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.

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<th>Learning: Undergraduate</th>
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<td>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.</td>
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<td>Number of undergraduates: 57 majors, 30 minors, 24 Actuarial Science minors</td>
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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

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<th>Discovery</th>
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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, 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)
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<th>Date</th>
<th>Tasks</th>
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<tr>
<td>5/18/10</td>
<td>Improve graduate teaching and service teaching to non-majors</td>
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<td></td>
<td>Enhance undergraduate experience and improve undergraduate education</td>
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<td>Increase collaborations with Carilion, VBI and ICTAS</td>
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Details

New Grants


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


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.


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.

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.


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.


Grants (continuing):


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.


Grants Pending:


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 temporarily 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%.


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).


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


Papers Published:


**Papers In Press:**


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.


16. Penn-Marshall, Michelle, **Goldie 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*.


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*.


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
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

- 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 Technometrics

• 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:
  o Aarnes Gudmested (Assistant Professor, Foreign Languages)
  o Sharmin Shamsalsadati (Graduate Student, Geophysics)
  o Kevin Kilourhy (Graduate Student, Education)
  o Frank Quinn (Professor, Mathematics)
• Lead organizer for Statistics Seminar Series: In this role, I was able to invite notable speakers including,
  o Dr. Valen Johnson, Professor and Chair of Department of Biostatistics, University of Texas M.D. Anderson Cancer Center, Houston, TX
  o Dr. Sidney Resnick, Lee Teng-Hui Professor in Engineering, Department of Operations Research, Cornell University, Ithaca, New York
  o Dr. Robert Gramacy, lecturer in the Statistical Laboratory at the University of Cambridge, United Kingdom and a fellow of Jesus College
  o 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:
  
  o Dr Hall from VT: “Assessing the Link between Productive use of domestic water, Poverty Reduction and Sustainability”

  o 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)


• 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*


• 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 Environmetrics, 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


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


• 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


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.

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](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