



The Lee Kong Chian School of Business
Academic Year 2024/25
Term 2

MGMT317 MANAGING PROCESS IMPROVEMENT

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COURSE DESCRIPTION

All firms have processes, most of which can be improved or optimized. Some of these processes include innovation, development, manufacturing, services, internal and external processes. The ability of managers to define, measure, improve and control processes is a key skill set and, combined with leadership, can enhance the success of a firm.

In this course, students will develop a combination of practical tool knowledge and project management skills to effectively change and improve important processes. Students will also gain a strong theoretical and practical understanding of six sigma deployment and will have the opportunity to achieve SMU Six Sigma “Greenbelt” certification. Students will learn the DMAIC methodology (Design, Measure, Analyze, Improve, Control) and apply it in real projects. These projects will be sponsored by SMU, local SME’s and MNC’s.

This course will also allow students to further develop and get feedback on the following *SMU Graduate Learning Outcomes: disciplinary knowledge, critical thinking and problem solving, collaboration and leadership, communication, self-directed learning, and resilience* (see <https://www.smu.edu.sg/programmes/graduate-learning-outcomes>)

LEARNING OBJECTIVES

Students will be trained in Six Sigma to the level of Greenbelt and will achieve certification of their Green Belt status by SMU. After taking this course, students will achieve the following learning outcomes (LOs).

Be able to:

- LO1: Answer questions about Lean and Six Sigma approaches to process improvement, including DMAIC (Design, Measure, Analyze, Improve, Control), related change and project management, as well as organizational deployment
- LO2: Analyze and solve problems in the context of process improvement
- LO3: Collaborate effectively with team and client to manage process improvement projects
- LO4: Communicate effectively in the context of process improvement
- LO5: Plan and act for personal growth and development
- LO6: Persevere and recover quickly in the face of disruptions and challenges

PRE-REQUISITE/ CO-REQUISITE/ MUTUALLY EXCLUSIVE COURSE(S)

Please refer to the Course Catalogue on OASIS for the most updated list of pre-requisites / co-requisites for this particular course. Do note that if this course has a co-requisite, it means that the course has to be taken together with another course. Dropping one course during BOSS bidding would result in both courses being dropped at the same time.

ASSESSMENT METHODS

Project	40%
Class Participation	20%
Peer Evaluation	10%
Final Exam (green belt certification)	30%

The project will be assessed on the following criteria: improvement results, tool use, quality of deliverables/ presentations, improvement ideas (linked to causes), team work, and leadership/ push for entitlement. The project starts in week 1 and, in addition to regular meetings with the client team, will require five update presentations to the client outside of class time according to the five phases of the six sigma methodology of Define, Measure, Analyze, Improve and Control. The scheduled exam time in week 15 or week 16 will be used for the poster presentation, which is a key moment for your team to show your project improvement results.

For class participation, presence in class and timeliness will form the basis. The teaching assistant will also take note of your participation in class and the instructor will discuss the quality of the individual contributions with the teaching assistant after each class. There will also be in-class exercises for teams and two small team assignments to practice specific six sigma methods (measurement system analysis and design of experiments) for which the team scores will be added to class participation. Finally you will submit a learning plan in week 5 and a learning reflection in week 16, both of which will count towards class participation. The learning plan and learning reflection will help you to become more self-directed in your learning from projects. The instructions and rubrics for these will be shared in class.

In the peer evaluation you will give feedback to your team members regarding their skills for critical thinking and problem solving, collaboration, communication, and resilience and positivity. Your score will depend on the quality of the feedback you give, as rated by the instructor, not on how you are rated by your peers. That said, if you are rated low across the board your grades could be negatively affected; you will in that case have a chance to explain your contribution to your team's project.

The final exam covers the materials covered in the class, takes place in week 13, and consists of a combination of multiple-choice questions and short and medium-length answer question.

INSTRUCTIONAL METHODS AND EXPECTATIONS

- Methodologies
 - DMAIC (methods for improving existing processes)
 - Deployment of Six Sigma
- Projects
 - Students will embark on a project in teams of four to five students to be completed within the 15 –week term. Project will use the tools as they are taught (see below).
- Team Coaching
 - Change Management
 - Leadership Essentials for Project Results
 - Deployment Leadership
- Process Improvement Tools – Lectures and in-class exercises
 - Project Charter
 - KJ Analysis
 - Process Observation / Mapping
 - Statistics Basic Review
 - Measurement System Analysis
 - Statistical Process Control
 - Process Capability Analysis
 - Minitab intro and practice sessions
 - Cause & Effect Matrix
 - Failure Modes and Effects Analysis
 - Variation Analysis
 - Solution Evaluation Matrices
 - Design of Experiments
 - Control Plans

Find course schedule overview on next page.

REQUIRED TEXT AND TOOLS

- George M. L. et al , “Lean Six Sigma Pocket Toolbook”, McGraw-Hill, 2005 – available in Booklink on SMU campus
- Minitab – campus network license will be provided to students enrolled in the course

UNIVERSITY POLICIES

Academic Integrity

All acts of academic dishonesty (including, but not limited to, plagiarism, cheating, fabrication, facilitation of acts of academic dishonesty by others, unauthorized possession of exam questions, or tampering with the academic work of other students) are serious offences.

All work (whether oral or written) submitted for purposes of assessment must be the student’s own work. Penalties for violation of the policy range from zero marks for the component assessment to expulsion, depending on the nature of the offense.

When in doubt, students should consult the instructors of the course. Details on the SMU Code of Academic Integrity may be accessed at <https://smu.sharepoint.com/sites/oasis/SitePages/DOS-WKLSWC/UCSC.aspx>.

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Accessibility

SMU strives to make learning experiences accessible for all. If you anticipate or experience physical or academic barriers due to disability, please let me know immediately. You are also welcome to contact the university's student accessibility support team if you have questions or concerns about academic provisions: accessibility@smu.edu.sg. Please be aware that the accessible tables in our seminar room should remain available for students who require them.

Digital Readiness for Teaching and Learning (DRTL)

As part of emergency preparedness, instructors may conduct lessons online via the Zoom platform during the term, to prepare students for online learning. During an actual emergency, students will be notified to access the Zoom platform for their online lessons. The class schedule will mirror the current face-to-face class timetable unless otherwise stated.

COURSE SCHEDULE OVERVIEW

(subject to minor modifications)

CLASSES	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16	W17
In-class lectures and exercises	DMAIC overview	Process Observation and Mapping	KJ Analysis (to identify X-factors)	Cause & Effect Matrix (C&E)	Failure Mode and Effects Analysis (FMEA)	Lean Operations	Pugh Matrix (Solution selection)	Recess week		Mid-term Review	Control Plans	Organizing for strategic process improvement	Final Exam		Poster Presentation (during scheduled exam slot)		
	Project Charter (Y)	Data & Descriptive Statistics	Measurement System Analysis (MSA)	Statistical Process Control (SPC)	Process Capability	Multi-vari Analysis (hypothesis testing)	Multi-vari Analysis (t-test, ANOVA, Regression)		Design of Experiments (DOE) (Part I)	DOE (Part 2)							
	Project Management	Sourcing data & Leadership	Best Practice Research														

PROJECT		W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14	W15	W16
Define			Charter (incl. schedule)	Process Mapping	Define Gate Review												
Measure	data collection		Y	Process Observation	Y	Y	Y	Measure Gate Review	X	X							
	data description				MSA	Descriptive Stats	SPC, Process Capability		SPC, Process Capability	X-Y graphs							
Analyze	forming hypotheses				KJ	C&E	FMEA				Analyze Gate Review						
	testing hypotheses							Multi-vari Analysis	Multi-vari Analysis	Multi-vari Analysis							
Improve				Best Practice Research	Best Practice Research	Best Practice Research	Best Practice Research	Best Practice Research	Solution Brainstorming	Solution Selection (Pugh Matrix)	Detailed Solution Design	Detailed Solution Design	Designed Experiments / Pilot	Designed Experiments / Pilot	Improve Gate Review		
Control															SOPs for process / control	SOP testing and training	Control Gate Review

Due by Friday 7 pm (see elearn)		Workbook	Workbook Learning Plan	Workbook + Catapult MSA Learning Plan	Workbook Midterm Peer Evaluation	Workbook	Workbook	Workbook	Workbook	Workbook	Workbook	Workbook + Catapult DOE report	Workbook	Workbook	Workbook	Workbook	Poster (before session) Final Workbook	Final Client Deliverables Final Peer Evaluation Learning
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