THE UNIVERSITY OF TENNESSEE
CENTER FOR EXECUTIVE EDUCATION

PRACTICAL STRATEGIES FOR PROCESS IMPROVEMENT INSTITUTE

- Location: Knoxville, Tennessee
- Duration: Three Non-consecutive Weeks
- Dates:
  1. September 10-15; October 9-13; November 6-10, 2000
  2. January 28-February 2; February 26-March 2; March 26-30, 2001
  3. May 13-18; June 4-8; July 9-13, 2001
  4. September 9-14; October 8-12; November 5-9, 2001
- 2000 Tuition: $7,350
  (includes meals and lodging)
- 2001 Tuition: $7,850
  (includes meals and lodging)
- Class size is limited

1. PARTICIPANT PROFILE
The Practical Strategies for Process Improvement Institute is designed primarily for process engineers, mid-to-upper-level managers, plant managers and senior managers with significant strategic and improvement responsibility.

2. OVERVIEW
Companies of all sizes are racing to improve their ability to provide goods and services of the correct quality, in the correct quantity, on-time, every time. As global competition mounts, only those organizations which effectively manage process and product variability will gain competitive advantage.

The Practical Strategies for Process Improvement Institute is a widely-recognized and respected program which presents practical, proven strategies for process improvement. The Institute is designed for process engineers, quality professionals and mid-to-upper-level managers with significant strategic and improvement responsibility.

Participants learn statistical methods for understanding variability, including the use of control charts (such as \( p, np, c, u, X-Bar \text{ and } R, X \text{ and } \text{Moving } R \)) for the study and improvement of processes. Participants learn that while these control charts are helpful in monitoring and maintaining processes, they can also be invaluable as a management tool for studying and prioritizing work efforts as the organization moves toward improved systems.

Throughout the course, participants develop a better understanding of data analysis, data collection and other process improvement methods. Other topics covered in the Institute include subgrouping plans for data collection and analysis, operational definitions, measurement, capability and designed experiments.

At the end of each week’s session, participants return to their organizations to put their newly-mastered concepts into practice. Then, participants return to the program three weeks later to review those concepts and add to them.
3. KEY OBJECTIVES
- To discover what constitutes system and process improvement in the context of providing customer value
- To learn how statistical methods can be used to understand cause-and-effect relationships in order to gain process knowledge
- To learn how statistical techniques can be used to study sources of variation with the goal of improving processes
- To understand each level of process work — maintaining, controlling, and improving — and to discuss strategies for working concurrently at all levels
- To discuss the managerial behaviors required to transform an organization into one dedicated to continuously improving the value provided by its goods and services

4. METHODS OF INSTRUCTION
The relationship between statistics, quality, cost, schedule and value in the competitive marketplace is explored through lectures, case studies, discussion and a project assignment. During the first week, each participant is assigned a faculty advisor who works with them for the duration of the course. (Many participants maintain contact with their advisor even after the course is over. This opportunity for ongoing support is one reason that the Institute is consistently one of the Center for Executive Education’s most popular offerings.)

See the program schedule included with this profile sheet.

5. FACULTY
The Institute is taught by the faculty of The University of Tennessee’s College of Business Administration. Each faculty member has both a thorough knowledge of statistical methods and extensive consulting experience. Faculty members include:
- Mary G. Leitnaker, the course owner for this program and an instructor for the Design of Experiments: Basics of Multifactor Experimentation program. Dr. Leitnaker is co-author of the book, The Power of Statistical Thinking: Improving Industrial Processes.
- Ramon Leon, a specialist in the areas of industrial statistics, reliability and robust design and an instructor for the Design of Experiments: Basics of Multifactor Experimentation program.
- Richard D. Sanders, one of the founders of this program and the Designed Experiments courses. Dr. Sanders is co-author of the book, The Power of Statistical Thinking: Improving Industrial Processes.
- James L. Schmidhammer, a co-founder of the Statistical Consulting Center, and a specialist in statistical quality control and multivariate analysis.
PRACTICAL STRATEGIES FOR PROCESS IMPROVEMENT INSTITUTE

► David L. Sylwester, an expert in statistical methodology, analysis of multivariate count data, and biostatistics.
► Esteban Walker, an expert in regression methods and an instructor for the Design of Experiments: Basics of Multifactor Experimentation program.

6. FACILITIES
Classes are held in the executive classrooms of The University of Tennessee Center for Executive Education. These facilities are specifically designed for group-interaction programs.

Accommodations are single-occupancy rooms at a nearby hotel.

7. SPECIAL FEATURES
Each participant will receive a copy of The Power of Statistical Thinking, Addison-Wesley Publishing, 1996. This valuable reference text was written by UT faculty and is based on over 15 years of research, teaching and consulting for manufacturing applications.

The Institute, like all Center for Executive Education public programs, is available as a customized, in-house program for organizations. As an in-house program, it is also available in Spanish.

This course is available for three semester hours of either graduate or undergraduate statistics credit. Students must complete three exams and their project assignment in order to earn University credit.

The Practical Strategies for Process Improvement Institute qualifies as one of the four fully-accredited graduate courses that make up The University of Tennessee’s first academic certificate program, the Graduate Certificate in Applied Statistical Strategies. The other courses are available nationally through UT’s award-winning web-based Cyberclass technology.

8. CONTACT
For more information on the Practical Strategies for Process Improvement Institute, please contact:

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FAX (865)974-4989
E-mail mdc@utk.edu
PRACTICAL STRATEGIES FOR PROCESS IMPROVEMENT INSTITUTE

9. WEB SITE
For late-breaking news on the Center for Executive Education and its offerings, visit our web site at http://mdc.bus.utk.edu

10. RELATED COURSES
Design of Experiments:
  Basics of Multifactor Experimentation
Black Belt Certification
Lean Enterprise Systems Design Institute
On-Line Experimentation
Response Surface Methodology
Robust Design

Competitive Challenges. 
Real-World Solutions.
# Practical Strategies for Process Improvement Institute Schedule

**Week One**

<table>
<thead>
<tr>
<th>SUNDAY</th>
<th>MONDAY</th>
<th>TUESDAY</th>
<th>WEDNESDAY</th>
<th>THURSDAY</th>
<th>FRIDAY</th>
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<tbody>
<tr>
<td>8:10-9:40AM Introduction to Statistical Thinking</td>
<td>8:10-9:40AM Introduction to c and u Charts</td>
<td>8:10-9:40AM R and X-bar Charts</td>
<td>8:10-9:40AM The Normal Distribution and Process Capability</td>
<td>8:10-9:40AM Moving Forward</td>
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<tr>
<td>10:00-11:30AM Common Cause-Special Cause Model for Studying Process Variation</td>
<td>10:00-11:30AM Introduction to c and u Charts (Continued)</td>
<td>10:00-11:30AM Subgrouping Strategies</td>
<td>10:00-11:30AM Control Charts for Individual Reading</td>
<td>10:00-11:30AM Measurement Issues</td>
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<td>11:30AM-1:00PM Lunch</td>
<td>11:30AM-1:00PM Lunch</td>
<td>11:30AM-1:00PM Lunch</td>
<td>11:30AM-1:00PM Measurement Issues (Continued)</td>
<td>11:45AM-1:00PM Lunch</td>
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<tr>
<td>4:00-6:00PM Hotel-Lobby Registration</td>
<td>1:00-2:30PM Study of Process Variations</td>
<td>1:00-2:30PM Introduction to Variables Data</td>
<td>1:00-2:30PM Central Limit Theorem, R and s Charts</td>
<td>1:00-2:30PM Moving Average and Range charts</td>
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<tr>
<td>5:30-6:30PM Reception</td>
<td>2:45-4:15 PM Identifying Sources of Process Variation</td>
<td>2:45-4:15 PM Distribution of Measurements</td>
<td>2:45-4:15 PM The Funnel Experiment; or Good Intentions Can Increase Variation</td>
<td>2:45-4:15 PM Case Study: Applying Statistical Thinking</td>
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<tr>
<td>6:30-7:30PM Dinner</td>
<td>4:30-6:30 PM Subgrouping and Process Management</td>
<td>4:30-6:30PM Case Study Insulators</td>
<td>4:30-5:30PM The Funnel Experiment; or Good Intentions Can Increase Variation (Continued)</td>
<td>4:30-6:30PM Case Study: Applying Statistical Thinking</td>
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<tr>
<td>7:30-8:30PM Orientation Session</td>
<td>6:45-8:00PM Dinner</td>
<td>6:45-8:00PM Dinner</td>
<td>5:45-7:00PM Hospitality</td>
<td>6:45-8:00PM Dinner</td>
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<tr>
<td>Time</td>
<td>Monday</td>
<td>Tuesday</td>
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<tr>
<td>10:00-11:30 AM</td>
<td>Components of Variance I The Need to Separate Sources of Variation</td>
<td>Batch Processes: Variation Between and Within Batches</td>
<td>Introduction to Statistical Tolerancing (Continued)</td>
<td>Discrimination of Measurement Processes</td>
<td>Process Study in a Job Shop</td>
</tr>
<tr>
<td>11:30-1:00 PM</td>
<td>Lunch</td>
<td>Lunch</td>
<td>Lunch Consultations</td>
<td>Lunch Consultations</td>
<td>Lunch Consultations</td>
</tr>
<tr>
<td>1:00-2:30 PM</td>
<td>Components of Variance II Sampling and Subgrouping Plans</td>
<td>Components of Variance III Magnitude and Stability Issues</td>
<td>Evaluating Assembly Processes</td>
<td>Case Study: Subgrouping Strategies</td>
<td>Case Study: Subgrouping Strategies</td>
</tr>
<tr>
<td>2:45-4:15 PM</td>
<td>Components of Variance II Sampling and Subgrouping Plans (Continued)</td>
<td>Further work on Measurement Issues</td>
<td>Case Study: Using Statistical Tolerancing in an Assembly Process</td>
<td>Case Study: Subgrouping Strategies (Continued)</td>
<td>Case Study: Subgrouping Strategies (Continued)</td>
</tr>
<tr>
<td>4:30-6:30 PM</td>
<td>CuSum Charts</td>
<td>Further work on Measurement Issues (Continued)</td>
<td>Case Study: Using Statistical Tolerancing in an Assembly Process (Continued)</td>
<td>Developing Subgrouping Strategies for Purposeful Process Study (Continued)</td>
<td>Developing Subgrouping Strategies for Purposeful Process Study (Continued)</td>
</tr>
<tr>
<td>6:45-8:00 PM</td>
<td>Dinner</td>
<td>Dinner</td>
<td>Hospitality</td>
<td>Lunch</td>
<td>Lunch</td>
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**Week One Exam**
## PRACTICAL STRATEGIES FOR PROCESS IMPROVEMENT INSTITUTE SCHEDULE

### Week Three

<table>
<thead>
<tr>
<th>MONDAY</th>
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<th>FRIDAY</th>
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<tbody>
<tr>
<td>8:10-9:40 AM Process Comparisons and Enumerative &amp; Analytical Issues</td>
<td>8:10-9:40 AM Identifying Correlation's and Studying Cause &amp; Effect Relationships</td>
<td>8:10-9:40 AM Including Many Process Parameters in a Designed Experiment</td>
<td>8:10-9:40 AM Integrating &quot;SPC&quot;, Designed Experiments and Process Improvement Objectives</td>
<td>8:10-9:45 AM (Hotel) Capstone Case Study (Continued)</td>
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<tr>
<td>10:00-11:30 AM Process Comparisons and Enumerative &amp; Analytical Issues (Continued)</td>
<td>10:00-11:30 AM Identifying Correlation's and Studying Cause &amp; Effect Relationships (Continued)</td>
<td>10:00-11:30 AM Including Many Process Parameters in a Designed Experiment (Continued)</td>
<td>10:00-11:30 AM Integrating &quot;SPC&quot;, Designed Experiments and Process Improvement Objectives (Continued)</td>
<td>10:00-11:30 AM (Hotel) Capstone Case Study (Continued)</td>
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<td>11:30-1:00 PM Lunch</td>
<td>11:30-1:00 PM Lunch Consultations</td>
<td>11:30-1:00 PM Lunch Consultations</td>
<td>11:30-1:00 PM Lunch Consultations</td>
<td>11:45-1:00 PM (Hotel) Capstone Case Study (Continued)</td>
</tr>
<tr>
<td>Optional Homework Review</td>
<td>1:00-2:30 PM Subgrouping Plans for Studying Webs, Coils and Rolls</td>
<td>1:00-2:00 PM Further Aids for Designing Experiments</td>
<td>1:00-2:30 PM (Hotel) Implementation Comments</td>
<td>1:15-2:15 PM (Hotel Restaurant) Lunch</td>
</tr>
<tr>
<td>2:45-4:15 PM Subgrouping Plans for Studying Webs, Coils and Rolls (Continued)</td>
<td>2:45-4:15 PM Introduction to Designed Experiments for Ongoing Process Study</td>
<td>2:15-3:45 PM SMC - Room G-4: Computer-Aided Analysis of Designed Experiments</td>
<td>2:45-4:15 PM (Hotel) Capstone Cast Study</td>
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<tr>
<td>4:30-6:30 PM Extensions to Components of Variance Studies</td>
<td>4:30-6:30 PM Case Study: Use of Designed Experiments</td>
<td>4:00-5:30 PM SMC - Room G-4 Computer-Aided Analysis of Designed Experiments (Continued)</td>
<td>4:30-6:30 PM (Hotel) Capstone Case Study (Continued)</td>
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<tr>
<td>6:45-8:00 PM Dinner</td>
<td>6:45-8:00 PM Dinner</td>
<td>5:45-7:00 PM Hospitality</td>
<td>6:45-8:00 PM Dinner</td>
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<td><strong>Week Two Exam</strong></td>
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