Annual Report Executive Summary for 2010

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 62 years of the existence of our department we have conferred over 1,000 graduate degrees: 1,003 to be exact, 701 masters degrees and 302 doctoral degrees. That is an average of about 16 graduate degrees per year. The undergraduate program was initiated in 1957 and has graduated 521 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. Effective for 2013 graduates, Stat 3104 Probability and Distributions is required. Offered Spring 2011 for first time in over seven years. Hope to strengthen student's preparation for Stat 4105 - 6 sequence. Revisions to Stat 4024/5024 were approved by university, transforming class from 2 to 3 credits.

Number of undergraduates: 75 majors, 40 minors, 34 Actuarial Science minors

Graduated 13 majors

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 collaboration and consulting center with researchers from the entire campus visiting our Laboratory for Interdisciplinary Statistical Analysis (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 Becton Dickenson, Capital One, DuPont, Eli Lilly,
General Electric, 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: 76
Number of PhDs awarded: 7
Number of Masters awarded: 24
Funded on grants: 10
Post-doctoral students funded: 0
Funded on fellowships: 3

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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, environmentics, regression analysis, and Bayesian statistics. In the calendar year 2010 the department had the following:

Number of grants: 16 new, 22 continuing, 30 pending
Amount of grants: $5,338,262 continuing, $8,950,815 new, Research expenditures: $320,752 (from IR web page)
Number of publications 52 (papers and books)
Number of papers in press 19
**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 14 different courses this year. We were also able to initiate a walk-in service to help with short projects.

Laboratory for Interdisciplinary Statistical Analysis (LISA) activities:

Collaborations: 334 clients, 3761 hours

Short Courses: 525 attendees, 14 courses 17 sessions

Walk-in Consulting Service: 266 clients, 378 hours

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

One faculty is editor of a journal, six faculty are on editorial boards of (10 total) journals. Fourteen faculty members have referred or reviewed for (37 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 2011**

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. P. Du (PI), (2010), Collaborative Research: Nonparametric smoothing for data with multiple components. National Science Foundation. $100,006 (2 summer months of salary for Du each year in 06/01/2010-05/31/2013). Collaborative PI: Hua Liang (University of Rochester, Biostatistics)

2. F. Guo (PI), “Traffic Safety Predict Modeling”, Sponsor the CEI Group, amount awarded $85,000, Percentage credit: 100%


4. F. Guo (Co-PI), “Development and Demonstration of Pavement Management Programs” Sponsor: Federal Highway Administration, amount awarded $131,268 for Phase I (total budget is approximate $800,000), Percentage credit: 20%.

5. F. Guo (Co-PI), “A Trip Level Analysis of Driver Distraction using 100–Car Study Database” Sponsor: the Insurance Institute of Highway Safety, amount awarded $284,252, Percentage credit: 50%

6. I. Hoeschele (PI), 5R01AG032098. Liu Y (PI) (02/15/08-01/30/14) National Institutes of Health Genetic determinants of visceral adiposity: A genome-wide association study. Role Hoeschele: VT sub-contract PI for the period 02/01/11-01/31/12. $100,136 (Hoeschele sub-contract).


12. **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.


**Grants (continuing):**


6. **I. Hoeschele** (Co-PI), (PI of sub-contract to Wake Forest University) 1R01HL101250-01 Liu Y (PI) National Institutes of Health Epigenome-Wide Association Study of DNA Methylation and Artherosclerosis. 09/1/09– 7/31/14 $559,641 (Hoeschele portion; total: $3,763,104)

7. **G. Holtzman**, “DEQ Academic Advisory Committee Work Plan”, Virginia Department of Environmental Quality (VDEQ), Principal Investigators: Tamim Younos (Water Research Center), Carl Zipper (CSES), and Golde Holtzman. Total Funding for Dept of Statistics: $1,650.


17. **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.


19. **E. Vance** & **E. Smith**, (PI Mary Marchant, Co-PI’s Timothy Mack, Bill Richardson, and Eric Smith) “Food and Agricultural Education Information System (FAEIS),” National Institute of Food and Agriculture. This grant provides 1 month of Dr. Eric Vance’s salary.


**Grants Pending:**

1. **F. Guo** (PI), “Pilot Naturalistic Driving Study in China”, approximate $100,000 percentage credit: 90%.

2. **F. Guo** (PI), “Secondary Analysis of Seniors' Naturalistic Driving and Fitness-to-Drive Data” $152,714, Submitted to the National Institute of Health, percentage credit: 60%.

3. **F. Guo** (Co-PI), Use of Probe & Regular Fleet Vehicles for Road Infrastructure Health Monitoring, Submitted to the Department of Transportation, $1,373,667, percentage credit: 15%.

4. **F. Guo** (Co-PI), Agent-based Modeling and Simulation for Transportation $1,153,892 percentage credit: 30%.
5. **I. Hoeschele** (sub-contract -PI), National Institutes of Health, Liu Y (PI) 7/1/11-6/30/16 Epigenomics of Human Health and Disease. $902,983 (Hoeschele sub-contract)


7. **I. Hoeschele** (CO-I), American Cancer Society, Ellis T (PI) 7/1/11-6/30/15 Non-thermal irreversible electroplation for treatment of aggressive, malignant brain tumors. $570,000 (total) (includes 2% of Hoeschele salary)

8. **I. Hoeschele** (PI), Translational Science Institute of Wake Forest University Medical School (Animal Model Pilot Program) 4/1/11-3/31/12. Hoeschele I (PI), Miller L (PI), Robertson J (co-I), Rossmeisl J (co-I), Robbins M (co-I)4/1/11-3/31/12. Canine Brain Genome Atlas. Invited submission to collect preliminary data for R01 NIH application within 1 year. $25,000


18. **I. Kim** (C-PI), NIH, Multimodal Intervention to improve social anxiety and social skill deficits in Adolescents with Autism Spectrum Disorders (PI: Susan White and CoInvestigators: Thomas Ollendick and Inyoung Kim), $683,086.

19. **S. Leman** (PI), Bayesian Analysis in Visual Analytics: Building an Interactive System, NSF, CCF, $400,000.


21. **E. Vance** (Co-PI) and Agozino, O. (PI), “Race, Ethnicity, Age and gender Articulation in existing databases on Alcohol-Related Arrests,” National Institute on Alcohol Abuse. $491,392 (50% attributed to LISA and the Department of Statistics).

22. **E. Vance** (Co-PI) and Alexander, K. “What is the epidemiology of Mycobacterium mungi -how can we control this emerging wildlife disease?” Morris Animal Foundation. This grant has no money for LISA, only prestige and the satisfaction of a job well done.


25. **E. Vance** (Co-PI), Hall, R. (PI), Burbey, T (Co-PI), Rosbach, D. (Co-PI), and Sforza, P. (Co-PI). “CNH: Evaluating the Vulnerability of Coastal Communities and Their Potable Groundwater Systems in Mozambique to Human and Natural Impacts,” National Science Foundation. $1,468,875 (15% attributed to LISA and the Department of Statistics).


27. **E. Vance** and Hawley, D. (PI). “Dual effects of intraspecific competition on pathogen dynamics in a songbird: integrating context-dependent resistance and behavior,” a CAREER proposal to the National Science Foundation. This grant would provide funding for LISA for statistical collaboration.

28. **E. Vance** and Reed, W. (PI). “Cultural Competency Training for Cancer Physicians,” National Cancer Institute. This grant would provide LISA $16,000 over 3 years for statistical consulting and analysis.
29. **E. Vance** and Reed, W. (PI). “Development of Culturally Appropriate Cancer Prevention Video Messages,” American Cancer Society. This grant would provide LISA $19,500 over 3 years for statistical consulting and analysis.

30. **E. Vance** and Wernz, C. (PI). “Organizational Structures for Improved Elderly Care at Critical Access Hospitals,” National Institutes of Health. $401,842. This grant would provide LISA $10,000 over 2 years.

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


**Papers Published:**


patients’ germline DNA exhibit an AT-rich microsatellite signature. Genes, Chromosomes & Cancer (in press).


**Papers In Press:**


5. Gupta PK, **Franck CT,** Miller WJ, Gupta H, Forse RA. Development and validation of a bariatric surgery morbidity risk calculator using the prospective, multicenter NSQIP dataset. Accepted, Journal of the American College of Surgeons.


Faculty

Instructors

1. Marlow Lemons
2. Leigh Williams

Assistant Professors

3. Pang Du
4. Feng Guo (50%)
5. Yili Hong
6. Leanna House
7. Dong Yun Kim
8. Inyoung Kim
9. Scotland Leman

Associate Professors

10. Golde Holtzman
11. George Terrell

Full Professors

12. Jeff Birch
13. Ina Hoeschele (33%)
14. JP Morgan
15. Eric Smith
16. Geoff Vining
17. Bill Woodall

Research Faculty

18. Chris Franck
19. Eric Vance
Adjunct Faculty

Richard Beckman
Shirley Hou
Ilya Lipkovich
Matt Rotelli
Spring 2010 Graduates

MS Degree Completion

Evan Beren Brooks
Lulu Cheng
Zaili Fang
Nabin Gyawali

PHD Degree Completion

Laura June Freeman
Linmin Gan
Denisa Anca Olteanu

Summer 1 2010 Graduates

PHD Degree Completion

Jinsong Chen
Jonathan William Duggins

Summer 2 2010 Graduates

PHD Degree Completion

Lu Wang

Fall 2010 Graduates

MS Degree Completion

Daniel Leigh Campbell
Salman Arif Cheema
Chen Chen
Tianlei Chen
Md. Mahafuzur Rahaman Chy
Rebecca Mae Dickinson
Yuanyuan Duan
Youjia Fang
Xinran Hu
Han Li
Hamdy Fayez Mahmoud
Evan McNear
Devi P. Mishra
Hayley Anne Nelson
Yiming Peng
Rebecca Joy Perez
Jonathan Wesley Stallings
Ram Thapa
Alan Kimball Vaughn
Dengfeng Zhang

**PHD Degree Completion**

Jacob Jonathan Zielinski
Corporate Partners Program

Continuing Corporate Partners:

Becton Dickinson Diagnostics
Capital One
DuPont
Eli Lilly
General Electric
JP Research
Minitab
Pratt & Whitney
RJ Reynolds
SAS
Service

Jeff Birch

- Chair, Teaching Evaluation Committee, 2000-present
- Chair, Graduate Committee, 2001-present
- Chair, Personnel Committee, 2009-10
- Director of Graduate Programs in Statistics, 2001-present
- Coordinator for STAT 3005-3006
- Faculty advisor, Mu Sigma Rho. (National Statistics Honor Society) 1991-present
- Referee for the journal *Quality Engineering and Reliability International*
- Referee for the *Journal of Quality Technology*
- Referee for the journal *Biometrics*

Pang Du

- Program Committee: The 3rd International Conference on BioMedical Engineering and Informatics (BMEI’ 10).
- Invited Session Chair: Session 104 – Use of Biomarkers in Personalized Medicine, 2010 ENAR Spring Meeting.

Christopher Franck

- Chair of Committee on Student Pro Bono Statistics, American Statistical Association.

Feng Guo

- Member of the computing committee for the statistics department
- Member of the statistics department seminar organizing committee
- Served as a reviewer for the journal *Accident Analysis and Prevention*
- Served as a reviewer for the Journal of Transportation Engineering
- Served as a reviewer for the journal *Transportation Research Record*
- Served as a reviewer for the journal *Ecological Application*
- Served as an associated editor for the 10th International Chinese Conference of Transportation Professionals (ICCTP 2010)
• Member of the Transportation Research Board subcommittee on Traffic surrogate measures
• Organize a session on transportation statistics for JSM 2011.
• Providing statistical consulting for Dr. Gang Wang in Economics and Yan Jiao in Fishery science.
• Providing statistical consulting and advice for a large number of VTTI researchers.

Leigh Harrell

• College of Science Curriculum Committee, Fall 2004 – current
  o Review new and revised course proposals and program check sheets
  o Edit and track progress of proposals for Statistics department
• Department of Statistics Undergraduate Committee, Fall 2004 – current
• American Educational Research Association, 2010-2011 Rasch SIG Program Co-chair

Ina Hoeschele

• College of Science P&T committee (chair)
• GBCB PhD program 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 journals Genetics and Frontiers in Systems Biology
• Served on two NIH Special Emphasis Proposal Review Panels (for very large, collaborative proposals), June 28-29 and November 11-12, 2010.

Golde Holtzman

• Chairperson of the departmental Corporate Partners Committee (2001-2011)
  o Duties include maintaining relations with ten corporate partners (Becton Dickinson, Capital One, DuPont, Eli Lilly and Company, General Electric, Minitab, Pratt & Whitney, R. J. Reynolds, and SAS), organizing the annual meeting, maintaining website.
  o Since its inception in 2001, $106,000 has been collected in partner contributions, plus a $75,000 gift from Lilly, and a $75,000 gift from Minitab, most of which has been disbursed for graduate student awards and recruitment
  o In 2010, DuPont’s Applied Statistics Group nominated Yili Hong for a highly competitive 2011 DuPont Young Professor Grant of $75,000 over three years. We also made good progress in recruiting Merck as a future corporate partner.
• Member, Faculty Reconciliation Committee (Ken Eriksson, chair), 2010-2011
• Member, COS Cluster Committee (Nancy Ross, chair), 2007-2011
• Member, COS Diversity Committee (Ann McNabb, chair), 2010-2011
• Elected member, Department of Statistics Personnel Committee, 2010-2012; Elected Chair, 2010-2011
• Appointed to Department of Statistics search committee for assistant professor in VPR-DA Cluster, 2010-11
• Mentor for Scotland Leman, assistant professor, Department of Statistics, 2007-2011
• Member, Academic Advisory Committee (AAC), Virginia Department of Environmental Quality, Stephan Schoenholtz, chair, 2007-2011
• Elected Mu Sigma Rho national councilor at large, 2007-2010

Yili Hong

• Chair of the Departmental Colloquium Committee, fall 2010. Leading organizer for the colloquium series.
• Member of the Departmental Colloquium Committee, spring 2010. My role was to help the committee chair in organizing the colloquium.
• Refereed for the *Journal of Statistical Planning and Inference*
• Refereed for the journal *Technometrics*
• Organizing a topic-contributed session on reliability for JSM 2011

Leanna House

• Department
  o Serve on undergraduate curriculum committee
  o Assisted Statistics search committee with interviews and meals
• College/University
  o Served on Math search committee
  o Served on System Biology Initiative to develop a new major
  o Serve on committee to develop a new Integrated Science Curriculum
• Refereed for Technometrics
• Serve on review panel for papers submitted the Fourteenth International Conference on Artificial Intelligence and Statistics

Dong Yun Kim

• Qualifying examination committee (2007- present), Department of Statistics, Virginia Tech
• Wrote a letter of support for Dr. Jianhua Xing at the Department of Biological Sciences, Virginia Tech in his DOE career grant proposal “Using the generalized Langevin equation formalism to reconstruct dynamic equations from time series data.”
• Wrote a letter of recommendation for Dr. Hokeun Sun at the Center for Clinical Epidemiology and Biostatistics, University of Pennsylvania School of Medicine, Philadelphia, PA.
• Served on six graduate student committees in Statistics and one in Forestry.

Inyoung Kim
• Qualifying exam committee member
• Search committee member
• Master oral exam committee member for 15 statistics graduate students
• Ph.D. committee member for Sook Ha (Electrical and Computer Engineering), Sarah Wang, Sunha Kim (Education), Rongam Cai (Plant Pathology, Physiology, and Weed Science) and Abhrabil Maiti (Electrical and Computer Engineering)
• Chair of section of categorical data analysis in ENAR 2010
• Chair of section of clustered data methods in ENAR 2010
• Program committee Bioinformatics 2011 (“International conference on Bioinformatics Models, Methods and Algorithms”)
• Reviewer for NSF career proposal in 2009 and 2010
• Referees for American Statistician, Biometrics and IEEE Transactions on Reliability

Marlow Lemons

• College of Science Diversity Committee representative from the Department of Statistics
• University Library Committee representative from the College of Science
• Journal Referee- *Teaching Statistics* (June 2010 – December 2010)

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* (9 papers)
• Associate Editor, *The American Statistician* (7 papers)
• Referee for additional four (4) papers from other journals: *Biometrika, Brazilian Journal of Probability and Statistics, Journal of Statistical Theory and Practice, Technometrics*.

Eric Smith

• Department Heads Council
• Committee to re-design SPOT
• Associate Editor of *Environmetrics*, Editorial Board: Environmental and Ecological Statistics
• Reviewer for Transactions of the American Fisheries Society, Ecological Modeling

George Terrell
• Active on the Statistics department Undergraduate Committee
• Member of the College of Science 5-year review committee for Dean Chang. (A very time-consuming committee in October and November).
• Handled 6 papers as Associate Editor for the Journal of Computational and Graphical Statistics.

Geoff Vining

• Editor-in-Chief, Quality Engineering
• Co-Chair, Publications Management Board, American Society for Quality
• Group Facilitator, Division Affairs Council, American Society for Quality

Eric Vance

• Member of the Faculty Senate
• Faculty advisor for StatCom
• Chair of Hiring Committee for LISA Assistant Director
• Member of the University Council
• Organized the Spring, Summer, and Fall 2009 LISA Short Course Series (525 attendees)
• Supervised the LISA Walk-in Consulting Service (266 clients)
• Supervised the LISA Collaboration meetings (334 clients)
• Reviewer for Annals of Applied Statistics.
• Assisted 1125 Virginia Tech colleagues or potential future colleagues personally or through LISA.

Bill Woodall

• Departmental Personnel Committee, Chair of Departmental Satellite Hiring Committee, Departmental Graduate 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 and successfully nominated Donald J. Wheeler for this award.
• Member of Advisory Board of Quality, Statistics, and Reliability Section of INFORMS
• 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 held in Seattle, Washington in August 2010.
• Outside Reviewer: Promotion to Professor at University of Washington; Promotions to Associate Professor at Memorial University, Canada, and Rutgers University; Outside reviewer for potential hire, School of Statistics and Management, Shanghai University of Finance and Economics, China.
Honors and awards

Fellows of the American Statistical Association

Active Faculty

Eric Smith  
Geoff Vining  
Bill Woodall  
JP Morgan

Emeritus Faculty

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

Fellows of the American Society for Quality

Geoff Vining  
Bill Woodall

Elected Members, International Statistics Institute

Eric Smith  
Geoff Vining  
Bill Woodall

Other awards

1. **Y. Hong**, The Zaffarano Prize for Graduate Student Research ($1,500), Iowa State University, 04/2010, an award to recognize superior performance in publishable research by an ISU graduate student.

2. **M. Lemons**, 2010 Alpha Chi Omega Professor Appreciation Award.

3. **G. Vining**, 2010 Shewhart Medal, the ASQ career award given annually to the person not previously so honored who has demonstrated the most outstanding technical leadership in the field of modern quality control, especially through the development to its theory, principles, and techniques.
Student Awards:

1. **Han Li** was awarded the Boyd Harshbarger Award for outstanding academic achievement by a first year graduate student.

2. **John Szarka** was awarded the Jesse C. Arnold Award for outstanding teaching by a graduate teaching assistant.

3. **Nels Johnson** was awarded the Klaus Hinklemann Award for outstanding service by a graduate student to the department or university.

4. **Austin Rhodes & Yiming Peng** received the Raymond Myers Award for being the top students in Linear Models and Experimental Design.

5. **Daniel Whitehead** was awarded the Gibbons Statistics Award is given to an outstanding first year PhD student in statistics.

6. **Anne Ryan** was awarded the Rose Costain Award is given to an outstanding graduate student citizen in the Department of Statistics.

7. **Anne Ryan** received the Ellis R. Ott Scholarship from the Statistics Division of the American Society for Quality. The Ellis R. Ott Scholarship is a national award presented annually to two recipients. Scholarship awards are based on demonstrated ability, academic achievement, industrial and teaching experience, involvement in student or professional organizations, faculty recommendations and career objectives.
Diversity activities (5 faculty reporting)


- Marlow Lemons is the department’s representative in 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.

- Yili Hong proposed to recruit graduate research assistant(s) from women and underrepresented groups in those proposals submitted to NSF.

- Golde Holtzman is a member of the COS Diversity Committee (Ann McNabb, chair), 2010-2011

- Golde Holtzman’s office is a VT LGBTA Safezone

- Leanna House was invited and served on a discussion panel about work-life balance during the Future Faculty Development Program

- Leanna House organizes breakfasts or 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 mentor female junior faculty.

- Several faculty members are doctoral advisors female graduate students.