STAT 495: Applied Statistics for Industry I

Syllabus, Fall 2006

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Office Hours: MWF 11:00–11:50 Central Time
MT 1:10–2:00 Central Time
and by appointment.

Lecture: This course will be delivered via the World
Wide Web Fall 2006. Students will view two lectures each week.
Lecture tapes will be available via WebCT.

Materials: The text Statistical Quality Design and Control by DeVor, Chang
and Sutherland is the required text. Course materials will be made
available to all students via WebCT. Also check the course website.

Computing: The preferred computing package is JMP. This program can be
downloaded from the ISU website or a CD can be sent to you.
Students may use other statistical computing packages, e.g. Minitab
but there is no guarantee that the instructor can help if they run
into problems using such a package.

Exams: Exam 1: Week of October 2
Exam 2: Week of November 6
Final Exam: Week of December 11

Assignments: Reading assignments correspond to the lecture for that day. It is
recommended that you read the suggested sections in the text
prior to viewing the tape. The due date for each assignment is one
week after it is assigned. Corrected assignments will be returned
as soon as possible. Solutions will be posted via WebCT.
Grading: Grading is based on your performance on exams and homework assignments. The breakdown of points is as follows:

- Exam 1: 100 pts
- Exam 2: 100 pts
- Final Exam: 130 pts
- Homework: 100 pts
- Project: 70 pts
- Total 500 pts

Tape # and Material Covered Assignment

1. Introduction

2. Statistical Thinking

Week of August 28, students view tapes 1 & 2.

3. Quality Improvement Sections 1.1, 1.2, 1.3
   Six Sigma Sections 2.1, 2.2, 2.3

4. Actions Based on Data Sections 3.1, 3.2
   Analytic vs. Enumerative Studies
   Homework #1 assigned

Week of September 4, students will view tapes 3 & 4.

5. Magnificent Seven: Part 1
   Flow charts, cause-and-effect,
   Pareto charts

6. Magnificent Seven: Part 2
   Histograms, scatterplots, stratification
   Section 3.3
   Homework #2 assigned

Week of September 11, students view tapes 5 & 6, Homework #1 due.

7. The Measurement System

8. Gage R & R
   Homework #3 assigned

Week of September 18, students view tapes 7 & 8, Homework #2 due.
<table>
<thead>
<tr>
<th>Date</th>
<th>Tape # and Material Covered</th>
<th>Assignment</th>
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</thead>
<tbody>
<tr>
<td>9.</td>
<td>Statistical Control</td>
<td>Sections 4.1, 4.2, 4.3</td>
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<tr>
<td>10.</td>
<td>Review for Exam 1</td>
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Week of September 25, students view tapes 9 & 10, Homework #3 due.

******* Exam 1 *******

11. Introduction to Control Charts  Sections 4.4, 4.5, 4.6

Week of October 2, students take Exam 1 and view tape 11.

12. $\bar{X}$ & $R$ charts, construction  Sections 5.4, 5.5
13. $\bar{X}$ & $R$ charts, interpretation  Chapter 6  
   Homework #4 assigned

Week of October 9, students view tapes 12 & 13.

14. Evaluating alarm rules  
    Rational Subgrouping  Chapter 7
15. Other charts for measurement data  Sections 11.1, 11.2  
    Homework #5 assigned

Week of October 16, students view tapes 14 & 15, Homework #4 due.

16. Control charts for count data I  Chapter 13
17. Control charts for count data II  Chapter 14  
   Homework #6 assigned

Week of October 23, students view tapes 16 & 17, Homework #5 due.

18. Assumptions, caveats and cautions
19. Review for Exam 2

Week of October 30, students view tapes 18 & 19, Homework #6 due.
20. Statistical thinking revisited

Week of November 6, students take Exam 2 and view tape 20.

   Chapter 9

22. Process Capability II
   Homework #7 assigned

Week of November 13, students view tapes 21 & 22.

23. Quantifying sources of variability, Nested designs

24. More on nested designs
   Homework #8 assigned

Week of November 20, students view tapes 23 & 24, Homework #7 due.

25. Enumerative studies; Definitions

26. Enumerative studies; Probability
   Homework #9 assigned

Week of November 27, students view tapes 25 & 26, Homework #8 due.

27. Inference

28. Philosophy of Quality
   Review for Final Exam

Week of December 4, students view tapes 27 & 28, Homework #9 due.

******* Final Exam, Week of December 11 *******