PharmaED RESOURCES, Inc.

A Short Course in Mixture Designed Experiments

October 16–17th, 2018, Racquet Club of Philadelphia, PA

Presented by Dr. Ronald D. Snee

This course will help scientists and engineers develop formulation recipes more quickly and efficiently. Good strategies are needed to get the right data in the right amount at the right time. Dr. Snee has worked on this problem for decades and has executed many different types of these experiments in a variety of industries. This experience has enabled him to identify what is essential for successful designs rather than what is just nice to know. Participants will be able to immediately apply what they have learned.

Key takeaways include how to:

- **Approach formulation development from a strategic viewpoint, where the resulting experiments provide a roadmap that plans for developing a successful formulation.**
- **Focus on developing understanding about how components blend together.**
- **Use designs and models that focus on finding dominant components with large effects.**
- **Use screening experiments to identify components that are most critical for formulation performance. This strategy ensures that important components are not overlooked.**
- **Analyze both screening and optimization experiments using graphical and numerical methods. The right graphics can extract additional information from the data.**
- **Integrate both formulation components and process variables in designs and models, using evolved methods that reduce the required experimentation by up to 50%.**

Collectively, the actions of: focusing on the development of strategic approaches; taking a broad view of formulation using screening designs; and investigating formulation components and process variables within the same experimental program, will all speed up experimentation and develop quality formulations in a timelier manner.

Course Outline

1. **Mixtures, Blends and Formulations – An Introduction**
2. **Basics of Experimentation and Response Surface Methodology**
3. **Experimental Designs for Formulations**
4. **Modeling Formulation Data**
5. **Screening Experiments - Identifying the Critical Components**
6. **Constrained Mixture Systems**
7. **Screening Experiments with Constrained Systems**
8. **Response Surface Modeling With Constrained Systems**
9. **Experiments involving mixture variables and process variables**
10. **Multiple Response Optimization – Graphical and Mathematical**

Examples, case studies and tips and traps will be provided throughout the course.

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What you will learn – How To:

- Approach formulation development from a strategic viewpoint.
- Generate the right data in the right amount at the right time.
- Design screening experiments to identify those components that are most important to the performance of the formulation.
- Design optimization experiments to identify optimum responses in the design space (operating window).
- Analyze both screening and optimization experiments using graphical and numerical methods.
- Create formulation design spaces and perform associated risk analysis
- Optimize multiple criteria, such as the quality, cost, and performance of product formulations.
- Design and analyze formulation studies that involve both formulation components and process variables using methods that reduce the required experimentation by up to 50%.
- Reduce mistakes, better meet deadlines, avoid wasted experimentation and reduce the cost of experimentation in terms of time, personnel and funds.

Cases you will study:

- Aerosol Propellant Development
- Flare Formulation Performance Optimization
- Gasoline Blending
- Glass Formulation Optimization
- Lubricant Performance Prediction
- Pharmaceutical Tablet Screening and Optimization
- Plastic Product Development
- Rocket Propellant Performance Optimization
- Vegetable Oil Formulation
- Wine Blending

About your instructor:

Ronald D. Snee, Ph.D.

Ronald D. Snee is President of Snee Associates, LLC. He provides guidance to senior executives in pursuit of improved business performance using Quality by Design, Process Modelling, Lean Six Sigma and other improvement approaches that produce bottom line results. His work focuses on the pharmaceutical and biotech industries. He is an Adjunct Professor in the pharmaceutical programs at Rutgers and Temple Universities.

Ron received his BA in Mathematics from Washington and Jefferson College and MS and PhD degrees from Rutgers University in Applied and Mathematical Statistics. He is a Fellow of the American Society of Quality, the American Statistical Association, and the American Association for the Advancement of Science. He has been elected as an Academician in The International Academy for Quality.

He began his career as practicing statistician at DuPont in 1968 following two years as an Assistant Professor in Statistics at Rutgers University. During his 24 years at DuPont he progressed from being an internal statistical consultant, to managing statisticians, software engineers and a variety of engineering specialists, to holding corporate level positions in R&D Planning and continuous process improvement.

During this time he was the originator and contributor to the development of mixture experimental designs which have been used with substantial benefit in chemical, process, pharmaceutical, biotechnology, and petroleum industries. In recognition of this contribution, he became the youngest professional ever to receive the Walter A. Shewhart Medal for the excellence of a technical contribution in the field of quality when he was 44 years old.

Ron has held a number of positions of trust in consulting industry and corporations since his retirement from DuPont. Most notably he was the Vice President for Process Assurance at Bell Atlantic where he was responsible for leading the Corporation in implementation of process management applying the concepts of statistical thinking for improving customer service. His group defined Bell Atlantic's core business processes, established roles and responsibilities for process owners and created a corporate-wide model for business process management.

Prior to Bell Atlantic Ron served at Joiner Associates as Vice President, Consulting and Senior Management Consultant, from 1992 to 1996.

Ron was a member of the team that created the criteria for the Malcolm Baldrige National Quality Award and became President of the Delaware Quality Consortium that administers the Delaware Quality Award and he also served as Judge for the Award.

He has been recognized by 20 major awards and honors including the ASQ Distinguished Service Medal, ASQ Grant Medal and the ASA Deming Lecture Award, He has published five books and more than 235 papers in the fields of statistics, performance improvement, and quality management. His most recent book is: *Strategies for Formulation Development* which is the subject of this workshop.

Who should attend?

- R&D Executives, Leaders and Managers
- Formulation Scientists and Engineers
- Those who desire to use Quality by Design in Formulation Development
- Lean Six Sigma Black Belts and Statisticians working with design teams
- Chemists and Chemical Engineers
- Process and Manufacturing Engineers
- Quality Control and Assurance personnel
- R&D personnel working in the chemical. pharmaceutical, food, plastics, paint, petroleum, coatings, metals, ceramic, biotech, electronics, and textiles industries

We recommend that you bring:

- Desire to learn and a mind open to new ideas
- Laptop computer with software used for Mixture designs.
- Case studies of formulation experiments you have worked on and wish to have critiqued (optional)

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About your conference destination:

The Racquet Club of Philadelphia is located in the heart of downtown Philadelphia, adjacent to beautiful Rittenhouse Square. From the conference venue, you can access many points of interest in Philadelphia including Independence Hall, the Kimmel Center, the Avenue of the Arts, numerous shops, and excellent restaurants!

Registration Information

Register for the conference using one of three options:
Online: www.pharmaedresources.com **Phone:** (217) 721-5774
Mail: 2810 Robeson Park Drive, Champaign, IL 61822

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VENUE INFORMATION:

Dates:	October 16–17th, 2018
Venue:	The Racquet Club of Philadelphia
Venue Address:	215 South 16th Street Philadelphia, PA 19102
Venue Phone:	(215) 735-1525
Hotel Room Block:	Club Quarters Hotel, Philadelphia
Hotel Address:	1628 Chestnut St Philadelphia, PA 19103
Hotel Telephone:	(215) 282-5000

Please register me for:

A Short Course in Mixture Designed Experiments

Standard Registration: $1,395
Early Bird Special: $1,195 if you register before Aug. 1st
Call for government or academic discount

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To pay by check, please provide a purchase order below. Please note that all payments must be received five (5) days prior to the conference to ensure space. Attendees will not be admitted to the conference without full payment.

PURCHASE ORDER #:

PLEASE NOTE:

PharmaEd Resources does not offer refunds. However, if you cannot attend after registering, we are happy to apply your registration fee to another PharmaEd Resources event, or transfer your registration to a colleague. Notice of cancellation must be received at least 5 days prior to the event.