

Course Abstract

This workshop is designed to enhance the skills of statisticians in using Statistical Engineering to solve large, complex, unstructured problems encountered in business, industry and government. Several case studies of the use of Statistical Engineering in a variety of fields will be presented. Issues addressed include: understanding what Statistical Engineering is, why it is important and how to use it. The difference between Statistical Engineering and the classic application of statistics will also be discussed.

The participants will be introduced to the critical leadership skills needed for the successful use of Statistical Engineering. Each participant will develop a personal action plan for using Statistical Engineering in their work environment. The workshop participants will gain insight regarding how to increase the impact of their work and how to transition from being viewed as passive consultants to being viewed as proactive leaders within their organizations.

The workshop will use an integration of presentation and discussion of material from articles on Statistical Engineering, the sharing of personal experiences (participants and workshop leaders) in solving large, unstructured problems, and the development of action plans. The session will be highly interactive enabling extensive participation by all.

Workshop Outline

- Start-up: Introductions, Agenda Review, Participant Expectations
- Why Change is Needed - Trends Affecting the Statistics Profession
- Statistical Engineering: What, Why and How
- Statistical Engineering Case Studies
- How Statistical Engineering is Different (Workshop)
- Identifying Opportunities for Using Statistical Engineering
- Statisticians Transitioning from Consultants to Leaders
- Skills needed to be leaders
- Theory Underlying Statistical Engineering and Needed Research
- Personal Action Plans for Use of Statistical Engineering (Workshop)
- CE Event Summary and Evaluation

Course Learning Objectives

- Awareness and understanding of Statistical Engineering:
 - What it is
 - Its value

- How to use it to solve large, unstructured problems encountered in business and industry
- Better understand the application of Statistical Engineering through the review and discussion of case studies
- How to assess and increase the impact of statistical studies
- Introduction to the leadership skills needed to effectively use Statistical Engineering
- Creation and critique of personal action plans for using Statistical Engineering

Instructor Biographies

Ron Snee and Roger Hoerl are recognized leaders in the statistics profession having a combined experience of more than 70 years in leading organizations and individuals in the use of statistical thinking and methods for improving performance. Snee has held leadership positions in statistical organizations at DuPont and Bell Atlantic, prior to launching his consulting career. Hoerl held leadership positions at Hercules and Scott Paper prior to his current assignment at General Electric as leader of GE Global Research Applied Statistics Laboratory. More details on their backgrounds are contained in the following biographies.

Ron Snee is Founder and President of Snee Associates, a firm dedicated to the successful implementation of process and organizational improvement initiatives. He provides guidance to senior executives in their pursuit of improved business performance using Quality by Design, Lean Six Sigma and other improvement approaches that produce bottom line results. He has played a leadership role in 28 major improvement initiatives for firms such as W. R. Grace, Kraft Foods, GE, DuPont, Bell Atlantic, Novartis and Schering Plough. He worked at DuPont for 24 years and as Vice President of Process Assurance prior to beginning his consulting career and is Adjunct Professor in the Temple University School of Pharmacy. He recently authored three books on Lean Six Sigma with Roger W. Hoerl of General Electric.

Ron received his BA from Washington and Jefferson College and MS and PhD degrees from Rutgers University. He is an academician in the International Academy for Quality and Fellow of the American Society of Quality, American Statistical Association, and American Association for the Advancement of Science. He has been awarded ASQ's Shewhart and Grant Medals, and ASA's Deming Lecture Award as well as numerous other awards and honors. He is a frequent speaker and has published 4 books and more than 225 papers in the fields of performance improvement, quality, management, and statistics. Snee was recently received the Institute for Validation Speaker of the Year Award.

Roger Hoerl leads the Applied Statistics Laboratory at GE Global Research, which focuses on new product and service development within each of the GE businesses. He has been named a Fellow of the American Statistical Association and the American

Society for Quality, and has been elected to the International Statistical Institute and the International Academy for Quality. He has received the Brumbaugh and Hunter Awards, as well as the Shewhart Medal, from the American Society for Quality, and the Founders Award from the American Statistical Association.

In 2006 he received the Coolidge Fellowship from GE Global Research, honoring one scientist a year from among the four global GE Research and Development sites for lifetime technical achievement. He used his six-month Coolidge sabbatical to study the global HIV/AIDS pandemic, spending a month traveling through Africa in 2007, and recently publishing a book on the subject entitled *Use What You Have; Resolving the HIV/AIDS Pandemic*. Roger has also authored five books in the areas of statistics and business improvement, two book chapters, and over 40 refereed journal articles.

Publications on Statistical Engineering by Roger Hoerl and Ron Snee

- Hoerl, R. W. and R. D. Snee (2002) *Statistical Thinking - Improving Business Performance*, Duxbury Press, Pacific Grove, CA.
- Hoerl, R. W. and R. D. Snee (2009) "Post Financial Meltdown: What Do Services Industries Need from Us Now?", (with discussion), *Applied Stochastic Models in Business and Industry*, December 2009, 509-521
- Hoerl, R. W. and R. D. Snee (2010) "Moving the Statistics Profession Forward to the Next Level", *The American Statistician*, February 2010, 10-14.
- Hoerl, R. W. and R.D. Snee (2010) "Closing the Gap: Statistical Engineering can Bridge Statistical Thinking with Methods and Tools", *Quality Progress*, May 2010, 52-53.
- Hoerl, R. W. and R. D. Snee (2010) "Tried and True - Organizations put Statistical Engineering to the Test and See Real Results", *Quality Progress*, June 2010, 58-60.
- Hoerl, R. W. and R. D. Snee (2010) "Statistical Thinking and Methods in Quality Improvement: A Look to the Future", (with discussion), *Quality Engineering*, July-September, Vol. 22, No. 3, 119-139.
- Pfeifer, C. G., D. W. Marquardt and R. D. Snee (1988) "A Time for Change", *Chance: New Directions for Statistics and Computing*, Vol. 1, No. 1, 39-42.
- Snee, R. D. and R. W. Hoerl (2003) *Leading Six Sigma - A Step by Step Guide Based on Experience With General Electric and Other Six Sigma Companies*, FT Prentice Hall, New York, NY,
- Snee, R. D. and R. W. Hoerl (2010) "Further Explanation; Clarifying Points About Statistical Engineering", *Quality Progress*, December 2010, pp. 68-72.