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## InIn 4078: Statistical Quality Control **The Seven Tools of SPC**

## **Objectives:**

After completing this lab, the student should

Have enhanced his/her abilities to identify, formulate, analyze, and suggest solutions to quality control problems.

Be able to select and apply appropriate SPC tools to process control situations. Understand, construct, and use histograms, check sheets, Pareto charts, cause-andeffect diagrams, control charts, stratification analysis, and scatter diagram for engineering problem solving.

Have enhanced his/her abilities to work on teams and present results in effective oral presentations and written reports.

Use Minitab to perform simple analyses using the seven tools of SPC and interpret the results.

## **Procedure:**

- 1. The students will organize themselves in teams of two or three people.
- 2. Before the lab session, all students must read, study, and learn:
  - a. Section 4.4 in our textbook, "The rest of the "Magnificent Seven".
  - b. Chapter 9, "The Seven Basic Japanese Tools" from the book by W. J. Kolarik, Creating Quality - concepts, systems, strategies, and tools -
- 3. Visit the web site: <u>http://deming.eng.clemson.edu/pub/tutorials/qctools/homepg.htm;</u> read the **synopsis** of the seven quality control tools, and do the **tutorials** on the quality control tools.
- 4. Write a short paper (about 4 pages, paper size 8 ½" x 11", one-inch margin on all sides, font size 10 or 12 points) summarizing the seven basic tools of SPC.
- 5. Do the Minitab tutorial, "Session One: MINITAB Basics".
- 6. Students must come to the lab session prepared to take a short exam (20 to 30 min.) on the seven basic tools of SPC.
- 7. The lab instructor will give each team a short problem related to the use of the seven basic tools; the teams will solve the problem, and two or three teams will be asked to give a short oral presentation.
  - a. Perform a Pareto Analysis on how an IE undergraduate student spends his/her time during a week; list at least 10 different activities.
  - b. Construct a cause-and-effect diagram for the "final grade on InIn4078".