



UT Tyler

Soules College of Business
Department of Technology
Course Syllabus



TECH 5390 Advanced Lean Six Sigma Black Belt Techniques

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Time: Online

Summer 2023

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Course Description

An in-depth analysis of lean and statistical tools used to reduce costs and improve process or transactional flow through an organization. The DMAIC approach will be discussed as well as most topics currently covered on lean six sigma certification exams.

Required Textbooks, Materials, and Supplies:

Kubiak, T.M. and Benbow, D.W., 2017. The Certified Six Sigma Black Belt Handbook (3rd Edition). Milwaukee, WI: ASQ Quality Press. ISBN: 978-0-87389-941-3

Optional Software:

Minitab may be purchased for \$32.99 at (www.onthehub.com/minitab) or you can download a 30 day trial version (<https://www.minitab.com/en-us/products/minitab/free-trial/>).

Course Objectives

At the end of this course, students will be able to:

1. Explore the advanced concepts of lean six sigma.
2. Become familiar with the statistical software, Minitab.
3. Understand the advanced tools of lean six sigma.

Student Learning Outcomes

1. Demonstrate how to use Minitab by successfully completing assignments and quizzes.
2. Explain statistical results by discussing assignments in class
3. Implement the fundamentals of lean six sigma by passing a national certification exam.
4. Identify the appropriate decision based off of the given statistical tool.

Course Competencies

1. Computer-Based Skills – the student will complete written assignments using the word processor.
2. Communication Skills – the student will exhibit a mastery of both written and oral skills in completion and presentation of the assigned projects.
3. Interpersonal Skills – the student will interact in class discussion to clarify the key lean and six sigma concepts.
4. Problem Solving (Critical Thinking) – the student will use conceptual thinking to analyze and make determinations regarding the implementation of Minitab.
5. Ethical Issues in Decision Making and Behavior- the student will gain an appreciation of the ethics when creating an environment conducive to Minitab.

6. Personal Accountability for Achievement – the student will complete the projects at the time designated by the instructor and will enter into class discussion.
7. Competence in Technology Principles
 - a. The student will have a thorough understanding of basic Minitab concepts to improve efficiency.
 - b. Exposure to and appreciation for industrial experiences such as industrial tours, work-study options and cooperative education, senior seminars – Students will discuss and review videos of companies implementing lean.

Grading Policy and Criteria to Determine Final Course Grade:

Quizzes (5)	550
Assignments	510
Final Exam	100
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TOTAL POINTS =	1160

Grade Scale Breakdown:

A=90 - 100%

B=80 - 89%

C=70 - 79%

D=60 - 69%

F=BELOW 60%

Note: 89.4999999999999999 is still a B.

Date of Final Exam: TBD

Course Content:

History of lean and six sigma

Integration of lean and six sigma

Six sigma and lean applications

Six sigma projects and classifications

Organizational process management and measurement

Team formation, facilitation, dynamics, management, performance, evaluation, rewards

DMAIC

Project charter and tracking

Data collection techniques

Measurement systems

Statistics (ANOVA, non-parametric tests, etc...)

Multivariate Tools

Regression

Hypothesis Testing

Probability

Process capability

Hypothesis testing

FMEA

Design of experiments

Waste elimination

Cycle time reduction

Kaizen

TOC

Risk analysis and mitigation
 SPC
 TPM and DFSS
 Final exam

Attendance (Face-to-Face only) and Make-Up Policy:

Attendance is mandatory for International students graduating this summer and will be taken at every scheduled face-to-face class and laboratory period. No make-ups unless:

1. Organized university trip.
2. Illness or death in **immediate** family (mother, father, brother and/or sister).
3. Illness of student.

Each one of these will require either a **doctor's statement** or a **signed** statement from the individual in charge of the trip.

A student will lose a letter grade in the course each time s/he is absent or late 3 times. Any student entering the classroom 1 second after the scheduled starting time will be considered late unless accompanied with a valid excuse (Applies to face-to-face lectures).

Late Work:

Absolutely no make up course work or exams. 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. Exceptions to this will be as per University Policy concerning absences from class. If you know an assignment will be late for a valid reason, inform your instructor in advance to avoid unnecessary penalty.

Required Activities Scheduled Outside of Regularly-Scheduled Class time (fees, tickets, procedures and/or forms required):

Read textbook, review notes, prepare PowerPoint presentations, and complete assignments. **ALL students are recommended to check Canvas at least twice a day for updates and communication.**

IDEA Statement

If you have a disability, including a learning disability, for which you request disability support services/accommodations(s), please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Support Services counselor. In order to assure approved services, the first week of class, diagnostic, prognostic, and prescriptive information should be received 30 days prior to the beginning of the semester services are requested. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579). Additional information may also be obtained at the following UT Tyler Web address: <http://www.uttyler.edu/disabilityservices>.

Academic Honesty Statement

“Academic dishonesty, such as unauthorized collusion, plagiarism and cheating, as outlined in the Handbook of Operating Procedures, University of Texas at Tyler, will not be tolerated. University regulations require the instructor to report all suspect cases of academic dishonesty to the Dean of Students for disciplinary action. In the event disciplinary measures are imposed on the student, it becomes part of the student’s official school records.” Also, please note that the handbook obligates you to report all observed cases of academic dishonesty to the instructor.

Grade Replacement Statement

If you are repeating this course for a grade replacement, you must file an intent to receive grade forgiveness with the registrar by the 12th day of class. Failure to file an intent to use grade forgiveness will result in both the original and repeated grade being used to calculate your overall grade point average. A student will receive grade forgiveness (grade replacement) for only three (undergraduate student) or two (graduate student) course repeats during his/her career at UT Tyler. (2006-2008 Catalogue, p. 35).

University Policies Regarding Academic Processes:

The following University policies must appear on each course syllabus or be provided as an informational sheet (web-links to these policies may be used in the print or electronic syllabus)

<http://www.uttyler.edu/academicaffairs/syllabuspolicies.pdf>

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/StudentRightsandResponsibilities.html>

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 12th day of class (See Schedule of Classes for the specific date). Exceptions to the 6-drop rule include, but are not limited to, the following: totally withdrawing from the university; being administratively dropped from a course; dropping a course for a personal emergency; dropping a course for documented change of work schedule; or dropping a course for active duty service with the U.S. armed forces or Texas National Guard. Petitions for exemptions must be submitted to the Registrar's Office and must be accompanied by documentation of the extenuating circumstance. Please contact the Registrar's Office if you have any questions.

Disability Services

In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Support Services counselor. If you have a disability, including a learning disability, for which you request an accommodation, please contact Ida MacDonald in the Disability Support Services office in UC 282, 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

by 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.

License Holder Responsibilities

We respect the right and privacy of students 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 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)

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