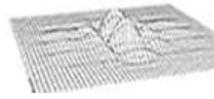




VirginiaTech  
*Invent the Future*



Department of  
**Statistics**



Fall 2008, Volume 6

[www.stat.vt.edu](http://www.stat.vt.edu)

# Department of Statistics Newsletter

## Fall 2008



**COLLEGE OF SCIENCE**  
Virginia Polytechnic Institute and State University

## Greetings from the Department Head, DR. ERIC SMITH

This spring we were able to restart our free consulting service which we named the Laboratory for Interdisciplinary Statistical Analysis (LISA). Thanks to the generous support of the Provost, Research Division, Graduate School, College of Science and the other colleges, we are able to support three full time graduate students and have a director and assistant director support the program. We welcome **Eric Vance** as the new director and **Ying Liu** as the assistant director. Eric comes to us from Duke University and Ying from Kansas State. Many thanks to **Laura Freeman** for her help in organizing and directing LISA in the initial phases and to **Bob Schulman** for his help as Director in the spring. They really helped to establish the program. Laura has been working with **Jonathan Duggins** to develop and teach some one hour topics classes for graduate students. The faculty has been rather productive in their publication and grant activities.

Our graduate program continues to improve and grow. Last year we graduated 18 Master's level students and 7 Ph.D. students. We have added several courses to the course listing including some new Bayesian classes, a spatial statistics class, a Six Sigma class and have taught Stochastic Processes after a long break. Our graduate students continue to be rewarded for their work. **Laura Freeman** received a fellowship from the Amelia Earhart Foundation, **Abdel Salam G. Abdel Salam** received the Mary Natrella scholarship. In addition, **Susan Furst** benefited from support from MINITAB and **Mark Seiss** was the first recipient of the Jean Gibbons Award. Jeff Birch has done an excellent job recruiting new students and we will be adding 20 students to the program in the fall.

Our undergraduate program graduated 15 in the spring graduation ceremony. Leigh Harrell continues her efforts to improve the program. This year we have added an Actuarial Science minor. Our freshman class includes seven new students which is the largest one we have had in a while.

The department added **Leanna House**, PhD from Duke University, as a new faculty member. Leanna comes to us from Durham, England where she has finished a post doctoral study where she has been working to develop novel approaches for computer model uncertainty analyses. She brings a strong background in computational and environmental statistics and was hired as part of the university's cluster on Energy and the Environment. We are especially looking forward to her class on Hierarchical Modeling that she will be teaching in the fall.

As we continue to grow the department, we seek your continued support for our programs to help students and faculty. Opportunities to contribute to various scholarships are described on the last page of the newsletter. Contributions to the general fund are also welcomed. And, don't forget to stop by for a visit if you are in the area. We would like to hear about how you have done since we saw you last.



## WELCOME



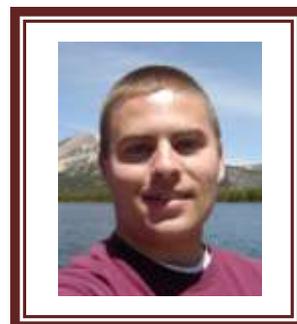
**Leanna House** joined the department as an Assistant Professor in Fall 2008. Dr. House finished her post-doctoral research associate in the Department of Mathematical Sciences at Durham University, United Kingdom, after receiving her Ph.D. in Statistics in 2006 from Duke University in Durham, North Carolina, USA where she also received her M.S. in statistics in 2003. Also, she received her B.S. in Biometry/Statistics in 1998 and a Master of Arts in Teaching (M.A.T) in Curriculum Development in 1999 from Cornell University. Dr. House research interests include Bayes linear and full Bayesian modeling, subjective prior elicitation, semiparametric /nonparametric modeling using Levy process priors, model selection, Bioinformatics, and computer model applications.

**Eric Vance** joined the Department as a Director of the Laboratory for Interdisciplinary Statistical Analysis in Fall 2008. Dr. Vance received his PhD from the Department of Statistical Science at Duke University and his MS from Duke's Institute of Statistics and Decision Sciences in 2008 where he worked as a statistical consultant, an instructor and teaching assistant, and a research assistant for SAMSI and NISS. His research interests include Bayesian statistics, social networks, and change detection in data streams. After completing a triple major in math, economics, and statistics at the University of California, Berkeley in 1997, Dr. Vance traveled around the world three times through 67 countries.



**Ying Liu** joined the department in Fall 2007 and has been appointed as Visiting Assistant Professor for 2007-2008. Dr. Liu has her Ph.D. in statistics from Kansas State University. Now Dr. Liu is the assistant director of the Laboratory for Interdisciplinary Statistical Analysis starting from Fall 2008.

**Michael Flora** is joined the department in Fall 2008 as the Windows Systems Administrator. Michael is an undergraduate student in the Business Information Technology department planning to graduate in December 2009. He has completed an Associates Degree at Virginia Western Community College.



## UNDERGRADUATE PROGRAM



Spring 2008 Graduation

### Undergraduate Degrees

In December 2007 **Brian Miller** received his undergraduate Degree.

In May 2008 we had eleven graduates. They included **Mary Arrowsmith** (Summa Cum Laude), **Susan Furst** (Magna Cum Laude) **Paul Roche** (Cum Laude), **Katherine Eady**, **Valmik Khadke**, **Kyle Smoot**, **Jeff Fuerte**, **Jodie Scott**, **Nan Stringer**, **Jeffrey Belcher**, **Brian Wright**

**Susan Furst**, **Jeffrey Belcher** and **Brian Wright** will continue in our department towards their graduate degree.

In August 2008 **Tabitha Hill**, **Blake Krippendorf** and **Trevor Walshand** received their undergraduate degrees.

### Actuarial Science - Minor

The Actuarial Science minor was approved by the University in June 2008. Undergraduate

students graduating in May 2010 or later can begin declaring the minor this fall.

### Undergraduate Award Winners for 2007-2008

#### The Whitfield Cobb Award -

*Awarded to the graduating senior with the highest academic performance overall*

Mary Arrowsmith

#### The Clyde Y. Kramer Award -

*Awarded to a graduating senior who has shown outstanding service to the University and the broader community*

Susan Furst



## GRADUATE PROGRAM

We began the year with 70 students, 42 MS students and 28 PhD students, with 17 new students entering the program.

### Graduate Degrees

The Fall 2007 Master of Science graduates were **Garima Chaturvedi, Yunjie Chen, Travis Gray** (now working at Capital One), **Joshua Howard, Lauren Howard** (now working at Aberdeen Proving Grounds), **Kuan-Chin Lin, Heng Wang** (attending Iowa State University for her Ph.D.), **Yadan Wang, Pamela Wentz** (now working at Corning), **Huan Zhang, Yanmei Zhang** and **Xin Zhao**. Additionally **Chao Han, Wandu Huang, Anne Ryan, John Szarka, Sai Wang** are continuing in the Ph.D. program in the department.

In Spring 2008 **Lydia Baberaj** received her Master of Science Degree.

The Fall 2007 PhD graduates were **Shannon Fraker** (now a Statistician at Joint Research and Development), **Mi Hyun Lee** (returned to work as statistician in Korea), **Zhengrong Li** (working as a Senior Biostatistician, Genetech), **Kimberly Love** (is now a Research Coordinator for the Department of Forestry, University of Georgia), and **Wen Wan** (Assistant Professor, Biostatistics and Bioinformatics, University of Alabama, Birmingham)

In Summer 2008 the PhD graduates were **Feng Gao** and **Zhonggai Li** (working as a Senior Scientist, Beckton-Dickenson). Details of their PhD dissertations are below.

- **Feng Gao** (2008) Title: *Clustering Response-Stressor Relationships in Ecological Studies*. Advisor: Eric P. Smith.
- **Kimberly Love** (2007) Title: *Modeling Error in Geographic Information Systems*. Advisor: Eric P. Smith and Keying Ye.

- **Mi Hyun Lee** (2007) Title: *On Independent Reference Priors*. Advisor: Eric P. Smith and Dongchu Sun.
- **Shannon Fraker** (2007) Title: *Evaluation of Scan Methods Used in Temporal Monitoring of Public Health Surveillance Data*. Advisor: William H. Woodall.
- **Wen Wan** (2007) Title: *A Semiparametric Method to Multi-Response Optimization*. Advisor: Jeffrey B. Birch.
- **Zhonggai Li** (2008) Title: *Objective Bayesian Analysis of Kullback-Liebler Divergence of two Multivariate Normal Distributions with Common Covariance Matrix and Star-shape Gaussian Graphical Model*. Advisor: Eric P. Smith and Dongchu Sun.
- **Zheng-rong Li** (2007) Title: *Model-based Tests for Standards Evaluation and Biological Assessments*. Advisor: Eric P. Smith.

### Graduate Award Winners for 2007-2008

#### - Boyd Harshbarger Award -

*Awarded for outstanding academic achievement by a first year graduate student*

Jennifer Kensler

#### - Jesse C. Arnold Award -

*Awarded for outstanding teaching by a graduate teaching assistant*

Jonathan Duggins

#### - Klaus Hinkleman Award-

*Awarded for outstanding service by a graduate student to the department or university*

Denisa Olteanu



## **The Laboratory for Interdisciplinary Statistical Analysis**

Consulting services in the Department of Statistics have gone through some radical changes in the past year. The Statistical Consulting Center is now the Laboratory for Interdisciplinary Statistical Analysis or LISA as we like to call it. Consulting services are now provided free of charge to all University clients. These free consulting services are possible due to the new funding structure for consulting. Funds for these services are provided by the Provost Office, the Graduate School, the Research Division as well as all of the Colleges.

Consulting activity has increased dramatically under the new funding system. In the past year graduate students have been hard at work assisting on average over 100 clients per semester. The Department has responded in turn by committing large amounts of graduate assistantship hours to the Laboratory. Our graduate students are receiving valuable experience under the new system as we are receiving project requests from departments from all over the University.

In addition to providing these increased consulting services, the Laboratory for Interdisciplinary Statistical Analysis is seeking new ways to reach out to University members. During summer 2008 a new seminar series for graduate students was offered. The Summer Seminar Series focused on providing general introductions to common statistical topics in consulting. Seminar topics included Design of Experiments, Regression and ANOVA as well as other more specialized consulting issues. The seminar series received an overwhelming response with over 90 registered participants and well over a hundred more that could not be accommodated due to space limitations.

The consulting laboratory has been under the direction of Ph.D. student Laura Freeman for the past year. Beginning in fall 2008 Dr. Eric Vance from Duke University will take over as the Director of the Laboratory for Interdisciplinary Statistical Analysis. Dr. Vance will be joined by Dr. Ying Liu from Kansas State University who will be the new Assistant Director of the Laboratory. It has been an exciting year for consulting!



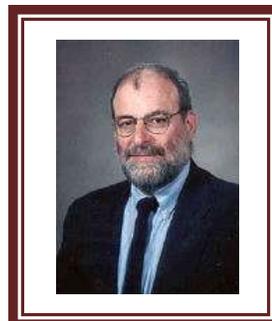
### **Department of Statistics Faculty**



## CORPORATE PARTNERS PROGRAM

The Department of Statistics Corporate Partners Program, now in its eighth year, is thriving. During the 2007-8 academic year, the program granted partial scholarships to eight new students: Matthew Williams, Patrick McCann, Jonathan Celso, Nels Johnson, Jennifer Kensler, and James Ringer. Several other students are involved in internships and/or research sponsored by partners.

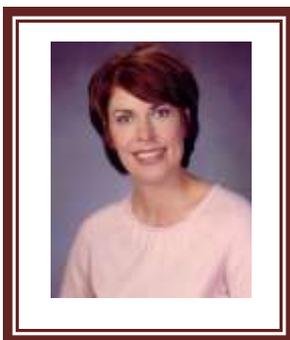
The program is still growing, we are pleased to welcome **Reynolds American** as the newest Corporate Partner. We thus have nine Corporate Partners: **Becton, Dickinson and Company, Capital One, DuPont, Eli Lilly and Company, General Electric, Minitab, Pratt & Whitney, Reynolds American,** and **SAS.**



The 2008 annual Corporate Partners Conference will be held on campus Thursday evening, September 25, through Saturday afternoon, September 27. Our guest of honor will be Jean Gibbons, prolific writer on non-parametric statistics, and alumnus of our department. Other highlights of the conference include one-on-one interviews with M.S. and Ph.D. candidates, an advisory meetings with departmental leaders and College of Science Dean Lay Nam Chang, student presentations of current research, and plenty of opportunities to develop professional relationships and joint projects. **Denisa Olteanu** who did such a great job last year, and a second doctoral student, **Anne Ryan**, will be handling a lot of the organizational chores for this year's conference.

Questions about the Partners Program in general or the 2008 conference are welcome via e-mail to **holtzman@vt.edu, dolteanu@vt.edu, and agryan@vt.edu.**

## FAREWELL



### **Becky Michael**

Joined the department in August 2000 as a Bookkeeper and left in May 2008. Becky went to Dairy Science.



### **Linda Breeding**

Joined the department in April 1989 as a secretary and left in April 2008. Linda went to Capital Design and Construction.



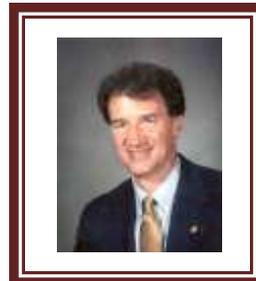
## DEPARTMENT ACTIVITIES

### Mentoring Program

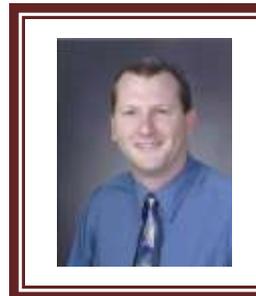
During the past year the Teacher Mentoring Program has undergone a revival. Two of our Ph.D. level graduate students, **Laura Freeman** and **Jonathan Duggins**, along with **Dr. Jeffrey Birch**, have worked to revitalize the mentoring program which to date has focused primarily on two courses: Biological Statistics and Statistics for Engineering Applications.



The purpose of the program is to provide first time teachers with resources designed to make the initial teaching experience go as smoothly as possible. In addition to first time teachers, returning teachers and recitation leaders are included to provide a sound pedagogical framework for all of our teachers. Teachers are provided with information on designing syllabi, classroom management techniques, common course administration issues and training in the use of Blackboard.



During each semester approximately three meetings are held where all TA teachers and instructors can come together and benefit from each other's experience. Over lunch (usually an inordinate amount of pizza) time sensitive topics such as midterm and tentative grade entry are discussed. These meetings also give both rookie and veteran teachers a chance to come together and talk to other individuals who are either currently facing or have faced the same day to day issues related to teaching, providing a much needed outlet for our teachers.



Over the last year there has been considerable focus on making sure the courses are more consistent in difficulty and administration, both between and within semesters. In the future the Mentoring Program is looking forward to expanding the focus of the program to cater to a broader set of courses and to providing even more comprehensive resources to our teachers.

### Student Internships

Several of our graduate students participated in internships this past year. Internships may be in government, industry or with another university department and are taken for course credit. Each participant must present an oral presentation to the department and a written report to their department and on-location advisors summarizing their experience. A summary of the interns are below

- **Anne Ryan**. Summer 2008. Company: Pratt & Whitney. Anne worked to create a short-course on computer experiments for practitioners. Computer experiments are used to replace physical experimentation in order to save companies time and money. Her summer responsibilities involved using GEMSA and GPMSA (software used at Pratt & Whitney) to analyze a simple example to be covered in the course.



### Student Internships cont...

- **Elaine Nsoesie.** Summer 2008. Intern at the Network Dynamics and Simulation Science Laboratory (NDSSL), which is part of the Virginia Bioinformatics Institute. Elaine worked on projects aimed at analyzing disease outbreaks and used statistical techniques to investigate whether data from the American Community Survey could be used in creating synthetic households.
- **James Ringer.** Summer 2008. Company: Minitab, State College, Pennsylvania. James was in the quality assurance department. James' title was a Statistical Analyst and his main responsibility was to test that the commands for the Minitab software were functioning correctly.
- **Jonathan Celso.** Summer 2008. Company: 3M St. Paul, MN. Jonathan spent this summer with the Lean Six Sigma Operations department, where he worked on several projects that involved multiple regression, design of experiments, forecasting as well as helping out with training materials that are used throughout the entire company.
- **Mari Rossman.** Summer 2008. Company: Intel, Location: Hillsboro, Oregon. Mari worked on a project with engineers on the qualification of sockets. Specifically, she analyzed metrology data and suggested improvements to the statistical methods previously used. In another project she developed the majority of a 4 hour class on equipment reliability statistics. Also, she co-taught a statistic class in Chandler, AZ and wrote JMP script for analysis techniques discussed in class.
- **Wandi Huang.** Summer 2008. Company: DuPont, Location: Wilmington, Delaware. For the past seven months she worked in the internship program in statistics at DuPont's Applied Statistics Group. Wandu participated in a large variety of projects in the areas such as DOE, RSM, Regression and Toxicology statistics, and worked with many experienced professional statisticians. Also, she attended two training courses – Six Sigma Green Belt Training and Strategy of Experimentation Training offered by the group.

## STUDENTS AWARDS

The department is pleased to announce the offering of the Jean Dickenson Gibbons Statistics Award. The award will be used to recruit top students into our program. Dr. Gibbons received her PhD from our department in 1962 and had an illustrious career as a professor of statistics at the Universities of Pennsylvania, Cincinnati, and Alabama. She is author or co-author of many highly regarded textbooks, including the well-known text Nonparametric Statistical Inference.

The first recipient of the Gibbons Statistics Award is Mark Seiss, a new PhD student to the program. Mark has BS and MS degrees in math from VT and a MS in statistics from George Washington University and has been working for the past three years at the U.S. Census Bureau. The Gibbons award further enhances other awards that the department has available for recruiting students.

The Corporate Partners Program provides annual awards to selected applicants to our program. Recipients of Corporate Partner Scholarships for 2008-09 are Mark Seiss, Nicholas Stewart, Veronica Bubb, Susan Furst, Evan Brooks, Lucas Roberts, Jeff Belcher, Nicolle Goble, and Casey Turner.

Additionally, the department offers the Minitab Fellowship on an annual basis to one of our top recruits. The Minitab Fellowship provides the recipient with a monthly stipend and tuition for one year. Susan Furst is the Minitab Scholar for 2008-09. Past recipients of the Minitab Fellowship are Anne Ryan (2006-07) and Cory Edmonds (2007-08).

**“Congratulations to all our award recipients”**



## HONORS

- **Abdel-Salam G. Abdel- Salam** has received Mary Natrella scholarship from the Quality and productivity section of ASA to present his work at the 2008 Quality and Productivity Research Conference held in Madison, WI in June 2008. Also Abdel-Salam received the best student paper award at the ASA Virginia academy of science chapter meeting held in Hampton, Virginia in May 2008.
- **J.P. Morgan** was selected as the Associate Editor for Journal of the American Statistical Association effective January 1, 2008 also as the Associate Editor for The American Statistician effective July 1, 2008. In addition J. P. Morgan was appointed Visiting Fellow at the Isaac Newton Institute for Mathematical Sciences, Cambridge, England, July 19 - August 17, 2008.
- **Laura Freeman** was awarded as a Department of Homeland Security Fellow during the 2007-2008 Academic Year. In addition, Laura was awarded the Amelia Earhart Fellowship for the 2008-2009 Academic Year, an award based on international competition. Also, Laura was a finalist for the College of Science Roundtable Scholarship.
- **Leigh Harrell** was selected to participate in a Statistics Education research cluster by the Research Advisory Board of CAUSE (Consortium for Advancement of Statistics Education) as part of a two-year research agenda. The groups in the research cluster will be presenting projects at JSM in August 2008 and 2009, as well as at USCOTS 2009.

**The department has published numerous papers and books. A complete list of 2007-2008 research papers, grants, and presentations please see the Annual Report for Department on our main webpage.**



Roxanne, JP, Scotland and Leanna enjoying the holiday party



Dr. Morgan gives the commencement speech at the Fall Graduation



Emeritus faculty with Dr. Birch at the annual holiday party





## Giving to the Department



Dr. Smith writes:

As I look back over the accomplishments of the last year, I am impressed by the hard work of our faculty, students and staff. I am also especially grateful for the support of our alumni and friends. Our Corporate Partners program has helped with our recruiting of new graduate students through financial support and internships. We are also especially grateful for the MINITAB fellowship that we award each year.

This year we were blessed to have a new award added to the suite of awards that we give to graduate students: the Jean Dickinson Gibbons Statistics Award. Jean Gibbons graduated from our department in 1962 with a Ph.D. and went on to an illustrious career as a researcher, teacher and administrator. Her book *Nonparametric Statistical Inference* is a classic text on the subject and continues to be a popular text. The award will be used to help a new Ph.D. student with research expenses.

Contributing to the department is relatively easy. You may send a contribution to

**University Development  
Virginia Tech  
902 Prices Fork Rd. (0336)  
Blacksburg, VA 24061**

Be sure to let them know that you want the money to go to the Department of Statistics.

There are a variety of funds that you might consider besides the General fund for the department including awards for **graduate students**:

Boyd Harshbarger Award  
Jesse C. Arnold Award  
Klaus Hinkelmann Award

And for **undergraduates** we have:

Clyde Kramer Scholarship

Please feel free to call me if you wish to discuss contributing to the department. We really do appreciate your support!

