

59th Annual Fall Technical Conference

Statistics & Quality - Solving Problems Today and Tomorrow



October 8-9, 2015

The Westin Oaks Houston at the Galleria
Houston, TX

Co-sponsored by:

<http://asq.org/conferences/fall-technical/>



ASA
AMERICAN STATISTICAL
ASSOCIATION

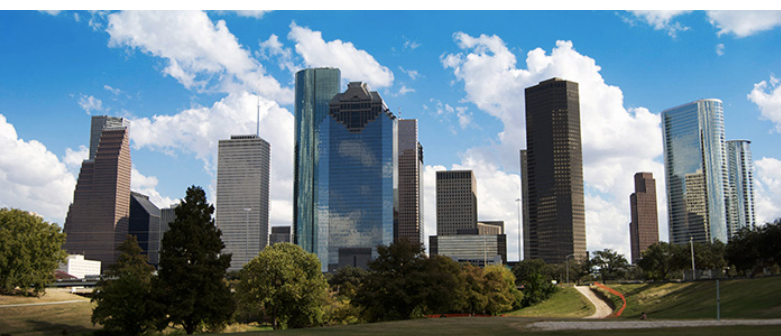
SECTION ON PHYSICAL AND
ENGINEERING SCIENCES
QUALITY AND PRODUCTIVITY SECTION



Chemical and Process
Industries Division
The Global Voice of Quality™



Statistics
Division
The Global Voice of Quality™



You are invited to attend the 59th Annual Fall Technical Conference held this year in Houston, 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 "Quality and Statistics: Solving Problems Today and Tomorrow". 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://asq.org/conferences/fall-technical/>) 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 Houston!

Accommodations

A block of rooms is available at the Westin Oaks Houston at the Galleria through September 15, 2015. Conference room rates are \$159/night (single/double rate), plus taxes. To make reservations, please call the hotel direct at (888) 627-8514 and mention the Fall Technical Conference to obtain the conference room rate (or visit <https://www.starwoodmeeting.com/Book/FTJ06C> for online reservations). 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 Westin Oaks Houston at the Galleria is an approximately 30 minute cab ride from 3 Houston Airports: William P. Hobby, George Bush Intercontinental, and Ellington Field. If you choose to rent a car, complimentary self-parking is available at the hotel. More information is available on the conference website under the "Travel" tab.

Cancellations and Refunds

A complete refund of conference registration fees will be given if you cancel prior to September 17, 2015. Cancellations received on or after this date will incur a \$145 cancellation fee.

Short Courses will be offered on Wednesday, October 7 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.

Split-Plot Design and Analysis

by Peter Goos
Sponsored by ASA-Q&P

Design of experiments textbooks emphasize the importance of randomizing the experimental runs. However, in industrial practice, a complete randomization is often infeasible or impractical. A useful alternative in such scenarios is the split-plot experimental design, which requires a restricted randomization. This course provides a thorough introduction to the design of split-plot experiments, the evaluation of split-plot experimental designs, and the analysis of data from split-plot experiments. Extensions to the split-plot design, such as the strip-plot design and the split-split-plot design are discussed as well. The course emphasizes industrial applications, involving full and fractional factorial two-level designs as well as response surface designs, and uses a regression approach to the data analysis. Based on the insights acquired concerning the data analysis, a flexible approach to the design of split-plot (and related) experiments is introduced. Throughout, various diagnostic tools will be used to evaluate the quality of alternative design options. The importance of simulating data will be highlighted. Course participants are encouraged to bring their laptops.

Peering into the Future: Introduction to Time Series Methods for Forecasting

by David A. Dickey
Sponsored by ASA-SPES

A common goal in statistical analysis is forecasting and the class of autoregressive integrated moving average (ARIMA) models is a workhorse in the toolkit of mathematical forecasters. These models assume a mean and serially correlated errors. Methods, both mathematical and graphical, are described for detecting the nature of that serial correlation and these lead to the selection of an appropriate ARIMA model. Several examples will be shown. Model diagnostics and their use in model modification are shown as well. SASTM will be used in this talk but interpretation rather than code will be the focus. The inference theory for these models requires "stationarity" which will be defined and investigated. In many applications, the data do not seem stationary. Depending on how the data depart from stationarity, the analyst may want to add regressors to the model in addition to the mean or they may opt to difference the data as is common in economics. The "Dickey-Fuller" test for determining whether differencing is needed will be discussed. Adding polynomial terms, seasonal dummy variables, and general regressors will also be shown in examples as will outlier detection. Exponential smoothing has a long and successful history in forecasting. The relationship of this forecasting method to ARIMA methods is quite strong. The method is simple and several examples will be shown, some of which show warning signs suggesting that another approach might be more useful. If time allows, a discussion of Autoregressive Conditionally Heteroscedastic (ARCH) models will be given and/or a discussion of Cointegration, topics which resulted in a Nobel Prize in 2003.

Data Visualization

by Jim Wisnowski
Sponsored by ASQ-CPID

This 8 hour class will provide the foundations for creating better graphical information from potentially very large data sources to accelerate the insight discovery process and enhance the understandability of reported results. First principles and the human elements of information visualization from multiple leading sources such as Edward Tufte and Stephen Few will be explored using example data sets. We will discuss best practices to most effectively and efficiently tell your story. We will explore common errors and make recommendations for aesthetics to include color, font, dimensionality, size, proportion, and scaling. Appropriate displays for univariate and multivariate plots, time dependent data, maps, networks, and animation will be recommended. This hands-on workshop will use Excel to the maximum extent practical and the latest trial versions of JMP and Tableau for participants to create and dynamically modify graphs. A participant who successfully completes this course will: (1) Know the definition of data visualization and information visualization (2) Be familiar with human perception and how to effectively use it to make better graphical displays (3) Understand the principles of graphical excellence (4) Avoid common mistakes in graphical displays (5) Be able to use JMP and Tableau to create graphs that best convey information about the business problem (6) Know what displays are effective for univariate distributions, multivariate correlations and models, maps, and networks (7) Be able to create and export animated graphics

Definitive Screening Designs: What, Why, and How

by Bradley Jones and Christopher Nachtsheim
Sponsored by ASQ-STAT

Definitive Screening Designs (DSDs) are a new class of designs for factor screening that Professor Doug Montgomery has called, "probably the most important development in design of experiments in the last 50 years." These designs are unique in that screening is performed at three levels for quantitative factors, and, if just a few active effects are found, the designs project to highly efficient response surface designs in the active factors. When this is the case, screening and optimization can then be accomplished in one step, avoiding the need for follow-up experiments. The most complete support for design and analysis of DSDs is in JMP. However, the latest version of Design Expert creates these designs and there is also a macro for generating them in Minitab. Students having JMP on their laptops are welcome to bring them so they can follow along. We will provide paper handouts of the slides as well as electronic versions of JMP journals. This course starts by introducing DSDs in their simplest form (where all the factors are quantitative) and demonstrating their extra capabilities over standard two-level fractional factorial and Plackett-Burman screening designs. We then show how to generate DSDs for scenarios where there are additional two-level categorical factors. We also show how to orthogonally block these designs if the factors are all quantitative or if there is a mix of quantitative and two-level categorical factors. We introduce each new wrinkle of design construction with a practical example including data.

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Thursday, October 8, 2015

7:00	REGISTRATION DESK OPENS		
8:00 - 9:00	Presentation of GERALD J. HAHN Q&P ACHIEVEMENT AWARD WELCOME / PLENARY SESSION "Statistical Intervals Vive La Différence!" William Q. Meeker Iowa State University		
Session 1			
9:15 - 10:00	A A Powerful Analytical Method for Definitive Screening Designs Bradley Jones JMP Division/SAS	B Data Quality of Quality Data Kurt DeMaagd Sight Machine	C Identifying an Optimal Method for Constructing Confidence Intervals for Pp, Ppk, and Percent Defective when Data are Non-normally Distributed Yanling Zuo Minitab Inc.
Moderators	Teri Utlaut Intel Corporation	Stephen Clarke SABIC	Joel Smith Minitab, Inc
10:00 - 10:30	B R E A K		
Session 2			
10:30 - 12:00	A STAT Invited Session Statistical Issues and Methods in Metrology Joanne R. Wendelberger Los Alamos National Laboratory	B Experimental Design Central Composite Design Applications in Biomedical Research Louis Johnson Cheryl Pammer Eduardo Santiago Minitab, Inc. Presenter: Louis Johnson	C Technometrics Invited Session A Swarm Intelligence Based (SIB) Natural Heuristic Optimization Method and its Applications in Statistics Frederick Kin Hing Phoa Institute of Statistical Science Academia Sinica Taiwan R.O.C.
	Development and Use of Standards in Metrology: Perspective from a National Metrology Institute Will Guthrie National Institute of Standards and Technology	Analysis Strategies for Definitive Screening Designs Maria L. Weese Miami University Douglas Montgomery Arizona State University Philip J. Ramsey University of New Hampshire Presenter: Maria L. Weese	A Bayesian Perspective on the Analysis of Unreplicated Factorial Designs Using Potential Outcomes Valeria Espinosa Google, Inc.
Moderators	Mindy R Hotchkiss Aerojet Rocketdyne	Willis Jensen W.L. Gore & Associates	William A. Brenneman Procter & Gamble
12:15 - 1:45	L U N C H E O N "The History of the Texas Medical Center" Diane Schaub MD Anderson Cancer Center		
Session 3			
2:00 - 3:30	A Censored/Life Data Analysis Estimating Properties of Antimicrobial Agents Using Statistical Techniques for Data that are Interval Censored and Correlated Adam L. Pintar Nancy Lin NIST Daneli Lopez-Perez FDA Presenter: Adam L. Pintar	B Mixture DOE Choice Experiments Involving Mixtures of Ingredients Peter Goos Universities of Leuven and Antwerp Aiste Ruseckaite Dennis Fok Erasmus University Rotterdam Presnter: Peter Goos	C Practical Issues in Advanced DOE Confirmation Runs in Design of Experiments Willis Jensen W.L. Gore & Associates
	Life Distribution Analysis Based on Levy Subordinators for Degradation with Random Jumps Yin Shu Qianmei Feng University of Houston David W. Colt Rutgers University Presenter: Yin Shu	Repairing Constrained Mixture Experimental Regions and Designs When Some Design Points Produce Undesirable Response Values Greg F. Piepel Scott K. Cooley Pacific Northwest National Laboratory Presenter: Greg F. Piepel	Too Saturated: When Too Many Factors are Too Much in a Supersaturated Design Philip R. Scinto The Lubrizol Corporation Weijie Shen The Pennsylvania State University Presneter: Philip R. Scinto
Moderators	James Wisnowski Adsurgo	Maria Weese Miami University	Christine Anderson-Cook Los Alamos National Laboratory
4:00 - 5:00	Presentation of WILLIAM G. HUNTER AWARD W. J. YOUDEN MEMORIAL ADDRESS William A. Brenneman Procter & Gamble		

General Conference Chair
Flor Castillo, SABIC

Program Committee
ASA-Q&P: Alix Ann Robertson , Sandia National Labs
ASA-SPES (Chair): Zhen Wang, Lubrizol

Publicity Chair
Barbara Wendelberger, University of Wisconsin

Short Course Chair
Anne Driscoll, Virginia Tech

ASQ-CPID: Marc Banghart, Wyle
ASQ-STAT: Mindy Hotchkiss, Aerojet Rocketdyne

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Friday, October 9, 2015

7:30	REGISTRATION DESK OPENS		
Session 4	A Q&P Invited Session Design of Experiments: A Key to Successful Innovation Douglas Montgomery Arizona State University	B CPID Invited Session Bayesian Models for the Analysis of Neuroimaging Data Marina Vannucci Rice University	C JQT Invited Session Dimensional Analysis and its Applications in Statistics Weijin Shen Google, Inc. Tim Davis We Predict Ltd., Timdavis Consulting Ltd. Presenter: Tim Davis
8:00 - 9:30	Understanding and Incorporating Uncertainty into Multiple Response Optimization Christine M. Anderson-Cook Los Alamos National Laboratory	A One-class Ensemble Based Control Chart for Multivariate Process Monitoring Waldyn Martinez Maria L. Weese Miami University Presenter: Waldyn Martinez	Monitoring Product Size and Edging from Bivariate Profile Data Roman Viveros-Aguilera McMaster University
Moderators	Alex Gutman Procter & Gamble	Stephanie DeHart Eastman Chemical	Fugee Tsung HK Univ. of Science & Technology
9:30 - 10:00	B R E A K		
Session 5	A SPES Invited Session The Exclusive Lasso: Competitive Within Group Variable Selection Genevera Allen Rice University Frederick Campbell Rice University Presenter: Genevera Allen	B Advanced SPC CUSUM for Counts: Design Procuedures for Low, Medium and High Count Regimes in Standard and Data-Rich Environments Darwin J. Davis Erwin M. Saniga University of Delaware Thomas P. McWilliams Drexel University James M. Lucss J. M. Lucas and Assoc. Presenter: Darwin J. Davis	C QE Invited Session Definitive Screening Applied to a Simulation Study of the F100-229 Engine Repair Network Raymond R. Hill Air Force Institute of Technology
10:00 - 11:30	Sparse Regression Incorporating Graphical Structure Among Predictors Yufeng Liu The University of North Carolina at Chapel Hill	On Nonparametric EWMA Control Charts Based on Linear Rank Statistics for Monitoring Location Gary R. Mercado Utah Valley University	Optimizing Thin Film Tool Coatings using a Finite Element Computer Simulator Danel Draguljić Franklin & Marshall College
Moderators	Adam Pintar National Institute of Standards and Technology	Ashley Nelson Eastman Chemical	Peter A. Parker NASA Langley Research Center
11:45 - 1:15	L U N C H E O N James L. Rosenberger ASA Vice President		
Session 6	A Specal Applications A Statistical Overview of Uncertainty Quantification Peter Qian University of Wisconsin-Madison	B Modeling for DOE Strategies for Leveraging an Experimental Materials Database for New Product Development David L. Zoller SABIC	C Simulation Applications Real-World Use of Simulation in Analytics Sarel Lavy Texas A&M University John Garcia Alpha Facilities Solutions, LLC Philip R. Scinto Scinto Statistical Services Manish Dixit Sam Houston State University Presenter: Philip R. Scinto
1:30 - 3:00	Optimal Design for Dual Response Systems Sarah E. Burke Douglas Montgomery Connie M. Borror Arizona State University Rachel T. Silvestrini Rochester Institute of Technology Presenter: Sarah E. Burke	Power Transformations in Mixture Models Joseph G. Voelkel Rachel Silvestrini RIT Presenter: Joseph G. Voelkel & Rachel Silvestrini	Probabilistic Approach to Complex Problem Solving in Manufacturing Environments Using Lean Six Sigma Jayjeet (Jay) Govardhan Kuss Filtration Inc. Mike Kalantar Faurecia Automotive Seating Presenter: Jayjeet Govardhan
Moderators	Will Guthrie National Institute of Standards and Technology	Greg F. Piepel Pacific Northwest National Laboratory	Jennifer Kensler Shell

4:00-6:00 SPES Special Session-Panel Discussion
"Success! How is it defined and achieved?"

Chair: Philip R. Scinto, Lubrizol Corporation

Kathleen D. Higley, US Strategy Manager (Fuels) at Shell Lubricants
Cassandra Garcia, Entrepreneur & Owner at Fed and Fit, Project Manager at ALPHA Facilities Solutions, LLC
Simon Sheather, Professor & Academic Director MS Analytics Program at Texas A&M University
William A. Brenneman, Research Fellow at Procter & Gamble

59th 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://asq.org/conferences/fall-technical/>. Contact ASQ Customer Care at 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. 17, 2015:	<input type="checkbox"/> \$335	<input type="checkbox"/> \$235	<input type="checkbox"/> \$235	<input type="checkbox"/> \$135
Late Registration after Sept. 17, 2015:	<input type="checkbox"/> \$385	<input type="checkbox"/> \$285	<input type="checkbox"/> \$285	<input type="checkbox"/> \$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

Split-Plot Design and Analysis ☐\$300

Data Visualization ☐\$300

Peering into the Future: Time Series Methods for Forecasting ☐\$300

Definitive Screening Designs: What, Why, and How ☐\$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 Westin Oaks Houston at the Galleria may be made on the hotel website or by calling the hotel at (888) 627-8514.

*denotes required information