Course Module
Stephen F. Austin State University
STAT 5390-001 Experimental Design & Analysis
Math (Bush) 213 TR 12:30-1:45PM
ZOOM: Mtg#: 952 4543 1378, PC: 016725

Instructor
Robert (Bob) Henderson
Department: Mathematics & Statistics; Office: Math (Bush) 344
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Phone: Office: (936) 468-1540; Cell: (936) 615-7796
BA in Math & History – Trinity University, San Antonio, TX (1978)
MS in Mathematical Statistics – Southern Methodist University, Dallas, TX (1980)
PhD in Mathematical Statistics – Southern Methodist University, Dallas, TX (1982)
MBA – University of Delaware, Newark, DE (1988)
Worked in industry for 27 years, 6 years with DuPont as internal consultant for a variety of businesses and staff groups, then 21 years in the semiconductor business, most with a supplier of a key enabling material for semiconductor production, and later with Samsung working primarily with engineers in process control efforts. The entire 27 years included many training delivery, as well as course development activities related to basic statistics, experimental design, and process control systems. Fall of 2009 was first semester at SFA.

Teaching Hours – MWF 9-9:50AM, MWF 11-11:50AM, TR 11:00AM-1:45PM
Office Hours – MWF 10-10:50AM, M 2-5PM, TW 2-4PM, and by appointment. Also, during these periods, you can send me an e-mail at the e-mail address above, and I will send you back a ZOOM Meeting Number and Passcode.

Course Goals
This course ideally will provide students with an introduction to and understanding of basic linear models, good experimental design practices, variance component analysis, and statistical process control.

Text
None.

Computer Access/Skills
This course is largely applied in nature; consequently, it will be helpful to have some facility in working with data using a computer. The course work will be greatly facilitated with the use of a statistical software package (JMP is one such package, which is available through MySFA, and will be utilized through much of the course). Knowledge of and ability to utilize Microsoft Office programs – Excel, Word, and Powerpoint – will also often be beneficial. Almost all workplaces expect some skills in working with these packages, and use them for reporting and/or presentation purposes. In addition, some familiarity with SAS and/or R (other more powerful statistical packages) might be helpful, but is certainly not necessary or required.

Prerequisites
STAT 3342 (Previously STA 320) or equivalent

Course Syllabus
The official course syllabus can be found at:
http://www3.sfasu.edu/math/docs/syllabi/STAT3346Syllabus.pdf
Course Overview

Week 1-2: Review of Statistical Inference & 1-way Analysis of Variance
Week 3: Development of 2-way Analysis of Variance
Week 4: Strategy of Experimentation
Week 5-6: Screening Designs (including Workshop 1)
Week 7-8: Response Surface Designs (including Workshop 2)
Week 9-10: Random and Mixed Effects Analysis of Variance (including Workshop 3)
Week 11-12: Statistical Process Control (including Workshop 4)
Week 13-14: Mixture Designs (including Workshop 5)

Grading
Grades will be determined by the following:

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<thead>
<tr>
<th>Component</th>
<th>Percentage</th>
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<tr>
<td>Homework</td>
<td>5%</td>
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<tr>
<td>Workshops</td>
<td>80%</td>
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<tr>
<td>Final Exam</td>
<td>15%</td>
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About Assignments
There will be 5 workshops on which students will work in small groups, and then present their results/reports to the class. The presentations will be evaluated by the instructor. In addition, students will be asked to evaluate the contribution of their fellow group members (colleague evaluations). In addition, students will be asked to evaluate the presentations of other groups (peer evaluations).

Attendance
Since a significant proportion of the evaluation is based on in-class activities, so missing a class is not desirable. Even though, the class periods will be available via ZOOM both synchronously and asynchronously, this is just a fallback for situations where missing a class is absolutely unavoidable (e.g., quarantine). If you know you are going to have to miss a specific class, please let me know via e-mail or phone prior to the class.