

Semester	III	Specialization	Supply Chain Management
Course Code	310SCM	Type	Subject - Elective
Course Title	Six Sigma		

Course Objectives:	
1	To provide a comprehensive understanding of six sigma
2	To introduce the six sigma methodology and philosophy
3	To learn how to manage change and sustain benefits
4	To learn how to listen and map customer requirements

Syllabus:

Unit Number	Contents	Number of Sessions
1	<p>Enterprise-wide Deployment:</p> <p>1.1 Six Sigma and Lean: Brief history of performance initiatives- Quality Control, TQM, Cost of Quality, Customer quality Management, SPC, Reengineering, Six Sigma, Theory of Constraint, Lean manufacturing.</p> <p>1.2 Business Process Management: Introduction to Six Sigma-As a metric, As a methodology, As a management System. Six sigma Evolution and approach Lean as a Business Management Strategy, Key elements of lean. Types of lean initiatives, Implementing lean initiatives</p>	5 + 1
2	<p>DMAIC model for implementing Six Sigma:</p> <p>2.1 Define: Project Selection, Developing the team, DMAIC & DMADV, Deliverables, Tollgate Questions</p> <p>2.2 Measure: Determining X variables, Cause and Effect Diagram & Matrix, Overview of MSA, Data Collection Plan – Forms, Baselineing the y data, DPMO, Capability Indices, COPQ, Yield, Tollgate Questions</p> <p>2.3 Analyze: Tools for identifying Root Causes: Histogram, Boxplot, Scatter Plot, Matrix Plot, DotPlot, Run Chart, Multi-Vari Chart, 5 Why's</p> <p>2.4 Improve: Generating Solutions, Random Stimulation, Six Thinking Hats, Mind Mapping, Challenge Assumptions, Decision Making Tools for Selecting Solutions – Pairwise Ranking, Solution Matrix, Force Field Analysis, Costs and Benefits, Pilot Plan, Potential Problem Analysis – Mistake Proofing, Risk Assessment Matrix and Control Assessment Matrix, FMEA, Contingency Plan, Verification Plan, Tollgate Questions</p>	7 + 1

	2.5 Control: Solution Planning, Process Control Plan, Review Meetings, Updated flowcharts & procedures, Control Charts, Out Of Control Action Plan, Project Conclusion Activities	
3	Six Sigma Impact measurement: Financial and Performance measurement: Lack of Clear Goals and Metrics linked to Measurable Business Goals, Mismatches between Traditional Accounting and Improvement Campaigns. Metrics That Impact – Revenue Growth, Cost Savings, Productivity Improvement, Reduced Cost of Poor Quality, Cash Flow Improvement, Faster product / service cycle times, Freed up engineering and /or sales / service time, Freed up other indirect time, Cost avoidance savings. Seven Elements of Six Sigma Scorecard	5 + 1
4	Six Sigma in non-manufacturing environments: MSA in the DMAIC Cycle. MSA Psychology. Why Non-Manufacturing Processes are Different, MSA Repeatability & Reproducibility (R&R) Studies. Gauge R & R. Comparison of MSA Acceptance Criteria	5 + 1
5	Projects in Six Sigma-Use of DMAIC Cycle	3 + 1

Learning Resources:

1	Text Books	The Six Sigma Black Belt Handbook by MacCarty, Daniels, Bremer and Gupta, TMGH, 2010 Edition Juran Institute's Six Sigma Breakthrough and Beyond by De Feo and Barnard, TMGH. What is Six Sigma? by Peter Pande, TMGH Six Sigma Management by Blashka, TMGH All about Six Sigma by Warren Brussee, TMGH.
2	Reference Books	TPS-Lean Six Sigma by Hubert Ramprasad, Sara Books Pvt.Ltd.
3	Supplementary Reading Material	The Certified Six Sigma Black Belt Hand Book, Donald Benbow, Pearson Publication Achieving Business Excellence by Pravin Rajpal, Om Books International, India.
4	Websites	http://asq.org
5	Journals	What , Why and How: The importance of statistical thinking for Six Sigma by Krishnamoorth, K. S., Industrial Engineer: IE, Oct 2011, Vol. 43, Issue 10 In pursuit of implementation patterns: the context of Lean and Six Sigma by Shah, R.; Chandrasekaran, A.; Linderman, K., International Journal of