



SYMBIOSIS INTERNATIONAL (DEEMED UNIVERSITY)

(Established under section 3 of the UGC Act 1956)

Re - accredited by NAAC with 'A' Grade

Founder: Prof. Dr. S. B. Mujumdar, M.Sc., Ph.D. (Awarded Padma Bhushan and Padma Shri by President of India)

(Established under section 3 of the UGC Act 1956, by notification No.F.9-12/2001-U3 Government of India)

**Sub Committee for Curriculum Development
Operations Management Specialization**

**Format to submit syllabus
(Revised 18th Nov 2016)**

Course Name: Six Sigma

(UG/PG): PG

Code: T2828

Number of Credits: 2

Level: 5

Learning Objective(s): To describe the concepts of Six Sigma as a quality improvement tool.

To explain the complete DMAIC cycle in detail

To analyze when and how to use Six Sigma as a tool for process improvement.

To analyze different cases of Six Sigma implementation

To apply Six Sigma concepts using software systems

Pedagogy:

Lectures supported by case studies

Projects / Assignments on application of Quality tools by various organizations.

Pre-learning:

Thorough proficiency in Statistical analytical tools used like MINITAB etc.

Course Outline:

Sr.No.	Topic	Hours
1	Introduction to Six Sigma, Six sigma as a competitive tool, understanding need to change, change methodology, overcoming resistance to change, cost of poor quality.	3
2	Define – customer expectations of the process: Determining the project CTQ's, identifying the customers, gathering, organizing, prioritizing VOC's, translating VOC to CTQ's, Defining the project, problem statement, project charter, Process mapping and its benefits, SIPOC model, levels of mapping.	4
3	Measure – frequency of defects: Project selection, understanding measures, CTQ prioritization, types of data, C&E diagram, Data collection plan, defining operational definitions, sampling procedures, measurement system analysis, tools for displaying and describing Variations, causes of variations, run & bar charts, normality plot.	4
4	Analyse – understanding why, where and when defects occur: Process capability, base lining, DPMO / DPU, C_p , C_{pk} , calculating sigma, Identification of possible causes, segmentation & stratification, sub process mapping, process map analysis, graphical analysis tools, Root causes, hypothesis testing, ANOVA, t-tests, chi square tests, regression analysis, Quantifying the opportunity.	4
5	Improve - fixing the process: Generating and selecting solutions, brainstorming, TRIZ, DOE, criteria matrix, NGT, idea screening tools, Refining solutions, FMEA, Error proofing, test solutions, pilot planning, result verification, Justifying solutions, cost benefits analysis.	3
6	Control –making the process stay fixed: Process control plan, charts, documentations, control charts, response plans, Implementing solutions, stakeholder analysis, implementation elements, Closing the project, documentation, acceptance strategy, communication of learning.	3
7	DOE	5
8	Design for Six sigma	4
	Total	30

Books Recommended:

1. The Six Sigma Handbook – by Thomas Pyzdek
2. The Six Sigma way – by Peter S Pande, Robert P. Neuman, Roland R.Cavanog
3. Lean Six Sigma for Service – by Michael L. George.
4. The Certified Six Sigma Green Belt Handbook by Roderick A. Munro, Matthew J. Maio, Mohamed B. Nawaz, Govindarajan Ramu, Daniel J. Zrymiak
5. Design for Six Sigma for Green Belts and Champions: Applications for Service Operations Foundations, Tools, DMADV, Cases, and Certification By Gitlow & Levine & Popovich New Delhi/PEARSON POWER/2006
6. Six Sigma for Managers by Brue, Greg New Delhi/Tata Mcgraw-Hill/2002 658.5 BRU

Suggested Evaluation Methods:

Study of Best practices
Project work

Parallel/Similar courses the existing curriculum:

S.No.	Name of the course	Institute where it was offered
<u>1</u>	Six Sigma	SIOM
<u>2</u>	Process optimization through Six sigma	SCIT
<u>3</u>	Quality management with Six Sigma	SCIT
<u>4</u>	Six Sigma (2 credits)	SIBM B
<u>5</u>	Six sigma (3 credits)	SIBM B
<u>6</u>	Six Sigma	SCMHRD
<u>7</u>	Six Sigma	SIIB

Name of Member	Dr ShyamSunde Chitta	DrPrabir Bandopadhaya	Dr Rohit Singh	Dr Kansara	Mr SHiba Parhi
Designation					
Org. / Inst.	SIBM H	SIBM P	SIOM	SIOM	SIOM
Signature					

Name of the Expert: Dr Vandana Sonwane

Signature:

Date: 18th Nov 2016

