

Executive Summary Statistics Department 2004

Note: All data are calendar year 2004 unless otherwise noted.

Research/Scholarship (13.04 Tenured of Tenure-track Faculty, 3 Instructors, 1 Post-Doc, 1 Research Scientist)

- Appeared: 18 peer-reviewed journal articles.
- In press: 21 peer-reviewed articles and 1 textbook.
- Faculty Presentations: 6 Invited International, 8 Invited National, 4 Contributed National.
- Two Best Paper Awards
- One Newly Elected Member of the International Statistical Institute
- Nine Fellows of the American Statistical Association (Four Current Faculty, Five Emeritus Faculty)
- Two Fellows of the American Society for Quality (Both Current Faculty)
- Two Past Editors of a Major Statistical Journal (*Journal of Quality Technology*)
- Eleven Associate Editorships/Editorial Board Members Held of Major Journals by Seven Faculty Members
- Research Expenditures: \$155,000 FY (2004-05)

Graduate Education

- Number of Graduate Students:
 - Spring 2004: 42 (21 M.S., 21 Ph.D.)
 - Fall 2004: 55 (27 M.S., 28 Ph.D.)
- Number of Ph.D. Awarded:
 - Spring 2004: 0
 - Fall 2004: 5
- Number of M.S. Awarded:
 - Spring 2004: 3
 - Fall 2004: 11
- Five Corporate Partners (Program Enhances Graduate Assistantships and Provides Practical Internships): Minitab, Eli Lilly, General Electric, DuPont, Kraft

Undergraduate Education

- Number of Undergraduate Majors:
 - Spring 2004: 41
 - Fall 2004: 38
- Number B.S. Awarded Spring 2004: 5

Outreach

- Service on Eight Major National/International Committees
- 702 Hours of Faculty Consulting and 1200 Hours of Graduate Student Consulting (Total: 1902) within the University through the Consulting Center

National Awards

Marion Reynolds, 2004 Brumbaugh Award of the American Society for Quality for the paper published by an ASQ journal that made the biggest contribution to the industrial applications of statistical quality control.

Bill Woodall, 2004 Jack Youden Prize for the best expository paper in *Technometrics*.

Elected member, International Statistical Institute (2004)

Bill Woodall

Fellows of the American Statistical Association

Active Faculty

Marion Reynolds
Eric Smith
Geoff Vining
Bill Woodall

Emeritus Faculty

Jesse Arnold
I.J. Good
Klaus Hinkelmann
Dick Krutchkoff
Ray Myers

Fellows of the American Society for Quality

Geoff Vining
Bill Woodall

Papers, Appeared in 2004

Beck, B. and **Morgan, J.P.** (2004), Optimal design in irregular BIBD settings, *Journal of Statistical Planning and Inference*, **129**, 59-84.

Ching, C-Y., Hart, V., **Holtzman, G.I.**, and Bakhiet, R.M. (2004), Isoflavone supplementation modulated erythrocyte antioxidant defense in healthy young men undergoing 80% VO₂pk exercise, *Nutrition Research*, **24**, 347-359.

Daum, L.T., **Ye, K.**, Chambers, J.P., Santiago, J., Hickman, J.P., Barnes, W.J., Kruzelock, R.P., and Atchley, D. (2004), Comparison of TaqMan™ and EpochDark Quenchers™ during real time reverse transcription PCR, *Cellular and Molecular Probes*, **18**, 207-209.

De La Fuente, A., Bing, N., **Hoeschele, I.**, and Mendes, P. (2004), Discovery of meaningful associations in genomic data using partial correlation coefficients, *Bioinformatics*, **20**, 3565-3574.

Duma, S.M., Hansen, G.A., Kennedy, E.A., Rath, A.L., McNally, C., Kemper, A.R., **Smith, E.P.**, Brolinson, P.G., Stitzel, J.D., Davis, M.B., Brozoski, F.T., McEntire, B.J., Alem, N.M., and Crowley, J.S. (2004), Upper extremity interaction with a helicopter side airbag: injury criteria for dynamic hyperextension of the female elbow joint, *Stapp Car Crash Journal*, **48**, 155-176.

Gao, G. and **Hoeschele, I.** (2004), Conditional probability methods for haplotyping in pedigrees, *Genetics*, **167**, 2055-2065.

Jensen, D.R. (2004) Condition numbers and D-efficiency, *Statistics and Probability Letters*, **66**, 267-274.

Jensen, D.J. and Srinivasan, S.S. (2004), Matrix equivalence classes with applications, *Linear Algebra and Its Applications*, **388**, 249-260.

Kennedy, E.A., Hurst, W.J., Stitzel, J.D., Curmier, J.M., Hansen, J.M., **Smith, E.P.**, and Duma, S.M. (2004), Lateral and posterior dynamic bending in the mid-shaft femur: fracture risk curves for the adult population, *Stapp Car Crash Journal*, **48**, 27-51.

Lafon, N.W., McMullin, S.L., Steffen, D.E., and **Schulman, R.S.** (2004), Improving stakeholder knowledge and agency image through collaborative planning. *Wildlife Society Bulletin*, **32**, 220-231.

Mahmoud, M.A. and **Woodall, W.H.** (2004), Phase I analysis of linear profiles with calibration applications, *Technometrics*, **46**, 377-391.

Myers, R.H., Montgomery, D.C., **Vining, G.G.**, Kowalski, S.M., and Borror, C.M. (2004), Response surface methodology: A retrospective and current literature review, *Journal of Quality Technology*, **36**, 53-77.

Noble, R., **Smith, E.P.**, and **Ye, K.** (2004), Model selection in canonical correlation analysis (CCA) using Bayesian model averaging, *Environmetrics*, **15**, 291-312,

Reynolds, M.R., Jr. and Stoumbos, Z.G. (2004), Control charts and the efficient allocation of sampling resources, *Technometrics*, **45**, 200-214.

Reynolds, M.R., Jr. and Stoumbos, Z.G. (2004), Should observations be grouped for effective process monitoring, *Journal of Quality Technology*, **36**, 343-366.

Stoumbos, Z.G. and **Reynolds, M.R., Jr.** (2004), The robustness and performance of CUSUM control charts based on the double-exponential and normal distributions,

Frontiers in Statistical Quality Control, **7**, edited by H.-J. Lenz and P.-Th. Wilrich, Springer-Verlag, Heidelberg, Germany, 79-100.

Woodall, W.H., Spitzner, D.J., Montgomery, D.C., and Gupta, S. (2004), Using control charts to monitor process and product quality profiles, *Journal of Quality Technology*, **36**, 309-320.

Zheng, L., Keller, S.F., Lyerly, D.M., Carman, R.J., Genheimer, C.W., gleaves, C.A., Kohlhepp, S.J., Young, S., Perez, S., and **Ye, K.** (2004), Multicenter evaluation of a new screening test that detects clostridium difficile in fecal specimens, *Journal of Clinical Microbiology*, **42**, 3837-3840.

Books, In Press in 2004

Vining, G.G. and Kowalski, S.M. (2006), *Statistical Methods for Engineers*, 2nd ed., Belmont, CA: Duxbury Press. (available fall 2005).

Papers, In Press in 2004

Bailey, R.A., Cameron, P.J., Dobsyani, P., **Morgan, J.P.**, and Soicher, L.S. (2005), Designs on the web, *Discrete Mathematics*.

Bing, N. and **Hoeschele, I.** (2005), Genetical genomics analysis of a yeast segregant population for transcription network inference, *Genetics*.

Bing, N., **Hoeschele, I.**, **Ye, K.**, and Eilertsen, K.J. (2005), Finite mixture model analysis of microarray expression data on samples of uncertain biological type with application to reproductive efficiency, *Veterinary Immunology and Immunopathology*.

Birch, J.B. and **Morgan, J.P.** (2005), TA Training at Virginia Tech: A Stepwise Progression, *American Statistician*, **59**, 14-18.

Boone, E., **Ye, K.**, and **Smith, E.P.** (2005), Assesment of two approximate method for comparing posterior probabilities, *Computational Statistics and Data Analysis*, **48**, 221-234.

Ching, C-Y., Bakhiet, R.M., Hart, V., and **Holtzman, G.I.** (2005), Isoflavones improve plasma homocysteine status and antioxidant defense system in healthy young men at rest but do not ameliorate oxidative stress induced by 80% VO(2)pk exercise, *Ann. Nutr. Meth.*, **49**, 33-41.

Gao, G. and **Hoeschele, I.** (2004), A note on a conditional enumeration haplotyping method in pedigrees, *Lecture Notes in Bioinformatics*, NewYork: Springer-Verlag.

Hoeschele, I. and Li, H. (2005), A note on joint versus gene-specific mixed model analysis of microarray gene expression data, *Biostatistics*, **6**, 183-186.

Jensen, D.R. (2005), Gauss inequalities on ordered linear spaces, *J. Multivariate Anal.*, **93**.

Pfister-Genskow, M., Myers, C., Childs, L., Lacson, J., Betthausen, J., Gouleke, Forsberg, E. P., Zheng, Y., Leno, G., Schultz, R., Liu, B., Chetia, C., Yang, X., **Hoeschele, I.**, and Eilertsen, K.J, (2004), Identification of differentially expressed genes in individual bovine preimplantation embryos produced by nuclear transfer: Improper reprogramming of genes required for trophoblast development, *Biology of Reproduction*, **72**.

Montgomery, D.C., **Myers, R.H.**, Carter, W.H., Jr., and **Vining, G.G.** (2005), The hierarchy principle in designed industrial experiments, *Quality and Reliability Engineering International*, **21**, 197-201.

Reynolds, M.R., Jr. and Kim, K. (2005). Multivariate monitoring of the process mean vector with sequential sampling, *Journal of Quality Technology*.

Reynolds, M.R., Jr. and Stoumbos, Z.G. (2005). Should CUSUM and EWMA charts be used with a Shewhart limit?, *Technometrics*..

Ryan, T.P. and **Woodall, W.H.** (2005), The most-cited statistical papers, *Journal of Applied Statistics*.

Spitzner, D.J. (2005), Risk-reducing hierarchical shrinkage for generalized linear models, *Journal of the Royal Statistics Society Series B*, **67**, 1-14.

Spitzner, D.J. (2005), Using goodness-of-fit procedures in high-dimensional testing, *Journal of Statistical Computation and Simulation*.

Stoumbos, Z.G. and **Reynolds, M.R., Jr.** (2005). Economic design of adaptive control schemes for monitoring the process mean and variance, *Nonlinear Analysis: Real World Applications*.

Vining, G.G. and Kowalski, S.M. (2006), An overview of composite designs run as split-plots, *Frontiers in Intelligent Statistical Quality Control*, 8th ed., Lenz, H.J. and Wilrich, P.T., eds.

Vining, G.G., Kowalski, S.M., and Montgomery, D.C. (2005), Response surface designs within a split-plot structure, *Journal of Quality Technology*, **37**, 115-129.

Woodall, W.H. and **Mahmoud, M.A.** (2005), The inertial properties of quality control charts, *Technometrics*.

Yang, X. and Ye, K. (2005), On efficiency of experimental designs for single factor cDNA microarray experiments, *Data Mining and Knowledge Management, Lecture Notes in Computer Science*, New York: Springer-Verlag, 119-127.

Faculty Presentations

Invited International

Reynolds, M.R., Jr. and Stoumbos, Z.G. Does the rational-subgroups concept provide an effective guide for process monitoring, VIII International Workshop on Intelligent Statistical Quality Control, Warsaw, Poland.

Vining, G.G. Exact inference for response surface designs within a split-plot structure. International Conference of Design of Experiments, Beijing, China.

Vining, G.G. An overview of composite designs run as split-plots. VIIIth International Workshop on Intelligent Statistical Quality Control, Warsaw, Poland and the Fourth Annual Meeting of the European Network for Business and Industrial Statistics, Copenhagen, Denmark, co-authored by S.M. Kowalski.

Vining, G.G. An overview of experiments with mixture components and process factors. Danish Society for Applied Statistics, Bagsvaerd, Denmark.

Woodall, W.H. Using control charts to monitor process and product quality profiles, VIII Workshop on Intelligent Statistical Quality Control, Warsaw, Poland

Ye, K. On efficiency of experimental designs for a single factor cDNA microarray experiments, Chinese Academy of Sciences Symposium, Beijing, China.

Invited National

Morgan, J.P. E-optimal block designs for up to 15 treatments, IISA Annual Meeting.

Reynolds, M.R., Jr. and Stoumbos, Z.G. Control charts and the efficient allocation of sampling resources. INFORMS Annual Meeting.

Smith, E.P. Evaluation of standards data from probabilistic monitoring programs. EMAP Meeting.

Stoumbos, Z.G. and **Reynolds, M.R., Jr.** Multivariate EWMA and Shewhart control charts for monitoring the mean vector and variance-covariance matrix. INFORMS Annual Meeting.

Vining, G.G. Overview of DOE within Six Sigma. Q&P Research Conference.

Woodall, W.H. Using control charts to monitor process and product quality profiles. Joint Statistical Meetings and INFORMS Annual Meeting.

Woodall, W.H. The view from the ivory tower, Annual W.J. Youden Address, Fall Technical Conference.

Contributed National

Schulman, R.S. Continuing statistical education for practicing professionals. Joint Statistical Meetings.

Spitzner, D.J. Use of goodness-of-fit procedures in high-dimensional testing, Joint Statistical Meetings.

Terrell, G.R. Finite population probability generating functions. Joint Statistical Meetings.

Ye, K. Use of power prior distributions in environmental and ecological data analysis, Joint Statistical Meetings

Associate Editors/Members of Editorial Review Boards

Ina Hoeschele, Associate Editor, *Genetics, Selection, Evolution*

Ina Hoeschele, Associate Editor, *Biometrics*

Don Jensen, Associate Editor, *Communications in Statistics – Theory and Methods*

Marion Reynolds, Editorial Review Board, *Journal of Quality Technology*

Marion Reynolds, Associate Editor, *Sequential Analysis*

Marion Reynolds, Associate Editor, *IIE Transactions*

Eric Smith, Associate Editor, *Environmetrics*

Eric Smith, Associate Editor, *Journal of Agricultural, Biological, and Environmental Statistics*

Geoff Vining, Editorial Review Board, *Journal of Quality Technology*

Bill Woodall, Editorial Review Board, *Journal of Quality Technology*

Keying Ye, Associate Editor, *Journal of Statistical Computation and Simulation*

Major National/International Society Service

Golde Holtzman, Secretary-Treasurer, Mu Sigma Rho National Honorary Society.

Geoff Vining, Chair-Elect, Statistics Division, American Society for Quality

Geoff Vining, Chair, Publications Management Board, American Society for Quality

Geoff Vining, General Conference Chair, Fifth International Symposium on Business and Industrial Statistics, Lima, Perú, January 2006.

Bill Woodall, Chair, Brumbaugh Award Committee, American Society for Quality

Bill Woodall, Member, Quality, Statistics, and Reliability Section of INFORMS
Advisory Board

Bill Woodall, Member, ASA Deming Lecturer Committee

Bill Woodall, Member, Shewhart Medal Committee, American Society for Quality