# Annual Report Executive Summary, 2007-08

## Department of Statistics

| **Learning: Undergraduate** |
|---|
| Number of undergraduates 45 majors, 22 minors<br><br>Graduated 10 |
| **Learning: Graduate** |
| Number of graduate students 70<br><br>Number of PhDs awarded: 6<br><br>Number of Masters awarded: 21<br><br>Funded on grants 9<br><br>Post-doctoral students funded 1<br><br>Funded on fellowships 2 |
| **Discovery** |
| Number of grants 19 (6 continuing and 13 new)<br><br>Amount of continuing grants: $8,518,723 (VBI related $7,020,077, Statistics: $1,498,646)<br><br>Amount of new grants: $1,356,579 (VBI related $612,926, Statistics $743,653)<br><br>Number of publications 31 (2.2 per faculty)<br><br>Number of papers in press 28<br><br>Awards none |
| **Engagement** |
| Consulting center activities 173 clients<br><br>Corporate partners program – 8 members<br><br>Secured funding for graduate student support from MINITAB, DuPont, RJ Reynolds |

Five faculty are on editorial boards of journals, one is a major journal

**Diversity**

Presentation at STATFEST

Mentoring of one minority graduate student to completion of Masters degree

Enhance graduate education through research topic courses

Enhance graduate experience through graduate student led seminars

**Goals for 2008-9**

Mentoring new faculty

Increase grant submissions and funding

Ensure success of the Laboratory for Interdisciplinary Statistical Analysis

**Details**
**Grants (continuing):**

**Hoeschele (Co-PI), National Science Foundation DBI-0211863, (*2002-2008*), "Dissecting soybean resistance to Phytophthora by QTL analysis of host and pathogen expression profiles", $6,764,465, B.M. Tyler (PI), M.A. Saghai Maroof, I. A. Dorrance, S. St. Martin.**

**Hoeschele, I. (PI).Comprehensive Cancer Center Of Wake Forest University, (2006-2010), "Biostatistics Consulting", $255,612**

**Morgan, J.P. NSF DMS 06-04997. Symmetry and Asymmetry in Experimental Design. $144,276. Award period: September 2006 -September 2009**.

**Smith, E. P., Co-PI (with S. Prisley, L. Carstensen, Jr. and K. Ye. Application of spatial uncertainty models to automate and enhance data fusion. National Geospatial Intelligence Agency. (8/1/05-7/31/08 $449,643 roughly 25% to statistics).**

**Smith, E.P., Samantha Bates, Saied Mostaghimi, Gene Yagow, Kevin Brannan, Donald Orth, Jim Berkson Model-based Clustering for Classification of Aquatic Systems and Diagnosis of Ecological Stress Submitted to USEPA (10/1/2003– 9/30/2006, extension to Feb, 2008 $844,310 over 1/3 goes to Statistics)**

**Vining, G. PI. Becton – Dickinson, 2006. Total amount awarded: $46,605 ($32,793 direct and $13,812 indirect). Project Title: BD Assistantship. Period: 10/15/2006 – 8/15/2007.**

**Grants (new):**

**Guo, F. Co-PI , "Modeling accident data for the 100-car naturalistic study", sponsored by The National Surface Transportation Safety Center for Excellence. $30,000 direct fund.**

**Smith, E.P. Principal Investigator (with Penelope Pooler). 2006 renewal. Cooperation And Collaboration On Vital Signs Monitoring Program Of The Northeast Coastal And Barrier Network And Eastern Rivers And Mountain Network Of The National Park Service. National Park Service $112,017 (100% to statistics).**

**Smith, E. P. Principal Investigator, 2006-7. Ecological thresholds and structured decision analysis using aquatic macroinvertebrate as indicators of stream health in the mid Atlantic Highlands. US Geological Survey $30,000.**

**Y. Jiao, D. Orth, and E.P. Smith MARFIN two-year proposal 08MF004(RF) "Model complexity and stock assessment quality: an investigation of the performance of models of different complexity and implications for model selection in fisheries" (year 1 $90,999, year 2 $111,566,total of $202,565).**

**G. Gao (PI), I Hoeschele (Co-PI). National Institutes of Health (*2007-2011*), "Haplotyping and QTL mapping in pedigrees with missing data". $177,582 (Hoeschele sub-contract).**

**K. Davy, I. Hoeschele (Co-PI).National Institutes of Health (*2007-2009*), "Angiotensis Receptor Blockade and Adipose Tissue Inflammation in Obesity". $435,344.**

**Kim, D-Y. Dynamic Interactions Among People, Livestock, and Savanna Ecosystems Under Climate Change (NSF CNH grant BCS-0709671). Role: Sole P.I. Subcontract with Michigan State University. Amount: $123,571. Period: 2007-2010.**

**Kim, D-Y. Prototyping a Rangeland Decision Support System (NASA-SBR grant). Role: Co-investigator. Sponsor Applied Geosolutions, LLC with Michigan State University. Amount: $10,200. Period: June-August 2007.**

**Vining, G., P.I., Pratt and Whitney, 2007. Total amount awarded: $45,902 ($31,358 direct and $14,544 indirect). Project Title: Monte Carlo Simulation of the Engine Development Process. Period: 1/1/2008 – 12/31/2008.**

**Vining, G., P.I., Pratt and Whitney, 2007. Total amount awarded: $26,205 ($16,682 direct and $9,523 indirect). Project Title: Investigation of Maximum Likelihood versus Rank Regression for Modeling of Life Time Data. Period: 11/1/2007 – 8/15/2008.**

**Vining, G., P.I., Becton – Dickinson, 2007. Total amount awarded: $46,769 ($32,582 direct and $14,187 indirect). Project Title: BD Assistantship. Period: 10/1/2007 – 9/30/2008.**

**Vining, G., P.I., National Institute of Aerospace, 2007. Total Amount Awarded: $93,704 ($63,854 direct and $29,850 indirect). Project Title: Rapid Prototyping Studies. Period: 8/15/2007 – 8/15/2008.**

**Vining, G., P.I., Pratt and Whitney, 2007. Total Amount Awarded: $22,720 ($14,516 direct and $8204 indirect. Project Title: Various smaller projects. Period: 1/1 – 12/31/2007**

**Books (published or in-press):**

**Banks, D. and Smith, EP (editors). The Good Book: IJGood's comments, criticisms and conclusions. Rice University Press (to appear)**

**Book Chapter (published or in-press):**

**Hoeschele I. (2007) Mapping quantitative trait loci in outbred populations. Handbook of Statistical Genetics, DJ Balding, M Bishop & C Cannings (eds.), Wiley, p. 623-677**

**Huebner, M., Kim, D., Ewart, S., Karmaus, W., Sadeghnejad, A., Arshad, SH. (2007), Patterns of GATA3 and IL13 Gene Polymorphisms Associated with Childhood Rhinitis and Atopy in a Brith Cohort. J. Allergy and Clinical Immunology. Available through E-pub.**

**Pang, H., Kim, I. and H. Zhao (2007). Pathway-Based Methods for Analyzing Microarray Data.,** ***Analysis of Microarray Data: A Network-Based Approach*****, Edited by M. Dehmer and F. Emmert-Streib, John Wiley& Sons, Ltd, in press.**

**Vining, G.G. (2007). "Adapting Response Surface Methodology for Computer and Simulation Experiments,"** ***The Grammar of Technology Development,*** **Tsubaki, H., Nishina, K., Yamada, S. eds., pp. 127-134.**

**Papers Published (since last FAR):**

**Bates Prins, S.C. and Smith, E.P. (2007). Using Biological Metrics to Score and Evaluate Sites: A Nearest-Neighbour Reference Condition Approach.** ***Freshwater Biology*****, 52, 98-111**

**Gao, G. and I. Hoeschele (2007). A note on a haplotyping method in pedigrees.** ***Genetics, Selection, Evolution*** **40: 25-36.**

**Guo, F., Dey, D., Holsinger, K., (2007). A hierarchical Bayesian approach for estimating origin of a mixed population. IMS, Lecture Notes Monograph Series**

**Jensen, W. A., Birch, J. B., and Woodall, W. H. (2007), High Breakdown Estimation for Phase I Multivariate Control Charts.** ***Quality and Reliability Engineering International*** **23, 615-629.**

**Kim, I., Liu, Y. and H. Zhao (2007). Bayesian methods for predicting interacting protein pairs using domain information,** ***Biometrics*****, 63, 824-833. (Editor's invited paper in Biometrics, JSM 2007)**

**Kim, B., Kim, I., Lee, S., Rha, S. and H. Chung (2007). Ranking candidate genes for the biomarker development in a cancer diagnostics,** ***Korean Communication in Statistics*****, 14, 169-182.**

**Kowalski, S.M., Parker, P.A., and Vining, G.G. (2007). "Tutorial on Split-Plot Experiments,"** ***Quality Engineering*****, 19, pp. 1-15.**

**Leman, S.C. et al. (2007) The Evolutionary Forest Algorithm.** ***Bioinformatics*****. 23 (15) 1962-1968.**

**Morgan, J. P. and Reck, R. (2007). Resolvable designs with large blocks.** ***Annals of Statistics*****, 35, 747-771.**

**Morgan, J. P. (2007). Optimal incomplete block designs.** ***Journal of the American Statistical Association*****, 102, 655-663.**

**Morgan J. P. and Jin, B. (2007). Optimal experimentation in two blocks.** ***Journal of Statistical Theory and Practice*****, 1, 357-375.**

**Parker, P.A., Kowalski, S.M., and Vining, G.G. (2007). "Construction of Balanced Equivalent Estimation Second-Order Split-Plot Designs,"** ***Technometrics*****, 49, pp 56-65.**

**Parvu, V. and Morgan, J. P. (2008). E-optimal designs for three treatments.** ***Journal of Statistical Planning and Inference*****, 138, 642-653.**

**Mahmoud, M. A., Parker, P. A., Woodall, W. H., and Hawkins, D. M. (2007), A Change Point Method for Linear Profile Data.** ***Quality & Reliability Engineering International*****, 23(2), 247-268.**

**Marshall, J. B., Spitzner, D. J., and Woodall, W. H. (2007), Use of the Local Knox Statistic for the Prospective Monitoring of Disease Occurrences in Space and Time.** ***Statistics in Medicine*** **26 (7), 1579-1593.**

**Parker, P.A., Kowalski, S.M., and Vining, G.G. (2007). "Unbalanced and Minimal Point Equivalent Estimation Second-Order Split-Plot Designs," *Journal of Quality Technology*, 39, pp. 376-388.**

**Reynolds, M.R., Jr. and Kim, K. (2007) Multivariate Control Charts for Monitoring the Process Mean and Variability Using Sequential Sampling. *Sequential Analysis*, 26, 283-315. (Invited paper in the special volume of *Sequential Analysis* in honor of Walter Shewhart).**

**Reynolds, M. R. Jr. and Stoumbos, Z. G. (2007). Variable Sampling Rate Control Charts, in *Encyclopedia of Statistics in Quality and Reliability*, Ruggeri, F., Kennett, R. and Faltin, F. W. (eds). John Wiley & Sons Ltd, Chichester, UK, pp. 2045-2050.**

**Runger, G. C., Barton, R. R., Del Castillo, E., and Woodall, W. H. (2007), Optimal Monitoring of Multivariate Data for Fault Detection. *Journal of Quality Technology*, 39(2), 159-172.**

**Stock, K.F., I. Hoeschele and O. Distl (2007) Bayesian estimation of genetic parameters for multivariate threshold and continuous phenotypes and molecular genetic data in simulated horse populations using Gibbs sampling. *BMC Genetics* 8:19.**

**Stock, K.F., I. Hoeschele and O. Distl (2007) Estimation of Genetic parameters and prediction of breeding values for multivariate threshold and continuous data in a simulated horse population using Gibbs sampling and residual maximum likelihood. *J. Anim. Breed. Genet.* 124:308-319.**

**Terrell, G. R. (2007) Finite element methods for density estimation. *Proceedings of the Statistical Computing Section*, Joint Statistical Meetings, Seattle, Washington**

**Tyler, B.M., R.J.Y. Jiang, L. Zhou, S. Tripathy, D. Dou, T. Torto-Alalibo, H. Li, Y. Mao, B. Liu, M. Vega-Sanchez, S.X. Mideros, R. Hanlon, B.M. Smith, K. Krampis, K. Ye, S. St. Martin, A.E. Dorrance, I. Hoeschele and M.A. Saghai Maroof (2007) Functional genomics and bioinformatics of the Phytophthora-soybean interaction. Stadler Genetics Symposium book.**

**Williams, J.D., J.B. Birch, W.H. Woodall, and N. M. Ferry. 2007. Statistical Monitoring of Heteroscedastic Dose-Response Profiles from High-throughput Screening. *Journal of Agricultural, Biological and Environmental Statistics.* 12, 2, pp 216-235.**

**Willis A. Jensen, Jeffrey B. Birch, and William H. Woodall. 2007. High Breakdown Estimation Methods for Phase I Multivariate Control Charts. *Quality and Reliability Engineering International* 23 (5), pp. 615-629.**

**Williams, J. D., Woodall, W. H., and Birch, J.B. 2007. Statistical Monitoring of Nonlinear Products and Processes Quality Profiles. *Quality and Reliability Engineering International* . 23(7), pp 925-941.**

**Woodall, W. H. (2007), Current Research in Profile Monitoring. *Revista Producão* 17(3), 420-425. (Invited paper for the Brazilian industrial engineering organization)**

**<u>Papers In Press:</u>**

**Bao, L and I. Hoeschele (2008) Quality assessment of a very large microarray experiment. *Technometrics* (in press).**

**Fraker, S. E., Woodall, W. H., and Mousavi, S. (2008), Performance Metrics for Surveillance Schemes. To appear in *Quality Engineering*.**

**Fraker, S. E., Woodall, W. H., and Burkom, H. S. (2008), A Note on the Poisson Likelihood Ratio Test Statistic for Kulldorff's Scan Methods. To appear in *Communications in Statistics – Theory and Methods*.**

**Hagerthey, S., Newman, S., Rutchey, K., Godin, J. and Smith, EP. The regime shift boundary in a subtropical wetland: Establishing ecological thresholds to low-level phosphorus enrichment. To appear in Ecology**

**Jensen, Willis A., Jeffrey B. Birch, and William H. Woodall. Monitoring Correlation within Linear Profiles Using Mixed Models. *Journal of Quality Technology* to appear in 2008.**

**Jensen, Willis A. and Jeffrey B. Birch. Profile Monitoring Via Nonlinear Mixed Models. *Journal of Quality Technology* to appear in 2008.**

**Jensen, W. A., Birch, J. B., and Woodall, W. H. (2008), Monitoring Correlation within Linear Profiles Using Mixed Models. To appear in *Journal of Quality Technology*.**

**Jin, B. and Morgan, J. P. (2007). Optimal saturated block designs when errors are correlated. *Journal of Statistical Planning and Inference*, to appear.**

**Jensen, W. A., Bryce, G. R., and Reynolds, M.R., Jr. (2008). Design Issues for Adaptive Control Charts. To appear in *Quality and Reliability Engineering International*.**

**Joner, M. D., Jr., Woodall, W. H., and Reynolds, M.R., Jr. (2008), Detecting a Rate Increase Using a Bernoulli Scan Statistic. To appear in *Statistics in Medicine*.**

**Lipkovich, I., Smith, E.P., Ye, K. Detecting pattern in biological stressor response. *Ecological and Environmental Statistics.***

**Liu, Y., Kim, I., and H. Zhao (2007). Protein interaction prediction from diverse sources, *Drug Discovery Today*, in press.**

**Liu, B., A. de la Fuente and I. Hoeschele (2008) Gene network inference via structural equation modeling in genetical genomics experiments. Genetics 178 (to appear in the March '08 issue and chosen as the issue's highlight article).**

**Mahmoud, M. A., Woodall, W. H., and Davis, R. E. (2008), Performance Comparison of Some Likelihood Ratio-Based Statistical Surveillance Schemes. To appear in *Journal of Applied Statistics*.**

**Mohammed, M. A., Worthington, P., and Woodall, W. H. (2008), Tutorial Notes on How to Plot Some Basic Control Charts for Health Care Practitioners. To appear in *Quality and Safety in Health Care*.**

**Morgan, J. P. and Parvu, V. (2007). Most robust BIBDs. *Statistica Sinica*, to appear.**

**Morgan, J. P. (2008). Latin squares and related designs. A chapter in *Encyclopedia of Statistics in Quality and Reliability*, to appear.**

**Park, C. and Reynolds, M.R., Jr. An Economic Design of an Integrated Process Control Procedure with Repeated Adjustments and EWMA Monitoring. To appear in *Journal of the Korean Statistical Society*.**

**Pickle, S. M., T. J. Robinson, J. B. Birch, and C. Anderson-Cook. A Semi-Parametric Approach to Robust Parameter Design. *Journal of Statistical Planning and Inference* to appear in 2008.**

**Reynolds, M.R., Jr. and Stoumbos, Z.G. (2008). Combinations of Multivariate Shewhart and MEMWA Control Charts for Monitoring the Mean Vector and Covariance Matrix. To appear in *Journal of Quality Technology*.**

**Rose,K.A., Roth, B.M., Smith, E.P. Skill assessment of spatial maps. To appear in *Journal of Marine Science***

**Sego, L. H., Woodall, W. H., and Reynolds, M. R., Jr. (2008), A Comparison of Surveillance Methods for Small Incidence Rates. To appear in *Statistics in Medicine*.**

**Wang Y. and I. Kim (2007). Profiling user behavior for intrusion detection using item response modeling, *Computer Security Journal*, in press.**

**Woodall, W. H. and Borror, C. M. (2008), Some Relationships between Gage R&R Criteria. To appear in *Quality and Reliability Engineering International*.**

**Woodall, W. H., Marshall, J. B., Joner, M. D., Jr., Fraker, S. E., and Abdel-Salam, A. G. (2008), On the Use and Evaluation of Prospective Scan Methods in Health-Related Surveillance. To appear in the *Journal of the Royal Statistical Society*, Series A.**

**Vining, G.G. (2008). "Geoff Vining's Discussion of 'Must a Process Be in Statistical Control before Conducting Designed Experiments," *Quality Engineering*, to appear.**

**Vining, G.G. and Kowalski, S.M. (2008). "Exact Inference for Response Surface Designs within a Split-Plot Structure," *Journal of Quality Technology*, to appear.**

**Zhang, T. Thieling, S. Prins, M. Hudy, EP Smith. Model-Based Clustering in a Brook Trout Classification Study within the Eastern United States. *Transactions of the American Fisheries Society***

**<u>Presentations at Scientific/Professional Conferences:</u>**

**Birch, J. "pRIPPLE: a Parallel Version of a Polynomial-time Piecewise Linear Estimation Algorithm." With M. A. Iyer*, L. T. Watson. Presented at the Proc. 2007 Spring Simulation Multiconf., Business and Industry Symp.**

**Birch, J. "An Improved Genetic Algorithm Using a Directional Search." With Wen Wan*. Presented at the Spring Eastern Region meeting of The Biometric Society, 2007, Atlanta, GA.**

**Birch, J. "Model Robust Regression: Development and Applications." With James Mays. Presented at the Southern Regional Council on Statistics, 2007 Summer Research Conference. Richmond, VA. Invited presentation.**

**Birch, J. "Optimal Smoothing and Mixing in Model Robust Regression." With B. Alden Starnes*. Presented at the Southern Regional Council on Statistics, 2007 Summer Research Conference. Richmond, VA.**

**Birch, J. "Model Robust Regression for Instrument Calibration." With James Mays*. Presented at the Southern Regional Council on Statistics, 2007 Summer Research Conference. Richmond, VA.**

**Birch, J. "Monitoring Correlation within Nonlinear Profiles Using Mixed Models" with Willis A. Jensen*. Joint Statistical Meetings. August, 2007. Salt Lake City, UT. Invited Presentation.**

**Birch, J. "Monitoring Correlation within Nonlinear Profiles Using Mixed Models" with Willis A. Jensen. Birch*. National INFORMS Conference. November, 2007. Seattle. Invited Presentation.**

**Birch, J. "On Detecting Stabilizing or Divergent Selection Using Patterns of Variation at SNP Loci" Joint Statistical Meeting, Salt Lake City, July, 2007**

**Carlson, J., Lemons, M., (2007), The Role of Family Support in Female Students' Transitions to Graduate School. Presented at the 2008 Virginia Tech SOESA Conference.**

**Du, P. "Penalized likelihood frailty model with smooth baseline hazard function". *The Tenth Meeting of New Researchers in Statistics and Probability*, Salt Lake City, Utah, July 2007.**

**Du, P. "Nonparametric smoothing spline model for gap time hazard function in recurrent event data". *Department of Statistics, George Mason University*, Fairfax, November 2007.**

**Du, P. Topic contributed talk: "Penalized likelihood frailty model with smooth baseline hazard function". *Joint Statistical Meeting 2007*, Salt Lake City, Utah, August 2007.**

**Du, P. Contributed talk: "Smoothing spline frailty model". *The 85$^{th}$ Annual Meeting of The Virginia Academy of Science*, Harrisonburg, Virginia, May 2007.**

**Du, P. Contributed talk (session chair): "Smoothing spline frailty model". *The Third Erich L. Lehmann Symposium*, Houston, Texas, May 2007.**

**Du, P. Contributed talk: "Frailty model with spline estimated baseline hazard function". *The 2007 ENAR Spring Meeting*, Atlanta, Georgia, March 2007.**

**Kim, I. Interface 2007 Conference, 39th Symposium on the Interface: Computing Science and Statistics 2007 (Invited talk)**

**Leman, S. Joint Statistical Meetings, in Salt Lake City, UT: The Evolutionary Forest Algorithm**

**Leman, S. Network Dynamics and Simulation Science laboratory (NDSSL): Modeling the Spread of Infectious Disease Using Genetic Information Within a Marked Branching Process.**

**Leman, S. Institute For Operations Research And The Sciences (INFORMS) at Virginia Tech: The Mutiset Sampler**

**Lemons, M., (2007), Analyzing Student Attitudinal Levels of Undergraduate Engineering Majors. Presented at the 2008 Virginia Tech SOESA Conference.**

**Terrell, G. Kim Parsimony and POP Modeling. Department of Statistics Colloquium, VPI&SU, April 12, 2007.**

**Terrell, G. Elementary Chis Squared. INFORMS Seminar, VPI&SU, September 19, 2007.**

**Terrell, G. Co-residual Analysis. Department of Statistics Colloquium, VPI&SU, November 29, 2007.**

***International Invited***

**Woodall, W. "Research Issues and Ideas on Health-Related Surveillance", presented at the IX$^{th}$ International Workshop on Intelligent Statistical Quality Control, Beijing, China, September 2007.**

**Vining, G.G. XXII Foro Nacional de Estadística y XI Seminario de Estadística Aplicada del IASI (2007) – Jurica, Querétaro, México. The Future of the Design and Analysis of Industrial Experiments.**

**Vining, G.G. International Symposium on Business and Industrial Statistics (2007) – Ponta Delgado, Azores. Weighting Issues for Comparing Split-Plot Experimental Designs.**

**Vining, G.G. Joint European Network for Business and Industrial Statistics – Design of Industrial Experiments Conference (2007) – Turin, Italy, "Comments on the Use of Computer Experiments for Robust Design".**

**Reynolds, M.R., Jr. and Stoumbos, Z. G. (2007). Multivariate Monitoring of the Process Mean and Variability Using Combinations of Shewhart and MEWMA Control Charts. Invited presentation at the IXth International Workshop on Intelligent Statistical Quality Control, Beijing, China.**

***Invited National Meetings***

**Morgan, J.P. Optimal Experimentation in Two Blocks. International Conference on Advances in Interdisciplinary Statistics and Combinatorics. Greensboro, October 13, 2007.**

**Morgan, J.P. Multi-criteria optimality in discrete design. Design and Analysis of Experiments DAE 2007. Mobile, November 2, 2007.**

**Vining, G.G. Designs and Analysis of Experiments (2007) – Memphis, Tennessee. Weighting Issues for Comparing Split-Plot Experimental Designs.**

**Vining, G.G. Q&P Research Conference (2007) – Santa Fe, New Mexico. The Beauty of Classical Designs**

**Reynolds, M.R., Jr. (2007). Control Charts for Multivariate Monitoring the Mean and Variability of Multivariate Processes with Sequential Sampling. Invited Plenary Lecture at the First International Workshop in Sequential Methodologies, Auburn, Alabama.**

**Technical Reports:**

**Williams, James D., Woodall, William H., Birch, Jeffrey B. 2007. Statistical Monitoring of Nonlinear Product and Process Quality Profiles. Virginia Tech Department of Statistics, Technical Report #07-2, 39 pages.**
**http://www.stat.org.vt.edu/dept/web-e/tech_reports/TechReport07-2.pdf**

**Waterman, Megan J., Birch, Jeffrey B., Schabengerger, Oliver. 2007. Linear Mixed Model Robust Regresion. Virginia Tech Department of Statistics, Technical Report #07-3, 39 pages.**
**http://www.stat.org.vt.edu/dept/web-e/tech_reports/TechReport07-3.pdf**

Fall 2007 Graduates

| | |
|---|---|
| Chaturvedi, Garima | MS |
| Chen, Yunjie | MS |
| Gray, Travis | MS |
| Han, Chao | MS |
| Howard, Joshua | MS |
| Howard, Lauren | MS |
| Huang, Wandi | MS |
| Lin, Kuan-Chin | MS |
| Ryan, Anne | MS |
| Szarka, John | MS |
| Wang, Heng | MS |
| Wang, Sai | MS |
| Wang, Yadan | MS |
| Wentz, Pamela | MS |
| Zhang, Huan | MS |
| Zhang, Yanmei | MS |
| Zhao, Xin | MS |
| | |
| Fraker, Shannon | PHD |
| Lee, Mi Hyun | PHD |
| Li, Zhengrong | PHD |

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|---|---|
| Love, Kimberly | PHD |
| Wan, Wen | PHD |

Spring 2007 Graduates

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|---|---|
| Graham, Jeffrey | MS |
| Packard, Kevin | MS |
| Potts, Jonathan | MS |
| Wang, Lu | MS |

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|---|---|
| Joner, Michael | PHD |

Corporate Partners Program

New Partners:

Continuing Corporate Partners:

Becton Dickinson Diagnostics
Capital One
DuPont
Eli Lilly
General Electric
Kraft
Minitab
Pratt & Whitney
SAS

Service

**Jeff Birch**

Chair, Teaching Evaluation Committee, 2000-present.
Chair, Graduate Committee, 2001-present.
Chair, Internal Departmental Review Committee, 2006-2007 (ad-hoc).

Director of Graduate Programs in Statistics, 2001-present.
Coordinator for STAT 3005-3006
Faculty advisor, Mu Sigma Rho. (National Statistics Honor Society) 1991-present

**Ina Hoeschele**

Personnel and Faculty Search committee, Department of Statistics
Faculty Search Committee, VBI
Steering committee of GBCB Ph.D. program
Admissions committees of GBCB Ph.D. program

Associate Editor for two journals: Biometrics and Genetics-Selection-Evolution

Regular reviewer for many journals and multiple funding agencies (US: NSF, NIH, International: BARD, The International Human Frontier Science Program, Vienna Science and Technology Fund)

Cyber infrastructure demonstration project (NSF-funded, VBI) advisory committee member (advise on presentations to high school students, in particular incorporation of statistical methods).

**Leigh Harrell**

College of Science Curriculum Committee (Fall 2004 – current).
Teaching Evaluation Committee (Spring 2007 – current).
Department of Statistics Instructor Search Committee (Summer 2007).

**Golde Holtzman**

Corporate Partners Committee, chair (2000-2008)

> During the period under review we added two additional corporate partners, Becton Dickinson Diagnostics, and Capital One. The continuing corporate partners are DuPont, Eli Lilly, General Electric, Kraft, Minitab, Pratt & Whitney, SAS.

Elected Mu Sigma Rho national secretary-treasurer, 1997-2000, re-elected 2000-2003, re-elected 2004-2007.

Marlow Lemons

Volunteer judge for Blacksburg High School's Debate Team.

Independent Research with Upward Bound student, Cory Neese. Research titled 'Creating a New and Easier Bowling Scoring System'.

**JP Morgan**

Personnel Committee, Department of Statistics
Search Chair, Department of Statistics
Graduate Committee, Department of Statistics
Policy & Procedures Committee, Department of Statistics
Faculty Subcommittee of the COS Diversity Committee

Associate Editor, *Journal of Statistical Planning and Inference*. Handled four papers submitted during 2007.
Referee for additional seven papers from other journals (*Biometrika* (2), *JASA, Annals of Statistics, Statistical Methodology, Statistics & Probability Letters, Michigan Mathematical Journal*).
NSF Statistics Grant Proposal Evaluation Panel, January 10-12, 2007 (convened in Arlington, VA).
Referee for two grant proposals to the National Security Agency.
External reviewer for three promotion cases: John McSorley (Southern Illinois), Leonard Soicher (Queen Mary University), Hegang Chen (University of Maryland).
Program Committee, DAE 2007 (held in Memphis, October 31 – November 3, 2007).

**Marion Reynolds**

Departmental Review Committee
Personnel Committee
Cluster Hiring Search committee
Chair of the Instructor Search Committee
Computing Committee
Qualifying Exam Committee
Policy/Procedures Committee

College of Science Committee

Honorifics Committee

Editorial Board Member
*Journal of Quality Technology*
*IIE Transactions*

Refereeing:
*Journal of Quality Technology* (3 papers)
*Technometrics* (3 papers)
*IIE Transactions*
*Sequential Analysis*
*Forest Science*
*International Journal of Production Economics*

Member of the Advisory Board of the Quality, Statistics, and Reliability Section of The Institute for Operations Research and the Management Sciences

**Eric Smith**

Department Head

Successfully completed a departmental five-year review and external review.

Coordinated the hosting for four external reviewers

Associate editor for Environmentrics
Editorial Collaborator for Environmental and Ecological Statistics

Review for tenure/promotion case: Oregon State University

Member of the organizing committee for the conference on Multivariate Environmental Statistics to be held in Denver, October, 2008.

Member of the nominations committee for the ENVR section of ASA

**George Terrell**

Associate Editor for 4 papers for the Journal of Computational and Graphical Statistics, and as referee for two papers for the same journal

**Geoff Vining**

Development Activities:

| | |
|---|---|
| R.J. Reynolds Internship (2006) | $ 75,000 |
| Minitab Scholar (2006 – 2010) | $150,000 |

College of Science Promotion and Tenure Committee
***PROFESSIONAL WORKSHOPS***

XXII Foro Nacional de Estadística y XI Seminario de Estadística Aplicada del IASI (2007) – Jurica, Querétaro, México, Generalized Linear Models, presented by G.G. Vining.

***Professional Service***

Past-Chair, Statististics Division of the American Society for Quality until July 1, 2007

Vice-President for Membership, International Society for Business and Industrial Statistics.

Chair, Publications Management Board, American Society for Quality until July 1, 2007. Co-Chair after July 1, 2007.

Member, Awards Board, American Society for Quality until July 1, 2007.

Member, Advisory Board and Editorial Review Board, *Quality Engineering*.

Member, Editorial Review Board, *Journal of Quality Technology*.

Session Organizer and Chair, "ASQ-Statistics Division Session on Six Sigma," (2007) International Symposium on Business and Industrial Statistics, Ponta Delgada, Azores.

**Bill Woodall**

College Cluster Hiring Committee (Spring, 2007)

Departmental Personnel Committee, Chair

Departmental Graduate Committee

Departmental Corporate Partners Committee (with responsibility for organizing the Student Research Seminar for the Corporate Partners Conference)
Member of the Editorial Review Board of the *Journal of Quality Technology*

Member of the American Statistical Association (ASA) Deming Lecturer Committee

Member of the American Society for Quality (ASQ) Shewhart Medal Committee

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

Reviewer for *Quality Engineering* (3), *Quality and Reliability Engineering International*, *Metrologia*, *International Journal of Production Research*, *Communications in Statistics – Theory and Methods* (4), *Journal of Quality Technology* (3), *Technometrics*, and *Quality Technology and Quantitative Management.*

Board of Directors for American Society for Quality Roanoke/Radford Section 1107: Student Liaison

Outside reviewer: Promotion to Professor, Hong Kong University of Science and Technology; Promotion to Associate Professor, Florida State University and Stevens Institute of Technology.

Presentation of "Use of Control Charts in Health Care Monitoring and Public Health Surveillance", Lynchburg Section of American Society for Quality (ASQ), March 2007, and Roanoke Section of ASQ, October 2007.

One Week Short Course on Statistical Quality Control, Athens University of Business and Economics, Athens, Greece, May 2007.

Honors and awards

**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

*Elected Members, International Statistics Institute*

Marion Reynolds
Eric Smith
Geoff Vining
Bill Woodall

Graduate Learning Enhancements

We have instituted a number of enhancements to our program to acquaint students with current interdisciplinary research in statistics in general and current research of our faculty. These activities are directly related to the areas of learning and discovery for our graduate students.

A Research Home is composed of a group of students and a faculty member who meet to discuss, in broad terms, research topics in statistics. These presentations are attended by all first year students and other interested students and faculty. The presentations are aimed at enhancing student interest in research in statistics and acquainting students to current research interests of our faculty.
Research Teams are comprised of faculty and graduate students working on common research problems or centered on research grants. Teams typically meet weekly or bi-weekly to keep members appraised of recent developments, to provide accountability for timely progress, and to share common expertise.

Special Topics in Statistics is a one-hour graduate course which emphasizes recent developments in statistical theory and subject matter not found elsewhere in the curriculum. Primary aims are to stimulate student interest in research and to inspire further studies for the Ph. D.