; regression.

In addition to the faculty in Statistics, students collaborate with faculty in other divisions of the University including Engineering and Medicine. Students in Statistics benefit from the association with students in other programs, particularly with those in Biostatistics. The research community is exceptional in breadth and quality.

The research facilities of the Department and of the University are excellent. The Departmental library is comprehensive and augmented by that of the University. The computing facilities available for the support of research are among the best anywhere. Currently the Department supports a network of 8 SUN workstations with comprehensive statistical software. The configuration is staffed by two technical experts. Students also have convenient access to the University CRAY and other machines.

Over the past five years, the enrollment in the Graduate Program in Statistics has averaged 16 Ph.D. students and 10 M.Sc. students with 19 Ph.D. students completing in that period. At present 12 of these students receive University Scholarships. Some of these are available to visa students. The Department also offers many students support and teaching experience in the form of Teaching Assistantships.

Le département de statistique offre un programme d'études supérieures d'une grande variété. Le département a 15 membres du personnel enseignant qui poursuivent des recherches dans les domaines d'intérêt suivants: le calcul statistique, l'estimation robuste, les méthodes graphiques, l'analyse multidimensionnelle, la statistique mathématique, les probabilités, l'estimation et l'inférence, les mathématiques actuarielles, les méthodes stochastiques dans la finance, la théorie des risques, les séries chronologiques, la méthode asymptotique, l'inférence, les fondations, l'estimation et les méthodes d'inférence, la

planification d'expériences, les modèles linéaires, l'inférence bayésienne, la sélection de modèles statistiques, la statistique non paramétrique, les modèles de crédibilité, les probabilités appliquées, l'analyse de survie, les prix du titulaire, l'analyse séquentielle, les méthodes de rééchantillonnage, la régression.

Les étudiants collaborent non seulement avec le personnel enseignant du département de statistique mais aussi avec celui d'autres divisions de l'université, y compris celles d'ingénierie et de médecine. Les étudiants en statistique profitent de leur association avec les étudiants d'autres programmes, particulièrement ceux en biostatistique. La communauté de recherche est d'une largeur et d'une qualité exceptionnelle.

Les ressources de recherches du département et de l'université sont excellentes. La bibliothèque du département a une collection étendue qui se trouve augmentée par celle de l'université. Les ressources de calcul disponibles aux chercheurs sont les meilleures. Actuellement, le département a un réseau de 8 sous-stations SUN et de considérables logiciels statistiques. Deux experts techniques s'occupent du réseau. Les étudiants ont accès facile à l'ordinateur CRAY de l'université et à d'autres machines.

Pendant les cinq dernières années, le programme d'études supérieures a eu une inscription de 16 étudiants au doctorat (Ph.D.) et de 10 étudiants à la maîtrise (M.Sc.) en moyenne, 19 étudiants ayant terminés leur doctorat durant cette période. Présentement, 12 de ces étudiants reçoivent des bourses de l'université. Quelques-unes de ces bourses sont offertes aux étudiants étrangers. Le département offre à beaucoup d'étudiants du soutien financier et de l'expérience de l'enseignement sous la forme de tâches de chargé de cours.

Faculty/Le personnel enseignant:

D.F. Andrews, Professor, Ph.D. (*Toronto, 1968*)

Students supervised/Étudiants dirigés: Ph.D. 12; M.Sc. 2

Grants/Subventions: NSERC Operating Grant; Equipment Grant; Connaught Development Grant; Ontario Mental Health Foundation

Selected Publications/Publications choisies:

- Andrews, D.F. and Pregibon, D. (1978), Finding the outliers that matter. *Journal of the Royal Statistical Society*, **B40**, 85–93.
- Andrews, D.F., Brant, R. and Percy, M.E. (1986), Bayesian incorporation of repeated measurements in logistic discrimination. *Canadian Journal of Statistics*, **14**, 263–266.

Fields of interest/Domaines d'intérêt:

- Statistical Computing; Calcul statistique
- Robust Estimation; Estimation Robuste

M.R. Bilodeau, Visiting Assistant Professor, Ph.D. (*Toronto, 1986*)

Selected Publications/Publications choisies:

- Bilodeau, M. and Srivastava, M.S. (1988), Estimation of the MSE matrix of the Stein estimator. *Canadian Journal of Statistics*, **16**, 153–159.

- Bilodeau, M. (1988), On the Simultaneous Estimation of Scale Parameters. *Canadian Journal of Statistics*, **16**, 169–174.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Mathematical Statistics; Statistique mathématique

D. Brenner, Associate Professor, Ph.D. (*Toronto, 1977*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Brenner, D. and Fraser, D.A.S. (1979), On Foundations for Conditional Probability with Statistical Models – When is a Class of Functions a Function. *Statistiche Hefte*, 148–159.
- Brenner, D. and Fraser, D.A.S. (1982), On Asymptotic Normality of Likelihoods and Conditional Analyses. *Canadian Journal of Statistics*, **10**, 163–172.

Fields of interest/Domaines d'intérêt:
- Techniques of Inference; Techniques de l'inférence statistique
- Mathematical Statistics; Statistique mathématique

S. Broverman, Associate Professor, Ph.D. (*Manitoba, 1976*)
Grants/Subventions: NSERC Grant, ACT Education Research Foundation

Selected Publications/Publications choisies:
- Broverman, S. (1986), A note on Variable Interest Rate Loans. *Proceedings of Joshi Conference, Actuarial Science*, 165–172.
- Broverman, S. (1986), The Rate of Return on Life Insurance and Annuities. *The Journal of Risk and Insurance*, **LIII**, 419–434.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat

B. Chan, Associate Professor, Ph.D. (*Toronto, 1979*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Chan, B. (1984), Recursive formulas for compound difference distributions. *Society of Actuaries, Transactions*, **XXXVI**, 171–182.
- Chan, B. (1982), Derivation of Moment Formulas by Operator Valued Probability Generating Functions. *The American Statistician*, **36**.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Risk Theory; Théorie des risques

M.J. Evans, Associate Professor, Ph.D. (*Toronto, 1977*)
Students supervised/Étudiants dirigés: Ph.D. 1; M.Sc. 1
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Evans, M. (1986), Moments of coverage of a random ellipsoid. *Annals of the Institute of Statistical Mathematics*, **38**, 1–11.
- Evans, M. and Swartz, T. (1988), Sampling from Gauss rules. *SIAM Journal of Scientific and Statistical Computing*, **9**, 950–961.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

A. Feuerverger, Associate Professor, Ph.D. (*Berkeley, 1972*)
Students supervised/Étudiants dirigés: Ph.D. 2; M.A. 1
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Feuerverger, A. (1987), Some new perspectives on the MLE and LRT. *University of Toronto Technical Report*.
- Feuerverger, A. (1988), On the empirical saddlepoint approximation. *University of Toronto Technical Report*.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Time Series Analysis; Analyse des séries chronologiques

I. Guttman, Professor, Ph.D. (*Toronto, 1955*)
Students supervised/Étudiants dirigés: Ph.D. 4
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Guttman, I., Johnson, R.A., Bhattacharya, G.K. and Reiser, B. (1988), Confidence Limits for Stree-Strength Models with Explanatory Variables. *Technometrics*, **30**.
- Draper, N.R., Evans, M. and Guttman, I. (1989), A Bayesian approach to system reliability when two components are dependent. *Computational Statistics and Data Analysis*, **7**, 39–40 (North-Holland).

Fields of interest/Domaines d'intérêt:

- Design & Analysis of Experiments; Planification & analyse d'expériences
- Techniques of Inference; Techniques de l'inférence statistique

K. Knight, Visiting Assistant Professor, Ph.D. (*Washington, 1986*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Knight, K. (1987), Rate of Convergence of Centred Estimates of Autoregressive Parameters for Infinite Variance Autoregressions. *Journal of Time Series Analysis*, 51–60.
- Knight, K. (1989, to appear), Consistency of Akaike's Information Criterion for Infinite Variance Autoregressive Processes. *Annals of Statistics*.

Fields of interest/Domaines d'intérêt:
- Statistical model selection; La sélection de modèle statistique
- Time Series Analysis; Analyse des séries chronologiques

P. McDunnough, Associate Professor, Ph.D. (*McGill, 1977*)
Students supervised/Étudiants dirigés: Ph.D. 4
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- McDunnough, P. (1989, to appear), Sampling Branching Tree. *Journal of Stochastic Processes and Applications*.
- McDunnough, P. (1988, to appear), What can and can't be estimated in branching and related processese.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Mathematical Statistics; Statistique mathématique

N. Reid, Professor, Ph.D. (*Stanford, 1979*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Cox, D.R. and Reid, N. (1987), Parameter orthogonality and approximate conditional inference. *Journal of the Royal Statistical Society B*, **49**, 1–39.
- Reid, N. (1988), Saddlepoint Methods and Statistical Inference. *Statistical Science*.

Fields of interest/Domaines d'intérêt:
- Techniques of Inference; Techniques de l'inférence statistique
- Nonparametrics; Statistique non paramétrique

P.L.J. Ryall, Associate Professor, M.A. (*Cambridge, 1954*)

Selected Publications/Publications choisies:
- Ryall, P.L.J. (1973), A ratio of Interest-Adjusted Cost Indexes for the Comparison of Dissimilar Life Insurance Contracts. *Transactions of the Society of Actuaries*, **25**, 55–72.
- Ryall, P.L.J. (1987), Calendar Days – Without a Calendar. *The Actuary*.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat

M.S. Srivastava, Professor, Ph.D. (*Stanford, 1964*)
Students supervised/Étudiants dirigés: Ph.D. 12
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Srivastava, M.S. (1987), Bootstrap Method in Ranking and Slippage Problems. *Communications in Statistics A*, **16**, 3285–3299.

- Srivastava, M.S. and Bilodeau, M. (1988), Estimation of the MSE matrix of the Stein estimator. *Canadian Journal of Statistics*, **16**, 153–159.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Nonparametrics; Statistique non paramétrique

R. Tibshirani, Assistant Professor, Ph.D. (*Stanford, 1984*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Hastie, T. and Tibshirani, R. (1986), Generalized additive models (with discussion). *Statistical Science*, **1, No. 3**, 295–318.
- Efron, B. and Tibshirani, R. (1986), The Bootstrap Methods for standard errors, confidence intervals, and other measures of statistical accuracy. *Statistical Science*, **1, No. 1**, 1–35.

Fields of interest/Domaines d'intérêt:
- Sampling; Théorie de l'échantillonnage
- Statistical Computing; Calcul statistique

Theses/Thèses (1983 to present/1983 à présent):

1) A. Naderisamani (1988), Measurability and Other Properties of Likelihood Map, Ph.D. Thesis.

2) M.Y. Greenwich (1987), The Conditional Analysis of the Location-Scale Model with Multi-parameter Error Distributions, Ph.D. Thesis.

3) P. Bagchi (1987), Bayesian Analysis of Directional Data, Ph.D. Thesis.

4) S. Ghosh (1987), Some Tests of Normality Using Methods based on Transforms, Ph.D. Thesis.

5) K.J. Keen (1987), Estimation of Intraclass and Interclass Correlations, Ph.D. Thesis.

6) E.L. Maki (1986), Some Statistical Topics Involving Incomplete Observation of a Branching Process, Ph.D. Thesis.

7) T.B. Swartz (1986), Evaluating Multidimensional Integrals via Sampling from Gauss Rules, Ph.D. Thesis.

8) NM.R. Bilodeau (1986), Stein estimation under Elliptical Distribution, Power of F-tests under Student-T Distribution and Tests of Correction in SUR Models, Ph.D. Thesis.

9) A. Dobriyal (1986), Linear Calibration and the Linear Functional Model – A Fiducial Method for Interval Estimation, Ph.D. Thesis.

10) T.Y. Wong (1986), On the Design of Bayes-Type Discrimination Rules, Ph.D. Thesis.

11) E.S. Sakey (1986), Structural Analysis and Missing Data, Ph.D. Thesis.

12) M.D. deB. Edwardes (1986), The Analysis of Ordinal Data, Ph.D. Thesis.

13) C. Siu (1985), Piecewise Linear Tree-Structured Regression with an Application for the Removal of Confounding Effects, Ph.D. Thesis.

14) Y.M. Chan (1985), The Performance of the Bootstrap Method in Approximating the Distributions of the Sample Variance and Ratio of Means, and in Estimating the Power of Sphericity Tests, Ph.D. Thesis.

15) K.E. Manchester (1985), Methods for the Systematic Evaluation of Statistical Graphs, Ph.D. Thesis.

16) S.A. Bartlett (1984), Posterior and Predictive Distributions for the Normal Multivariate Linear Model with Missing Data, Ph.D. Thesis.

17) J. Berkowitz (1984), On Assessing the Chi-Squared Approximation to Log Likelihood Ratio Test for Generalized Linear Models, Ph.D. Thesis.

18) R.J. Gebotys (1984), A Confidence Theory Approach to Model Selection, Ph.D. Thesis.

19) R.S. Katapa (1984), Statistical Analysis of Familial Data, Ph.D. Thesis.

20) R.W. Oldford (1983), Effective Dimension: A Theory for the Non-Stochastic Examination of Linear Regression, Ph.D. Thesis.

21) J. Quijano-Leon (1983), Autoregressive Time-Series Modelling Using Shrinkage Estimators, Ph.D. Thesis.

22) T.K. Hui (1983), On Tests of Multivariate Normality, Ph.D. Thesis.

23) T. Stukel (1983), Generalized Logistic Models, Ph.D. Thesis.

Department of Preventive Medicine and Biostatistics

The graduate program in Biostatistics provides training leading to the MSc and PhD degrees under the auspices of the Department of Community Health of the School of Graduate Studies. It is the responsibility of the Department of Preventive Medicine and Biostatistics within the Division of Community Health of the Faculty of Medicine of the University of Toronto. At present the program, under the directorship of Paul Corey, involves sixteen members of the department of whom all but one are full time faculty of the University.

Many of the members of the program are associated with several research institutes which include: National Cancer Institute of Canada, Ontario Cancer Treatment and Research Foundation, Gage Research Institute (Respiratory Diseases), Ludwig Institute for Cancer Research, Addiction Research Foundation and the Clarke Institute of Psychiatry. This in addition to the 11 teaching hospitals associated with the Faculty of Medicine insure that the students will be exposed to a wide variety of interesting examples of biostatistical applications.

The Clinical research suppport unit (CRSU) is the statistical consulting group within the department whose clients include researchers within the Faculty of Medicine, University and community. It provides experience and financial support to those graduate students associated with it.

The department enjoys the support of the Department of Statistics within the Faculty of Arts and Science both in courses offered that students in the Biostatistics program are expected to take as well as assistance in graduate thesis supervision.

Le programme des études supérieures en biostatistique conduit à la maîtrise (M.Sc.) et au doctorat (Ph.D.) sous les auspices du département de la santé communautaire de l'école des études supérieures. Le programme est la responsabilité du département de médecine préventive et de biostatistique qui fait partie de la division de la santé communautaire de la faculté de médecine de l'université de Toronto. Au présent, le programme, sous la direction de Paul Corey, est composé de seize membres du département. Tous sauf un sont engagés à plein temps comme personnel enseignant de l'université.

Beaucoup de membres du programme sont associés à plusieurs instituts de recherche, y compris l'institut national canadien de cancer, la fondation ontarienne de recherche et de traitement du cancer, l'institut Gage de recherche (maladies respiratoires), l'institut Ludwig de recherche sur le cancer, la fondation de recherche sur la toxicomanie et l'institut Clarke de psychiatrie. En outre, la faculté de médecine est associée à onze centres hospitalo-universitaires. C'est ainsi que les étudiants rencontreront une gamme d'exemples intéressants d'applications biostatistiques.

L'unité de soutient des recherches cliniques est le groupe de consultation statistique du département et elle compte parmi ses clients des chercheurs de la faculté de médecine,

de l'université et de la communauté. Les étudiants associés à l'unité pourront en acquérir de l'expérience pratique et de l'aide financière.

Le département de statistique de la faculté des lettres et des sciences soutient le département de médecine préventive et de biostatistique en offrant des cours que les étudiants en biostatistique devront suivre et en aidant avec la direction des thèses du deuxième et troisième cycle.

Faculty/Le personnel enseignant:

R. Brant, Assistant Professor, Ph.D. (*Toronto, 1982*)
Students supervised/Étudiants dirigés: M.Sc. 2
Grants/Subventions: NSERC Operating Grant (1988–1990)

Selected Publications/Publications choisies:

- Brant, R. (1984), Approximate likelihood and probability calculations based on transforms. *Annals of Statistics,* **12**, 989–1005.
- Brant, R. (1987), Residual components in generalized linear models. *Canadian Journal of Statistics,* **15**: 115–126.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

S.B. Bull, Assistant Professor, Ph.D. (*Western, 1983*)
Grants/Subventions: NSERC Operating Grant (1987–89), NHRDP (1988–90),

Selected Publications/Publications choisies:

- Bull, S.B. and Donner, A. (1987), The efficiency of multinomial logistic regression compared to multiple group discriminant analysis. *Journal of the American Statistical Association*, **82**, 1118-1122.
- Bull, S.B. et al. (1988), Intensity of follow-up: effects of estimates in a population telephone survey with an extension of Kish's method. *American Journal of Epidemiology*, **127**, 552–561.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

M. Chipman, Associate Professor, M.A. (*Toronto, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NHRDP (1985–1988), Ontario Ministry of Health (1988–91)

Selected Publications/Publications choisies:

- Perlman, M., Chipman, M.L. et al (1986), Prediction in the first 24 hours of life of neonatal survival of infants of birthweight less than 801 grams. *Critical Care Medicine,* **14**, 768–772.
- Chipman, M.L. (1983), Motor vehicle accident fatality statistics and investigation of reliability. *Canadian Journal of Public Health,* **74**, 381–384.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Applications (health; santé)

B. Choi, Assistant Professor, Ph.D. (*Toronto, 1983*)
Students supervised/Étudiants dirigés: M.Sc. 2
Grants/Subventions: NHRDP Research Grant (1986–1988), Ontario Ministry of Labour Research Grant (1987–89), University of Toronto Operating Grant (1987)

Selected Publications/Publications choisies:
- Choi, B.C.K. and Howe, G.R. (1984), Methodological issues in case-control studies: 4 Validity and efficiency of various analysis strategies for continuous variables using the unconditional logistic regression model. *International Journal of Epidemiology,* **13**, 526–532.
- Choi, B.C.K. and Nethercotte, J.R. (1989, to appear), Economic impact of smoking in Canada. *Journal of Health Planning and Management.*

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Multivariate Analysis; Analyse multidimensionnelle

P.N. Corey, Professor & Director, Ph.D. (*Johns Hopkins, 1974*)
Students supervised/Étudiants dirigés: M.Sc. 10, Ph.D. 1
Grants/Subventions: Ontario Ministry of the Environment, Ontario Ministry of Health, Ontario Ministry of Labour, Health and Welfare Canada

Selected Publications/Publications choisies:
- Broder, I., Corey, P., et al (1985), Longitudinal study of grain elevator and control workers with demonstration of healthy worker effect. *Journal of Occupational Medicine,* **27**, 873–880.
- Halliday, M.L., Corey, P. et al (1987), A method for estimating persons versus cases from hospital morbidity data in the absence of unique personal identifiers. *American Journal of Epidemiology*, **125**, 885–891.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

A. Csima, Associate Professor, M.A. (*Toronto, 1961*)
Students supervised/Étudiants dirigés: M.Sc. 3

Selected Publications/Publications choisies:
- Williamson, P.C., Csima, A., Galin, H., and Mamelak, M. (1986), Spectral EEG correlates of dream recall. *Biol. Psychiatry,* **21**, 717–723.
- Csima, A., Szathmary, T. (1987), Facial proportion indices in children less than 6 years old in *Anthropometric facial proportions in medicine*, Farkas, L.G. and Munro, I.R. editors. Springfield, C.C. Thomas, 163–165.

Fields of interest/Domaines d'intérêt:
- Applications
- Design & Analysis of Experiments; Planification & analyse d'expériences

L. Endrenyi, Professor, Ph.D. (*Toronto, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 10, Ph.D. 2
Grants/Subventions: M.R.C. Operating Grant (1988–1990)

Selected Publications/Publications choisies:

- Bezeau, M. and Endrenyi, L. (1986), Design of experiments for the precise estimation of dose-response parameters: the Hill equation. *Journal of Theoretical Biology,* **123**, 415–430.
- Cornish-Bowden, A., and Endrenyi, L. (1986), Robust regression of enzyme kinetic data. *Biochemical Journal,* **234**, 21–29.

Fields of interest/Domaines d'intérêt:

- Applications (biology; biologie)
- Design & Analysis of Experiments; Planification & analyse d'expériences

G.E. McKeown-Eyssen, Associate Professor, Ph.D. (*McGill,1975*)
Students supervised/Étudiants dirigés: M.Sc. 1, Ph.D. 4
Grants/Subventions: Ludwig Institute for Cancer Research

Selected Publications/Publications choisies:

- Eyssen, G.E.M., and Thomas, D.C. (1985), Sample size determination in case-control studies: the influence of the distribution of exposure. *Journal of Chronic Diseases,* **38**: 559–568.
- Eyssen, G.E.M., Yeung, K.S., and Bright-See (1986), Assessment of past diet in epidemiologic studies. *American Journal of Epidemiology*, **124**, 94–103.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)

J. Hsieh, Professor, Ph.D. (*Chapel Hill, 1972*)
Students supervised/Étudiants dirigés: M.Sc. 7, Ph.D. 2
Grants/Subventions: SSHRC Operating Grant (1985), OMH Research Grant (1985–1987), NSERC Operating Grant (1987–1988)

Selected Publications/Publications choisies:

- Hsieh, J.J. (1977), A formulation of the lifetime distribution and the existence of its moments. *Journal of Mathematical Biology,* v. 5, 75–86.
- Hsieh, J.J. (1985), Construction of expanded infant life tables: A method based on a new mortality law. *Mathematical Biosciences*, V. 76, 221–242.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

S. Minkin, Assistant Professor, Ph.D. (*Toronto, 1982*)
Grants/Subventions: NSERC Operating Grant (1988–90)

Selected Publications/Publications choisies:

- Minkin, S. (1987), On optimal designs for binary data. *Journal of the American Statistical Association,* **82** 1098–1103.

- Minkin, S. (1989, to appear), Fit assessment and identification of functional form in logistic regression. *Applied Statistics*.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Data Analysis; Analyse des données

H. Risch, Assistant Professor, Ph.D. (*Chicago, 1980*)
Grants/Subventions: Operating grant of the National Cancer Institute of Canada Epidemiology Unit

Selected Publications/Publications choisies:
- Risch, H.A. et al. (1988), Occupational factors and the incidence of cancer of the bladder in Canada. *British Journal of Ind. Medicine*, **45**, 361-367.
- Risch, H.A. (1983), An approximate solution for the standard deterministic epidemic model. *Math Biosciences* 63: 1–8.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Applications (health; santé)

D. Tritchler, Associate Professor, Ph.D. (*Harvard, 1980*)
Grants/Subventions: NCIC Research Grant

Selected Publications/Publications choisies:
- Emerson, J.D. and Tritchler, D. (1987), The three-decision problem in medical decision making. *Statistics in Medicine,*, 101–112.
- Tritchler, D. (1988), The exact non-parametric analysis of a class of experimental designs. *Communications in Statistics A*,**17**, 1351–1363.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Statistical Computing; Calcul statistique

Theses/Thèses (1983 to present/1983 à présent):

1) G. Tso (1988), Shrinkage estimators in general linear models, Ph.D. Thesis.

2) L. Wasserman (1988), Statistical inference based on belief functions, Ph.D. Thesis.

3) M. Barrie (1987) A statistical comparison of quantitative methods of assessing muscle cell clumping, M.Sc. Thesis.

4) G. Arraiz (1987), Parametric modelling of the incidence of occult tumours, M.Sc. Thesis.

5) S. Chang (1986), A parametric model for life-table functions, Ph.D. Thesis.

6) L. Wasserman (1985), Convex likelihood functions or resistant estimates? An investigation on a generalization of the logistic model, M.Sc. Thesis.

7) S. Jain (1984), Design of experiments for estimating parameters of the logistic model, M.Sc. Thesis.

8) S. Newman (1983), Life-table analysis of breast cancer mortality, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:
1 M.Sc., 5 Ph.D.

The University of Victoria

Victoria, British Columbia V8W 2Y2
Department of Mathematics and Statistics

The statistics section of the Department of Mathematics and Statistics at the University of Victoria consists of five faculty members. The current composition of the statistics section has been in effect since 1979.

Since 1973 the Department has offered Majors and Honours programs in Mathematics with Probability and Statistics emphasis. The Department has a modest graduate program. In recent years there have been about 3 to 6 graduate students registered each year, of which only a small number have specialized in probability and statistics. In order to recognize the activity of the statistics section and to increase awareness of the undergraduate and graduate programs in probability and statistics, the Department has recently approved a change in its name to the Department of Mathematics and Statistics.

In recent years the University of Victoria has hosted two major statistical conferences: the Second International Conference on Teaching Statistics (ICOTS II) in August 1986, and the Annual Meeting of the Statistical Society of Canada in June 1988.

The areas of research interest of faculty in the statistics section include mathematical statistics, classical and bayesian inference, probability theory, stochastic processes, data analysis, statistical computing, nonparametric statistics, natural resource modelling, time series analysis and regression analysis.

Computing facilities available include a mainframe IBM 3090 model 150S running VM/SP and supporting CMS and OS/VSI, and two systems running UNIX a VAX 11/780 and a PYRAMID 98xe. There is a Statistics Laboratory equipped with IBM 3163 terminals to the mainframe and a Microcomputer Facility equipped with a network of IBM PS/2 model 60 computers, both of which operate under the auspices of Computing and System Services. The University of Victoria Library has an extensive collection of texts and monographs and a wide selection of journals in the areas of probability and statistics.

Le département de mathématiques et de statistique de l'université de Victoria comprend la section de statistique qui a un personnel enseignant de 5 membres. La composition actuelle de cette section existe comme telle depuis 1979.

Depuis 1973 le département offre des programmes de premier cycle: B.Sc. spécialisé et majeur en mathématiques, orientation ≪probabilités et statistique≫. Le département offre aussi un programme modeste d'études supérieures. Dernièrement, 3 à 6 étudiants

se sont inscrits dans le programme d'études supérieures par an. Un petit nombre d'entre eux se sont spécialisés en probabilités et en statistique. Afin de reconnaître l'activité de la section de statistique et de rehausser le profil des programmes de premier et de deuxième cycle en probabilités et en statistique, le département a approuvé récemmement un changement dans son nom à celui de Département de mathématiques et de statistique.

Ces dernières années, l'université de Victoria a accueilli deux conférences majeures de statistique: La deuxième conférence internationale sur l'enseignement de la statistique en août 1986, et Le congrès annuel de la Société statistique du Canada en juin 1988.

Les domaines d'intérêt de recherche du personnel enseignant de la section de statistique comprennent les mathématiques statistiques, l'inférence bayésienne et classique, la théorie des probabilités, les processus stochastiques, l'analyse des données, le calcul statistique, la statistique non paramétrique, la modélisation des ressources naturelles, l'analyse des séries chronologiques et l'analyse de régression.

Le département a accès à une unité centrale de traitement IBM 3090 modèle 150S qui fait fonctionner VM/SP, CMS, et OS/VSI, et deux systèmes, VAX 11/780 et PYRAMID 98xe, qui font fonctionner UNIX. Il y a un laboratoire de statistique équippé de terminaux IBM 3163 reliés à l'unité centrale. Il y a aussi un centre de micro-ordinateurs équippé d'un réseau de micro-ordinateurs IBM PS/2 modèle 60. Ces deux ressources sont sous les auspices des Services de calcul et de systèmes. La bibliothèque de l'université de Victoria a une vaste collection de textes et de monographies et une large sélection de revues portant sur les probabilités et la statistique.

Faculty/Le personnel enseignant:

R.R. Davidson, Professor, Ph.D. (*Florida State, 1966*)

Selected Publications/Publications choisies:

- Davidson, R.R. and Beaver, R.J. (1977), On extending the Bradley-Terry model to incorporate within-pair order effects. *Biometrics*, **33**, 693–702.
- Davidson, R.R. (1980), Some properties of a family of generalized logistic distributions. *Statistical Climatology*, (S. Ikeda, E. Suzuki, E. Uchida, M.M. Yoshino, Editors) Elsevier , 27–34.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

W.K. Hastings, Associate Professor, Ph.D. (*Toronto, 1962*)

Fields of interest/Domaines d'intérêt:

- Data Analysis; Analyse des données
- Time Series Analysis; Analyse des séries chronologiques

B.R. Johnson, Associate Professor, Ph.D. (*Oregon, 1970*)
Students supervised/Étudiants dirigés: 1

Selected Publications/Publications choisies:
- Johnson, B.R. and Truax, D.R. (1987), Asymptotic properties of Bayes risk for one-sided tests. *Canadian Journal of Statistics*,**15**, 53–61.
- Johnson, B.R. (1988), Lightning detection in British Columbia: An example of using system operation at unknown reliability to estimate component reliability. *Canadian Journal of Statistics*,**16**, 105–115.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Probability Theory; Théorie des probabilités

R.E. Odeh, Professor, Ph.D. (*Carnegie I Tech, 1962*)
Students supervised/Étudiants dirigés: MS 5
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Odeh, R.E. (1986), Confidence Limits on the Correlation Coefficient. *Selected Tables in Mathematical Statistics*, **X**, 129–348, Providence: American Mathematical Society.
- Odeh, R.E. and Owen, D.B. (1983), . *Attribute Sampling Plans, Tables and Confidence Limits for Proportions*, New York: Marcel-Dekker, Inc.

Fields of interest/Domaines d'intérêt:
- Statistical Computing; Calcul statistique
- Nonparametrics; Statistique non paramétrique

W.J. Reed, Associate Professor, Ph.D. (*British Columbia, 1975*)
Students supervised/Étudiants dirigés: 1
Grants/Subventions: NSERC; FEPA

Selected Publications/Publications choisies:
- Reed, W.J., Optimal Harvesting of a Fishery Subject to Random Catastrophic Collapse. *IMA Journal of Applications in Medicine and Biology*
- Reed, W.J. and Clarke, H.R., Harvest Decisions and Asset Valuation for a Biological Resource Exhibiting Size-Dependent Growth. *International Economic Review*.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Applications (biology; biologie)

Theses/Thèses (1983 to present/1983 à présent):

1) J. Apaloo (1988), Management of a Forest Stand: Determination of Optimal Thinning Rate, Fertilization Rate and Rotation Age in the Presence of Risk of Catastrophic Destruction, M.Sc. Thesis.

2) A.K. Majumder (1988), The Distribution of the Longest Run under Binomial Sampling, M.Sc. Thesis.

Current student enrolment/Étudiants inscrits présentement:

4 M.Sc.

University of Waterloo

Waterloo, Ontario N2L 3G1
Department of Statistics and Actuarial Science

The Department of Statistics and Actuarial Science is one of five departments that comprise the Faculty of Mathematics at the University of Waterloo. It consists of 24 statistics and 8 actuarial professors and represents the largest concentration of researchers assembled in either field in Canada. Research interests of faculty members encompass theoretical and applied areas. Several faculty members are cross-appointed to other departments including Health Studies, Psychology, Recreation, Sociology, and the School of Accountancy. Members of the Department serve on the editorial boards of a number of major statistical and actuarial journals, and the editorial offices of two major journals have been located in the Department. The department operates the Statistical Consulting Service which is staffed by faculty, students and three master's-level consultants. Experience in statistical consulting is regarded as an important aspect of graduate education.

Graduate students have ample opportunity to attend formal courses, seminars, and discussion groups, or to do research in almost any area of statistics or actuarial science. A unique aspect of the master's programme is the cooperative option, which combines eight months of formal course work with an eight-month placement in a job involving use of statistical methods.

A recent initiative led to the formation of the Institute for Improvement in Quality and Productivity which is closely associated with the department. The IIQP provides opportunities for interested faculty to become involved in teaching and consulting for its industrial partners which include several major Canadian corporations. As activities of the IIQP increase, it is expected that interested graduate students will participate in these activities. The actuarial group has been instrumental in the development of the Institute for Insurance and Pension Research. This has attracted considerable industrial support and will serve to enhance relationships between faculty, students and the insurance industry.

Le département de statistique et d'actuariat est l'un des cinq départements de la Faculté de mathématiques de l'université de Waterloo. Avec ses 24 statisticiens et ses 8 actuaires, il représente la plus forte concentration de chercheurs dans ces deux disciplines au Canada. Le personnel du département poursuit des recherches tant théoriques qu'appliquées. C'est ainsi que certains professeurs du département sont aussi rattachés aux départements de psychologie, de sociologie, de récréologie, des sciences de la santé ou à l'école de comptabilité. En outre, plusieurs professeurs sont membres de comités

de rédaction de revues scientifiques et le département loge les bureaux de rédaction de deux revues majeurs. Le service de consultation du département emploie trois diplômés de deuxième cycle et offre aux étudiants la possibilité d'acquérir une précieuse expérience comme consultants en statistique sous la supervision du corps enseignant.

Une pléiade de cours, de séminaires et de groupes de discussion permet aux étudiants de se familiariser ou de se spécialiser dans pratiquement toutes les branches de la statistique et de l'actuariat. Il faut noter que le programme de maîtrise est disponible en régime coopératif, ce qui permet d'acquérir de l'expérience pratique comme statisticien dans le cadre d'un stage de huit mois qui complète les huit mois de scolarité.

Des efforts récents ont abouti à la fondation d'un Institut pour l'amélioration de la qualité et de la productivité (IAQP), dont les activités sont intimement liées à celles du département. L'IAQP permet au personnel du département de s'impliquer dans des projets de consultation et de dispenser de l'enseignement chez ses partenaires industriels, parmi lesquels comptent plusieurs entreprises canadiennes importantes. On prévoit faire davantage appel à la participation étudiante à mesure que l'IAQP prendra de l'expansion. Pour sa part, le groupe d'actuariat a mis sur pied un institut de recherche en assurance et en pension. Cette initiative a recu l'appui enthousiaste du milieu des affaires et permettra de resserrer les liens entre le personnel enseignant, les étudiants et l'industrie de l'assurance.

Faculty/Le personnel enseignant:

B. Abraham, Professor, Ph.D. (*Wisconsin, 1975*)
Students supervised/Étudiants dirigés: M.Sc. 14; Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1984–1987)

Selected Publications/Publications choisies:
- Abraham, B. (1986), Forecast functions implied by ARIMA models and other forecast procedures. *International Statistical Review*, **54**, 51–66.
- Abraham, B. (1983), *Statistical Methods for Forecasting*, John Wiley and Sons Ltd.

Fields of interest/Domaines d'intérêt:
- Quality Assurance; Contrôle de la qualité
- Time Series Analysis; Analyse des séries chronologiques

W.H. Aitken, Associate Professor, Hon B.A. (*Toronto, 1949*)
Students supervised/Étudiants dirigés: M.Sc. 3

Selected Publications/Publications choisies:
- Aitken, W.H. (1985), *Actuarial Liabilities*, Proceedings, Canadian Institute of Actuaries.
- Aitken, W.H. (1982), *Amortization of Capital Gains*, Proceedings, Canadian Institue of Actuaries.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Applications

G.W. Bennett, Associate Professor, Ph.D. (*Adelaide, 1966*)

Selected Publications/Publications choisies:
- Bennett, G.W. (), Estimation of Anaerobic Threshold. *Canadian Journal of Statistics*.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Multivariate Analysis; Analyse multidimensionnelle

M.A. Bennett, Associate Professor, B.A. (*Nottingham 1957*)

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Applications

P.P. Boyle, Professor, Ph.D.

Students supervised/Étudiants dirigés: 6

Grants/Subventions: NSERC Operating Grant (1985-1988)

Selected Publications/Publications choisies:
- Turnball, S. and Boyle, P.P. (1988), Pricing and Hedging Truncated Options. *Journal of Futures Markets*.
- Boyle, P.P. (1988), A Lattice Framework for Option Pricing with Two State Variables. *Journal of Financial and Quantitative Analysis*, **23**.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Finance

K.S. Brown, Associate Professor, Ph.D. (*Waterloo, 1974*)

Students supervised/Étudiants dirigés: M.Sc. 10; Ph.D. 8

Grants/Subventions: National Cancer Institute (1984–87); Ontario Ministry of Health (1985–88); National Heart, Lung & Blood Institute (1988–1991)

Selected Publications/Publications choisies:
- Brown, K.S., Peterson, A.V. (To appear), Statistical Methods for the Analysis of Longitudinal Data from School-Based Smoking Prevention Studies. *Preventive Medicine*.
- Hirdes, J.P., Brown, K.S., Vigoda, D.S., Forbes, W.F., Crawford, L. (1987), Health Effects of Cigarette Smoking: Data from the Ontario Longitudinal Study on Aging. *Canadian Journal of Public Health*, **78**, 13–17.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Biostatistics; Biostatistique

R.L. Brown, Associate Professor, B. Math (*Waterloo, 1971*)
Grants/Subventions: Canadian Institute of Actuaries - Intercompany Mortality Study, International Foundation of Employee Benefit Plan, Age of Eligibility for Social Security Pension Benefits.

Selected Publications/Publications choisies:
- Brown, R.L. (1982), Actuarial Aspects of the Changing Canadian Demographic Profile. Transactions of the Society of Actuaries **XXXIV**.
- Brown, R.L. (1984), Making Demography Relevant: The Canadian Baby Boom. Insurance: Mathematics and Economics, **3**.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Applied Demography; Démographie appliquée

W.H. Cherry, Professor, Ph.D. (*Melbourne, 1967*)
Students supervised/Étudiants dirigés: M.Sc. 4, Ph.D. 9

Selected Publications/Publications choisies:
- Cherry, W.H. (1981), Distribution of cadmium in human tissues. Chapter 4 in: Cadmium in the Environment, Part 2 (Health Effects), J.O. Nriagu (editor), Wiley-Interscience, pages 69–536.
- Brown, K.S., Cherry, W.H., and Forbes, W.F. (1986), The 1978 national survey of smoking habits of Canadian school children. *Canadian Journal of Public Health*, **77**, 139–146.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

C. Cutler, Assistant Professor, Ph.D. (*Carleton, 1985*)
Grants/Subventions: NSERC Operating Grant (1985–88)

Selected Publications/Publications choisies:
- Cutler, C., The Hausdorff dimension distribution of finite measures in Euclidean space. *Canadian Journal of Mathematics*, **38**, 1459–1484.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Probability Theory; Théorie des probabilités

V.T. Farewell, Professor, Ph.D. (*London, 1977*)
Students supervised/Étudiants dirigés: M.Sc. 2; Ph.D. 3
Grants/Subventions: NSERC Operating Grant - 1986–1989

Selected Publications/Publications choisies:
- Farewell, V.T. and Dahlberg, S. (1984), Some statistical methodology for the analysis of HLA data. *Biometrics*, **40**, 547–560.
- Farewell, V.T. (1985), Some remarks on the analysis of cross-over trials with a binary response. *Applied Statistics*,**34**, 121–128.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Biostatistics; Biostatistique

W.F. Forbes, Professor, Ph.D./D.Sc. (*London, 1964*)
Students supervised/Étudiants dirigés: M.Sc. 18; Ph.D. 13;
Grants/Subventions: Ontario Ministry for Senior Citizens' Affairs; SSHRC, (Jan. 1987 to Jan. 1989) with B.D. McPherson; Social Data Research; Canadian Council on Smoking and Health; various grants and contracts as part of collaboration with Freeport Hospital

Selected Publications/Publications choisies:
- Forbes, W.F. and Thompson, M.E. (1983), Estimating the Health Care Costs of Smokers. *Canadian Journal of Public Health*, **74**, 183–190.
- Forbes, W.F. and Gibberd, R.W. (1984), Mathematical Models of Carcinogenesis; a Review. *The Mathematical Scientist*, **9**, 95–110.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

V.P. Godambe, Professor, Ph.D. (*London, 1958*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 6
Grants/Subventions: NSERC Operating Grant (1986–1989)

Selected Publications/Publications choisies:
- Godambe, V.P. (1985), The foundations of finite sample estimation in stochastic processes. *Biometrika*, **72**, 419–428.
- Godambe, V.P., and Thompson, M.E. (1986), Parameters of superpopulation and survey population: Their relationships and estimation. *International Statistical Review*, **54**, 127–138.

Fields of interest/Domaines d'intérêt:
- Sampling; Théorie de l'échantillonnage
- Techniques of Inference; Techniques de l'inférence statistique

M. Hamada, Research Assistant Professor, Ph.D.

Selected Publications/Publications choisies:
- Hamada, M. and Tse, S.K. (1988), A note on the existence of maximum likelihood estimates in linear regression models using interval censored data. *Journal of the Royal Statistical Society*, **50**, 293–296.
- Hamada, M. and Wu, C.F.J. (1986), Should accumulation analysis and related methods be used for industrial experiments?, discussion of 'Testing in industrial experiments with ordered categorical data', by V.N. Nair. *Technometrics*, **28**, 302–306.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Quality Assurance; Contrôle de la qualité

J.D. Kalbfleisch, Professor, Ph.D. (*Waterloo, 1969*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 8
Grants/Subventions: NSERC Operating Grant (1986–1989)

Selected Publications/Publications choisies:
- Kalbfleisch, J.D. and Lawless, J.F. (1985), The Analysis of Panel Data Under a Markov Assumption. *Journal of the American Statistical Association*, **80**, 863–871.
- Kalbfleisch, J.D. and Prentice, R.L. (1980), The Statistical Analysis of Failure Time Data. New York. Wiley.

Fields of interest/Domaines d'intérêt:
- Applications
- Techniques of Inference; Techniques de l'inférence statistique

J.G. Kalbfleisch, Professor, Ph.D. (*Waterloo, 1966*)

Selected Publications/Publications choisies:
- Kalbfleisch, J.G. (1985), Probability and Statistical Inference. *Probability and Statistical Inference*, 2 volumes, 2nd Edition, Springer-Verlag.

Fields of interest/Domaines d'intérêt:
- Applications
- Techniques of Inference; Techniques de l'inférence statistique

J.F. Lawless, Professor, Ph.D. (*Waterloo, 1969*)
Students supervised/Étudiants dirigés: M.Sc. 2; Ph.D. 5
Grants/Subventions: NSERC Operating Grant (1985–1988)

Selected Publications/Publications choisies:
- Kalbfleisch, J.D. and Lawless, J.F. (1985), The analysis of panel data under a Markov assumption. *Journal of the American Statistical Association*, **80**, 863–871.
- Lawless, J.F. (1987), Regression methods for Poisson process data. *Journal of the American Statistical Association* , **82**, 808–815.

Fields of interest/Domaines d'intérêt:
- Applications
- Techniques of Inference; Techniques de l'inférence statistique

D.E. Matthews, Associate Professor, Ph.D. (*London, 1975*)
Students supervised/Étudiants dirigés: M.Sc. 5
Grants/Subventions: NSERC Operating Grant (1986–1989)

Selected Publications/Publications choisies:
- Matthews, D.E., Farewell, V.T., and Pyke, R. (1985), Asymptotic Score-Statistic Processes and Tests for Constant Hazard Against a Change-Point Alternative. *The Annals of Statistics*, **13**, 583–591.
- Matthews, D.E., Minder, Ch.E. and MacMillan, I. (1987), A Stochastic Model for the Effect of Indicent Light Intensity on $C0_2$ Uptake in Leaves. In *Applied Probability, Stochastic Processes, and Sampling Theory, Vol. I.*. MacNeill, I.B. and Umphrey, G.J. (eds.). Dordrecht: Dr. Reidel, 41–50.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

D.L. McLeish, Professor, Ph.D. (*McGill, 1972*)
Students supervised/Étudiants dirigés: M.Sc. 4; Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1985–1988)

Selected Publications/Publications choisies:
- McLeish, D.L. (1984), Estimation for Aggregate models: The aggregate Markov Chain. *Canadian Journal of Statistics*, **12**, 265–282.
- McLeish, D.L. and Small, C. (1986), Likelihood Methods for the discrimination problem. *Biometrika*, **73**, 1-7.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Mathematical Statistics; Statistique mathématique

D.J. Murdoch, Research Assistant Professor, Ph.D.
Students supervised/Étudiants dirigés: 1

Selected Publications/Publications choisies:
- Murdoch, D.J. and Krewski, D. (1988), Carcinogenic risk assessment with time-dependent exposure patterns. *Risk Analysis*, **8**, 521–530.

Fields of interest/Domaines d'intérêt:
- Applications
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

R.W. Oldford, Assistant Professor, Ph.D. (*Toronto, 1983*)
Grants/Subventions: NSERC Operating Grant (1987–1990)

Selected Publications/Publications choisies:
- Oldford, R.W. and Peters, S.C. (To appear), DINDE: Towards more sophisticated software environments for statistics. *SIAM Journal of Scientific and Statistical Computing*, 191–211.
- Oldford, R.W. and Peters, S.C. (), Implementation and Study of Statistical Strategy. *Artificial Intelligence and Statistics* edited by W.A. Gale, Addison-Wesley: Reading, M.A. 335–353.

Fields of interest/Domaines d'intérêt:
- Data Analysis; Analyse des données
- Statistical Computing; Calcul statistique

H.H. Panjer, Professor, Ph.D. (*Western, 1975*)
Students supervised/Étudiants dirigés: Masters 10; Ph.D. 4
Grants/Subventions: NSERC Operating Grant (1988-1991)

Selected Publications/Publications choisies:
- Panjer, H.H. (1988), AIDS: Some Aspects of Modelling the Insurance Risk. *Transactions of the Society of Actuaries*.

- Panjer, H.H. (1986), Direct Calculation of Ruin Probabilities. *Journal of Risk and Insurance*, **53**, 521–529.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

F.G. Reynolds, Associate Professor, M.Sc. (*Manitoba, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 2

Selected Publications/Publications choisies:
- Medical Care and Services in Canada. *Transactions of the Society of Actuaries*, **XXXIV**.
- Family Allowances in Canada. Society of Actuaries.

W.S. Rickert, Associate Professor, Ph.D. (*Waterloo, 1968*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 1
Grants/Subventions: National Health Research Development Program (1986–1989)

Selected Publications/Publications choisies:
- Rickert, W.S., Collishaw, N.E., Bray, D.F. and Robinson, J.C. (1986), Estimates of maximum or Average Cigarette Tar, Nicotine and Carbon Monoxide Yields can be Obtained from Yields Under Standard Conditions. *Preventive Medicine*, **15**, 82–91.
- Robinson, J.C., Young, J.C., and Rickert, W.S. (1984), Maintain levels of nicotine but reduce other smoke constituents. A formula for less hazardous cigarettes. *Preventive Medicine*, **13**, 437–445.

Fields of interest/Domaines d'intérêt:
- Applications (biology; biologie)
- Applications (health; santé)

J.C. Robinson, Associate Professor, Ph.D. (*Waterloo, 1969*)
Grants/Subventions: NHRDP

Selected Publications/Publications choisies:
- Robinson, J.C. and Elliott, J.R. (1983), Teaching Concepts of Design and Analysis Using Real and Simulated Experiments. *The First International Conference on the Teaching of Statistics*, **2**, 603–626.
- Robinson, J.C., Ricket, W.S. and Young, J.C. (1984), Maintain Levels of Nicotine but reduce other smoke constituents. A formula for 'less hazardous' cigarettes? *Preventive Medicine* , **13**, 437–445.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Design & Analysis of Experiments; Planification & analyse d'expériences

K.R. Shah, Professor, Ph.D. (*Indian Statistical Institute, 1965*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 1
Grants/Subventions: NSERC Operating Grant (1985–1988)

Selected Publications/Publications choisies:
- Shah, K.R. and Khatri, C.G. (1974), Estimation of location parameters from two linear models under normality. *Communications in Statistics*, **3**, 647–663.
- Shah, K.R. (1977), Analysis of designs with two-way elimination of heterogeneity. *Journal of Statistical Planning and Inference*, **1**, 207–216.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Techniques of Inference; Techniques de l'inférence statistique

K.P. Sharp, Assistant Professor, M.A. (*California, Berkeley, 1976*)
Grants/Subventions: Financial Research Foundation of Canada: $10,000

Selected Publications/Publications choisies:
- Sharp, K.P. (1987), A Model for Determining Early Retirement Incentives. *Insurance: Mathematics and Economics*, **6**, 117–127.
- Sharp, K.P. (1986), Mortgage Rate Insurance in Canada. *Canadian Public Policy*, **12**, 432–437.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Applications (econometrics; économétrie)

C.G. Small, Associate Professor, Ph.D. (*Cambridge, 1982*)
Students supervised/Étudiants dirigés: M.Sc. 3
Grants/Subventions: NSERC Operating Grant (1986–1989)

Selected Publications/Publications choisies:
- Small, C.G. (1987), Measures of centrality for multivariate and directional distributions. *Canadian Journal of Statistics*, **15**, 31–39.
- McLeish, D.L. and Small, C.G. (1988), The Theory and Applications of Statistical Inference Functions. Springer Lecture Notes in Statistics, **44**.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Techniques of Inference; Techniques de l'inférence statistique

D.A. Sprott, Professor, Ph.D. (*Toronto, 1955*)
Students supervised/Étudiants dirigés: Ph.D. 2
Grants/Subventions: NSERC Operating Grant (1987–1990)

Selected Publications/Publications choisies:
- Bernard, G.A. and Sprott, D.A. (1983), The generalized problems of the Nile: Robust Confidence sets for parametric functions. *Annals of Statistics*, **11**, 104–113.
- Sprott, D.A. and Viveros, R. (1984), The interpretation of maximum likelihood estimation. *Canadian Journal of Statistics* , **12**, 27–38.

Fields of interest/Domaines d'intérêt:
- Applications
- Foundation of Inference; Fondements de l'inférence statisque

C. Struthers, Assistant Professor, Ph.D. (*Waterloo, 1984*)
Grants/Subventions: NIDA, SSHRCC

Selected Publications/Publications choisies:
- Struthers, C.A. and Farewell, V.T. (1989, to appear), A Mixture Model for Time to Aids Data with Left Truncation and an Uncertain Origin. To Appear *Biometrika*.
- Struthers, C.A. and Kalbfleisch, J.D., (1986), Misspecified Proportional Hazards Model. *Biometrika*, **73**, 363–369.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Techniques of Inference; Techniques de l'inférence statistique

M.E. Thompson, Professor, Ph.D. (*Illinois, 1969*)
Students supervised/Étudiants dirigés: M.Sc. 11; Ph.D. 13
Grants/Subventions: NSERC Operating Grant (1985–1988)

Selected Publications/Publications choisies:
- Thavaneswaran, A. and Thompson, M.E. (1986), Optimal estimation for semi-martingales. *Journal of Applied Probability* , **23**, 409–417.
- Thompson, M.E. (1987), Ideas from the foundations of sampling applied to the one-way layout. In I.B. MacNeill and G.J. Umphrey (eds.): *Applied Probability, Stochastic Processes and Sampling Theory*. D. Reidel.

Fields of interest/Domaines d'intérêt:
- Sampling; Théorie de l'échantillonnage
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

W.J. Welch, Associate Professor, Ph.D. (*Imperial, 1981*)
Grants/Subventions: NSERC; NSF; AT&T

Selected Publications/Publications choisies:
- Welch, W.J. and Gutierrez, L.G. (1988), Robust Permutation Tests for Matched-Pairs Designs. *Journal of the American Statistical Association*,**83**, 450–455.
- Welch, W.J. (1983), A Mean Squared Error Criterion for the Design of Experiments. *Biometrika*, **70**, 205–213.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Quality Assurance; Contrôle de la qualité

J.B. Whitney, Associate Professor, Ph.D. (*Toronto, 1968*)
Students supervised/Étudiants dirigés: M.Sc. 20; Ph.D. 2

Selected Publications/Publications choisies:
- Whitney, J.B. and Boots, B. (1979), An examination of residential mobility through the use of the log-linear model. Parts I and II. *Regional Science and Urban Economics*, **8 and 9**.

- Whitney, J.B., Grew, R. and Harrigan, P. (1984), La Scholarisation en France 1829–1906. *Annalles*, Extrait du Numero 1.

Fields of interest/Domaines d'intérêt:
- Applications (engineering; génie)
- Data Analysis; Analyse des données

G.E. Willmot, Assistant Professor, Ph.D. (*Waterloo, 1986*)

Selected Publications/Publications choisies:
- Willmot, G.E. (1988), A Note on the Equilibrium M/G/1 Queue Length. *Journal of Applied Probability*, **25**, 228–231.
- Willmot, G.E., Parameter Orthogonality for a Family of Discrete Distributions. *Journal of the American Statistical Association*, **83**, 517–521.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Distribution Theory; Théorie des fonctions de répartition

C.F.J. Wu, Professor, Ph.D. (*Berkeley, 1976*)
Students supervised/Étudiants dirigés: Ph.D. 12
Grants/Subventions: NSERC Operating Grant; MRCO Grant

Selected Publications/Publications choisies:
- Wu, C.F.J. (1986), Jackknife, bootstrap and other resampling methods in regression analysis (with discussion). *Annals of Statistics*, **14**, 1261–1350.
- Rao, J.N.K. and Wu, C.F.J. (1988), Resampling inference with complex survey data. *Journal of the American Statistical Association*,**83**, 231–241.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Techniques of Inference; Techniques de l'inférence statistique

J.C. Young, Associate Professor, Ph.D. (*Edinburgh, 1968*)
Students supervised/Étudiants dirigés: M.Sc. and Co-op M.Sc. 27
Grants/Subventions: NSERC Infrastructure (1984–87)

Selected Publications/Publications choisies:
- Delvecchio, O. and Young, J.C. (1985), Empirical Models for Predicting the Mechanical Properties of Reinforcing Bar. *Iron and Steelmaking*, 10–14.
- Whitney, J.B. and Young, J.C. (1989), Statistical Methodology: Prerequisities for effective implementation in industry. *Philosophical Transactions of the Royal Society*.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Quality Assurance; Contrôle de la qualité

Theses/Thèses (1983 to present/1983 à présent):

1) J.A. Cook (1988), Goodness of Fit Tests and Two Sample Tests for Grouped and Censored Lifetime Data, Ph.D. Thesis.

2) A.Z. Chuang (1988), Time Series Modelling in the Presence of Outliers, Ph.D. Thesis.

3) C. Dean (1988), Mixed Poisson Models and Regression Methods for Count Data, Ph.D. Thesis.

4) H.J. Mantel (1988), Conditional Inference in a Stratified Model with Nuisance Parameters, Ph.D. Thesis.

5) P. Munholland (1988), Statistical Aspects of Field Studies on Insect Populations, Ph.D. Thesis.

6) J. Garrido (1987), Diffusion Models for Risk Processes with Interest and Inflation, Ph.D. Thesis.

7) A. Luong (1987), Minimum distance methods based on the class of quadratic distances, Ph.D. Thesis.

8) A. Gould (1986), Some issues in the regression analysis of survival data, Ph.D. Thesis.

9) G.E. Willmot (1986), A class of counting distributions with insurance applications, Ph.D. Thesis.

10) N.D. Yatawara (1986), Detection of Outliers and Random Events in Time Series, Ph.D. Thesis.

11) A. Thavaneswaran (1985), Estimation for Semimartingales, Ph.D. Thesis.

12) R. Viveros (1985), Estimation in Small Samples, Ph.D. Thesis.

13) A. Dewanji (1984), Analysis of incomplete life time data, Ph.D. Thesis.

14) C. Ramsay (1984), Compound birth-death processes and the ruin problem of risk theory, Ph.D. Thesis.

15) C. Struthers (1984), Asymptotic properties of linear rank tests with censored data, Ph.D. Thesis.

16) R.F. Bartlett (1983), On estimation with kriging for finite populations under superpopulation models, Ph.D. Thesis.

17) A.F. Desmond (1983), Local maxima of stationary stochastic processes and stochastic modelling of fatigue, Ph.D. Thesis.

18) T.J. DiCiccio (1983), Higher order comparisons of asymptotic methods for conditional and unconditional interval estimation, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:

33 M.Sc., 20 Ph.D.

The University of Western Ontario

London, Ontario, N6A 5B9
Department of Statistical and Actuarial Sciences

Founded, in 1980, the Department of Statistical and Actuarial Sciences evolved out of well established programs in Western's Mathematics Departments. As of June 1987, 25 Ph.D. and 20 M.Sc. degrees in statistics have been conferred. Recently, between 15 and 20 full-time students have been registered annually in graduate programs — approximately equally divided between the M.Sc. and Ph.D. programs. Honors undergraduate programs of the department have recently conferred 25 – 35 B.Sc.'s per annum and, in addition, the department supports substantial general and service programs. Consequently, teaching assistantships have been awarded to most graduate students interested in helping with undergraduate courses. These stipends are augmented by university scholarships and by grant and contract funds. A limited number of visa tuition bursaries are available.

Research programs conducted by staff and faculty include those in the following areas: foundations of statistical inference, multivariate statistical analysis, applied probability modelling, sample survey design and analysis, time series analysis, stochastic hydrology, actuarial science, biomedical and economic applications, quality assurance, statistical computing, design and analysis of experiments, stochastic processes, and distribution theory.

Research programs of the department are supported by ancillary facilities organized under the aegis of Statistical and Actuarial Services. The first of these facilities to be established was the Statistical Laboratory (STATLAB). Since 1977 STATLAB has logged over 400 collaborative research projects. Collaborative research projects involving industrial applications are conducted by the Ontario Quality Centre, another ancillary facility established recently with funding from the Ontario Ministry of Industry, Trade and Technology and from the university. A third ancillary facility is the Statistical and Actuarial Computing Laboratory (SACLAB) which was formed recently to consolidate the computing resources and systems analysis/programming staff of the department. A principal resource of this facility is a VAX 11/785 purchased partly with an NSERC Major Equipment grant. More recently a microcomputer laboratory has been established and equiped. A fourth ancillary facility has been established in the area of actuarial science is the Canadian Centre for Pension and Retirement Studies.

These ancillary facilities provide for graduate students an environment rich in statistical and actuarial applications. Furthermore, cost recovery on Statistical Services projects has been used to establish a substantial departmental research library and to purchase additional computing equipment for use by department researchers.

Fondé en 1980, le département de statistque et d'actuariat a évolué de programmes bien établis dans le département de mathématiques à Western. Jusqu'en juin 1987, le département de statistique a remis 25 doctorats et 20 maîtrises en statistique. Récemment, entre 15 et 20 étudiants se sont inscrits annuellement à pleintemps dans les programmes d'études supérieures — ce nombre étant plus ou moins divisé également entre les programmes de maîtrise et de doctorat. Le département a remis 25 à 35 B.Sc. spécialisés en statistique par an dernièrement. De plus, le département offre des cours au niveau général aux étudiants du premier cycle. En conséquence, la plupart des étudiants diplômś intéressés à aider avec les cours du premier cycle se voient confier des tâches de chargé de cours. Ces traitements sont augmentés par des bourses et par des fonds venant de subventions et de contrats. Un nombre limité de bourses pour les étudiants venant de l'étranger est disponible.

Les programmes de recherche menés par le personnel du département comprennent les domaines suivants: les fondements de l'inférence statistique, l'analyse multidimensionnelle, les probabilités appliquées, la théorie de l'échantillonnage, l'analyse des séries chronologiques, l'hydrologie stochastique, l'actuariat, les applications biomédicales et économiques, le contrôle de la qualité, le calcul statistique, la planification et l'analyse d'expériences, les processus stochastiques, et la théorie des fonctions de répartition.

Les services statistiques et actuariels, qui regroupent plusieurs laboratoires auxilliaires, soutiennent les programmes de recherche du département. Le premier des laboratoires à être établi a été le laboratoire statistique. Depuis 1977 le laboratoire statistique a complété 400 projets de recherche collaborative. Le centre de la qualité de l'Ontario, un autre laboratoire établi dernièrement avec des subventions de l'université et du Ministère de l'industrie, du commerce de de la technologie de l'Ontario, mène des projets de recherche collaborative où il y a des applications industrielles. Un troisième laboratoire auxilliaire est le laboratoire de calcul statistique et actuariel qui a été formé récemmement afin de consolider le personnel professionnel et les ressources pour le calcul statistique. Une ressource principale de ce laboratoire est un VAX 785 acheté en partie avec une subvention du CRSNG. Plus récemment, le département a établi et équippé un laboratoire de micro-ordinateurs. Un quatrième laboratoire auxilliaire établi dans le domaine d'actuariat est le centre canadien pour l'étude des pensions de de la retraite.

Ces laboratoires auxilliaires pourvoient les étudiants diplômés d'un milieu riche en applications statistiques et actuarielles. De plus, avec le revenu produit par les projets des services statistiques, le département a établi une bibliothèque de recherche substantielle et a acheté des ordinateurs supplémentaires.

Faculty/Le personnel enseignant:

E.S. Ahmed, Professor, Ph.D. (*Carleton, 1988*)
Students supervised/Étudiants dirigés: M.Sc. 1 in progress
Grants/Subventions: NSERC Operating Grant (1989–1991)

Selected Publications/Publications choisies:

- E.S. Ahmed and A.K.M.E. Saleh (1989), Pooling multivariate data. *Journal of Statistical Computation and Simulation* **31**, 149–167.
- E.S. Ahmed and A.K.M.E. Saleh (1989), Estimation strategy using preliminary tests on some normal models. *Soochow Journal of Mathematics* **14**, 135–165.

Fields of interest/Domaines d'intérêt:

- Statistical Computing; Calcul statistique
- Multivariate Analysis; Analyse multidimensionnelle

M.M. Ali, Professor, Ph.D. (*Toronto, 1961*)

Students supervised/Étudiants dirigés: M.Sc. 37, Ph.D 14

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- M.M. Ali (1980), Characterization of the normal distribution among the symmetric spherical class. *Journal of the Royal Statistical Society B,* **42**, 162–164.
- M.M. Ali and B.C. Sutradhar (1989, to appear), A generalization of the Wishart distribution for the elliptical model and its moments for the multivariate-t model. *Journal of Multivariate Analysis,* **27**.

Fields of interest/Domaines d'intérêt:

- Mathematical Statistics; Statistique mathématique
- Multivariate Analysis; Analyse multidimensionnelle

O.D. Anderson, Associate Professor, Ph.D. (*Cambridge, 1985*)

Selected Publications/Publications choisies:

- O.D. Anderson & J.G. de Gooijer (1988), Sampled autocovariances and autocorrelation results for linear time series processes. *Communications in Statistics, (Simulation and Computation),* **17**, 489–513.
- O.D. Anderson (1988), The serial correlation structure for a random process with steps. *Metrika,* **36**, 221–248.

Fields of interest/Domaines d'intérêt:

- Time Series Analysis; Analyse des séries chronologiques
- Serial Dependence; Dépendance sériale

D.R. Bellhouse, Professor, Ph.D. (*Waterloo, 1975*)

Students supervised/Étudiants dirigés: M.Sc. 9

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Bellhouse, D.R. (1984), Optimal randomization for experiments in which autocorrelation is present. *Biometrika,* **71**, 155–60.
- Bellhouse, D.R. (1980), Sampling studies in archaeology. *Archaeometry,* **22**, 123–32.

Fields of interest/Domaines d'intérêt:

- Design & Analysis of Experiments; Planification & analyse d'expériences
- Sampling; Théorie de l'échantillonnage

M.S. Haq, Professor, Ph.D. (*Toronto, 1966*)
Students supervised/Étudiants dirigés: M.Sc. 15, Ph.D. 4
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Haq, M.S. (1982), Structural relation and prediction for the multivariate model. *Statistische Hefte,* **23**, 218–229.
- Haq, M.S. (1985), On predicition error from a structural model. In *Statistical Theory and Data Analysis*. North Holland.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Multivariate Analysis; Analyse multidimensionnelle

V.M. Joshi, Visiting Professor, D.Sc. (*Bombay, 1971*)
Grants/Subventions: NSERC Operating Grant (1985–1987)

Selected Publications/Publications choisies:
- Joshi, V.M., The best strategy for estimating the mean of a finite population. *Annals of Statistics,* **7**, 531–536.
- Joshi, V.M. A family of probability densities having a complete sufficient statistic for a location parameter. *Journal of the Indian Statistical Association,* **23**, 1–18.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Sampling; Théorie de l'échantillonnage

R.J. Kulperger, Associate Professor, Ph.D. (*Carleton, 1978*)
Students supervised/Étudiants dirigés: M.Sc. 2
Grants/Subventions: NSERC operating grant

Selected Publications/Publications choisies:
- Kulperger, R.J. (1986) Parametric estimation for simple branching diffusion processes, II. *Journal of Multivariate Analysis.,* **18**, 255–241.
- Kulperger, R.J. (1985) On the residuals of autoregressive processes and polynomial regression. *Stoch. Proc. Appl.,* **21**, 107–118.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Techniques of Inference; Techniques de l'inférence statistique

I. B. MacNeill, Professor & Chairman, Ph.D. (*Stanford, 1969*)
Students supervised/Étudiants dirigés: M.Sc. 3 , Ph.D. 2
Grants/Subventions: NSERC — Operating, Equipment, Major Equipment, Infrastructure, Other — Ontario Ministry of Industry, Trade and Technology, Health and Welfare Canada, Marine Ecology Laboratory, Statistics Canada.

Selected Publications/Publications choisies:
- MacNeill, I.B. (1985), Detecting unknown interventions with application to forecasting hydrological data. *Water Resources Bulletin,* **21**, 785–796.

- MacNeill, I.B., and Jandhyala, V.K. (1985), The residual process for nonlinear regression. *Journal of Applied Probability,* **22**, 957–963.

Fields of interest/Domaines d'intérêt:
- Quality Assurance; Contrôle de la qualité
- Time Series Analysis; Analyse des séries chronologiques

A.I. McLeod, Associate Professor, Ph.D. (*Waterloo, 1978*)
Students supervised/Étudiants dirigés: M.Sc. 6, Ph.D. 6
Grants/Subventions: NSERC Operating Grant (1986–1988)

Selected Publications/Publications choisies:
- Camacho, F., McLeod, A.I. & Hipel, K.W. (1987), Contemporaneous bivariate time series. *Biometrika,* V. 74, pp. 103–113.
- McLeod, A.I., Noakes, D.J., Hipel, K.W. & Thompstone, R.M. (1987). Combining hydrologic forecasts. *Journal of the American Society of Civil Engineers, Water Resources Planning and Management Division,* V. 113, pp. 29–41.

Fields of interest/Domaines d'intérêt:
- Applications
- Time Series Analysis; Analyse des séries chronologiques

S. B. Provost, Assistant Professor, Ph.D. (*McGill, 1984*)
Students supervised/Étudiants dirigés: M.Sc. 2
Grants/Subventions: NSERC Operating Grant (1985–88), NSERC Infrastructure (Joint), NSERC Equipment (Joint)

Selected Publications/Publications choisies:
- Provost, Serge (1986), Some test statistics for the structural coefficients of the multivariate functional relationship model. *Annals of the Institute of Statistical Mathematics A,* **38**, 285–296.
- Provost, Serge (1986). On the exact distribution of the ratio of a linear combination of chi-square variables over the root of a product of chi-square variables. *The Canadian Journal of Statistics* **14**, 61–67.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Multivariate Analysis; Analyse multidimensionnelle

F.A. Spiring, Assistant Professor, Ph.D. (*Manitoba, 1988*)
Grants/Subventions: UWO Overhead (special competition)

Selected Publications/Publications choisies:
- Chan, L.K., Cheng, S.W. & Spiring, F.A. (1988), A new measure of process capability. *Journal of Quality Technology,* **20**, 162–175.
- Cheng, S.W. & Spiring, F.A. (1987), A test to identify the uniform distribution with application to probability plotting and other distributions. *IEEE Transactions on Reliability,* **36**, 98–105.

Fields of interest/Domaines d'intérêt:
- Multivariate Analysis; Analyse multidimensionnelle
- Quality Assurance; Contrôle de la qualité

D. Stanford, Assistant Professor, Ph.D. (*Carleton, 1981*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Standford, D.A., Pagurek, B. & Woodside (1987), The serial correlation coefficients for waiting times in the stationary GI/M/M queue. *Queueing Systems,* **2**, 373–380.
- Stanford, D.A. (1985), Modelling priority queueing characteristics in approximate analytical tools for open queueing networks, *Proceedings of the 2nd International Conference on Modelling Techniques and Tools for Performance Analysis,* Valbonne, France.

Fields of interest/Domaines d'intérêt:
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.
- Operations Research; Recherche opérationnelle

K.J. Stroiński, Assistant Professor, Ph.D. (*Heriot–Watt, 1980*)

Selected Publications/Publications choisies:
- Stroinski, K. (1986), Modelling motor insurance claim frequencies in *Insurance and Risk Theory,* Reidel Publishing, Holland.

Fields of interest/Domaines d'intérêt:
- Actuarial Science; Actuariat
- Data Analysis; Analyse des données

T.H. Wonnacott, Associate Professor, Ph.D. (*Princeton, 1963*)

Selected Publications/Publications choisies:
- *Econometrics, 2nd ed.* New York: Wiley, 1979, 580 pp (joint with R.J. Wonnacott).
- *Introductory Statistics for Business and Economics, 3rd ed.* New York: Wiley, 1984, 750 pp (joint with R.J. Wonnacott)

Fields of interest/Domaines d'intérêt:
- Applications (econometrics; économétrie)
- Applications (health; santé)

Theses/Thèses (1983 to present/1983 à présent):

1) C. Jiménez (1988), Advances in Time Series Analysis with Applications to Hydrology, Ph.D. Thesis.

2) T.S. Kheoh (1986), Topics in Time Series Analysis and Forecasting, Ph.D. Thesis.

3) V.K. Jandhyala (1985), Residual Processes for Regression Models with Applications to Detection of Parameter Changes at Unknown Times, Ph.D. Thesis.

4) J.J. Koval (1985), Properties of Logistic Regression Models with Correlated Errors, Ph.D. Thesis.

5) F. Camacho (1984), Contemporaneous CARMA Modelling with Applications, Ph.D. Thesis.

6) B.C. Sutradhar (1984), Contributions to Multivariate Analysis Based on Elliptic Distributions, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:

13 M.Sc., 4 Ph.D.

Department of Epidemiology and Biostatistics

The Department offers programs leading to the M.Sc. and Ph.D. degrees. The programs are open to health professionals and to candidates with a background in quantitative methods, biology or a social science discipline. The objective is to provide training in methodologic skills relevant to population-based and clinical epidemiology. A concentration in biostatistics is available for candidates with a strong background in statistics who wish to acquire training and experience in the application of their discipline to the health field. As of June 1988, six Ph.D. and one Master's degree have been awarded to candidates in the biostatistics stream. There are only three other universities in Canada and one other in Ontario, currently offering graduate training in epidemiology and biostatistics at the Ph.D. level.

Research interests of the biostatistics faculty include the design and analysis of family studies, the development of clinical trials methodology, statistical methods for longitudinal data, ordinal classification procedures, and the analysis of correlated outcomes in the presence of covariates.

A major mission of the department is to provide methodologic assistance to researchers in the Health Sciences. This allows graduate students an opportunity to gain experience in the design and analysis of research projects. Excellent computing facilities exist both centrally and within the department.

Le département offre des programmes conduisant à la maîtrise (M.Sc.) et au doctorat (Ph.D.). Les programmes sont ouverts aux professionnels de la santé et aux candidats qui ont une formation en méthodes quantitatives, en biologie, ou en une discipline des sciences sociales. L'objectif est de fournir une formation en méthodologie ayant rapport à l'épidémiologie clinique. Les candidats avec une bonne formation en statistique peuvent suivre l'orientation ≪biostatistique≫ s'ils veulent acquérir une formation et de l'expérience dans l'application de leur discipline aux sciences de la santé. Au juin 1988, six doctorats et une maîtrise avaient été conférés aux candidats de l'orientation ≪biostatistique≫. Il y a seulement trois autres universités au Canada et une autre en Ontario qui offrent des cours de troisième cycle en épidémiologie et en biostatistique.

Le personnel enseignant en biostatistique poursuit des recherches sur la planification et l'analyse d'études familiales, le développement de la méthodologie pour les essais cliniques, les méthodes statistiques pour les données longitudinales, les procédés de la classification ordinale, et l'analyse de résultats corrélés en présence de covariés.

Un mandat majeur du département est d'aider les chercheurs en sciences de la santé avec leur méthodologie. Les étudiants de cycles supérieurs ont ainsi l'occasion d'acquérir de l'expérience dans la planfication et l'analyse de projets de recherche. Il existe des ressources excellentes de calcul dans le département et dans l'université.

Faculty/Le personnel enseignant:

M.K. Campbell, Assistant Professor, Ph.D. (*Western, 1986*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 2
Grants/Subventions: NSERC Operating Grant; PSI

Selected Publications/Publications choisies:

- Campbell, M.K. and Donner, A. (1989, to appear), Classification efficiency of multinomial logistic regression relative to ordinal logistic regression. *Journal of the American Statistical Association*.
- Gagnon, R., Campbell, M.K., Hunse, C. and Patrick, J. (1987), Patterns of human fetal heart rate accelerations from 26 weeks to term. *American Journal of Obsteterics & Gynecology*, **157**, 743.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

A. Donner, Professor & Chairman, Ph.D. (*Harvard, 1973*)
Students supervised/Étudiants dirigés: M.Sc. 2; Ph.D. 8
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Donner, A. and Eliasziw, M. (1988), Confidence interval construction for parent-offspring correlations. *Biometrics*, **44**, 727–738.
- Donner, A. (1987), Statistical methodology for paired-cluster designs. *American Journal of Epidemiology*, **126**, 972–979.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

J.J. Koval, Assistant Professor, Ph.D. (*Western, 1985*)
Students supervised/Étudiants dirigés: M.Sc. 1
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Koval, J.J., Kwarciak, L.M., Grace, M.G.A. and Lockwood, B.J. (1987), A comprehensive database management system for a variety of clinical trials. *Methods of Information in Medicine*, **26**, 24–30.
- Donner, A., Koval, J.J. and Bull, S. (1984), Testing the effect of sex differences on sib-sib correlations. *Biometrics*, **40**, 349–356.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Statistical Computing; Calcul statistique

J. Rochon, Assistant Professor, Ph.D. (*North Carolina, 1985*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Rochon, J. and Helms, R.W. (1988), ML estimation for the incomplete repeated-measures experiments under an ARMA covariance structure. *Biometrics*.
- Rochon, J. (1988), The application of the GSK method to the determination of minimum sample sizes. *Biometrics*.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

D.A. Sim, Assistant Professor, Ph.D. (*Washington, 1981*)
Grants/Subventions: NCI(US); MRC

Selected Publications/Publications choisies:
- Dewhirst, M.W. and Sim, D.A. (1984), The utility of thermal dose as a predictor of tumor and normal tissue responses to combined radiation and hyperthermia. *Cancer Research (suppl)*, **44**, 4772–4780.
- Oleson, J.R., Sim, D.A. and Manning, M.R. (1984), Analysis of prognostic variables in hyperthermia treatment of 161 patients. *International Journal of Radiation, Oncology, Biology, Physics* , **10**, 2231–2239.

Fields of interest/Domaines d'intérêt:
- Applications (health; santé)
- Data Analysis; Analyse des données

Theses/Thèses (1983 to present/1983 à présent):

1) K. Campbell (1986), Asymptotic Error Rates of Classification Procedures when the Response Variable is Ordinal, Ph.D. Thesis.

2) A. Donald (1984), The Analysis of Clustered Data in Sets of 2x2 Contingency Tables, Ph.D. Thesis.

3) S. Bull (1983), Theoretical Properties of Multinomial Logistic Regression, Ph.D. Thesis.

4) Y. Mao (1983), Population Attributable Risk: Definition, Estimation and Application, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:

4 (Biostatistics stream)

The University of Windsor

Windsor, Ontario N9B 3P4
Department of Mathematics and Statistics

The Department offers graduate programs leading to the M.Sc. in Statistics and the Ph.D. in Statistics. Members of the Statistics group are engaged in teaching graduate courses in mathematical statistics, multivariate statistics, data analysis, applied and theoretical probability, design of experiments, categorical data analysis, sample surveys and sampling techniques, decision theory and linear models. The graduate courses being offered attract many students from engineering, biology, economics and other disciplines.

Members of the Statistics group are engaged in research in areas such as Bayesian inference, multivariate analysis, robustness studies, outlier detection techniques, categorical data analysis, mathematical statistics, design of experiments, queueing theory and methodological research in biological and health sciences.

Le département offre des programmes conduisant à la maîtrise (M.Sc.) et au doctorat (Ph.D.) en statistique. Les membres du groupe de statistique enseignent des cours de niveau supérieur en statistique mathématique, statistique multidimensionnelle, analyse des données, probabilités théoriques et appliquées, planification d'expériences, analyse des données catégoriques, sondages et techniques de l'échantillonnage, théorie de la décision, et modèles linéaires. Ces cours attirent beaucoup d'étudiants en génie, en biologie, en économie et en d'autres disciplines.

Les membres du groupe de statistique poursuivent des recherches dans les domaines comme l'inférence bayésienne, l'analyse multidimensionnelle, les études en robustesse, les techniques de la détection des observations extrèmes abérrantes, l'analyse des données catégoriques, la statistique mathématique, la planification d'expériences, la théorie des queues, et les recherches méthodologiques en biologie et en sciences de la santé.

Faculty/Le personnel enseignant:

K.Y. Fung, Professor, Ph.D. (*UCLA, 1972*)
Students supervised/Étudiants dirigés: M.Sc. 4; Ph.D. 4
Grants/Subventions: NSERC Operating Grant (1986–1988)

Selected Publications/Publications choisies:

- Bass, T.A., Fung, K.Y. (1986), Two-stage tests for the mean of the multivariate normal distribution with unknown covariance matrix. *Communications in Statistics A*, **15**, 109–121.
- Fung, K.Y., Howe, G.R. (1984), The effect of joint misclassificatoin of risk factors and confounding factors upon estimation and power. *International Journal of Epidemiology*, **13**, 366–370.

Fields of interest/Domaines d'intérêt:

- Applications (health; santé)
- Data Analysis; Analyse des données

M. Hlynka, Assistant Professor, Ph.D. (*Penn State, 1985*)

Students supervised/Étudiants dirigés: M.Sc. 1

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Hlynka, M. and Sheahan, J.N. (1988), The secretary problem for a random walk. *Stochastic Processes and their Applications*, **28**, 317–325.
- Hlynka, M. and Sheahan, J.N. (1987), Controlling rates in a double queue. *Naval Research Logistics Quarterly*, **34**, 569–577.

Fields of interest/Domaines d'intérêt:

- Queueing Theory; Théorie des Queues
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

S.R. Paul, Professor, Ph.D. (*Wales, 1976*)

Students supervised/Étudiants dirigés: M.Sc. 4; Ph.D. 1

Grants/Subventions: NSERC Operating Grant (1986–88)

Selected Publications/Publications choisies:

- Barnwal, R.K., Paul, S.R. (1988), Analysis of one-way layout of count data with negative binomial variation. *Biometrika*, **75**, 215–222.
- Paul, S.R. (1985), A three parameter generalization of the binomial distribution. *Communications in Statistics A*, **14**, 1497–1506.

Fields of interest/Domaines d'intérêt:

- Applications
- Data Analysis; Analyse des données

M. Shoukri, Associate Professor, Ph.D. (*Calgary, 1980*)

Students supervised/Étudiants dirigés: 1

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Shoukri, M.M., Mian, I.U. and Tracy, D.S. (1988), Sampling properties of the log-logistic distribution with application to Canadian precipitation data. *Canadian Journal of Statistics*,**16(3)**.
- Shoukri, M.M. (1989), Use of regression models to estimate genetic parameters and measures of familial correlation in man. *Applied Statistics*, **38(2)**.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Techniques of Inference; Techniques de l'inférence statistique

D.S. Tracy, Professor, Sc.D. (*Michigan, 1963*)
Students supervised/Étudiants dirigés: M.Sc. 1; Ph.D. 9
Grants/Subventions: NSERC Operating, Ontario-Quebec Exchange

Selected Publications/Publications choisies:
- Tracy, D.S. and Jinadasa, K.G. (1987), Matrix derivatives of patterned matrices and statistical applications. In *New Perspectives in Theoretical and Applied Statistics*, eds. Puri, Vilaplana and Wertz. John Wiley & Sons, New York, 341–351.
- Tracy, D.S. and Tajuddin, I.H. (1986), Empirical power comparison of two MRPP rank tests. *Communications in Statistics A*, **15**, 551–570.

Fields of interest/Domaines d'intérêt:
- Distribution Theory; Théorie des fonctions de répartition
- Multivariate Analysis; Analyse multidimensionnelle

C.S. Wong, Professor, Ph.D. (*Illinois-Urbana, 1969*)
Students supervised/Étudiants dirigés: Ph.D. 2
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Wong, C.S. & McDonald, J.F. (1987), Confidence intervals for a population size based on a capture-recapture model. *Communications in Statistics A*, 89–91.
- Wong, C.S. (1985), On the use of differentials in statistics. *Journal of Linear Algebra and its Applications*, **70**, 285–299.

Fields of interest/Domaines d'intérêt:
- Design & Analysis of Experiments; Planification & analyse d'expériences
- Mathematical Statistics; Statistique mathématique

Theses/Thèses (1983 to present/1983 à présent):

1) A. Phillips (1988), A Study of the Variance Estimators of the Mantel-Haenszel Log-Odds-Ratio Estimate, Ph.D. Thesis.

2) K.G. Jinadasa (1986), Matrix Derivatives with Application to Estimation Problems in Multivariate Statistics, Ph.D. Thesis.

3) I.H. Tajuddin (1984), Fourth Moment and Simulated Powers of MRPP Statistics, Ph.D. Thesis.

4) J.C. Masaro (1983), Optimality of Chemical Balance Weighting Designs, Ph.D. Thesis.

Current student enrolment/Étudiants inscrits présentement:

2 M.Sc., 7 Ph.D.

York University

4700 Keele St.; North York, Ontario
M3J 1P3
Department of Mathematics

York University is located in the City of North York in Metropolitan Toronto. The Department of Mathematics offers Bachelor's, Master's and Ph.D. degrees with a concentration in statistics possible at all levels. At the undergraduate level, there are usually about fifteen courses given in statistics and related disciplines such as probability, operations research and actuarial science. The Master's programme has included a specialization in statistics since 1975. There are a variety of courses in probability and statistics topics ranging from the theoretical to the applied, including for example, a hands-on consulting course at the Statistical Consulting Laboratory. Students may choose a thesis option, a survey paper option, or a course-only option. The Ph.D. programme, which has probability and theoretical statistics among its designated areas of concentration, was recently established and is now in operation. All graduate students are offered financial support including teaching assistantships, research assistantships and scholarships. Visa students usually receive funds which cover their extra tuition fees.

There are ten faculty members whose main scholarly activities are in probability and statistics, with about half in each discipline. In probability, the research interests include Brownian motion, Markov processes, stationary stochastic processes, extreme value theory, information theory, branching processes and applications to statistical mechanics. In statistics, they include foundations of inference, differential techniques in inference, optimization in statistics, graphical methods and inference on stochastic processes.

The computer facilities include some highly specialized interactive graphics capabilities. The library subscribes to most important probability and statistics journals and has a large collection of books.

L'université York et située dans la ville de North York dans le métropole de Toronto. Le département de mathématiques offre des diplômes au niveau du baccalauréat, de la maîtrise et du doctorat avec la possibilité de spécialisation en statistique. Au niveau du 1^{er} cycle, on offre d'habitude environ quinze cours en statistique et en disciplines connexes telles que les probabilités, la recherche opérationnelle et l'actuariat. Le programme de maîtrise comprend une spécialisation en statistique depuis 1975. Il y a une variété de cours en probabilités et en statistique qui vont de la théorie aux applications, y compris par exemple un cours pratique en consultation qui se tient au laboratoire de consultation

statistique. Les étudiants peuvent choisir entre maîtrise avec thèse ou avec dissertation de survol ou maîtrise sans thèse. Le programme de doctorat, dont des domaines de concentration comprennent les probabilités et la statistique théorique, a été récemmement établi et fonctionne maintenant. Tous les étudiants des cycles supérieurs sont offerts de l'appui financier tel que des bourses et des postes comme chargé de cours ou assistant de recherche. Les étudiants étrangers reçoivent d'habitude des fonds qui couvrent leurs frais de scolarité supplémentaires.

Il y a 10 membres du personnel enseignant qui sont actifs dans les domaines des probabilités et de la statistique avec la moitié à peu près dans chaque discipline. Les domaines d'intérêt en probabilités comprennent le mouvement Brownien, les processus de Markoff, les processus stochastiques stationnaires, la théorie de la valeur extrème, la théorie de l'information, le processus à ramification et les applicatoins à la mécanique statistique. En statistique, les domaines d'intérêt comprennent les fondements de l'inférence, les techniques différentiels de l'inférence, l'optimisation en statistique, les méthodes graphiques et l'inférence sur les processus stochastiques.

Les ordinateurs sont capables de faire l'infographie interactive très spécialisée. La bibliothèque a des abonnements à la plupart des revues importantes en probabilités et en statistique et possède une grande collection de livres.

Faculty/Le personnel enseignant:

G. Denzel, Associate Professor, Ph.D. (*Washington, 1965*)

Fields of interest/Domaines d'intérêt:
- Applications
- Data Analysis; Analyse des données

D.A.S. Fraser, Professor, Ph.D. (*Princeton, 1949*)
Students supervised/Étudiants dirigés: Ph.D. 35
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Fraser, D.A.S. and Reid, N. (1988), On conditional inference for a real parameter: a differential approach on the sample space. *Biometrika*, **75**, 251–264.
- Fraser, D.A.S. (1987), Fibre analysis and tangent models. *Statistical Papers*, **28**, 163–181.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Techniques of Inference; Techniques de l'inférence statistique

S. Guiasu, Professor, Ph.D. (*Bucharest, 1966*)
Students supervised/Étudiants dirigés: 69
Grants/Subventions: NSERC Operating Grants

Selected Publications/Publications choisies:
- Guiasu, S. (1977), *Information Theory with applications*, McGraw-Hill, New York.

- Guiasu, S. (1971-77, 1987), Probability space of wave functions. *Physical Review A*, **36**.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Multivariate Analysis; Analyse multidimensionnelle

N. Madras, University Research Fellow (*Ph*)D.,Cornell, 1984.
Grants/Subventions: NSERC Operating Grant 1987-88; 1988-91

Selected Publications/Publications choisies:
- Madras, N. (1986), A Process in a Randomly Fluctuating Environment. *Annals of Probability*, **14**, 119–135.
- Madras, N. (1988), The Pivot Algorithm: A Highly Efficient Monte Carlo Algorithm for the Self-Avoiding Walk. *Journal of Statistical Physics*, **50**, 109–186.

Fields of interest/Domaines d'intérêt:
- Applications
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

H. Massam, Associate Professor, Ph.D. (*McGill, 1977*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Massam, H. and Fraser, D.A.S. (To appear), Mixed primal-dual bases algorithm for regression under inequality constraints. Application to concave regression. *Scandanavian Journal of Statistics*.
- Massem, H. (1989, to appear), An exact decomposition theorem for a sample from the three dimensional hyperboloid distribution. *Journal of the Royal Statistical Society B*,.

Fields of interest/Domaines d'intérêt:
- Mathematical Statistics; Statistique mathématique
- Techniques of Inference; Techniques de l'inférence statistique

G. Monette, Associate Professor, Ph.D. (*Toronto, 1980*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Evans, M., Fraser, D.A.S. and Monette, G. (1986), On principles and arguments to likelihood. *Canadian Journal of Statistics*,**14**, 181–199.
- Evans, M., Fraser, D.A.S. and Monette, G. (1985), Mixtures, embedding, and ancillarity. *Canadian Journal of Statistics*,**13**, 1–6.

Fields of interest/Domaines d'intérêt:
- Foundation of Inference; Fondements de l'inférence statisque
- Statistical Computing; Calcul statistique

K.W. Ng, Visiting Associate Professor, Ph.D. (*Toronto, 1975*)

Selected Publications/Publications choisies:

- Ng, K.W., Fang, K.T. and Kotz, S. (1989, to appear), Symmetric Multivariate and Related Distributions. Chapman and Hall Ltd.
- Ng, K.W., Chow, P.H. and others (1986), Fertility, Fecundity, Sex Ratio and the Accessory Sex Glands in Male Golden Hamsters. *International Journal of Andrology*, **9**, 312–320.

Fields of interest/Domaines d'intérêt:

- Applications
- Multivariate Analysis; Analyse multidimensionnelle

G.L. O'Brien, Ph.D. (*Dartmouth, 1971*)

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- O'Brien, G.L. (1987), Extreme values of stationary and Markov sequences. *Annals of Probability*, **15**, 281–291.
- O'Brien, G.L. and Vervaat, W. (1985), Self-similar processes with stationary increments generated by point processes. *Annals of Probability*, **13**, 28–51.

Fields of interest/Domaines d'intérêt:

- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

P.H. Peskun, Associate Professor, Ph.D. (*Toronto, 1970*)

Selected Publications/Publications choisies:

- Peskun, P.H. (1980), Theoretical Tests for Choosing the Parameters of the General Mixed Linear Congruential Pseudorandom Number Generator. *Journal of Statistical Computation and Simulation*, **11**, 281–305.
- Peskun, P.H. (1981), Guidelines for Choosing the Transition Matrix in Monte Carlo Methods Using Markov Chains. *Journal of Computational Physics*, **40, No. 2**, 327–344.

Fields of interest/Domaines d'intérêt:

- Sampling; Théorie de l'échantillonnage
- Goodness-of-Fit; Test de validité

T.S. Salisbury, Associate Professor, Ph.D. (*British Columbia,*)

Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:

- Salisbury, T.S. (1986), An Increasing Diffusion, in Seminar on Stochastic Processes 1984. Birkhäuser, Boston.
- Salisbury, T.S. and Davis, B. (1988), Connecting Brownian Paths. *Annals of Probability*, **16**, 1428–1457.

Fields of interest/Domaines d'intérêt:

- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

R.A. Schaufele, Associate Professor, Ph.D. (*Washington, 1963*)
Students supervised/Étudiants dirigés: 6

Selected Publications/Publications choisies:
- Chapman, D.G. and Schaufele, R.A., *Elementary Probability Models and Statistical Inference*.

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

D.L. Tanny, Associate Professor, Ph.D. (*Cornell, 1975*)
Grants/Subventions: NSERC Operating Grant

Selected Publications/Publications choisies:
- Tanny, D.L. (1988), A necessary and sufficient condition for a branching process in a random environment to grow like the product of its means. *Stochastic Processes and Their Applications*, **28**, 123–139.
- Tanny, D.L. (1988, to appear), A new proof of the strong law without first moment. *Contemporary Mathematics, Proceedings of the Conference on Measure and Measurable Dynamics in Honour of Dorothy Maharam, American Mathematics Society* .

Fields of interest/Domaines d'intérêt:
- Probability Theory; Théorie des probabilités
- Stoch. Processes & Appl. Probability; Processus stoch. & probabilités appl.

Current student enrolment/Étudiants inscrits présentement:
24 Master's; 4 Ph.D.

Statistics Professors; Professeurs de statistique

Abraham, b. *(Waterloo);* Adatia, a. *(Regina);* Ahmed, e. s. *(Western);* Aitken, w.h. *(Waterloo);* Al-Hussaini, a.n. *(Alberta);* Ali, m.m. *(Western);* Allen, o.b. *(Guelph);* Alvi, s.a. *(OISE);* Alvo, m. *(Ottawa);* Aly, e.e. *(Alberta);* Anderson, o.d. *(Western);* Anderson, w.j. *(McGill);* Andrews, d.f. *(Toronto);* Angers, j-f. *(Sherbrooke);* Armstrong, b.g. *(McGill);* Bacon, d.w. *(Queen's);* Bailar III, John c. *(McGill);* Balakrishnan, n. *(McMaster);* Balasooriya, u. *(Memorial);* Banerjee, p.k. *(New Brunswick);* Bartlett, r.f. *(Memorial);* Behara, m. *(McMaster);* Belinsky, m.m. *(Concordia);* Bellhouse, d.r. *(Western);* Bennett, g.w. *(Waterloo);* Bennett, m.a. *(Waterloo);* Bertaud, m. *(Montreal);* Bickis, m. g. *(Saskatchewan);* Bilodeau, m.r. *(Toronto);* Bose, a. *(Carleton);* Boulanger, a. *(Sherbrooke);* Boyle, p.p. *(Waterloo);* Brant, r. *(Toronto);* Bravo, g. *(McGill);* Brenner, d. *(Toronto);* Brewster, j.f. *(Manitoba);* Brisebois, m. *(Sherbrooke);* Broekhoven, l.h. *(Queen's);* Broverman, s. *(Toronto);* Brown, k.s. *(Waterloo);* Brown, r.l. *(Waterloo);* Bull, s.b. *(Toronto);* Burke, m.d. *(Calgary);* Burrill, d.f. *(OISE);* Cabilio, p. *(Acadia);* Campbell, m.k. *(Western);* Capéraà, p. *(Laval);* Carmichael, j.p. *(Laval);* Carter, e.m. *(Guelph);* Chan, b. *(Toronto);* Chan, l.k. *(Manitoba);* Chaubey, y.p. *(Concordia);* Chaudhry, m.l. *(RMC);* Chawla, j.s. *(Acadia);* Cheng, s.w. *(Manitoba);* Cherry, w.h. *(Waterloo);* Chipman, m. *(Toronto);* Choi, b. *(Toronto);* Chorneyko, i.z. *(McMaster);* Ciampi, a. *(McGill);* Cleroux, r. *(Montreal);* Clément, b. *(Ecole Polytechnique);* Colin, b. *(Sherbrooke);* Collins, j.r. *(Calgary);* Corey, p.n. *(Toronto);* Csima, a. *(Toronto);* Csörgő, m. *(Carleton);* Cutler, c. *(Waterloo);* Côté, r. *(Laval);* Dabrowski, a.r. *(Ottawa);* Dale, d.k. *(Carleton);* Dalzell, c. *(Memorial);* Davidson, r.r. *(Victoria);* Dawson, d. *(Carleton);* Dean, c. *(Calgary);* Denzel, g. *(York);* Deo, c.m. *(Ottawa);* Deslauriers, g. *(Ecole Polytechnique);* Desmond, a.f. *(Guelph);* Devroye, l. *(McGill);* Dion, j.g. *(Sherbrooke);* Dionne, l. *(Memorial);* Donner, a. *(Western);* Ducharme, g. *(Montreal);* Dufresne, d. *(Montreal);* Dulberg, c. *(Ottawa);* Duncan, r. *(Montreal);* Dunnett, c.w. *(McMaster);* Duthie, a.i. *(Regina);* Dwivedi, t.d. *(Concordia);* Eastwood, b.j. *(Dalhousie);* Eaves, d.m. *(Simon Fraser);* Ehlers, p.f. *(Calgary);* Ehsanes Saleh, a.k.Md. *(Carleton);* Elliott, r. *(Alberta);* Ellis, m.d. *(OISE);* Endrenyi, l. *(Toronto);* Enns, e.g. *(Calgary);* Evans, m.j. *(Toronto);* Even, a. *(OISE);* Farewell, v.t. *(Waterloo);* Feuerverger, a. *(Toronto);* Field, c. *(Dalhousie);* Forbes, w.f. *(Waterloo);* Fraser, d.a.s. *(York);* Fu, j.c. *(Manitoba);* Fung, k.y. *(Windsor);* Gabor, g. *(Dalhousie);* Garrido, j. *(Concordia);* Genest, c. *(Laval);* Gent, m. *(McMaster);* Giri, n.c. *(Montreal);* Giroux, g. *(Sherbrooke);* Glick, n. *(UBC);* Godambe, v.p. *(Waterloo);* Goldsmith, c.h. *(McMaster);* Goldstein, m. *(Montreal);* Gombay, e. *(Alberta);* Graham, j. *(Carleton);* Greenwood, p.e. *(UBC);* Griffin, m. *(Queen's);* Guiasu, s. *(York);* Gupta, r.d. *(New Brunswick);* Gupta, r.p. *(Dalhousie);* Guttman, i. *(Toronto);* Hamada, m. *(Waterloo);* Hamilton, d. *(Dalhousie);* Hanley, j. a. *(McGill);* Hapuarachchi, k.p. *(Memorial);* Haq, m.s. *(Western);* Hastings, w.k. *(Victoria);* Heckman, n.e. *(UBC);* Herz-Fischler, r.m. *(Carleton);*

HERZBERG, A.M. *(Queen's);* HILL, Gerry B. *(McGill);* HINES, W.G.S. *(Guelph);* HLYNKA, M. *(Windsor);* HOOPER, P. *(Alberta);* HOPPE, F.M. *(McMaster);* HSIEH, J. *(Toronto);* HUANG, J-S. *(Guelph);* HUBERT, J.J. *(Guelph);* HUSE, V.R. *(Acadia);* IVANOFF, B.G. *(Ottawa);* JAIN, R.K. *(Memorial);* JOE, H. *(UBC);* JOFFE, A. *(Montreal);* JOHNSON, B.R. *(Victoria);* JOHNSON, D.P. *(Calgary);* JOHNSTON, B. *(Manitoba);* JOSHI, V.M. *(Western);* KABE, D.G. *(St. Mary's);* KABIR, A.B.M.L. *(Carleton);* KALBFLEISCH, J.D. *(Waterloo);* KALBFLEISCH, J.G. *(Waterloo);* KARUNAMUNI, R.J. *(Alberta);* KELKER, D. *(Alberta);* KHALIL, Z.S. *(Concordia);* KHAN, S.B. *(OISE);* KNIGHT, K. *(Toronto);* KNIGHT, W. *(New Brunswick);* KOVAL, J.J. *(Western);* KREYSZIG, E. *(Carleton);* KULPERGER, R.J. *(Western);* LARSON, G. *(Regina);* LAVERTY, W. H. *(Saskatchewan);* LAWLESS, J.F. *(Waterloo);* LEE, C.C. *(Memorial);* LEFEBVRE, M. *(Ecole Polytechnique);* LEPAGE, Y. *(Montreal);* LESSARD, S. *(Montreal);* LIDDELL, F.D.K. *(McGill);* LINGAPPAIAH, G.S. *(Concordia);* LIU, J. *(UBC);* LOCKHART, R. *(Simon Fraser);* LUONG, A. *(Memorial);* MAAG, U. *(Montreal);* MACDONALD, P.D.M. *(McMaster);* MACGREGOR, J.F. *(McMaster);* MACNEILL, I. B. *(Western);* MACPHERSON, B.D. *(Manitoba);* MADRAS, N. *(York);* MAES, M.A. *(Queen's);* MAK, T.K. *(Memorial);* MANCHESTER, L. *(Dalhousie);* MANOUKIAN, E.B. *(RMC);* MASARO, J. *(Acadia);* MASSAM, H. *(York);* MASSÉ, J.-C. *(Laval);* MATHAI, A.M. *(McGill);* MATTHEWS, D.E. *(Waterloo);* MCDONALD, D.R. *(Ottawa);* MCDUNNOUGH, P. *(Toronto);* MCGREGOR, J.R. *(Alberta);* MCKEOWN-EYSSEN, G.E. *(Toronto);* MCLEAN, L.D. *(OISE);* MCLEISH, D.L. *(Waterloo);* MCLEOD, A.I. *(Western);* MEAD, E.R. *(McMaster);* MEHRA, K.L. *(Alberta);* MIETTINEN, Olli S. *(McGill);* MILLS, S. *(Carleton);* MILNER, R.A. *(McMaster);* MING-GAO GU, *(McGill);* MINKIN, S. *(Toronto);* MOHANTY, S.G. *(McMaster);* MONETTE, G. *(York);* MOORE, M. *(Ecole Polytechnique);* MORAN, M.A. *(Ecole Polytechnique);* MORIN, H. *(Laval);* MOUNT, K. *(Manitoba);* MULLEN, K. *(Guelph);* MURDOCH, D.J. *(Waterloo);* MUREIKA, R.A. *(New Brunswick);* NAIR, R.C. *(Ottawa);* NARASIMHA PRASAD, N.G. *(Alberta);* NG, K.W. *(York);* NISHISATO, S. *(OISE);* O'BRIEN, G.L. *(York);* O'SHAUGHNESSY, C.D. *(Saskatchewan);* ODEH, R.E. *(Victoria);* OLDFORD, R.W. *(Waterloo);* PANJER, H.H. *(Waterloo);* PAUL, S.R. *(Windsor);* PERRON, F. *(Montreal);* PESKUN, P.H. *(York);* PETKAU, A.J. *(UBC);* PROVOST, S. B. *(Western);* RAMAN, S. *(Ottawa);* RAMSAY, J.O. *(McGill);* RAO, J.N.K. *(Carleton);* REED, W.J. *(Victoria);* REID, N. *(Toronto);* REYNOLDS, F.G. *(Waterloo);* RICKERT, W.S. *(Waterloo);* RISCH, H. *(Toronto);* RIVEST, L.P. *(Laval);* ROBERTS, R.S. *(McMaster);* ROBINSON, J.C. *(Waterloo);* ROCHON, J. *(Western);* ROSS, W.H. *(Queen's);* ROUTLEDGE, R. *(Simon Fraser);* ROY, R. *(Montreal);* RYALL, P.L.J. *(Toronto);* SALISBURY, T.S. *(York);* SAMANTA, M. *(Manitoba);* SÄRNDAL, C.E. *(Montreal);* SCHAUFELE, R.A. *(York);* SCHMULAND, B. *(Alberta);* SCHULZER, M. *(UBC);* SCHWARZ, C.J. *(Manitoba);* SESHADRI, V. *(McGill);* SHAH, K.R. *(Waterloo);* SHANNON, H.S. *(McMaster);* SHAPIRO, S.H. *(McGill);* SHARP, K.P. *(Waterloo);* SHEAHAN, J.N. *(Alberta);* SHOUKRI, M. *(Windsor);* SIM, D.A. *(Western);* SINGH, R. *(Saskatchewan);* SINGH, R.S. *(Guelph);* SINHA, S.K. *(Manitoba);* SMALL, C.G. *(Waterloo);* SMITH, B. *(Dalhousie);* SMITH, J.T. *(Queen's);* SPIRING, F.A. *(Western);* SPROTT, D.A. *(Waterloo);* SRINIVASAN, R. *(Saskatchewan);* SRIVASTAVA, M.S. *(Toronto);* SRIVASTAVA, T.N. *(Concordia);* STANFORD, D. *(Western);* STEPHENS, M.A. *(Simon Fraser);* STILL, H.A. *(Queen's);*

Stroiński, k.j. *(Western);* Stroud, t.w.f. *(Queen's);* Struthers, c. *(Waterloo);* Styan, g.p.h. *(McGill);* Suissa, s. *(McGill);* Sutradhar, b.c. *(Memorial);* Swartz, t. *(Simon Fraser);* Tanny, d.l. *(York);* Tardif, s. *(Montreal);* Taylor, d.w. *(McMaster);* Thavaneswaran, a. *(Manitoba);* Theodorescu, r. *(Laval);* Thompson, m.e. *(Waterloo);* Thompson, k. r. *(Dalhousie);* Tibshirani, r. *(Toronto);* Tiku, m.l. *(McMaster);* Tingley, m. *(New Brunswick);* Tomkins, r.j. *(Regina);* Tracy, d.s. *(Windsor);* Traub, r.e. *(OISE);* Tritchler, d. *(Toronto);* Turner, t.r. *(New Brunswick);* Vaillancourt, j. *(Sherbrooke);* van Eeden, c. *(Montreal);* Villegas, c. *(Simon Fraser);* Wahlstrom, m.w. *(OISE);* Walter, s.d. *(McMaster);* Wang, y.h.f. *(Concordia);* Wani, j.k. *(Calgary);* Wasan, m.t. *(Queen's);* Watts, d.g. *(Queen's);* Weiss, j. *(OISE);* Welch, w.j. *(Waterloo);* Weldon, k.l. *(Simon Fraser);* Weston, j. h. *(Regina);* Whitmore, g.a. *(McGill);* Whitney, j.b. *(Waterloo);* Wiens, d. *(Alberta);* Willmot, g.e. *(Waterloo);* Winter, b.b. *(Ottawa);* Wolfson, c. *(McGill);* Wolfson, d.b. *(McGill);* Wong, c.s. *(Windsor);* Wonnacott, t.h. *(Western);* Worsley, k.j. *(McGill);* Wu, c.f.j. *(Waterloo);* Young, j.c. *(Waterloo);* Zamar, r.h. *(UBC);* Zidek, j.v. *(UBC)*

Professors by Fields; Professeurs par domaines

Actuarial Science; Actuariat:

Aitken, w.h. *(Waterloo);* Bennett, m.a. *(Waterloo);* Boyle, p.p. *(Waterloo);* Broverman, s. *(Toronto);* Brown, r.l. *(Waterloo);* Chan, b. *(Toronto);* Chan, l.k. *(Manitoba);* Dufresne, d. *(Montreal);* Garrido, j. *(Concordia);* Mead, e.r. *(McMaster);* Panjer, h.h. *(Waterloo);* Ryall, p.l.j. *(Toronto);* Sharp, k.p. *(Waterloo);* Stroiński, k.j. *(Western);* Willmot, g.e. *(Waterloo)*

Applications:

Aitken, w.h. *(Waterloo);* Belinsky, m.m. *(Concordia);* Bennett, m.a. *(Waterloo);* Boulanger, a. *(Sherbrooke);* Brewster, j.f. *(Manitoba);* Burrill, d.f. *(OISE);* Chaubey, y.p. *(Concordia);* Chaudhry, m.l. *(RMC);* Csima, a. *(Toronto);* Côté, r. *(Laval);* Denzel, g. *(York);* Eaves, d.m. *(Simon Fraser);* Graham, j. *(Carleton);* Griffin, m. *(Queen's);* Hoppe, f.m. *(McMaster);* Jain, r.k. *(Memorial);* Kalbfleisch, j.d. *(Waterloo);* Kalbfleisch, j.g. *(Waterloo);* Kelker, d. *(Alberta);* Laverty, w. h. *(Saskatchewan);* Lawless, j.f. *(Waterloo);* Lingappaiah, g.s. *(Concordia);* Madras, n. *(York);* Manoukian, e.b. *(RMC);* McLeod, a.i. *(Western);* Mullen, k. *(Guelph);* Murdoch, d.j. *(Waterloo);* Ng, k.w. *(York);* Paul, s.r. *(Windsor);* Petkau, a.j. *(UBC);* Ross, w.h. *(Queen's);* Roy, r. *(Montreal);* Sinha, s.k. *(Manitoba);* Smith, j.t. *(Queen's);* Sprott, d.a. *(Waterloo);* Still, h.a. *(Queen's);* Thompson, k. r. *(Dalhousie);* Traub, r.e. *(OISE);* Wasan, m.t. *(Queen's)*

Applications (biology; biologie):

Allen, o.b. *(Guelph);* Carter, e.m. *(Guelph);* Chipman, m. *(Toronto);* Ciampi, a. *(McGill);* Dabrowski, a.r. *(Ottawa);* Endrenyi, l. *(Toronto);* Hines, w.g.s. *(Guelph);* Hubert, j.j. *(Guelph);* Knight, w. *(New Brunswick);* Lessard, s. *(Montreal);* Macdonald, p.d.m. *(McMaster);* McDonald, d.r. *(Ottawa);* Minkin, s. *(Toronto);* Reed, w.j. *(Victoria);* Rickert, w.s. *(Waterloo);* Risch, h. *(Toronto);* Routledge, r. *(Simon Fraser);* Schwarz, c.j. *(Manitoba);* Smith, b. *(Dalhousie)*

Applications (econometrics; économétrie):

Dwivedi, t.d. *(Concordia);* Sharp, k.p. *(Waterloo);* Wonnacott, t.h. *(Western)*

Applications (engineering; génie):

Bacon, d.w. *(Queen's);* Banerjee, p.k. *(New Brunswick);* Broekhoven, l.h. *(Queen's);* Clément, b. *(Ecole Polytechnique);* Deslauriers, g. *(Ecole Polytechnique);* Khalil, z.s. *(Concordia);* Kreyszig, e. *(Carleton);* MacGregor, j.f. *(McMaster);* Maes, m.a. *(Queen's);* Moran, m.a. *(Ecole Polytechnique);* Watts, d.g. *(Queen's);* Weldon, k.l. *(Simon Fraser);* Whitney, j.b. *(Waterloo);* Winter, b.b. *(Ottawa)*

Applications (health; santé):

Armstrong, b.g. *(McGill);* Bailar III, John c. *(McGill);* Bartlett, r.f. *(Memorial);* Brant, r. *(Toronto);* Bravo, g. *(McGill);* Broekhoven, l.h. *(Queen's);* Brown, k.s. *(Waterloo);* Bull, s.b. *(Toronto);* Campbell, m.k. *(Western);* Cherry, w.h. *(Waterloo);* Chipman, m. *(Toronto);* Choi, b. *(Toronto);* Ciampi, a. *(McGill);* Corey, p.n. *(Toronto);* Donner, a. *(Western);* Dunnett, c.w. *(McMaster);* Eastwood, b.j. *(Dalhousie);* Farewell, v.t. *(Waterloo);* Forbes, w.f. *(Waterloo);* Fung, k.y. *(Windsor);* Gent, m. *(McMaster);* Glick, n. *(UBC);* Goldsmith, c.h. *(McMaster);* Hanley, j. a. *(McGill);* Hill, Gerry b. *(McGill);* Hsieh, j. *(Toronto);* Hubert, j.j. *(Guelph);* Koval, j.j. *(Western);* Liddell, f.d.k. *(McGill);* Mak, t.k. *(Memorial);* Matthews, d.e. *(Waterloo);* McGregor, j.r. *(Alberta);* McKeown-Eyssen, g.e. *(Toronto);* Miettinen, Olli s. *(McGill);* Milner, r.a. *(McMaster);* Ming-Gao Gu, *(McGill);* Mullen, k. *(Guelph);* Nair, r.c. *(Ottawa);* Raman, s. *(Ottawa);* Rickert, w.s. *(Waterloo);* Risch, h. *(Toronto);* Roberts, r.s. *(McMaster);* Robinson, j.c. *(Waterloo);* Rochon, j. *(Western);* Schulzer, m. *(UBC);* Shannon, h.s. *(McMaster);* Shapiro, s.h. *(McGill);* Sim, d.a. *(Western);* Struthers, c. *(Waterloo);* Suissa, s. *(McGill);* Walter, s.d. *(McMaster);* Weston, j. h. *(Regina);* Wolfson, c. *(McGill);* Wolfson, d.b. *(McGill);* Wonnacott, t.h. *(Western);* Worsley, k.j. *(McGill)*

Combinatorial Theory; Mathématiques combinatoires:

Chorneyko, i.z. *(McMaster);* Masaro, j. *(Acadia);* Mohanty, s.g. *(McMaster);* O'Shaughnessy, c.d. *(Saskatchewan);* Still, h.a. *(Queen's)*

Data Analysis; Analyse des données:

Bailar III, John c. *(McGill);* Bennett, g.w. *(Waterloo);* Brant, r. *(Toronto);* Bull, s.b. *(Toronto);* Burrill, d.f. *(OISE);* Campbell, m.k. *(Western);* Carmichael, j.p. *(Laval);* Cherry, w.h. *(Waterloo);* Corey, p.n. *(Toronto);* Côté, r. *(Laval);* Denzel, g. *(York);* Donner, a. *(Western);* Dulberg, c. *(Ottawa);* Dunnett, c.w. *(McMaster);* Eastwood, b.j. *(Dalhousie);* Field, c. *(Dalhousie);* Forbes, w.f. *(Waterloo);* Fung, k.y. *(Windsor);* Griffin, m. *(Queen's);* Hamilton, d. *(Dalhousie);* Hanley, j. a. *(McGill);* Hastings, w.k. *(Victoria);* Jain, r.k. *(Memorial);* Lepage, y. *(Montreal);* Maag, u. *(Montreal);* MacPherson, b.d. *(Manitoba);* McLean, l.d. *(OISE);* Mills, s. *(Carleton);* Milner, r.a. *(McMaster);* Minkin, s. *(Toronto);* Morin, h. *(Laval);* Mount, k. *(Manitoba);* Nair, r.c. *(Ottawa);* Oldford, r.w. *(Waterloo);* Paul, s.r. *(Windsor);* Ramsay, j.o. *(McGill);* Roberts, r.s. *(McMaster);* Rochon, j. *(Western);* Schulzer, m. *(UBC);* Schwarz, c.j. *(Manitoba);* Shannon, h.s. *(McMaster);* Shapiro, s.h. *(McGill);* Sim, d.a. *(Western);* Smith, j.t. *(Queen's);* Stroiński, k.j. *(Western);* Taylor, d.w. *(McMaster);* Walter, s.d. *(McMaster);* Weston, j. h. *(Regina);* Whitmore, g.a. *(McGill);* Whitney, j.b. *(Waterloo)*

Design & Analysis of Experiments; Planification & analyse d'expériences:

Alvo, m. *(Ottawa);* Bacon, d.w. *(Queen's);* Bellhouse, d.r. *(Western);* Bertaud, m. *(Montreal);* Bickis, m. g. *(Saskatchewan);* Csima, a. *(Toronto);* Dulberg, c. *(Ottawa);* Duthie, a.i. *(Regina);* Endrenyi, l. *(Toronto);* Giri, n.c. *(Montreal);* Goldsmith, c.h. *(McMaster);* Guttman, i. *(Toronto);* Hamada, m. *(Waterloo);* Hamilton, d. *(Dalhousie);* Herzberg, a.m. *(Queen's);* Hooper, p. *(Alberta);* Kabe, d.g. *(St. Mary's);* Laverty, w. h. *(Saskatchewan);* McLean, l.d. *(OISE);* Miettinen, Olli s. *(McGill);* Mount, k. *(Manitoba);* O'Shaughnessy, c.d. *(Saskatchewan);* Rao, j.n.k. *(Carleton);* Robinson, j.c. *(Waterloo);* Shah, k.r. *(Waterloo);* Suissa, s. *(McGill);* Welch, w.j. *(Waterloo);* Wong, c.s. *(Windsor);* Wu, c.f.j. *(Waterloo);* Young, j.c. *(Waterloo)*

Distribution Theory; Théorie des fonctions de répartition:

Gupta, r.p. *(Dalhousie);* Huang, j-s. *(Guelph);* Lingappaiah, g.s. *(Concordia);* Mathai, a.m. *(McGill);* Mureika, r.a. *(New Brunswick);* Provost, s. b. *(Western);* Seshadri, v. *(McGill);* Shoukri, m. *(Windsor);* Tiku, m.l. *(McMaster);* Tracy, d.s. *(Windsor);* Wani, j.k. *(Calgary);* Willmot, g.e. *(Waterloo)*

Foundation of Inference; Fondements de l'inférence statisque:

Brewster, j.f. *(Manitoba);* Fraser, d.a.s. *(York);* Gabor, g. *(Dalhousie);* Guiasu, s. *(York);* Haq, m.s. *(Western);* McLeish, d.l. *(Waterloo);* Monette, g. *(York);* Perron, f. *(Montreal);* Särndal, c.e. *(Montreal);* Sprott, d.a. *(Waterloo);* Villegas, c. *(Simon Fraser);* Weldon, k.l. *(Simon Fraser)*

Mathematical Statistics; Statistique mathématique:

Ali, m.m. *(Western);* Alvo, m. *(Ottawa);* Aly, e.e. *(Alberta);* Angers, j-f. *(Sherbrooke);* Balakrishnan, n. *(McMaster);* Behara, m. *(McMaster);* Bilodeau, m.r. *(Toronto);* Brenner, d. *(Toronto);* Cabilio, p. *(Acadia);* Capéraà, p. *(Laval);* Cheng, s.w. *(Manitoba);* Chorneyko, i.z. *(McMaster);* Collins, j.r. *(Calgary);* Csörgő, m. *(Carleton);* Cutler, c. *(Waterloo);* Davidson, r.r. *(Victoria);* Dionne, l. *(Memorial);* Duthie, a.i. *(Regina);* Ehsanes Saleh, a.k.Md. *(Carleton);* Evans, m.j. *(Toronto);* Feuerverger, a. *(Toronto);* Genest, c. *(Laval);* Glick, n. *(UBC);* Gombay, e. *(Alberta);* Greenwood, p.e. *(UBC);* Heckman, n.e. *(UBC);* Huang, j-s. *(Guelph);* Huse, v.r. *(Acadia);* Johnson, b.r. *(Victoria);* Joshi, v.m. *(Western);* Kabir, a.b.m.l. *(Carleton);* Karunamuni, r.j. *(Alberta);* Kelker, d. *(Alberta);* Kreyszig, e. *(Carleton);* Larson, g. *(Regina);* Lee, c.c. *(Memorial);* Lockhart, r. *(Simon Fraser);* Luong, a. *(Memorial);* Manoukian, e.b. *(RMC);* Massam, h. *(York);* McDunnough, p. *(Toronto);* McLeish, d.l. *(Waterloo);* Mead, e.r. *(McMaster);* Mehra, k.l. *(Alberta);* Samanta, m. *(Manitoba);* Sheahan, j.n. *(Alberta);* Singh, r. *(Saskatchewan);* Singh, r.s. *(Guelph);* Srivastava, t.n. *(Concordia);* Stephens, m.a. *(Simon Fraser);* Tardif, s. *(Montreal);* Theodorescu, r. *(Laval);* Tingley, m. *(New Brunswick);* Tritchler, d. *(Toronto);* Wani, j.k. *(Calgary);* Wiens, d. *(Alberta);* Wong, c.s. *(Windsor);* Zamar, r.h. *(UBC)*

Multivariate Analysis; Analyse multidimensionnelle:

AHMED, E. S. *(Western);* ALI, M.M. *(Western);* BELINSKY, M.M. *(Concordia);* BENNETT, G.W. *(Waterloo);* BILODEAU, M.R. *(Toronto);* BRAVO, G. *(McGill);* CARTER, E.M. *(Guelph);* CHAWLA, J.S. *(Acadia);* CHOI, B. *(Toronto);* CLÉMENT, B. *(Ecole Polytechnique);* COLIN, B. *(Sherbrooke);* EAVES, D.M. *(Simon Fraser);* EHSANES SALEH, A.K.Md. *(Carleton);* GENEST, C. *(Laval);* GIRI, N.C. *(Montreal);* GUIASU, S. *(York);* GUPTA, R.D. *(New Brunswick);* GUPTA, R.P. *(Dalhousie);* HAQ, M.S. *(Western);* HERZBERG, A.M. *(Queen's);* HOOPER, P. *(Alberta);* KABE, D.G. *(St. Mary's);* MAAG, U. *(Montreal);* MATHAI, A.M. *(McGill);* NG, K.W. *(York);* NISHISATO, S. *(OISE);* PERRON, F. *(Montreal);* PROVOST, S. B. *(Western);* RIVEST, L.P. *(Laval);* SPIRING, F.A. *(Western);* SRIVASTAVA, M.S. *(Toronto);* STROUD, T.W.F. *(Queen's);* SUTRADHAR, B.C. *(Memorial);* TIKU, M.L. *(McMaster);* TRACY, D.S. *(Windsor);* VILLEGAS, C. *(Simon Fraser);* ZIDEK, J.V. *(UBC)*

Probability Theory; Théorie des probabilités:

AL-HUSSAINI, A.N. *(Alberta);* BICKIS, M. G. *(Saskatchewan);* BOSE, A. *(Carleton);* BURKE, M.D. *(Calgary);* CHAWLA, J.S. *(Acadia);* CUTLER, C. *(Waterloo);* DABROWSKI, A.R. *(Ottawa);* DAWSON, D. *(Carleton);* DEO, C.M. *(Ottawa);* DUNCAN, R. *(Montreal);* ELLIOTT, R. *(Alberta);* GOLDSTEIN, M. *(Montreal);* GREENWOOD, P.E. *(UBC);* HERZ-FISCHLER, R.M. *(Carleton);* IVANOFF, B.G. *(Ottawa);* JOFFE, A. *(Montreal);* JOHNSON, B.R. *(Victoria);* JOHNSON, D.P. *(Calgary);* LARSON, G. *(Regina);* LEFEBVRE, M. *(Ecole Polytechnique);* LESSARD, S. *(Montreal);* MASSÉ, J.-C. *(Laval);* O'BRIEN, G.L. *(York);* SALISBURY, T.S. *(York);* SCHAUFELE, R.A. *(York);* SCHMULAND, B. *(Alberta);* SMALL, C.G. *(Waterloo);* SRINIVASAN, R. *(Saskatchewan);* TANNY, D.L. *(York);* TOMKINS, R.J. *(Regina);* VAILLANCOURT, J. *(Sherbrooke);* WANG, Y.H.F. *(Concordia)*

Quality Assurance; Contrôle de la qualité:

ABRAHAM, B. *(Waterloo);* CHAN, L.K. *(Manitoba);* HAMADA, M. *(Waterloo);* HAPUARACHCHI, K.P. *(Memorial);* MACNEILL, I. B. *(Western);* MACPHERSON, B.D. *(Manitoba);* SPIRING, F.A. *(Western);* WELCH, W.J. *(Waterloo);* YOUNG, J.C. *(Waterloo)*

Sampling; Théorie de l'échantillonnage:

ADATIA, A. *(Regina);* BARTLETT, R.F. *(Memorial);* BELLHOUSE, D.R. *(Western);* DALE, D.K. *(Carleton);* GODAMBE, V.P. *(Waterloo);* GRAHAM, J. *(Carleton);* HAPUARACHCHI, K.P. *(Memorial);* JOSHI, V.M. *(Western);* MORAN, M.A. *(Ecole Polytechnique);* MORIN, H. *(Laval);* MUREIKA, R.A. *(New Brunswick);* NARASIMHA PRASAD, N.G. *(Alberta);* PESKUN, P.H. *(York);* RAO, J.N.K. *(Carleton);* RIVEST, L.P. *(Laval);* SÄRNDAL, C.E. *(Montreal);* THOMPSON, M.E. *(Waterloo);* TIBSHIRANI, R. *(Toronto)*

Statistical Computing; Calcul statistique:

Ahmed, e. s. *(Western);* Andrews, d.f. *(Toronto);* Cleroux, r. *(Montreal);* Devroye, l. *(McGill);* Fu, j.c. *(Manitoba);* Knight, w. *(New Brunswick);* Koval, j.j. *(Western);* Macdonald, p.d.m. *(McMaster);* Manchester, l. *(Dalhousie);* Monette, g. *(York);* Odeh, r.e. *(Victoria);* Oldford, r.w. *(Waterloo);* Raman, s. *(Ottawa);* Swartz, t. *(Simon Fraser);* Taylor, d.w. *(McMaster);* Tibshirani, r. *(Toronto);* Tritchler, d. *(Toronto);* Turner, t.r. *(New Brunswick)*

Stochastic Processes & Applied Probability; Processus stochastiques & probabilités appliquées:

Al-Hussaini, a.n. *(Alberta);* Banerjee, p.k. *(New Brunswick);* Bose, a. *(Carleton);* Carmichael, j.p. *(Laval);* Chaudhry, m.l. *(RMC);* Csörgő, m. *(Carleton);* Dalzell, c. *(Memorial);* Dawson, d. *(Carleton);* Dean, c. *(Calgary);* Deo, c.m. *(Ottawa);* Deslauriers, g. *(Ecole Polytechnique);* Desmond, a.f. *(Guelph);* Dufresne, d. *(Montreal);* Ehlers, p.f. *(Calgary);* Elliott, r. *(Alberta);* Enns, e.g. *(Calgary);* Giroux, g. *(Sherbrooke);* Goldstein, m. *(Montreal);* Gombay, e. *(Alberta);* Herz-Fischler, r.m. *(Carleton);* Hill, Gerry b. *(McGill);* Hines, w.g.s. *(Guelph);* Hlynka, m. *(Windsor);* Hoppe, f.m. *(McMaster);* Hsieh, j. *(Toronto);* Huse, v.r. *(Acadia);* Ivanoff, b.g. *(Ottawa);* Joffe, a. *(Montreal);* Johnson, d.p. *(Calgary);* Khalil, z.s. *(Concordia);* Kulperger, r.j. *(Western);* Lefebvre, m. *(Ecole Polytechnique);* Lockhart, r. *(Simon Fraser);* Madras, n. *(York);* Maes, m.a. *(Queen's);* Massé, j.-c. *(Laval);* Matthews, d.e. *(Waterloo);* McDonald, d.r. *(Ottawa);* McDunnough, p. *(Toronto);* McGregor, j.r. *(Alberta);* Ming-Gao Gu, *(McGill);* Mohanty, s.g. *(McMaster);* Moore, m. *(Ecole Polytechnique);* Murdoch, d.j. *(Waterloo);* O'Brien, g.l. *(York);* Panjer, h.h. *(Waterloo);* Reed, w.j. *(Victoria);* Routledge, r. *(Simon Fraser);* Salisbury, t.s. *(York);* Schaufele, r.a. *(York);* Schmuland, b. *(Alberta);* Sheahan, j.n. *(Alberta);* Srinivasan, r. *(Saskatchewan);* Stanford, d. *(Western);* Tanny, d.l. *(York);* Thavaneswaran, a. *(Manitoba);* Theodorescu, r. *(Laval);* Thompson, m.e. *(Waterloo);* Thompson, k. r. *(Dalhousie);* Tomkins, r.j. *(Regina);* Vaillancourt, j. *(Sherbrooke);* Wasan, m.t. *(Queen's);* Winter, b.b. *(Ottawa);* Wolfson, c. *(McGill);* Wolfson, d.b. *(McGill)*

Techniques of Inference; Techniques de l'inférence statistique:

Adatia, a. *(Regina);* Allen, o.b. *(Guelph);* Aly, e.e. *(Alberta);* Angers, j-f. *(Sherbrooke);* Balakrishnan, n. *(McMaster);* Balasooriya, u. *(Memorial);* Brenner, d. *(Toronto);* Brisebois, m. *(Sherbrooke);* Cabilio, p. *(Acadia);* Cheng, s.w. *(Manitoba);* Colin, b. *(Sherbrooke);* Davidson, r.r. *(Victoria);* Dean, c. *(Calgary);* Desmond, a.f. *(Guelph);* Dwivedi, t.d. *(Concordia);* Evans, m.j. *(Toronto);* Fraser, d.a.s. *(York);* Fu, j.c. *(Manitoba);* Godambe, v.p. *(Waterloo);* Guttman, i. *(Toronto);* Joe, h. *(UBC);* Kabir, a.b.m.l. *(Carleton);* Kalbfleisch, j.d. *(Waterloo);* Kalbfleisch, j.g. *(Waterloo);* Karunamuni, r.j. *(Alberta);* Kulperger, r.j. *(Western);* Lawless, j.f. *(Waterloo);* Lee, c.c. *(Memorial);* Luong, a. *(Memorial);* Mak, t.k. *(Memorial);* Massam, h. *(York);* Mills, s. *(Carleton);* Narasimha Prasad, n.g. *(Alberta);* Reid, n. *(Toronto);* Shah, k.r. *(Waterloo);* Shoukri, m.

(Windsor); SINGH, R. *(Saskatchewan);* SINGH, R.S. *(Guelph);* SINHA, S.K. *(Manitoba);* SMALL, C.G. *(Waterloo);* STROUD, T.W.F. *(Queen's);* STRUTHERS, C. *(Waterloo);* SWARTZ, T. *(Simon Fraser);* WATTS, D.G. *(Queen's);* WIENS, D. *(Alberta);* WU, C.F.J. *(Waterloo);* ZAMAR, R.H. *(UBC)*

Time Series Analysis; Analyse des séries chronologiques:

ABRAHAM, B. *(Waterloo);* ANDERSON, O.D. *(Western);* FEUERVERGER, A. *(Toronto);* HASTINGS, W.K. *(Victoria);* KNIGHT, K. *(Toronto);* LIU, J. *(UBC);* MACGREGOR, J.F. *(McMaster);* MACNEILL, I. B. *(Western);* MCLEOD, A.I. *(Western);* ROSS, W.H. *(Queen's);* ROY, R. *(Montreal);* SMITH, B. *(Dalhousie);* SUTRADHAR, B.C. *(Memorial);* THAVANESWARAN, A. *(Manitoba);* TURNER, T.R. *(New Brunswick)*

Nonparametrics; Statistique non paramétrique:

BOULANGER, A. *(Sherbrooke);* BURKE, M.D. *(Calgary);* CAPÉRAÀ, P. *(Laval);* DEVROYE, L. *(McGill);* HECKMAN, N.E. *(UBC);* LEPAGE, Y. *(Montreal);* MEHRA, K.L. *(Alberta);* ODEH, R.E. *(Victoria);* REID, N. *(Toronto);* SAMANTA, M. *(Manitoba);* SRIVASTAVA, M.S. *(Toronto);* TARDIF, S. *(Montreal);* VAN EEDEN, C. *(Montreal)*

Information Theory; Théorie de l'information:

BEHARA, M. *(McMaster);* GABOR, G. *(Dalhousie)*

Reliability Theory; Théorie de la fiabilité:

CLEROUX, R. *(Montreal);* GUPTA, R.D. *(New Brunswick);* WHITMORE, G.A. *(McGill)*