



*Soules College of Business
School of Technology
Department of Technology*

**Tech 5310 – Six Sigma Quality
Course Syllabus**

TECH 5310
Dr. Heshium Lawrence – SCOB 225.03
Office Hours: M & W 3-6

Six Sigma Quality
Spring 2020
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903.566.7331

I. Course Description:

An understanding and application of the basic concepts of modern manufacturing process management systems, with regards to quality, just-in-time, lean manufacturing and six sigma. This three graduate hour course will present techniques for the planning, measuring, and implementation of Six Sigma Quality efforts. Key elements for company-wide strategic quality planning such as identifying customers and their needs, designing quality services, establishing optimal quality goals, statistical based improvement methods, and implementing six sigma tools to include DMAIC.

II. 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)

III. Course Objectives:

- A. The student will be able to perform problem solving, using statistical tools and techniques.
- B. The student will better understand the connection between quality assurance, manufacturing, and management practices.
- C. The student will gain knowledge in the areas of Just-In-Time and Lean Manufacturing techniques.
- D. The student will learn how to change those processes that contain unacceptable quality deficiencies through the use of Six Sigma quality improvement program methods.
- E. The student will learn how to design experiments.

IV. 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

V. 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 chars 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.

VI. Course Requirements:

A. Weighted grade distributions

| | |
|------------------------------|---------|
| Topic summaries (x6) | 60pts |
| Exams (x2)- TENTATIVE | 80pts |
| Homework assignments (x13) | 1050pts |

C. Suspense Dates:

| | |
|-------------------|--|
| Class Start Date: | Jan 13 th |
| Study Day: | April 29 th |
| Topic Summary #1 | Thur, Jan 30 th |
| Topic Summary #2 | Thur, Feb 20 th |
| Topic Summary #3 | Thur, March 5 th |
| Topic Summary #4 | Thur, March 19 th |
| Topic Summary #5 | Thur, April 9 th |
| Topic Summary #6 | Thur, April 23 rd |
| Final Exam Week | April 28 th -30 th /May 1 st -2 nd |

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.

VII. University Policies Regarding Academic Processes:

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.

Students Rights and Responsibilities

To know and understand the policies that affect your rights and responsibilities as a student at UT Tyler, please follow this link: <http://www.uttyler.edu/wellness/rightsresponsibilities.php>

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, quitlines, and group support. For more information on cessation programs please visit www.uttyler.edu/tobacco-free.

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. 12.) Grade Replacement Contracts are available in the Enrollment Services Center or at <http://www.uttyler.edu/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. 12th) 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 of Texas at Tyler offers accommodations to students with learning, physical and/or psychological disabilities. If you have a disability, including a non-visible diagnosis such as a learning disorder, chronic illness, TBI, PTSD, ADHD, or you have a history of modifications or accommodations in a previous educational environment, you are encouraged to visit <http://hood.accessiblelearning.com/UTTyler> and fill out the New Student application. The Student Accessibility and Resources (SAR) office will contact you when your application has been submitted and an appointment with Cynthia Lowery, Assistant Director of Student Services/ADA Coordinator. For more information, including filling out an application for

services, please visit the SAR webpage at <http://www.uttyler.edu/disabilityservices> , the SAR office located in the University Center, # 3150 or call 903.566.7079.

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.

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.

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.
- UT Tyler Counseling Center (903.566.7254)

VIII. References for TECH 5310: Books

Creveling, Clyde M. (2006). *Six sigma for technical processes*. Upper Saddle River, New Jersey: Pearson Prentice-Hall. ISBN 0-13-238232-6

Breyfogle, W.F., (2003). *Implementing six sigma: Smarter solutions using statistical methods* (2nd ed.). John Wiley & Sons.

Goldratt, E.M., (2004). *The goal: A process of ongoing improvement* (3rd ed.). North River Press

Harry, Mikel and Richard Schroeder. (2000). *Six Sigma The Breakthrough Management Strategy Revolutionizing the World’s Top Corporations*. New York: Doubleday. ISBN 0-385-49437-8

websites

www.asq.org

www.astm.org

www.business.com

www.qa-inc.com

www.itl.nist.org

www.quality.nist.org

XII. Topic Summaries: All topic summaries will be checked for plagiarism

Directions: Write article summaries from the following topics listed below. These articles should be taken from recent periodicals (2009-2019), **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. The articles you choose to review must have relevance to principles of quality control and reflect current trends in the quality movement. **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 (as long as it relates to the course and you get approval from the me)**

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

Course title
Your Name

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" |