5/18/10

Annual Report Executive Summary for 2009-10

Department of Statistics

The Department of Statistics at Virginia Tech was founded in 1949 and is the third oldest department of statistics in the nation. The Master's program started in 1949 and the PhD program in 1951. In the 60 years of the existence of our department we have conferred over 900 graduate degrees: 972 to be exact, 677 masters degrees and 295 doctoral degrees. That is an average of about 16 graduate degrees per year. The undergraduate program was initiated in 1957 and has graduated 508 students.

Learning: Undergraduate
Our undergraduate program has improved through the addition of the Actuarial Science minor. Many of our undergraduates go on to do graduate work in Statistics. This year we made two changes to the curriculum, adding a section on Regression for majors only and adding a class on SAS. We believe these changes will give the undergraduates a better sense of identity and improve their ability to obtain employment. Number of undergraduates: 57 majors, 30 minors, 24 Actuarial Science minors Graduated 15 majors in 2009, 12 in Spring 2010.
Learning: Graduate
Our graduate program specializes in training students in statistical theory balanced with extensive applications including practical experience obtained by consulting and internship opportunities. A graduate degree in statistics is highly valued by those that count--employers of statisticians. Nearly one hundred percent of our graduates for the past many years leave Virginia Tech with jobs or, at least, with job offers. And, often our graduates have received multiple offers. Our recent graduates began their professional careers at such places as the Merck, Capital One, JP Morgan, DuPont, among many others. We have a very active consulting center with faculty from the entire campus visiting our Laboratory of Interdisciplinary Statistical Research (LISA) throughout the year. All our students are trained in consulting via coursework and practical experience. In fact, each MS student must work in LISA for at least one semester for a minimum of five hours per week. We have a very active Corporate Partners Program where corporations (including BD, Capital One, DuPont, GE, JR Research, Lilly,

Minitab, Pratt & Whitney, RJ Reynolds, and SAS) sponsor student recruiting and scholarships for students. Our Corporate Partners, and other companies, visit us regularly as we are among their top choices for recruiting new hires and interns.

We have more intern positions to fill each year than we have students who can fill them. Statistics interns earn a great summer salary. In addition, an intern can receive three hours of credit for their summer intern experience as we believe that on the job training can be just as valuable as in-class training.

Number of graduate students: 75

Number of PhDs awarded: 3

Number of Masters awarded: 17

Funded on grants: 12

Post-doctoral students funded: 0

Funded on fellowships: 1

Discovery

Our department has had another outstanding year in terms of publications and grant support. Our faculty are very active in research ranging from bioinformatics, biostatistics, industrial statistics, reliability theory, design of experiments, regression analysis, and Bayesian statistics. In the calendar year 2009 the department had the following:

Number of grants: 20 new, 8 continuing, 16 submission

Amount of grants: $3,613,034 Research expenditures: $530,614

Number of publications 34

Number of papers in press 29

Engagement

Our LISA program continues to grow and work to improve statistical literacy across campus. We offer collaborative services to faculty, staff and students. Our short course program is well-attended by graduate students and faculty and offered 5 different courses last semester. We were also able to initiate a walk-in service to help with short projects.

Laboratory for Interdisciplinary Statistical Analysis (LISA) activities:

Collaborations: 243 clients, 2274 hours

Short Courses: 275 attendees, 5 sessions

Walk-in Consulting Service: 211 clients, 378 hours.

Corporate partners program –10 members (Becton Dickenson, Capital One, DuPont, Eli Lilly and Company, General Electric, J.P. Research, Minitab, Pratt and Whitney, R.J. Reynolds, SAS)

One faculty is editor of a journal, six faculty are on editorial boards of (13 total) journals

Diversity

Enhanced graduate education through teaching mentoring of women in Statistics

Enhanced graduate education through research topic courses and graduate student led seminars

Improve diversity through increased recruiting efforts

Participation in departmental, college and university activities related to diversity

Goals for 2010

Mentoring new faculty

Increase grant submissions and funding

Enhancing LISA (Laboratory for Interdisciplinary Statistical Analysis)

Improve graduate teaching and service teaching to non-majors

Enhance undergraduate experience and improve undergraduate education

Increase collaborations with Carilion, VBI and ICTAS

Details

New Grants

1. **F. Guo** (PI), "Final Report for NADS Lane Change Collision Avoidance System Study", National Highway Traffic Safety Administration, $ 29,967. Period: 1/2009-8/2009.

2. **F.Guo** (Co-PI), Project ID: 456396, Sponsor Confidential, total budget $48,992, percentage credit is 50%.

3. **I. Hoeschele** (PI), "Highly Multivariate Methods for Quantitative Trait Loci Mapping in Systems Genetics", National Institutes of Health $773,732. Period: 2/1/10 – 1/31/12.

4. **I. Hoeschele** (Co-PI) (PI of sub-contract to Wake Forest University), "Epigenome-Wide Association Study of DNA Methylation and Artherosclerosis", National Institutes of Health $559,641.

5. **G. Holtzman,** "DEQ Academic Advisory Committee Work Plan", Virginia Department of Environmental Quality (VDEQ), Principal Investigators: Golde Tamim Younos and Carl Zipper (CSES), $2,514.

6. **L. House,** "Design of Variation: Data Matching/Large Model Methods", Pratt and Whitney (P&W), $17,364.00. Period: 8/1/09 –12/31/09.

7. **D. Kim** (PI), "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. $123,571. Period: 2007-2010.

8. **I. Kim** (Co-PI), "From Statistics to Circuits: Foundations for Future On-Chip Fingerprints", National Science Foundation (NSF), 08/01/2010-07/01/2013: (PI: Patrick Schaumont and Co-Pi's: Leyla Nazhandali and Inyoung Kim), $675K.

9. **S. Leman** (PI), "Bayesian Analysis in Visual Analytics", National Science Foundation (CCF, 0937071.) Co PIs: Leanna House, Chris North, $499,307 for 9/2009 –9/2012.

10. **M. Lemon** (PI), "Creating an Evaluation Plan to Enhance the Research Experience for Undergraduates at Virginia Tech", National Science Foundation, $5,000 per year for three years.

11. **E. Vance** (PI), Leanna House, Leigh Harrell 06/09, "Academic Assessment Grant, Office of Academic Assessment, Virginia Tech", $1800 was awarded from this grant to attend academic assessment conferences.

12. **E. Vance,** (PI Ralph Hall, PhD) 9/09 – 03/10, Water and Sanitation Program – Africa, World Bank. "Assessing the Link between Productive Use of Domestic Water, Poverty Reduction and Sustainability", $6500 for LISA.

13. **E. Vance,** (PI Anthony D. Slonim, MD, DrPH) 11/09 – 04/10, Research Acceleration Program, Carilion Clinic. "Assessing Regional Differences in Healthcare Technology Use and Quality", $1,000 for LISA.

14. **Ying Liu** (CO-PI), **"**Prevalence of Jones' Iliacus Tenderpoints in the Young Adult population". (PI Joy Palmer, EV-VCOM, PPC/OMM VT), $5,000.

15. **E. Smith,** Murch, R. and others. "Biometrics Training and Research Program. BAE Systems", $484,622 (5% to statistics). The money should come in several pieces, the first is for $242,311.

16. **E. Smith,** Yan Jiao and others. "Integrated assessment modeling of natural mortality: a framework and simulation study ", FY10 MARFIN Southeast Regional Office of NOAA, $133,344 over two years (roughly 5% to statistics).

17. **G. Vining**, (PI), "Statistical Engineering for Measurement System Characterization and Calibration", National Institute for Aerospace (NASA), $50,612 ($33,958 direct and $16,654 indirect). 6/30/2009 – 8/31/2010.

18. **G. Vining**, (PI), Pratt & Whitney, "Monte Carlo Simulation of the Engine Development Process", $89,879 ($63,039 direct and $26,840 indirect). 1/1/2009 – 12/31/2009.

19. **W. Woodall** (PI), "Monitoring Vaccine Effectiveness", Merck, Inc $43,000.

20. **W. Woodall** (Co-PI) & Jaime Camelio (ISE), "Quality Mining – A Novel Framework for Quality Monitoring and Control for Data Rich Manufacturing Systems",National Science Foundation, CMMI-0927323, Amount $304,500. 2009-2012. (20% overhead credit for our department).

Grants (continuing):

1. **F. Guo** (PI), "Developing Bayesian Models for Naturalistic Driver Study: Follow up", National Surface Transportation Safety Center for Excellence, $44,755 direct, Additional $15,000 was award in 2009.

2. **I.Hoeschele** (Co-PI), RHL092572A, PI: Davy. National Institute of Health. Title: Angiotensis II Receptor Blockade and Adipose Tissue Inflammation in Obesity. 8/01/2008 – 7/31/2010. $435,344.

3. **I.Hoeschele** (Co-PI), PI: Inzana. Wake Forest University (NIH). Title: Research Collaboration and TSI Program. 7/01/2007 – 6/30/2009. $65,406.

4. **I.Hoeschele** (Co-PI), 1R01GM073766-01A2, PI: Gao. National Institutes of Health. Title: Haplotyping and QTL mapping in pedigrees with missing data. 6/1/2007 – 5/31/2012. $177,582.

5. **I.Hoeschele** (PI), P30 CA12197, PI: Torti. WFUHS (NIH/NCI), Comprehensive Cancer Center of Wake Forest University. Title: Biostatistics Consulting. 2/1/2006 – 1/31/2012. $255,612.

6. **J.P. Morgan** (PI), NSF DMS 06-04997. Symmetry and Asymmetry in Experimental Design. $144,276. Period: 9/2006 -9/2010.

7. **G. Vining**, (PI), "Statistical Engineering for Measurement System Characterization and Calibration", National Institute for Aerospace (NASA), $114,384. Period: 6/27/08 – 8/31/09.

8. **W. Woodall** (PI), "Study of Vaccine Safety Monitoring Methods", Merck, Inc. $28,750.

Grants Pending:

1. **P. Du** (Co-PI), Kolivras, K., Campbell, J., & Smith, E.P., "Environmental variability and disease emergence: Spatial patterns of Lyme disease emergence in Virginia" *National Science Foundation*. $294,323 (1 summer month of salary each year for Du in 08/01/2010-07/31/2012). PI: Korine Kolivras (VT Geography).

2. **P. Du** (PI), "Collaborative Research: Nonparametric smoothing for data with multiple components" *National Science Foundation*. $264,975 (2 summer months of salary for Du and support for one RA each year in 08/01/2010-07/31/2013).Collaborative PI: Hua Liang (University of Rochester, Biostatistics).

3. **F. Guo** (Co-PI), Development and Demonstration of Pavement Friction Management Programs, Submitted to Federal Highway Administration, total budget $1,596,890, percentage credit: 20%.

4. **F. Guo** (Co-PI), Commercial Driver Individual Differences Study, submitted to Federal Motor Carrier Safety Agency, total budget: $3,242,658, percentage credit: 10% (This project is temporally put on hold by the sponsor agency)

5. **F. Guo** (PI), Development of a Joint Model for Frequency and Duration of Non-recurring Traffic Events, submitted to Transportation Research Board, $79,339, percentage credit: 100%.

6. **I. Hoeschele** (PI), "SysGenSIM: A Systems Genetics Simulator for Evaluation of Analysis Methods and Sample Size", National Institutes of Health.

7. **I. Hoeschele** (Co-PI) (F. Zou PI, UNC), "Nonparametric Bayesian variable selection in genetics and genomics", National Institutes of Health.

8. **L. House,** "Systems Biology of Metabolic Regulation for Rational Metabolic Engineering in Soybean Seeds", Virginia Tech College of Agriculture and Life Sciences, RFP: Biodesign and Bioprocessing Research Center (BBRC), Collaborators: Eva Collakova (Plant Pathology, Physiology, & Weed Science), Award: $80,000 for one year.

9. **I. Kim** (Co-PI) & Patrick Schaumont, "Characterizing Internal Activity in Complex Digital Systems using Bayesian Matching Techniques", National Science Foundation (NSF), (07/01/2010-6/30/2012) $291,491.

10. **S. Leman** (PI), "User-Guided Spatialization for Visualizing Document Collections", National Science Foundation EAGER(PIs: Chris North, Scotland Leman, Leanna House), $40,000—$50,000.

11. **E. Vance,** (PI Ronald D. Tyler, Jr., DVM), Career Development Award, Crohn & Colitis Foundation of America, "Nanomedical based treatment for Crohn's Disease", $7,500 for LISA.

12. **E. Vance,** (PI Holly Matusovich, PhD), NSF, "CAREER: A Motivational Perspective on Engineering Student Engagement", $24,000 for LISA.

13. **E. Vance,** (PI Wornie Reed, PhD), National Cancer Institute, "Navigating low-income African Americans through cancer clinical trials", $15,000 for LISA.

14. **E. Vance,** (PI Wornie Reed, PhD), National Cancer Institute, "Cancer screenings", $15,000 for LISA.

15. **Ying Liu (Co-PI),** Retrospective Case Study of Jones' Iliacus Tenderpoints in the Ambulatory Setting (PI Dr. Palmer, EV-VCOM) (10% contribution American Osteopathic Association).

16. **Ying Liu** (Co-PI), Clinical assessment of Strain-Counterstrain for ilioposoas. (PI Dr. Palmer, EV-VCOM) (submitted. Jan 21 2010 National Institution of Health **NIH**).

Books and book chapters (published or in-press):

1. Banks, D. and **Smith, EP** (editors). 2008. The Good Book: IJGood's comments, criticisms and conclusions. Rice University Press, Houston.

2. Myers, R.H., Montgomery, D.C., **Vining, G.G.,** and Robinson, T.J. (2011). *Generalized Linear Models with Applications in Engineering and Science*, New York: John Wiley (in press).

3. **Vining, G.G.** and Kowalski, S.M. (2011). *Statistical Methods for Engineers*, 3rd ed., Boston, Ma.: Brooks/Cole.

Papers Published:

1. Almeida, N. F.*, Yan, S.*, Cai, R.*, Clarke, C. R.*, Morris, C. E., Schaad, N. W., Lacy, G. H., Jones, J. B., Castillo, J. A., Bull, C. T., **Leman, S**., Guttman, D. S., Setubal, J. C., Vinatzer, B. A., A Multilocus sequence typing & analysis database and website for plant-associated and plant-pathogenic microorganisms. *Phytopathology*, 100(3), pp. 208-215, 2010.

2. Banks, D., **House, L.,** and Killourhy, K. (2009). Cherry-Picking for Complex Data: Robust Structure Discovery. *Philosophical Transactions of the Royal Society, Series A,* **367,** 4339-4359.

3. Boone, EL, Ye, K. and **Smith, EP.** (2009) Using data augmentation via the Gibbs Sampler to incorporate missing covariate structure into linear models for ecological assessment. ***Environmental and Ecological Statistics*** 16:75-87.

4. **Du, P.** (2009), Nonparametric modeling of the gap time in recurrent event data. *Lifetime Data Analysis*, 15, 256-277.

5. Escobar, L. A., **Hong, Y.,** and Meeker, W. Q. (2009), Simultaneous Confidence Bands and Regions for Log-Location-Scale Distributions with Censored Data, *Journal of Statistical Planning and Inference*, 139(9), 3231-3245.

6. **Feng Guo,** Dipak Dey, and Kent Holsinger,(2009) "On Detecting Stabilizing or Divergent Selection Using Patterns of Variation at SNP Loci", *Journal of American Statistical Association*. Vol. 104, No. 485 pp. 142-154.

7. **Feng Guo,** Xuesong Wang, and Mohamed A. Abdel-Aty, "Modeling Signalized Intersection Safety with Corridor Level Spatial Correlations", *Accident Analysis and Prevention.* 42(1): 84-92.

8. **Hong, Y.,** Meeker, W. Q., and McCalley, J. D. (2009), Prediction Intervals for Remaining Life of Power Transformers Based on Left Truncated and Right Censored Lifetime Data, *The Annals of Applied Statistics*, 3(2), 857-879.

9. **House, L.** (2009) Application of Reification to a Rainfall-Runoff Computer. Internal Report for Managing Uncertainty in Complex Models Research Group, United Kingdom. http://mucm.group.shef.ac.uk/Pages/Dissemination/Dissemination_Papers_Internal.html

10. Huang, H., H. Zhu, F. Cheng, **I. Hoeschele** and F. Zou (2009) Gaussian process based Bayesian semiparametric quantitative trait loci interval mapping. Biometrics (Published Online: May 13 2009. DOI: 10.1111/j.1541-0420.2009.01268.x).

11. Jiao, Y., Reid, K., Nudds, T. and **Smith, EP**. 2009 Graphical evaluation of fisheries status using a likelihood inference approach. To appear: ***North American Journal of Fisheries Management 29:1106-1118.***

12. Jiao, Y., Reid, K. and **Smith, EP**. 2008 Model selection uncertainty and Bayesian model averaging in fisheries recruitment modeling. In Beamish, ed., The Future of Fisheries Science in North America, Springer, 31:505-524.

13. Kangas-Kontio, T., S. Kakko, S., M. Tamminen, P. Von Rohr, **I. Hoeschele,** T. Juvonen, Kere, and M.J. Savolainen (2009) Genome scan for loci regulating HDL-cholesterol levels in Finnish extended pedigrees with early coronary heart disease. European Journal of Human Genetics (advance online publication November 5 2009; doi: 10.1038/ejhg.2009.202).

14. **Leman, S.**, Chen, Y., Lavine, M. (2009), The Multiset Sampler. *JASA*, 2009, 104(487): 1029-1041.

15. **Leman, S.**, Levy, F., Walker, E., Modeling The Spread Of Infectious Disease Using Genetic Information Within A Marked Branching Process. *Statistics in Medicine,* 2009, 28(29): 3581 – 3717.

16. Liu, B., **I. Hoeschele** and A. de la Fuente (2009) Inferring gene regulatory networks from genetical genomics data. In: Handbook of research on computational methodologies in gene regulatory networks. S. Das, D. Caragea, W.H. Hsu and S.M. Welsh (eds.), IGI Global.

17. Mahmoud, M.; **Morgan, J. P.; Woodall, W. H.** (2009) The monitoring of simple linear regression profiles with two observations per sample. *Journal of Applied Statistics*, to appear.

18. Meeker, W. Q., Escobar, L. A., and **Hong, Y.** (2009), Using Accelerated Life Tests Results to Predict Product Field Reliability, *Technometrics*, 51(2), 146-161.

19. **Morgan, J. P.** (2010). Optimal resolvable designs with minimum PV aberration. *Statistica Sinica,* **20**, 715-732.

20. **Morgan, J. P.** (2009). Variance balance and admissibility. *Journal of Statistics and Applications*, **4**, 409-414.

21. **Morgan, J. P.** (2008). On MV-optimality of resolvable designs from 2-level orthogonal arrays. *Statistics and Applications,* **6**, 87-95.

22. Mousavi, S. and **Reynolds, M.R., Jr.** (2009). A CUSUM chart for Monitoring a Proportion with Autocorrelated Binary Observations. *Journal of Quality Technology*, 41, 401-414.

23. N. Moore, N. Torbick, B. Lofgren, J. Wang, B. Pijanowski, J. Andresen, **DY Kim**, J. Olson, 2009. Adapting MODIS-derived LAI and fractional cover into the RAMS in East Africa. International Journal of Climatology, Published Online: Aug 24 2009, DOI: 10.1002/joc.2011.

24. Rose,K.A., Roth, B.M., **Smith, E.P.** Skill assessment of spatial maps. (2009). ***Journal of Marine Science*** 76:34-48.

25. **Reynolds, M.R., Jr.** and Park, C. (2009). CUSUM Charts for Detecting Special Causes in Integrated Process Control. *Quality and Reliability Engineering International*, 26, 199-221.

26. **Reynolds, M. R., Jr.** (2009). Discussion on "Optimal Sequential Surveillance For Finance, Public Health, and Other Areas" By Marianne Frisén. *Sequential Analysis*, 28, 375-380.

27. Sego, L H., **Reynolds, M. R., Jr**., and **Woodall, W. H.** (2009), "Risk-Adjusted Monitoring of Survival Times", *Statistics in Medicine* 28, 1386-1401.

28. Tucker, D.M., M.A. Saghai Maroof, S. Mideros, J.A. Skoneczka, D.A. Nabati, G.R. Buss, **I. Hoeschele,** B.M. Tyler, S.K. St. Martin, and A.E. Dorrance (2010) Mapping quantitative trait loci for partial resistance to *Phytophthora sojae* in a soybean interspecific cross. *Crop Science* (doi: 10.2135/cropsci2009.03.0161; Published online 22 Jan. 2010).

29. **Vance, E.A.,** Archie, E.A., and Moss, C.J., (2009), Social networks in African Elephants. *Computational and mathematical organization theory*, 15-4, 273-293.

30. Wang, L., Kowalski, S.M., and **Vining, G.G.** (2009). "Orthogonal Blocking of Response Surface Split-Plot Designs," *Journal of Applied Statistics*, 36, pp. 303-321.

31. **Woodall, W. H.** (2009), "A Conversation with Donald J. Wheeler", *Quality Engineering* 21 (4), 357-365.

32. **Woodall W. H.** (2009), "Discussion of 'Optimal Sequential Surveillance for Finance, Public Health, and Other Areas' by Marianne Frisén", *Sequential Analysis* 28(3), 338-341.

33. Zachary R. Doerzaph, Rajaram Bhagavathula, **Feng Guo,** "Identification of factors related to violation propensity using large naturalistic intersection approach-level database. *Proceeding of Transportation Research Board 2009 Annual Meeting* (CD ROM).

34. Zhou, L., S. X. Mideros, L. Bao, R. Hanlon, F. Arredondo, S. Tripathy, K. Kampis, A. Jerauld, C. Evans, S.K. St. Martin, S. Maroof, **I. Hoeschele**, A.E. Dorrance and B.M. Tyler (2009) Infection and genotype remodel the entire soybean transcriptome. BMC Genomics 10:49.

<u>Papers In Press:</u>

1. David C. Novak, Christopher Hodgdon, **Feng Guo**, and Lisa Aultman-Hall "Nationwide Freight Generation Models: A Spatial Approach", to appear on *Networks and Spatial Economics.*

2. **Du, P.** , and Ma, S. (2008), "Frailty model with spline estimated nonparametric hazard function". *Statistica Sinica.*

3. **Du, P.** , Ma, S., and Liang, H. (2009), "Penalized variable selection procedure for Cox models with semiparametric relative risk". *Annals of Statistics.*

4. Duggins, J., Williams, M., **Kim, D.,** and **Smith, E.P.** (2010). "Changepoint detection in SPI transition probabilities'. To appear in Journal of Hydrology.

5. **Feng Guo**, Sheila G. Klauer, Jon M. Hankey, Tomas A. Dingus, "Using Near-Crashes as a Crash Surrogate for Naturalistic Driving Studies" Accepted for the *Transportation Research Record: Journal of the Transportation Research Board.*

6. **Feng Guo**, Hesham Rakha, Sangjun Park, "A Multi-State Travel Time Reliability Model", Accepted for the *Transportation Research Record: Journal of the Transportation Research Board.*

7. **Hong, Y.,** Escobar, L. A., and Meeker, W. Q. (2010), Coverage Probabilities of Simultaneous Confidence Bands and Regions for Log-Location-Scale Distributions, *Statistic & Probability Letters*, in press.

8. **Hong, Y.** and Meeker, W. Q. (2010), Field-Failure and Warranty Prediction Using Auxiliary Use-rate Data. *Technometrics*, in press.

9. **Hong, Y.** and Meeker, W. Q. (2010), The Importance of Identifying Difference Components of a Mixture Distribution in the Prediction of Field Returns. *Applied Stochastic Models in Business and Industry*, in press.

10. Jensen, Willis and **Jeffrey B. Birch**. Correlated and Autocorrelated Profiles. Chapter 9 of the book *Statistical Analysis and Profile Monitoring*, eds. Amirhossein, A. and Kazemzadeh, R.B. To be published in 2010.

11. Jiang, W., Han, S. W., Tsui, K-L., and **Woodall, W. H.** (2010), "Spatiotemporal Surveillance in the Presence of Spatial Correlation" to appear in *Statistics in Medicine* (accepted 1/6/2010).

12. L. Yuan, S. Honmab, **I. Kim**, S. I. Ishidad, J. T., Patton, A. Z., Kapikian, and Y. Hoshino (2009). Resistance to rotavirus infection in adult volunteers challenged with a virulent G1P1A[8],NSP4[B] virus correlated with serum IgG antibodies to homotypic VP7 and VP4. *Journal of Infectious Diseases*, in press.

13. Mahmoud, M. A., Morgan, J. P., and **Woodall, W. H.** (2010), "The Monitoring of Simple Linear Regression Profiles with Two Observations", to appear in the *Journal of Applied Statistics.*

14. Meeker, W. Q., **Hong, Y.,** and Escobar, L. A. (2010), The Condition-based Paradigm, *The Wiley Encyclopedia of Operations Research and Management Science*, in press.

15. Meeker, W. Q., **Hong, Y.,** and Escobar, L. A. (2010), The Failure-based Paradigm, *The Wiley Encyclopedia of Operations Research and Management Science*, in press.

16. Penn-Marshall, Michelle, **Golde Holtzman** and William Barbeau (accepted, to appear 2010) "African-Americans may have to consume more than twelve grams a day of resistant starch to lower their risk of type 2 diabetes". Journal of Medicinal Food.

17. **Reynolds, M.R., Jr.** and Stoumbos, Z.G. Robustness to Non-Normality of CUSUM Control Charts for Monitoring the Process Mean and Variance. To appear in *Quality and Reliability Engineering International*.

18. **Reynolds, M.R., Jr.** and Cho, G. Y. Multivariate Monitoring of the Process Mean and Variability With Variable Sampling Intervals. To appear in *Sequential Analysis*.

19. **Reynolds, M.R., Jr.** and Stoumbos, Z.G. (2009). Multivariate Monitoring of the Process Mean and Variability Using Combinations of Multivariate Shewhart and MEMWA Control Charts. To appear in *Frontiers in Statistical Quality Control*.

20. **Reynolds, M. R., Jr.,** and **Woodall, W. H.** (2010), Discussion of "Life and Work of Bhaskar Kumar Ghosh" by Pranab Kumar Sen, to appear in *Sequential Analysis*.

21. Robinson, T. , **Birch J. B.** and A. Starnes. "A Semiparametric Approach to Dual Modeling". To appear in *Journal of Statistical Planning and Inference* in 2010.

22. Sangjun Park, Hesham Rakha, **Feng Guo**, "Multi-state Travel Time Reliability Model: Model Calibration Issues", Accepted for the *Transportation Research Record: Journal of the Transportation Research Board.*

23. S. Ha, **I. Kim**, and J. Xuang (2010). Enhancing pathway based analysis with different weighting schemes. *Proc. IEEE International Conference on Bioinformatics&Biomedicine*, Washington D. C., USA, Nov. 2009, in press. (Acceptance rate : 30%)

24. Szarka, J. L., III, Gan, L., and **Woodall, W. H.** (2010), "Comparison of the Early Aberration Reporting System (EARS) W2 Methods to an Adaptive Threshold Method", to appear in *Statistics in Medicine*. (accepted 1/8/2010)

25. Wan, W. and **J. B. Birch.** A Semiparametric Technique for the Multi-Response Optimization Problem. *Quality and Reliability Engineering International.* To be published in 2010.

26. Wang, L., **Vining, G.G.,** and Kowalski, S.M. (2009). "Two-Strata Rotatability in Split-Plot Central Composite Designs ," *Applied Stochastic Models in Business and Industry*, to appear.

27. **Woodall, W. H., Birch, J. B**., and **Du, P.** (2009), Discussion of "Nonparametric profile monitoring by mixed effects modeling" by Qiu, Zou and Wang. *Technometrics.*

28. **Woodall, W. H.,** Grigg, O. A., and Burkom, H. S. (2010), Research Issues and Ideas on Health-Related Monitoring, to appear in *Frontiers in Statistical Quality Control 9*, edited by H. J. Lenz and P. -Th. Wilrich.

29. **Woodall, W. H.** and Tsui, K-L. (2010), "Discussion of 'Some Methodological Issues in Biosurveillance' by R. D. Fricker, Jr.", to appear in *Statistics in Medicine*.

Faculty

Instructors

1. Leigh Harrell
2. Marlow Lemons

Assistant Professors

3. Pang Du
4. Feng Guo
5. Yili Hong
6. Dong Yun Kim
7. Leanna House
8. Inyoung Kim
9. Scotland Leman

Associate Professors

10. Golde Holtzman
11. George Terrell

Full Professors

12. Jeff Birch
13. Ina Hoeschele
14. JP Morgan
15. Marion Reynolds
16. Eric Smith
17. Geoff Vining
18. Bill Woodall

Research Faculty

19. Ying Liu

20. Eric Vance

Adjunct Faculty

Richard Beckman
Shirley Hou
Ilya Lipkovich
Matt Rotelli

Spring 2009 Graduates

MS Degree Completion

Khaled Farag Bedair
Yi Chao
Megan Elyse Lutz
David Jiann-Jan Peng
Mari Jo Rossman
Marwah Mahmoud Soliman

PHD Degree Completion

Xiaowei Wang
Sara Rue Wilson

Summer 1 2009 Graduates

MS Degree Completion

Emmanuel A. Frimpong

Fall 2009 Graduates

MS Degree Completion

Jeffrey Wade Belcher
Veronica Leah Bubb
Susan Amanda Furst
Nicolle Theresa Goble
Bo Liu
Lucas Raymond Roberts
Casey Nicole Turner
Linyan Wen
Brian Jay Wright
Liaosa Xu

PHD Degree Completion

Abdel-Salam Gomaa Abdel-Salam

5/18/10

Corporate Partners Program

Continuing Corporate Partners:

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

Service

Jeff Birch

- Chair, Teaching Evaluation Committee, 2000-present
- Chair, Graduate Committee, 2001-present
- Chair, Personnel Committee, 2009-present
- Director of Graduate Programs in Statistics, 2001-present
- Coordinator for STAT 3005-3006, STAT 3615-3616
- Faculty advisor, Mu Sigma Rho. (National Statistics Honor Society) 1991-present
- Referee for the journal *Quality Engineering and Reliability International*
- Referee for the journal *Annals of Applied Statistics*

Pang Du

- Referee: *Environmental and Ecological Statistics (1 article), Journal of Computational and Graphical Statistics (1 article and 1 revision), Journal of Statistical and Planning Inference (2 articles), Journal of the American Statistical Association (2 articles and 1 revision), Journal of the Royal Statistical Society: Series B (1 article)*
- Session Chair: Topic Contributed Session 157 – Penalized Regression and Spline Models, *2009 Joint Statistical Meeting*

Feng Guo

- Served as a reviewer for the journal *Accident Analysis and Prevention*: 19 papers
- Served as a reviewer for the Journal of Transportation Engineering 1 paper
- Served as a reviewer for the journal *Transportation Research Record:* 4 papers
- Served as an associated editor for the 10th International Chinese Conference of Transportation Professionals (ICCTP 2010)
- Provided statistical support and consulting service for VTTI researchers for projects without budget for statistical analyses such as:
    - Elder driver naturalistic driving study
    - Intersection safety study using advance data collection system

  - Lane change behavior evaluation using naturalistic driving study
  - The safety impacts of sleep apnea for commercial truck drivers
  - Travel time reliability modeling
  - Car device buying & use survey

- Promoted the connection between VTTI and the Department of Statistics. Some of the activities including provide funded summer research jobs for graduate student; identify valuable research questions needed from VTTI projects and recommend to statistical professors with corresponding expertise

- Helped VTTI to build partnership with the College of Transportation Engineering at Tongji University, which is the top transportation institute in China. This will promote international academic activities and joint research. A potential joint pilot naturalistic driving study is under consideration

Leigh Harrell

- College of Science Curriculum Committee, Fall 2004 – current

- Department of Statistics Undergraduate Committee, Fall 2004 – current

- Met with Electrical Engineering department to look at modifications to Stat 4714, Statistics for Electrical Engineers, Spring 2009

- American Educational Research Association, 2009-2010 Rasch SIG Program Co-chair

- Nominated for the ballot as a Member-at-Large for the Statistics Education special interest group of the American Statistical Association (election pending)

- Participated in American Statistical Association-sponsored meetings with representatives for Virginia senators and congressman to advocate for more NSF and NIH funding and educational initiatives regarding quantitative literacy, August 2009

Ina Hoeschele

- College of Science P&T committee

- GBCB steering and admissions committees

- Adjunct Professor in the VT-Carillion Medical School, participated in curriculum development (Genetics, Block I team member))

- Associate Editor for the journal Genetics (continued)

- Ad hoc member of four NIH review panels / study sections: GCAT (Genomics, Computational Biology and Technology); GO applications to Genomics Profiling and Genomic Technologies in Mental Disorders; The Genes, Environment and Health Initiative (GEI); NIH Challenge Grants in Health and Science Research)

- Accepted an invitation to become a regular Review Editor for the new journal Frontiers in Systems Biology

Golde Holtzman

- Chairperson of the departmental Corporate Partners Committee. Duties include maintaining relations with ten corporate partners (Becton Dickinson, Capital One, DuPont, Eli Lilly and Company, General Electric, JP Research, Minitab, Pratt & Whitney, R. J. Reynolds, and SAS), organizing the annual meeting, maintaining website. Since its inception in 2001, more than $80,000 has been collected in partner contributions, most of which has been disbursed for graduate student awards and recruitment

- Member, COS Cluster Committee (2007-2010)

- Elected member, Department of Statistics Personnel Committee, 2007-2009

- Appointed to Department of Statistics search committee for assistant professor, 2008-09

- Appointed to Department of Psychology search committee for assistant professor, 2008-09

- Mentor for Scotland Leman, assistant professor, Department of Statistics, 2007-20010

- Member, Academic Advisory Committee (AAC), Virginia Department of Environmental Quality, Tamim Younis, chair, 2007-2009

- Elected Mu Sigma Rho national councilor at large, 2007-2010

Yili Hong

- Co-organizer for the Department of Statistics weekly colloquia

- Refereed for the *Journal of the American Statistical Association*

- Refereed for the journal T*echnometrics*

- Refereed for *Lifetime Data Analysis*

Leanna House

- Reviewed for JASA

- Reviewed for Bayesian Analysis
- Nominated for web editor of the International Society of Bayesian Analysis (ISBA)
- Served on undergraduate committee
- Consulting:
    - Aarnes Gudmested (Assistant Professor, Foreign Languages)
    - Sharmin Shamsalsadati (Graduate Student, Geophysics)
    - Kevin Kilourhy (Graduate Student, Education)
    - Frank Quinn (Professor, Mathematics)
- Lead organizer for Statistics Seminar Series: In this role, I was able to invite notable speakers including,
    - Dr. Valen Johnson, Professor and Chair of Department of Biostatistics, University of Texas M.D. Anderson Cancer Center, Houston, TX
    - Dr. Sidney Resnick, Lee Teng-Hui Professor in Engineering, Department of Operations Research, Cornell University, Ithaca, New York
    - Dr. Robert Gramacy, lecturer in the Statistical Laboratory at the University of Cambridge, United Kingdom and a fellow of Jesus College
    - Dr. Harold ("Skip") Garner, Executive Director of the Virginia Bioinformatic Institute

Dong Yun Kim

- Qualifying examination committee (2007- present), Department of Statistics, Virginia Tech
- Served as external reviewer for tenure/promotion bid of an assistant professor in another university

Inyoung Kim

- Chair of Section of Statistical Analysis of metabolomics data in ENAR 2009

Marlow Lemons

- University Library Committee – Representative for the College of science

- College of Science Diversity Committee – Representative for Department of Mathematics and the Department of Statistics

- Journal Referee- *Teaching Statistics* (June 2009 – August 2009)

Scotland Leman

- Organizer of session in honor of IJ Good for the 2010 Joint Statistical Meeting

- Colloquium Committee

Ying Liu

- Reviewed 2 hatch projects

- Assisted several faculty members in writing manuscripts and grant proposals

- Assisted several Ph.D students in data collection, data survey and data analysis for their dissertation proposals

- Assistant Director of LISA (Laboratory for Interdisciplinary Statistical Analysis)

- Provided free short courses for all graduate students in order to improve their statistical skill and technology

- Joined two projects:

    - Dr Hall from VT: "Assessing the Link between Productive use of domestic water, Poverty Reduction and Sustainability"

    - Dr. Ethan Colliver from Montgomery Regional hospital: "The Effect of Osteopathic Manual Medicine on Post-Operative Ileus"

JP Morgan

- Personnel Committee, Department of Statistics

- Search Chair, Department of Statistics

- Graduate Committee, Department of Statistics

- Policy & Procedures Committee, Department of Statistics

- Mentor to Junior Faculty: Dong-Yun Kim

- Associate Editor, *Journal of Statistical Planning and Inference* (8 papers)

- Associate Editor, *Journal of the American Statistical Association* (6 papers)

- Associate Editor, *The American Statistician* (9 papers)

- Referee for *Annals of Statistics, Communication in Statistics, Journal of the Korean Statistical Society, Statistica Sinica , Technometrics*.

- External reviewer for two promotion cases and one award: Auburn University, Loyola University, and University of Missouri-Columbia.

Marion Reynolds

- Statistics Department Committees:
    - Personnel Committee
    - Cluster Hiring Search Committee
    - Teaching Evaluation Committee
    - Qualifying Exam Committee
- Editorial Board Member *Journal of Quality Technology*, *IIE Transactions*
- Refereeing: *Journal of Quality Technology* (4 papers), *European Journal of Operations Research* (3 papers), *Communications in Statistics* (1 paper), *International Journal of Production Research* (1 paper), *Quality Engineering*(1 paper)
- Member of the Advisory Board of the Quality, Statistics, and Reliability Section of The Institute for Operations Research and the Management Science

Eric Smith

- Associate editor for Environmentrics, Editorial Board: Environmental and Ecological Statistics

- Reviewer for Water Resources Research

- Review of two faculty for Full Professor from other universities

- Department Heads Advisory Committee, Teaching Evaluation Committee (SPOI), external member of the Psychology review committee.

George Terrell

- Associate Editor of the Journal of Computational and Graphical Statistics

- Referee for *The American Statistician*

Geoff Vining

- Department Corporate Partners Committee

- Editor-in-Chief, *Quality Engineering*.

- Deputy Group Facilitator, Division Affairs Council, American Society for Quality (2009-2010)

- Past Chair and Member, American Society for Quality Publications Management Board

- 53rd ASQ – ASA Annual Fall Technical Conference (2009) – Indianapolis, Indiana, A Short Course on Industrial Split-Plot Experiments by G.G. Vining.

Eric Vance

- Member of the Faculty Senate

- Organized the Spring, Summer, and Fall 2009 LISA Short Course Series (275 attendees)

- Continued the LISA Walk-in Consulting Service (222 clients)

- Continued the LISA Collaboration meetings (264 clients)

- Evaluated a colleague's experience and contributions in statistical consulting for tenure review

- Supported the graduate students' efforts to establish StatCom as a community leader in providing pro-bono statistical consulting to local non-profits and governmental organizations and educational outreach to local P-12 schools

Bill Woodall

- Departmental Personnel Committee (spring 2009), Departmental Graduate Committee, Departmental Qualifying Exam Committee

- Member of the Editorial Review Boards of the *Journal of Quality Technology* and *Quality Engineering*

- Member of the American Society of Quality Deming Medal Committee

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

- Reviewer for 21 manuscripts: *Advances in Engineering Software*, *Applied Stochastic Models for Business and Industry*, *IIE Transactions*, *Statistics in Medicine*, *Quality and Reliability Engineering International* (3), *Technometrics*, *Communications in Statistics-Theory and Methods*, *Journal of Quality Technology* (3), *Information Fusion*, *Wiley Encyclopedia of Operations Research and Management Science*, *Journal of Probability and Statistics*, *Annals of Applied Statistics*, *Journal of the Royal Statistical Society Series A*, *Quality Engineering* (2), *Sequential Analysis*, *BMC Medical Informatics and Decision Making*

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

- Member of the Scientific Program Committee of the Xth International Workshop on Intelligent Statistical Quality Control to be held in Seattle in August 2010

- Outside Reviewer: Promotion to Professor, University of Waterloo, Canada; and Distinguished Research Professor, University of Southern Illinois – Edwardsville

- Served on NSF CAREER Award Review Panel for Manufacturing Enterprise Systems, December 2009.

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

Other awards

1. **L. Harrell,** Nominated for the Provost's Award for Excellence in Advising, Spring 2009.
2. **L. Harrell,** Outstanding EDRE Graduate Student Award, Spring 2009
3. **Yili Hong,** Graduate Research Excellence Award, Iowa State University, 08/2009.
4. **Yili Hong,** The Laha Travel Award ($500) to attend the Joint Statistical Meetings at Washington, DC, Institute of Mathematical Statistics, 08/2009.
5. **L. House,** received young researchers award to attend Subjective Bayes Workshop in Warwick, UK.
6. **M. Lemons,** 2009 Alpha Chi Omega Professor Appreciation Award.

7. **W. Woodall,** presented the Isobel Loutit Invited Address in Business and Industrial Statistics at the Statistical Society of Canada meeting in Vancouver.

8. **W. Woodall,** added to "Wall of Fame" of Persian Quality and Productivity Research Center.

Student Awards:

1. **Laura Freeman** awarded the Amelia Earhart Fellowship for research related to aerospace sciences. This prestigious award is granted to a very limited number (only 35 granted last year) from a world-wide pool of applicants. And is given for research contributions to the aerospace sciences.

2. **Laura Freeman** was named the Virginia Tech 2009 Graduate Women of the Year

3. **Denisa Olteanu** was awarded the American Statistical Association's Section on Quality and Productivity 2009 Natrella Scholarship. The award is given for research contribution to the field of quality.

4. **Abdel-Salam G.Abdel-Salam** was awarded the 2009 Richard A. Freund International Scholarship from the American Society of Quality.

5. **Austin Rhodes** was awarded the Jean Dickinson Gibbons Statistics Award.

6. **Liaosa Xu** was the recipient of the Raymond H. Myers Fellowship.

Diversity activities (8 faculty reporting)

- Bill Woodall has been advising or co-advising four female Ph.D. students this past year and worked with another on pharmaceutical research with Merck & Co., Inc.

- Ina Hoeshele frequently has female graduate students and postdocs in her group (white and of color), and collaborates closely with several female colleagues (due to strong common interests and expertise/competencies).

- Two faculty members are associated with the College of Science Diversity Committee-Recruiting undergraduate and graduate students to Virginia Tech to pursue undergraduate and graduate studies in our department by visiting predominantly minority universities.

- One faculty attended workshop on mentoring through ADVANCE

- Faculty and instructor mentoring

- Golde Holtzman's office is a VT LGBTA Safezone, and is announced on my academic home page, https://courseware.vt.edu/users/holtzman/index.html

- One faculty member attended workshop sponsored by the women's center to recognize victims of abuse and stalking. Jan 2008.

- One faculty member attended a meeting hosted by COS that pertained to curriculum changes and the first year experience.

- Leanna House organizes breakfasts and lunches for women in statistics at VT. We discuss specific issues that women in the department face or may face and provide information on scholarships and/or research/career resources available to women. Men are not excluded and welcome to attend, if they want

- Several faculty members are doctoral advisors female graduate students.

- Several faculty mentor female junior faculty.

- Eric Vance attended 7th Annual Virginia Tech Undergraduate Research & Prospective Graduate Student Conference Luncheon, April 7, 2009. Luncheon speaker: Dr. Joseph Freeman

- Eric Vance attended ***Outreach NOW 2009: Celebrating Progress in the Internationalization of Virginia Tech*** conference. Keynote Speaker: Dr. M.S. Swaminathan