FLORIDA POLYTECHNIC UNIVERSITY

Course Syllabus

Course Information

- **Course Number and Title**: MAN 3520 –Lean Six Sigma
- **Credit Hours**: 3 credits
- **Current Academic Term**: Spring 2026
- **Class Meeting**: TR – 09:30 PM – 10:45 AM(IST-1049)

Instructor Information

- **Instructor**: Dr. Parisa Hajibabaee
- **Office**: BARC-1107
- **Office Hours**: TR– 11:00AM -12:00 PM,T– 2:30 -3:30 PM or by appointment
- **Office Phone**: 863-874-8559
- **E-mail**: phajibabaee@floridapoly.edu

Course Details

- **Delivery Mode**: This course will be delivered face-to-face in room **IST-1049**. Please check the Canvas course website for all information, including announcements, discussions, assignments, quizzes, and supplementary material for topics covered in this course.

- **Course Website:** https://floridapolytechnic.instructure.com/courses/10007

- **Official Catalog Course Description**:
  Process Design using Lean Six Sigma is an applied course that covers process design, analysis, and process improvement for both manufacturing and service enterprises. This course will introduce the lean production/operation mindset and introduces various tools of lean and six sigma to design, analysis and improving the efficiency, cost, quality, and customer service of a process. Students will work in teams working on real-world cases.

- **Prerequisites:** STA3036 Probability and Statistics 2 for Business, Data Science, and Economics

- **Gordon Rule (6A-10.030):** No.

- **Required Textbooks**:

  - **Textbook:**
    - **Title:** An Introduction to Six Sigma and Process Improvement
    - **Authors:** James R. Evans, William M. Lindsay
    - **Edition:** 2nd
    - **ISBN10:** 1133604587
    - **ISBN13:** 978-1133604587
    - **Copyright:** 2015, 2005 Cengage Learning

- **Equipment and Materials**: We will use Office 365 with Excel, Google Colab, the **Anaconda** data science platform, and **Jupyter Notebook**. All are free, which are available at https://apps.floridapoly.edu/.

- **Course Objectives**:
  Lean and six sigma principles are most often associated with manufacturing. But lean principles and six sigma can be applied to any business process that can be described. This course will introduce the lean mindset, establish basic principles of lean processes, and provides various tools useful to improving the efficiency, cost, quality and customer service. One of those tools, value stream mapping will be dwelled on as it provides the means to see opportunities for improvement. The main aspects of lean are focusing on what adds value to the customer: continuous improvement, process flow and customer pull. The students will also investigate what will be the challenges to transform a business process from its present state to lean.
- **Instructional Methods:**
  This course is delivered in face-to-face format. Please check the Canvas course website for all information, including announcements, discussions, and any supplementary material for topics covered in this course.

- **Course Learning Outcomes**:
  Upon completion of this course, students will be able to:
  1. Understand the concepts, strategies, and models of lean enterprise.
  2. Apply lean six sigma tools to identify opportunities and implement lean ideas into practice.
  3. Apply lean six sigma to turnaround and transform declining business.
  4. Demonstrate Value Stream Mapping to show the current and future state value stream of a business process.
  5. Demonstrate the ability to work effectively in a team and provide insights and solutions related to process planning and improvement.

    - **Alignment with Program Outcomes**:

	Course Learning Outcome and Learning Level*				
Business Analytics Program Student Outcomes	1	2	3	4	5
(1) Apply current business analytics concepts, techniques, and practices to solve business problems.	Comprehension				
(2) Analyze a given business problem using appropriate analytics techniques to generate insights and solutions.		Analysis		Evaluation	
(3) Communicate effectively insights, analysis, conclusions, and solutions to a diverse audience.					Comprehension
	Course Learning Outcome and Learning Level*				
Data Science Program Student Outcomes	1	2	3	4	5

(1) An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.				Analysis	
(2) An ability to formulate or design a system, process, procedure, or program to meet desired needs.		Application			
(3) An ability to develop and conduct experiments or test hypotheses, analyze, and interpret data and use scientific judgment to draw conclusions.					
(4) An ability to communicate effectively with a range of audiences.					Comprehension
(5) An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.	Knowledge				
(6) An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.					Comprehension

*: Learning level as described in Bloom's taxonomy and Anderson and Krathwohl's taxonomy

Academic Support Resources

- **Library**: Students can access the Florida Polytechnic University Library through the University website and Canvas, on and off campus. Students may direct questions to library@floridapoly.edu.
- **Tutoring and Learning Center**: The Tutoring and Learning Center (The TLC) provides tutoring to all Florida Poly students who may need additional academic support. The TLC is staffed by students who have excelled in the courses they tutor. They offer support by reviewing concepts and materials from class, clarifying points of confusion and providing assistance with learning strategies. While the focus of TLC is to provide support to students in freshman-level courses, upper-level courses are also tutored at the Center. The TLC is located in the IST Commons (second floor).
    - **Knack Tutoring**: Students looking for additional assistance outside of the classroom are advised to consider working with a peer tutor through Knack. Florida Polytechnic University has partnered with Knack to provide students with access to verified peer

tutors who have previously aced this course. To view available tutors, visit floridapoly.joinknack.com and sign in with your student account.

- **Academic Success Coaches**: All students at Florida Poly are assigned an Academic Success Coach. Your Academic Success Coach can assist you with academic success strategies. Please visit the Student Success Center on the second floor of the IST building to meet with an Academic Success Coach.
- **Writing Center**: Located on the second floor of the IST (2059/2061), the Writing Center helps students to develop their writing and presentation skills. Consultations are available in person and virtually. For more detail, visit floridapoly.edu/writing center.

Course Policies

Attendance

- Students in **face-to-face (this includes labs and C-courses)** courses are expected "to attend all of their scheduled University classes and to satisfy all academic objectives as defined by the instructor" (University Policy, FPU-5.0010AP).
- Exceptions to any attendance requirements may be made on a case-by-case basis
- Quizzes and class activities will only be graded if you are physically present in class. Students may not complete these activities remotely without prior approval. Exceptions will be announced in advance if applicable.
- Students are expected to arrive on time to each class session. Attendance will be recorded in Canvas at the beginning of class. You have up to **five minutes after class begins** to enter the attendance code.
- If you arrive late and miss the code entry, you may email the instructor **up to two times per semester** to request a manual attendance correction. After those two instances, any additional late arrivals without valid, documented reasons will be recorded as **"absent"** in Canvas.

Open-Book Class Quizzes

Quizzes are mostly designed as *in-class learning activities* rather than traditional exams. You may use your notes, lecture slides, and textbook while answering. You are also encouraged to discuss ideas with your classmates to deepen understanding.

However, **do not use Google, ChatGPT, or any other AI tools.** The goal is to apply what you have learned in class and demonstrate your own reasoning and understanding of the concepts.

Exam Procedures and Expectations

Exam Review Session

If time permits, a review session may be held before each exam. Students who actively participate in the review and prepare by studying the relevant chapters may receive a small bonus on that exam.

To ensure fairness and consistency in grading, please follow these rules for all exams:

- **Show your work:** For quantitative questions, show all steps and calculations leading to your final answer. Partial credit will be awarded based on the work shown.
- **Formula sheet policy:** You may bring *one page* of handwritten formulas. It should include only formulas—no text explanations, worked examples, or complete solutions.

- **Bring required materials:** You are responsible for bringing your own formula sheet, calculator, and scratch paper.
- **Legible submissions:** If you submit handwritten work, make sure it is neat, well-organized, and easy to read. Illegible work may lose partial credit.
- **Spot checks:** You are not required to submit your formula sheet, but I may conduct random checks during the exam to ensure the policy is followed.

Participation

Students are expected to participate in the classroom experience. The use of earbuds/headphones during class is specifically not allowed and students who engage in this behavior may be asked to leave the class for the day (noting exceptions for authorized accommodations). In addition, students who routinely do not bring materials to class that are required for participation, will not be given credit for class attendance, and if this becomes a pattern of behavior, may be asked to leave the class for the day. Persistent problems with participation may result in a code of conduct referral.

Special Permissions/Requests:

Permissions/excuses due to medical emergencies will be given ONLY if the student turns in a medical note from the doctor within 2 weeks of being seen by the doctor.

The instructor will not be able respond to emails coming directly from students asking for special permissions or requests due to unforeseen circumstances. If students are experiencing some difficult situation due to unforeseen circumstances and are unable to focus on the coursework, they are asked to reach out to the CARE Services at Florida Poly. If the Case Manager approves their case, then the instructor will receive an email from the Case Manager attaching a memo from CARE Services on behalf of the student.

Late Work/Make-up work

Students are expected to turn their assignments in on or before the due date. Late assignments will suffer a 10% penalty for every 24-hour. For example, an assignment worth 100 points turned in 2 days late will receive a 20-point penalty. Assignments turned in 4 or more days after the due date will receive a grade of '0', but you can still have it graded and receive feedback.

Grading Scale: (See also University Grading Policy).
Grades will be determined according to the following scale:

93 to 100	A	73 to 75.99	C
90 to 92.99	A-	70 to 72.99	C-
86 to 89.99	B+	66 to 69.99	D+
83 to 85.99	B	63 to 65.99	D
80 to 82.99	B-	60 to 62.99	D-
76 to 79.99	C+	Below 59.99	F

Assignment/Evaluation Methods:

Evaluation Method	*Percentage*
Attendance	5%
Homework	15%
Quizzes/Class Activities	15%
Project	10%
Exams	55%
Total	100%

CANVAS Policy:

- Assignments, announcements, and information will be posted on CANVAS. **Students are responsible for checking CANVAS regularly to be aware of their assignments** and other class information. Please see the end of this document for guidelines for submission of assignments.

Email Policy:

- All students are required to use **studentuserID@floridapoly.edu** email system (most preferable) OR the CANVAS e-mail system to communicate with the instructor. On occasion, email may be used to disseminate important class-related assignments, announcements, and information. Students are responsible for any information or assignments given in e-mail. **In your email, please start by introducing yourself and mentioning the course title in the first line.**

Final Project Policy:

- Students are responsible for forming their own project groups and adding group information to the Excel file I will provide later in the semester. Failure to do so will result in a deduction of points.
- A **discussion board** will be created on Canvas to help students who have not yet formed a group connect with classmates.
- Each group member must actively contribute to the project and participate in the class presentation. Be punctual on the day of your presentation—lateness or absence will result in a grade deduction for that individual, though it will not affect the grades of group members.

University Policies

Reasonable Accommodations

The University is committed to ensuring equal access to all educational opportunities. The Office of Disability Services (ODS), facilitates reasonable accommodations for students with disabilities and documented eligibility. It is the student's responsibility to self-identify as a student with disabilities and register with ODS to request accommodations. If you have already registered with ODS, please ensure that you have requested an accommodation letter for this course through the ODS student portal, and communicate with your instructor about your approved accommodations as soon as possible. Arrangements for testing accommodations must be made in advance. Accommodations are not retroactive. If you are not registered with ODS but believe you have a temporary health condition or permanent disability requiring an accommodation, please contact ODS as soon as possible: DisabilityServices@floridapoly.edu; (863) 874-8770; www.floridapoly.edy/disability.

Accommodations for Religious Observances, Practices and Beliefs

The University will reasonably accommodate the religious observances, practices, and beliefs of individuals in regard to admissions, class attendance, and the scheduling of examinations and work assignments. (See University Policy.)

Title IX

Florida Polytechnic University is committed to ensuring a safe, productive learning environment on our campus that prohibits sex discrimination and sexual misconduct, including sexual harassment, sexual assault, dating violence, domestic violence and stalking. Resources are available if you or someone you know needs assistance. Any faculty or staff member you speak to is required to report the incident to the Title IX Coordinator. Please know, however, that your information will be kept private to the greatest extent possible. You will not be required to share your experience. If you want to speak to someone who is permitted to keep your disclosure confidential, please seek assistance from the Florida Polytechnic

University Ombuds Office, BayCare's Student Assistance Program, 1-800-878-5470 and locally within the community at Peace River Center, 863-413-2707 (24-hour hotline) or 863-413-2708 to schedule an appointment. The Title IX Coordinator is available for any questions to discuss resources and options available.

Academic Integrity
Violations of academic integrity regulation include actions such as cheating, plagiarism, use of unauthorized resources (including but not limited to use of Artificial Intelligence tools), illegal use of intellectual property, and inappropriately aiding other students. Such actions undermine the central mission of the university and negatively impact the value of your Florida Poly degree. Suspected violations will be fully investigated, possibly resulting in sanctions up to and including expulsion from the university.

Recording Lectures
Students may, without prior notice, record video or audio of a class lecture for a class in which the student is enrolled for their own personal educational use. Recordings may not be used as a substitute for class participation or class attendance. Recordings may not be published or shared in any way, either intentionally or accidentally, without the written consent of the faculty member. Failure to adhere to these requirements is a violation of state law (subject to civil penalty) and the student code of conduct (subject to disciplinary action). *Recording class activities including, but not limited to, lab sessions, student presentations (whether individually or part of a group), class discussion (except when incidental to and incorporated within a class lecture), and invited guest speakers is* ***prohibited****.*

Course Schedule

- Important Dates: https://floridapoly.edu/academics/academic-calendar/index.php
- A tentative course calendar is included below.

Week	*Topic*	*Chapter*
1	***Foundations of Six Sigma*** • *Introduction to Six Sigma.* • *Quality Principles and Six Sigma* • *Systems Approach to Management* • *In Class Exercise*	Part 1 Chapter 1
2	***Principles and Metrics of Six Sigma*** • *Problem Classification* • *Six Sigma in Service Organizations* • *Process Concepts and Variation* • *Introduction to Six Sigma Metrics* • *In Class Exercise*	Part 1 Chapter 2
3	***Principles and Metrics of Six Sigma*** • *DMAIC* • *Lean Six Sigma Introduction* • *Lean Principles* • *In Class Exercise* • *Six Sigma in Practice*	Part 1 Chapter 2
4	***Project Organization and Definition*** • *Organizing for Six Sigma Projects and Teams* • *Essential People Skills for Six Sigma* • *Selecting and Defining Six Sigma Projects*	Part 2 Chapter 3

	• *High-Level Process Maps and Customer Requirements* • *In Class Exercise*	
5	***Process Measurement*** • *Identifying and Selecting Process Metrics* • *Understanding Process Mapping* • *Techniques for Data Collection and Summarization* • *Measurement System Evaluation*	Part 2 Chapter 4
6	***Advanced Process Measurement*** • *Process Capability Measurement and Indexes* • *Statistical Sampling Techniques* • *Descriptive Statistics with Tools* • In Class Exercise	Part 2 Chapter 4
7	***Process Analysis Fundamentals*** • *Probability Concepts* • *probability Distributions* • *Statistical Inference* • *Hypothesis Testing* • *In Class Exercise*	Part 2 Chapter 5
8	***Process Analysis Fundamentals*** • *Regression* • *Correlation Analysis* • *Analysis of Variance (ANOVA)* • *Root Cause Analysis Techniques* • *In Class Exercise*	Part 2 Chapter 5
9	***Spring Break***	
10	***Process Improvement Principles and Process control*** • *Tools for Process Improvement: Kaizen, Poka-Yoke* • *Analyzing Process Maps and Creative Thinking* • *Breakthrough Improvement and the Deming Cycle* • *Introduction to Control Systems and Documentation* • *In Class Exercise*	Part 2 Chapter 6
11	***Statistical Process Control*** • *Fundamentals of Statistical Process Control* • *Process Monitoring and Control* • *Control Charts for Variables and Attribute Data* • *In Class Exercise*	Part 2 Chapter 7
12	***Process Control Advanced Techniques*** • *Implementing Statistical Process Control* • *Advanced Control Charts and Process Monitoring* • *Case Study Discussions related to Control* • *In Class Exercise*	Part 2 Chapter 7
13	***Design for Six Sigma (DFSS) Introduction*** • *Overview of DFSS and Concept Development* • *Detailed Design, Tolerance, and Reliability Prediction* • *In Class Exercise*	Part 2 Chapter8
14	*In Class Exercise*	Part 2 Chapter8

15	***Project presentation***	

I reserve the right to modify this schedule as required by the progression of the class.

Tentative Rubric for Project

Project Report Rubric

Objective	**Category**	**Below Expectations**	**Weak**	**Average**	**Good**	**Excellent**
	Score	**1**	**2**	**3**	**4**	**5**
Students can write professional quality documents	Introduction	Opening is off-topic and inappropriate to the purpose, not concise and no clarity	Opening is somewhat related to the topic and appropriate to the purpose but is not concise and clear	Opening is related to the topic and appropriate to the purpose. Somewhat clear and concise	Opening is related to the topic and appropriate to the purpose. Clear and concise	Strong opening that is clear and concise
	Organization	Disorganized; incorrect format; unclear direction	Somewhat organized; incorrect format; unclear direction	Organized; correct format; unclear direction	Organized; correct format; clear direction	Correct formatting, strong clarity and organization in the development of main points
	Literature Review	Does not present information from any source	Presents information from irrelevant sources representing limited points of view/approaches	Presents information from relevant sources representing limited points of view/approaches	Presents in-depth information from relevant sources representing limited points of view/approaches	Synthesizes in- depth information from relevant sources representing limited points of view/approaches
				Critical elements of	Critical elements of the methodology	All elements of the

	Research Design (weighted twice)	Does not provide information on research design	Inquiry design demonstrates misunderstanding of the methodology or theoretical framework	the methodology or theoretical framework are missing, incorrectly developed or unfocused	or theoretical framework are appropriately developed however, more subtle elements are ignored or unaccounted for	methodology or theoretical framework are skillfully developed and may be synthesized from across disciplines or relevant subdisciplines
	Analysis (weighted twice)	Incorrect, Irrelevant, no supporting evidence	Correct, irrelevant, no supporting evidence	Correct, relevant, no supporting evidence	Relevant and correct with supporting evidence	Relevant, correct, complete, incorporates innovative insights
	Next Steps	Missing or content does not support conclusion	Conclusion irrelevant to the findings	Conclusion somewhat relevant to the findings	Conclusion relevant to the findings	Strong conclusion that is clear, complete and compelling
	Grammar & Spelling	Uses language that often impedes meaning due to errors	Uses language that often sometimes meaning due to errors	Uses language that generally conveys meaning to readers with clarity, although writing includes some errors	Uses straightforward language that conveys meaning to readers. Language has few errors	Uses graceful language that communicates meaning to readers with clarity and fluency and is virtually error free
	Reference Style (APA)	Did not follow APA style	Numerous errors in APA style, did not cite sources correctly,	Some errors in APA style, cited correctly but	Minimum errors in style and formatting but does not detract from readability	No errors in APA style

			formatting issues	formatting issues persist		
Total points for Report = 50						