UTTyler
THE UNIVERSITY OF TEXAS AT TYLER

Soules College of Business
Department of Technology
TECH 5310-Six Sigma Quality
Course Syllabus

Professor: Dr. Heshium Lawrence   **Fall 2024**
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Office: COB 312
Office Hours: By appointment

Course Description:
A discussion, analysis, and application of quality control concepts to include both attribute and variable quality control techniques. Advanced graphical problem-solving techniques in Six Sigma will be studied. Attribute analysis will be emphasized as it applies to MIL-STD-105D and variable analysis as it applies to MIL-STD-414. Effective utilization of microcomputers will be used to develop spreadsheets, graphs, charts, and run statistical quality control microcomputer programs.

Textbook(required):
Summers, D.C.S. (2011). *Lean Six sigma: Process Improvement Tools and Techniques*
ISBN-13: 9780135125106

Additional hand-outs may be required (this will be provided by the instructor)

Course Objectives:
A.   Execute problem solving using statistical tools and techniques.
B.   Interpret the connection between quality assurance, manufacturing, and management practices.
C.   Associate knowledge in the areas of Just-In-Time and Lean Manufacturing techniques.
D.   Implement change to processes that contain unacceptable quality deficiencies using Six Sigma quality improvement program methods.

Student Learning Outcomes:
A. Demonstrate how to use Excel, specifically Excel's statistical add-on tool, by completing several assignments.
B. Construct statistical graphs (Pareto, Mean and Range, etc...) using Excel.
C. Differentiate between a good manufacturing process and a bad one by interpreting a Mean and Range graph.
D. Summarize Six Sigma concepts by completing one-page topic summaries in the course

Topics Covered in the Course:
1. Six Sigma Origins
2. Quality Masters
3. Leadership and Strategic Planning
4. Creating a Customer Focus
5. Teams
6. Project Management
7. Measures and Metrics
8. Problem-Solving
9. Statistics
10. Variable Control Charts
11. Process Capability
12. Probability
13. Attribute Control Charts
14. Reliability
15. Failure Modes and Effects Analysis
16. Design of Experiments

Course Competencies:

A. Computer-based skills – By use software the student will store and manipulate data and perform statistical based quality improvement studies through the presentation of SPC charts and graphs.
B. Communication skills – The student will conduct, write, and present a term research project related to a variety of subject areas found within six sigma quality methods.
C. Interpersonal skills – students will work in quality improvement teams to experience the use of graphical problem-solving techniques.
D. Problems solving – Each student will interpret statistical charts to determine the status of industrial processes by gathering data and using statistical analyses. Through the use of six sigma improvement tools, students will solve problems and implement improvement processes by using the plan-do-check-evaluation cycle.
E. Ethical issues in decision making and resolution – This competency will not be addressed in TECH 5310.
F. Personal accountability for achievement – Each student will follow the designated suspense dates for course work as listed in the course syllabus.
G. Competence in basic technology principles – by the study of the major "quality gurus", the student will develop a foundation for the total quality management movement.

Course Requirements:

A. **Weighted grade distributions**
Topic summaries (x7)   70pts
Exams (x4)-**TENTATIVE**   188pts
Homework assignments (x13)   1050pts

C. **Suspense Dates:**
Topic Summary #1	Thur, Sept 5
Topic Summary #2	Thur, Sept 19
Topic Summary #3	Thur, Oct 3
Topic Summary #4	Thur, Oct 17
Topic Summary #5	Thur, Nov 7
Topic Summary #6	Thur, Nov 21
Topic Summary #7	Thur, Dec 5
Thanksgiving Holiday	**Nov 25-29**
Final Exam Week	**Dec 9-13**
Homework Assignments	as scheduled

Any make up course work or exams due to a student not submitting it is considered on a case-by-case basis. Which means the professor reserves the right to decline make up course work or exams.

UT Tyler Honor Code
Every member of the UT Tyler community joins together to embrace: Honor and integrity that will not allow me to lie, cheat, or steal, nor to accept the actions of those who do.

Campus Carry
We respect the right and privacy of students 21 and over who are duly licensed to carry concealed weapons in this class. License holders are expected to behave responsibly and keep a handgun secure and concealed. More information is available at http://www.uttyler.edu/about/campus-carry/index.php

UT Tyler a Tobacco-Free University
All forms of tobacco will not be permitted on the UT Tyler main campus, branch campuses, and any property owned by UT Tyler. This applies to all members of the University community, including students, faculty, staff, University affiliates, contractors, and visitors. Forms of tobacco not permitted include cigarettes, cigars, pipes, water pipes (hookah), bidis, kreteks, electronic cigarettes, smokeless tobacco, snuff, chewing tobacco, and all other tobacco products. There are several cessation programs available to students looking to quit smoking, including counseling, quit lines, and group support. For more information on cessation programs please visit https://www.uttyler.edu/offices/human-resources/wellness/tobacco-cessation/.

Grade Replacement/Forgiveness and Census Date Policies
Students repeating a course for grade forgiveness (grade replacement) must file a Grade Replacement Contract with the Enrollment Services Center (ADM 230) on or before the Census Date of the semester in which the course will be repeated. (For Fall, the Census Date is Sept. 9th.) Grade Replacement Contracts are available in the Enrollment Services Center or at https://www.uttyler.edu/current-students/registrar/. Each semester's Census Date can be found on the Contract itself, on the Academic Calendar, or in the information pamphlets published each semester by the Office of the Registrar. Failure to file a Grade Replacement Contract will result in both the original and repeated grade being used to calculate your overall grade point average. Undergraduates are eligible to exercise grade replacement for only three course repeats during their career at UT Tyler; graduates are eligible for two grade replacements. Full policy details are printed on each Grade Replacement Contract. The Census Date (Sept. 9th) is the deadline for many forms and enrollment actions of which students need to be aware. These include:

- Submitting Grade Replacement Contracts, Transient Forms, requests to withhold directory information, approvals for taking courses as Audit, Pass/Fail or Credit/No Credit.
- Receiving 100% refunds for partial withdrawals. (There is no refund for these after the Census Date)
- Schedule adjustments (section changes, adding a new class, dropping without a "W" grade)
- Being reinstated or re-enrolled in classes after being dropped for non-payment
- Completing the process for tuition exemptions or waivers through Financial Aid

State-Mandated Course Drop Policy
Texas law prohibits a student who began college for the first time in Fall 2007 or thereafter from dropping more than six courses during their entire undergraduate career. This includes courses dropped at another 2-year or 4-year Texas public college or university. For purposes of this rule, a dropped course is any course that is dropped after the census date (See Academic Calendar for the specific date). Exceptions to the 6-drop rule may be found in the catalog. Petitions for exemptions must be submitted to the Enrollment Services Center and must be accompanied by documentation of the extenuating circumstance. Please contact the Enrollment Services Center if you have any questions.

Disability/Accessibility Services
In accordance with Section 504 of the Rehabilitation Act, Americans with Disabilities Act (ADA) and the ADA Amendments Act (ADAAA) the University offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including non-visible a disability diagnosis such as a chronic disease, learning disorder, head injury or ADHD, or you have a history of modifications or accommodations in a previous educational environment you are encouraged to contact the Student Accessibility and Resources office and schedule an interview with an Accessibility Case Manager. If you are unsure if the above criteria applies to you, but have questions or concerns please contact the SAR office. For more information or to set up an

appointment please visit the SAR webpage (https://www.uttyler.edu/academics/success-services/disability-services/) or the SAR office located in the Library (LIB), Room 460 or call 903.566.7079. You may also send an email to saroffice@uttyler.edu.

Student Absence due to Religious Observance
Students who anticipate being absent from class due to a religious observance are requested to inform the instructor of such absences by the second-class meeting of the semester. Revised 09/16

Student Absence for University-Sponsored Events and Activities
If you intend to be absent for a university-sponsored event or activity, you (or the event sponsor) must notify the instructor at least two weeks prior to the date of the planned absence. At that time the instructor will set a date and time when make-up assignments will be completed.

Social Security and FERPA Statement
It is the policy of The University of Texas at Tyler to protect the confidential nature of social security numbers. The University has changed its computer programming so that all students have an identification number. The electronic transmission of grades (e.g., via e-mail) risks violation of the Family Educational Rights and Privacy Act; grades will not be transmitted electronically.

Emergency Exits and Evacuation
Everyone is required to exit the building when a fire alarm goes off. Follow your instructor's directions regarding the appropriate exit. If you require assistance during an evacuation, inform your instructor in the first week of class. Do not re-enter the building unless given permission by University Police, Fire department, or Fire Prevention Services.

Student Standards of Academic Conduct
Disciplinary proceedings may be initiated against any student who engages in scholastic dishonesty, including, but not limited to, cheating, plagiarism, collusion, the submission for credit of any work or materials that are attributable in whole or in part to another person, taking an examination for another person, any act designed to give unfair advantage to a student or the attempt to commit such acts.

i. "Cheating" includes, but is not limited to:
- copying from another student's test paper;
- using, during a test, materials not authorized by the person giving the test;
- failure to comply with instructions given by the person administering the test;
- possession during a test of materials which are not authorized by the person giving the test, such as class notes or specifically designed "crib notes". The presence of textbooks constitutes a violation if they have been specifically prohibited by the person administering the test;

- using, buying, stealing, transporting, or soliciting in whole or part the contents of an unadministered test, test key, homework solution, or computer program;
- collaborating with or seeking aid from another student during a test or other assignment without authority;
- discussing the contents of an examination with another student who will take the examination;
- divulging the contents of an examination, for the purpose of preserving questions for use by another, when the instructors has designated that the examination is not to be removed from the examination room or not to be returned or to be kept by the student;
- substituting for another person, or permitting another person to substitute for oneself to take a course, a test, or any course-related assignment;
- paying or offering money or other valuable thing to, or coercing another person to obtain an unadministered test, test key, homework solution, or computer program or information about an unadministered test, test key, home solution or computer program;
- falsifying research data, laboratory reports, and/or other academic work offered for credit;
- taking, keeping, misplacing, or damaging the property of The University of Texas at Tyler, or of another, if the student knows or reasonably should know that an unfair academic advantage would be gained by such conduct; and
- misrepresenting facts, including providing false grades or resumes, for the purpose of obtaining an academic or financial benefit or injuring another student academically or financially.

ii. "Plagiarism" includes, but is not limited to, the appropriation, buying, receiving as a gift, or obtaining by any means another's work and the submission of it as one's own academic work offered for credit.

iii. "Collusion" includes, but is not limited to, the unauthorized collaboration with another person in preparing academic assignments offered for credit or collaboration with another person to commit a violation of any section of the rules on scholastic dishonesty.

iv. All written work that is submitted will be subject to review by plagiarism software on Canvas.

UT Tyler Resources for Students
- UT Tyler Writing Center (903.565.5995), writingcenter@uttyler.edu
- UT Tyler Tutoring Center (903.565.5964), tutoring@uttyler.edu

The Mathematics Learning Center, RBN 4021, this is the open access computer lab for math students, with tutors on duty to assist students who are enrolled in early-career courses.

Artificial Intelligence Language
UT Tyler is committed to exploring and using artificial intelligence (AI) tools as appropriate for the discipline and task undertaken. We encourage discussing AI tools' ethical, societal, philosophical, and disciplinary implications. All uses of AI should be

acknowledged as this aligns with our commitment to honor and integrity, as noted in UT Tyler's Honor Code. Faculty and students must not use protected information, data, or copyrighted materials when using any AI tool. Additionally, users should be aware that AI tools rely on predictive models to generate content that may appear correct but is sometimes shown to be incomplete, inaccurate, taken without attribution from other sources, and/or biased. Consequently, an AI tool should not be considered a substitute for traditional approaches to research. You are ultimately responsible for the quality and content of the information you submit. Misusing AI tools that violate the guidelines specified for this course (see below) is considered a breach of academic integrity. The student will be subject to disciplinary actions as outlined in UT Tyler's Academic Integrity Policy.

Category 1: AI is encouraged during the course, and appropriate acknowledgment is expected.

- Example 1: I encourage you to explore using artificial intelligence (AI) tools, such as ChatGPT, for all assignments and assessments. Any such use must be appropriately acknowledged and cited, following the guidelines established by the APA/MLA/Chicago Style Guide, including the specific version of the tool used. The submitted work should include the exact prompt you used to generate the content and the AI's complete response as an appendix. Because AI-generate content is not necessarily accurate or appropriate, you must assess the validity and applicability of any submitted AI output. You will not earn full credit if inaccurate, invalid, or inappropriate information is found in your work. APA Style Citation Information
MLA Style Citation Information
Chicago Style Citation Information
- Example 2: You can use AI programs (ChatGPT, Copilot, etc.) in this course. These programs can be powerful tools for learning and other productive pursuits, including completing assignments in less time, helping you generate new ideas, or serving as a personalized learning tool. However, your ethical responsibilities as a student remain the same. You must follow UT Tyler's Honor Code and uphold the highest standards of academic honesty. This applies to all uncited or improperly cited content, whether created by a human or in collaboration with an AI tool. If you use an AI tool to develop content for an assignment, you must cite the tool's contribution to your work.
- Example 3: Students can use AI platforms to help prepare for assignments and projects. You can use AI tools to revise and edit your work (e.g., identify flaws in reasoning, spot confusing or underdeveloped paragraphs, or correct citations). When submitting work, students must identify any writing, text, or media generated by AI. In this course, sections of assignments generated by AI should appear in a different colored font, and the relationship between those sections and student contributions should be discussed in a cover letter that accompanies the assignment when submitted.

Topic Summary Information/Guidelines

Topic Summaries: **All topic summaries will be checked for plagiarism (you cannot use a topic summary from any previous year or course). You may submit topic summaries before their due dates**

Directions: Write article summaries from the following topics listed below. **These articles should be taken from recent periodicals (2012-2024), not handbooks/manuals or textbooks.** Each summary shall be one (1) page in length. Each summary must come from a separate periodical of a different titled publication. **SEE EXAMPLE ON LAST PAGE (you must follow the format and use APA or points will be deducted).**

1. just-in-time production technology
2. quality circles, teams, or work groups
3. supplier quality and certification programs
4. process capability studies and applications
5. quality in design
6. integrating quality control into manufacturing
7. KANBAN
8. statistical process control charts and applications
9. integrating quality control into the service industry
10. budget control of quality
11. quality service
12. total quality management
13. quality function deployment
14. process control studies
15. employee empowerment and management
16. Six Sigma Quality
17. Benchmarking Processes
18. Supply Chain Management
19. Five S's (5 Ss')
20. material requirements planning
21. cost of quality
22. product life-cycle management
23. Yellow, Green, Black, or Master Black Belt in Six Sigma
24. DMAIC
25. Statistical Process Control
26. Value Stream Map
27. 7 Lean tools of waste
28. Lean/Six Sigma in Healthcare
29. FMEA
30. **topic of your choice (must relate to the course and get approval from me)**

Note: The instructor reserves the right to modify the syllabus. All modifications will be communicated to the students in a timely manner

Six Sigma Quality (TOPIC from the list above)

Lee, K., & Su, Y. (2012). Applying Six Sigma to quality improvement in construction. *Journal of Management in Engineering, 29*(4), 464-470. (Reference must be in the correct APA format)

The first paragraph is an overview/synopsis of the article you just read.

Reaction

This paragraph is your reaction to the article, good or bad. If you have any personal experience with the topic, include it in this section. Why you picked this article? Did the author do a good job of explaining the topic? What could have been better? (These are just some of the questions you should consider when writing this paragraph)

Note: Margins are to be set at the following dimensions:

Left	**= 1.25"**
Right	**= 1.00"**
Top	**= 1.00"**
Bottom	**= 1.00"**