



# 57<sup>th</sup> Annual Fall Technical Conference

Statistics & Quality - Spurring Innovation



**October 17-18, 2013**  
Hyatt Regency San Antonio  
San Antonio, Texas  
<http://cba.ua.edu/ftc2013>

Co-sponsored by:



You are invited to attend the 57th Annual Fall Technical Conference held this year in San Antonio, TX. This conference is the premier forum to discuss topics at the interface of statistics and quality. The theme of this year's conference is "Statistics and Quality: Spurring Innovation". The goal is to engage researchers and practitioners in a dialogue that leads to more effective use of statistics to improve quality. The conference will serve to bring innovations in statistical methodologies and quality tools to the forefront. You will have the opportunity to meet informally and exchange views with speakers and colleagues during breaks and in the hospitality suite.

### Council Meetings

Three of the sponsoring organizations (Chemical & Process Industries & Statistics Divisions of ASQ and the Quality & Productivity Section of ASA) will also hold council meetings during the conference (days and times TBA). The council meetings are an opportunity for those who wish to become involved in the activities of the societies to become better informed. Please check the conference website (<http://cba.ua.edu/ftc2013>) for more information on dates, times, room locations, and other meetings of interest.

### Hospitality Suite

The Annual Fall Technical Conference and the officers of the sponsoring organizations host a hospitality suite each year. This plays a vital role in the strategic operations of the divisions. We welcome new faces and new perspectives on division operations as well as share technical insights with colleagues in a friendly, informal atmosphere. Check at the registration desk for hospitality suite location and hours of operation. Please come to meet us in San Antonio!

### Accommodations

A block of rooms is available at the Hyatt Regency San Antonio through September 26, 2013. Conference room rates are \$150/night (single/double rate), plus taxes. To make reservations, please call the hotel direct at 210-222-1234 and mention the Fall Tech Conference to obtain the conference room rate. Please keep in mind that ASA/ASQ is counting on attendees to use the conference hotel to offset catering and administrative costs.

### Travel Arrangements

Travel arrangements from the airport to the hotel are the responsibility of the attendee. The Hyatt Regency on the world famous Riverwalk is a short 15 minute cab ride from the airport. Rental cars are not necessary as everything is within a short walking distance. However, if you do choose to rent a car, parking is available at the hotel for \$10/day. More information is available on the conference website.

### Cancellations and Refunds

A complete refund of conference registration fees will be given if you cancel prior to Oct 1, 2013. Cancellations received on or after this date will incur a \$145 cancellation fee.

**Short Courses** will be offered on Wednesday, October 16 from 8:30 a.m. to 5:30 p.m. The fee for each course is \$300 and includes coffee breaks and lunch. Registration is limited.

**Introduction to Text Mining & Natural Language Processing**  
by Heath Rushing  
Sponsored by ASA-Q&P

It is estimated that approximately 80% of data in most organizations is unstructured, such as text. This short course will provide an overview of new methods easily implemented to find previously unknown relationships from a collection of unstructured data. Techniques used for predictive analytics and data mining are also explored with text from various sources such as email, survey comments, incident reports, free form data fields, websites, research reports, blogs, social media, and other text fields to discover potentially useful and actionable business insights. We will provide multiple demonstrations with example datasets that include applications to fraud detection, accident investigations, auto insurance policies, aviation, medical, sports and other meaningful case studies applicable to ASA/ASQ interests.

This will be a hands-on workshop where participants will be guided through end-to-end examples starting from assembling disparate text sources, followed by creating a structured database, to applying analytical methods such as decision trees, principal components, and cluster analysis to discover useful relationships. No specialized software is required to be purchased as routines from the freely available R statistical programming language provide the analytical engine to produce interpretable results. Commercially available software such as SAS Text Miner will also be demonstrated.

**Methods for Designing & Analyzing Mixture Experiments**  
by John Cornell and Greg Piepel  
Sponsored by ASA-SPES

Mixture experiments are very useful in many product development areas, including foods and drinks, plastics, alloys, ceramics and glass, gasoline blending, fertilizers, textile fibers, concrete, drugs, and many others.

The short course will provide an overview of various approaches and methods used in designing mixture experiments and analyzing the resulting data. Designs for simplex-shaped and irregular-shaped regions (the latter resulting from placing additional constraints on the component proportions) will be covered. The various types of mixture models that can be fitted to mixture data will be covered, as will graphical techniques for interpreting component effects. Including process variables and/or a total amount variable in mixture experiments will be discussed. Graphical and analytic methods for developing mixtures with optimum properties will also be covered. Numerous examples from the experience of the presenters will be used to illustrate the topics discussed.

The course is designed for anyone (statistician or non-

statistician) wanting to know about statistical methods for designing mixture experiments and analyzing the resulting data. Prerequisites are an understanding of elementary statistics concepts and some previous exposure to experimental design and least squares regression.

**Experiments for Reliability Achievement**  
by Steve Rigdon, Connie Borrer, and Rong Pan  
Sponsored by ASQ-CPID

Design of experiments is used extensively to achieve quality, but applications to reliability are less common. This is due to a number of reasons but mainly to the fact that the normal distribution, which underlies most experimental designs, is not a reasonable distribution for lifetimes. In this short course, we address the problem of using designed experiments to model the distribution of lifetimes and, in particular, how the lifetimes depend on a set of predictor variables. We discuss a number of examples and present results using the most common statistical software packages.

**Design of Experiments: New Methods and How to Use Them**  
by Doug Montgomery and Brad Jones  
Sponsored by ASQ-STAT

Early designed experiments required a statistician to create a design and analyze the data. As DOE has transcended its roots, the lack of statisticians relative to the number of potential applications of DOE makes professional statistical involvement in every experimental study infeasible. One way of dealing with this scarcity is to use tabled sample plans that are available in textbooks. These plans typically have very desirable statistical properties and have a fairly wide range of applicability. This "one size fits all" approach to design choice is quite popular.

Recently, a viable alternative has arisen due to a huge increase in the power of computers and their accompanying software. A computer-aided approach to DOE offers the possibility of a tailored approach to design. As a result interest in design of experiments (DOE) has greatly increased. Many organizations have effectively integrated the design of experiments methodology into their overall operational improvement strategy, including those deploying six sigma and design for six sigma (DFSS). DOX is the most powerful of the six sigma tools, and its impact on product design and development, manufacturing, and production operations can be profound.

This course on DOX is unique in that it discusses new approaches to choosing a design and analyzing the resulting data that have only been recently available. These methods allow you to solve the most complex experimental design problems easily and directly using the same general approach. The course focuses on several major aspects of DOX, including both the practical and the statistical aspects, and interpretation of results. Participants should bring laptops with a trial version of JMP pre-loaded.

**57th Annual Fall Technical Conference Registration**

ASQ Customer Care  
PO Box 3005  
Milwaukee, WI 53201-3005

Complete this form and mail to the address above (you may wish to keep a copy for your records) or fax to 414-272-1734, Attn: ASQ Customer Care. Your registration will be confirmed by mail within 2 weeks of receipt. To register online, please visit <http://cba.ua.edu/ftc2013>. Contact ASQ Customer Care at [asq@asq.org](mailto:asq@asq.org), with any questions or changes related to registration.

**PERSONAL INFORMATION**

Member Numbers:  ASQ  ASA

First Name for Badge\* \_\_\_\_\_

Title:  Mr.  Mrs.  Ms.  Dr.

First Name\* \_\_\_\_\_

Last Name\* \_\_\_\_\_

Job Title \_\_\_\_\_

Preferred Mailing Address:  Home  Business

Business/Company: \_\_\_\_\_

Address\* \_\_\_\_\_

City/State\* \_\_\_\_\_

Zip/Postal Code\* \_\_\_\_\_

Country\* \_\_\_\_\_

Telephone Number\* \_\_\_\_\_

Fax Number \_\_\_\_\_

E-mail Address\* \_\_\_\_\_

Yes, you may release my e-mail address to conference sponsors and exhibitors.

**SPECIAL NEEDS**

Please list any special needs, disabilities, and/or dietary restrictions that we may address to make your participation more enjoyable:

**CONFERENCE REGISTRATION**

2 day 1 Day 1 Day Student

THR FRI

Regular Registration on/before Sept. 26, 2013:  \$335  \$235  \$235  \$135

Late Registration after Sept. 26, 2013:  \$385  \$285  \$285  \$185

\* Conference ID badges will be required for all events.

\* Hotel arrangement, travel, and short courses are NOT included in the conference fees.

**SHORT COURSES**

- Methods for Designing & Analyzing Mixture Experiments  \$300
- Introduction to Text Mining & Natural Language Processing  \$300
- Experiments for Reliability Achievement  \$300
- Design of Experiments: New Methods & How to Use Them  \$300

**PAYMENT**

Total Payment\* \$ \_\_\_\_\_

Payment Type:\*  Check (sent by mail and made payable to ASQ)

MasterCard  Visa  American Express

Credit Card Number \_\_\_\_\_

Expiration Date \_\_\_\_\_

Cardholder Name \_\_\_\_\_

Cardholder Signature \_\_\_\_\_

**HOTEL REGISTRATION**

Reservations for the Hyatt Regency San Antonio may be made on the conference website (<http://cba.ua.edu/ftc2013>) or by calling the hotel at (210) 222-1234.

\*denotes required information

**57th Annual Fall Technical Conference**

Statistics & Quality - Spurring Innovation



Thursday, October 17, 2013

7:00	REGISTRATION DESK OPENS		
8:00 - 9:00	WELCOME / PLENARY SESSION		
	John Sall SAS Institute		
Session 1	A	B	C
9:15 - 10:00	<b>Data Types</b> The What's and Why's of Different Kinds of Data Connie Borror Arizona State Univ Christine Anderson-Cook Los Alamos National Lab	<b>Dimensional Analysis</b> Dimensional Analysis and its Applications in Statistics Dennis Lin Weijie Shen Penn State Univ	<b>Practical DOE</b> Practical DOE "Tricks of the Trade" Pat Whitcomb Stat-Ease Inc.
Moderators	Mia Stephens	Joel Smith	Teri Utlaut
10:00 - 10:30	B R E A K		
Session 2	A	B	C
10:30 - 12:00	<b>STAT Invited Session</b> Keys to Successful Experiment Planning - A Role for Statistical Engineering Panelists Stephanie DeHart DuPont Peter Goos University of Antwerpen Peter Parker NASA Discussant Geoff Vining Virginia Tech	<b>Design and Analysis of Computer Experiments</b> Estimating Local Sensitivity Indices for Deterministic Computer Simulator Output in Rectangular and Nonrectangular Regions Angela Dean Thomas Santner The Ohio State University Fangfang Sun Harbin Institute of Technology Optimal Bayesian Designs for Combined Physical and Deterministic Simulator Experiments Erin Leatherman Angela Dean Thomas Santner The Ohio State University	<b>Reliability</b> Survival Analysis of Water Main Breaks as the Answer to the Repair-or-Replace Dilemma Shayn Weidner Jesus Cuellar Joleen Beltrami University of the Incarnate Word Development of Inferential Methods for Censored Data from the Step-Stress Accelerated Life Tests David Han Univ of Texas at San Antonio
Moderators	Christine Anderson-Cook	Adam Pintar	Brenda Bishop
12:15 - 1:45	L U N C H E O N		
	George Box Tribute Dennis Lin, Penn State Univ		
Session 3	A	B	C
2:00 - 3:30	<b>Technometrics Invited Session</b> Screening Strategies in the Presence of Interactions David Woods Susan Lewis University of Southampton Danel Draguljic Angela Dean The Ohio State University Anna Vine Southampton Statistical Sciences Institute	<b>Case Studies in DOE</b> Modeling of Voice Communications Sara Wilson Kurt Swieringa Jennifer Murdoch NASA Robert Leonard David Edwards Virginia Commonwealth Univ	<b>Stu Hunter's Contributions to Quality Engineering</b> Stu Hunter's Contributions to Experimental Design and Quality Engineering Doug Montgomery Arizona State Univ
Moderators	Hugh Chipman	Bryan Smucker	Geoff Vining
4:00 - 5:00	Presentation of WILLIAM G. HUNTER AWARD W. J. YOUTEN MEMORIAL ADDRESS		
	The Web of Statistics Russell V. Lenth, Univ of Iowa		

**General Conference Chair**  
Jim Wisnowski, *Adsurgo* (james.wisnowski@adsurgo.com)

**Short Course Chair**  
Shari Kraber, *Stat-Ease, Inc.*

**Program Committee**  
ASA-Q&P: Willis Jensen, W.L. Gore & Associates  
ASA-SPES: Robert Wilkinson, *The Lubrizol Corporation*

**Publicity Chair**  
Marcus Perry, *University of Alabama*

**Local Chair**  
Tim Duncan

ASQ-CPID: Flor Castillo, *The Dow Chemical Company*  
ASQ-STAT (Chair): Peter Parker, *NASA*

**57th Annual Fall Technical Conference**

Statistics & Quality - Spurring Innovation



Friday, October 18, 2013

7:30	REGISTRATION DESK OPENS		
Session 4	A	B	C
8:00 - 9:30	<b>Q&amp;P Invited Session</b> Big Data = Big Opportunities for Research and Collaboration Fadel M. Megahed L. Allison Jones-Farmer Auburn University	<b>CPID Invited Session</b> Projection Properties of No-Confounding Designs for Six, Seven, and Eight Factors in Sixteen Runs Shilpa Madhavan Shinde Doug Montgomery Arizona State University Bradley Jones SAS Institute	<b>JQT Invited Session</b> More Pitfalls of Accelerated Tests Bill Meeker Iowa State Univ
Moderators	Willis Jensen	Flor Castillo	Brad Jones
9:30 - 10:00	B R E A K		
Session 5	A	B	C
10:00 - 11:30	<b>SPES Invited Session</b> Panel Discussion on the Current & Future State of Applied Industrial Statistics Panelists William Brenneman Procter & Gamble Duane Steffy Exponent, Inc. Joanne Wendelberger Los Alamos Nat Lab Kevin White Eastman Chemical Co.	<b>Mixture Experiments</b> Iterative Development of Mixture Component Constraints and a Layered Mixture Experiment Design Greg F. Piepel Jarrod V. Crum Pacific Northwest Nat Lab	<b>QE Invited Session</b> The Statistician's Role in Innovation Willis Jensen W.L. Gore & Associates
Moderators	Robert Wilkinson	Stephanie DeHart	Pete Parker
11:45 - 1:15	L U N C H E O N		
	Achieving Personalized Medicine: An Introduction to Optimal Dynamic Treatment Regimes Marie Davidian, ASA President North Carolina State University		
Session 6	A	B	C
1:30 - 3:00	<b>Design of Experiments</b> Searching for Powerful Supersaturated Designs David J. Edwards Virginia Commonwealth Univ Maria Weese Byran Smucker Miami University	<b>Quality in Healthcare</b> Statistical Issues in Continued Process Verification Julia O'Neill Rob Kasprow Nelson Afanador Krista Witkowski Merck & Co., Inc.	<b>System Performance</b> Testing System Performance Using Bayesian Adaptive Experiment Designs Adam L. Pintar Blaza Toman Dennis Leber William Guthrie NIST
Moderators	Grant Olsen	Anne Ryan	Keying Ye
	<b>Approximate Model Spaces for Model-Robust Experiment Design</b> Byran Smucker Miami University Nathan Drew Epsilon	<b>Healthcare Quality: A Perspective from a Cancer Center</b> Victoria Jordan Diane Schaub UT MD Anderson Cancer Center Connie Borror Arizona State Univ	<b>A Risk-Based Decision Analysis Framework for Establishing Requirements for Robust Rocket Engine System Performance</b> Mindy Hotchkiss Cassandra Bigini Pratt & Whitney Rocketdyne