

Annex A

Managing Process Improvement

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- Pilot: Term 2, AY2014-15 (Jan to Apr 2015)
- Next course-run: Term 2, AY2015-16 (Jan to Apr 2016)

Course Description

All firms have processes, most of which can be improved or optimised. 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 practical understanding of appropriate tool use 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 achieve “Greenbelt” certification (recognised by the industry). Students will learn the DMAIC methodology (Define, Measure, Analyse, Improve, Control) and apply it in real projects. These projects will be sponsored by local SME’s and MNC’s.

Learning Objectives

Students will be trained in Six Sigma to the level of Greenbelt and will achieve certification of their Green Belt status (recognised by the industry). After taking this course, students will be able to:

- Explain the different elements of Six Sigma Deployment, including the change and leadership components necessary
- Define, lead and manage small to medium-size process improvement projects using the DMAIC (Design, Measure, Analyse, Improve, Control)
- Identify and apply appropriate six-sigma and project management tools to effectively improve processes
- Operate within teams and within organisations to drive effective process improvements

Assessment Methods

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

Instructional Methods

- 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 term. Project will use the tools as they are taught.
- Case Studies (in-class)
- Leadership guidance
 - Change Management
 - Leadership Essentials for Project Results
 - Deployment Leadership
- Process Improvement Tools - Lectures
 - Charters
 - Voice of the Customer (as needed)
 - Measurement System Analysis
 - Statistics Basic Review (assume basic stats is required)
 - Variation Analysis
 - Cause & Effect Matrix
 - Design of Experiments
 - Failure Modes and Effects Analysis
 - Crystal Ball Prediction Software or other Monte Carlo Simulation tool
 - Microsoft Excel 2007

Additional Information:

- The course has been conducted in January and August 2014. In January 2015, in offering the module as a pilot SMU-X course, the level of active faculty mentoring was deepened and intensified. There was also enhanced utilisation of interactive technology, such as in the form of analytics software.
- Partner organisations who have participated in this course represent a wide range of sectors. They include: APL, Cargill, Cima Nanotech, CKE Manufacturing, Ikano, Infineon, LVMH and Resorts World Sentosa.
- 45 students were involved in the pilot course. They recently completed 9 different projects with various partner companies from the consumer electronics, F&B, healthcare, luxury goods, manufacturing and shipping sectors.
- Qualifying students will receive their Six Sigma Green Belt Certification on 23 April 2015. *Six Sigma* is a set of techniques and tools for process improvement developed by Motorola in 1986 and applied in many industries today. *Green Belts* are employees of an organisation who have been trained on the *Six Sigma* improvement methodology and can lead a process improvement team as part of their jobs.

- Project Examples

- (i) **APL** (<http://www.apl.com/wps/portal/apl>)

- APL Project 1

- Title: APL Worldwide Sales Target Setting
 - Description: APL's sales target setting is a top-down process that currently takes 3 weeks. Our challenge is to propose a concept to do tiered target setting with the eventual objective of making nil the region level target variances. Target is to streamline the entire process to 1 week.

- APL Project 2

- Title: Port Approach Process Improvement
 - Description: Improving fuel efficiency by improving the process for communicating with ships and smart speed management, regarding port approach.

- APL Project 3

- Title: Minimising the number of container re-handles at APL
 - Description: The project seeks to minimise the volume of re-handles experienced by APL without compromising/violating the existing constraints.

- (ii) **Cima Nanotech** (<http://www.cimananotech.com/>)

- Description: The SMU-Cima NanoTech project sought to understand the customer perceptions and willingness-to-pay for innovative solutions and additional functions in microwave ovens.

- (iii) **LVMH**

- LVMH Project 1

- Title: Staff Roster at Louis Vuitton Marina Bay Sands Store
 - Description: The project involves analysing the staff roster process in the Marina Bay Sands store and identifying ways to improve the "match-to-traffic" of the roster. When staff are rostered to match foot flow of customers there is a potential to increase sales.

- LVMH project 2

- Title: Matching capacity and demand at Louis Vuitton Singapore warehouse
 - Description: The project involves studying the communication between Louis Vuitton and their 3rd party logistics provider about demand and capacity for warehouse operations. A new daily status report and performance metric was developed to facilitate improved planning and sequencing.
