

Six Sigma
INSY 6330/6336/5330
Fall 2020

Tuesday & Thursday 12:30 PM - 1:45 PM

Instructor	Dr. Sa'd Hamasha, Ph.D.
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Office Hours	By appointment
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Course Description	This course covers the six sigma engineering techniques. The content emphasizes the DMAIC (Define, Measure, Analyze, Improve, and Control) methodology combined with Lean management practices through analytical and quantitative tools.
Textbooks	Recommended textbook: Charles T. Carroll, <i>“Six Sigma for Powerful Improvement: A Green Belt DMAIC Training System with Software Tools and a 25-Lesson Course,”</i> CRC Press Taylor & Francis Group, 2013. Recommended textbook: Kishore K. Pochampally and Surendra M. Gupta, <i>“Six Sigma Case Studies with Minitab”</i> , CRC Press Taylor & Francis Group, 2014.
Course Goals	<ul style="list-style-type: none">• Describe fundamental concepts and methods in six sigma, including the DMAIC problem solving methodology.• Integrate six sigma knowledge and tools to implement and deploy process improvements successfully.• Practice advanced six sigma techniques by applying the DMAIC methodology on practical problems to accelerate processes, increase efficiency, and reduce or eliminate variation.
Course Topics	<ol style="list-style-type: none">1. Introduction to Six Sigma and problem solving using Define, Measure, Analyze, Improve and Control (DMAIC)2. Define Phase: identify preliminary requirements, voice of the customer, develop team charter, high-level process map3. Measure Phase: overview, critical-to-quality characteristics, performance standards, 7 process improvement tools, data collection plan, measurement system analysis4. Analyze Phase: overview, process capability, performance objectives, sources of variation and waste, correlation analysis, regression analysis, confidence intervals, hypothesis testing

5. Improve Phase: overview, design of experiments (DOE), analysis of variance (ANOVA), confirming solutions, setting tolerances, and documenting
6. Control Phase: overview, statistical process control; process capability analysis; mistake-proofing; build process control plan, transfer solution to process owner and close project
7. Case studies and applications

Policies & Guidelines:

- **Evaluation:**

- **Grading:**

Assignment	Percent
Quizzes	40%
Homework Assignments	30%
Case Studies	30%

- Grades will be assigned on a ten-point scale:

Undergraduate:	Graduate:
A = 90 – 100	A = 90 – 100
B = 80 – 89.99	B = 80 – 89.99
C = 70 – 79.99	C = 70 – 79.99
D = 60 – 69.99	F = less than 70
F = less than 60	

- **Quiz Policy:** All quizzes will be conducted on Canvas using Honorlock Proctoring. The instructor will announce the quiz time five days in advance. Students registered in INSY6336 have 24hr window to finish the quiz. Quiz time for INSY 5330 and 6330 is Tuesday or Thursday at 12:30 PM (no 24hrs window). The student is expected to notify the instructor in advance by email in the event an emergency occurs which prevents the student from taking a quiz at the scheduled time, if possible. A make-up quiz will only be given for absence due to unavoidable situations. Subsequently, the student is required to present a written explanation.
- **Attendance:** The student is responsible for all of the information presented, materials distributed, and announcements made in class.
- **Email:** Students are responsible for all E-mail messages sent by the instructor. The Auburn University email address is the official way of communication.
- **Canvas:** Course material will be kept at the Canvas system.
- **Academic Honesty:** All assignments (quizzes, exams, case studies, etc.) should reflect your own individual effort unless the instructor has specifically stated that the work is to be completed in teams. Students will abide by Auburn University’s policy on academic honesty. Failure to abide by this policy may result in a zero grade in the assignment or an F in the course, or may even have worse consequences, depending on the circumstances. The policy guidelines will be strictly followed.