MEOE 006 INTRODUCTION TO SIX SIGMA: QUALITY AND METHODOLOGY

L	T	P	Credit
3	0	0	3

Pre-requisite: 1.

Course Outcomes: At the end of the course, the student will be able to:

MEOE-006.1	*Discuss the philosophy and basic concept of Six Sigma*
MEOE-006.2	*Understand the kano model and customer requirements*
MEOE-006.3	*Analyze the basic steps for implementation of Six Sigma in industry*
MEOE-006.4	*Apply the failure modes and effects Analysis*
MEOE-006.5	*Describe the basics of operational excellence*

Mapping of course outcomes with program outcomes

CO	PO1: Engineering knowledge	PO2 Problem analysis	PO3: Design/development of solutions	PO4: Conduct investigations of complex problems	PO5: Modern tool usage	PO6: The engineer and society	PO7: Environment and sustainability	PO8: Ethics	PO9: Individual and team work	PO10: Communication	PO11: Project management and finance	PO12: Life-long learning
MEOE-006.1	3	2	2	1	-	-	-	-	-	-	-	-
MEOE-006.2	3	2	2	1	-	-	-	-	-	-	-	-
MEOE-006.3	3	2	2	1	-	-	-	-	-	-	-	-
MEOE-006.4	3	2	2	1	-	-	-	-	-	-	-	-
MEOE-006.5	3	2	2	1	-	-	-	-	-	-	-	-

Unit I

1.1. Six Sigma Introduction : Introduction to the Six Sigma, Six Sigma history,
1.2. Methodology and DMAIC process improvement cycle,
1.3. Cost of quality, Process yield,
1.4. Becoming a customer and market-driven enterprise

Unit II

2.1. Customer Needs and Requirements :
2.2. Customer expectations,
2.3. Kano Model to categorize quality characteristics,
2.4. Six Sigma project, Defining the Problem, key content in a Project Charter,
2.5. customer needs & requirements, Linking six sigma project to strategies

Unit III

3.1. Six Sigma Quality Tools : Important tools used in process deviations,
3.2. Failure Modes and Effects
3.3. Analysis, Eight Disciplines and Five Whys,Techniques for Design for Six Sigma (DFSS),
3.4. Basic Six Sigma Metrics, Attributes to good metrics

Unit IV

4.1. Design for Six Sigma: DMAIC, Zero defect,
4.2. Design for Manufacturing (DFM),
4.3. Design for Assemble(DFA) and Reliability Analysis,
4.4. Six Sigma Basic Statistics, Methodology of six sigma implementation

Unit V

5.1. Six Sigma Strategy : Six Sigma: Strategic planning and Implementation, Six Sigma and
5.2. Operational Excellence: Summary, Six Sigma:
5.3. Case study and Tools, The Seven Elements of Waste, TQM vs. Six
5.4. Sigma-The contrast Application of Six Sigma :
5.5. Six Sigma for Supply Chain Management, TQM and quality chain,
5.6. Taguchi Product Design Approach, Taguchi's Robust Design,
5.7. Application of Six Sigma in Industry,
5.8. Readiness for Six Sigma: Assessing the Organization

Text Books:

1. SIX SIGMA FOR BUSINESS EXCELLENCE : APPROACH TOOLS AND APPLICATIONS by HEMANT URDHWARESHE, PEARSON

References:

1. SIMPLIFIED SIX SIGMA : METHODOLOGY, TOOLS AND IMPLEMENTATION by N. GOPALAKRISHNAN, PHI Learning
2. AN INTRODUCTION TO SIX SIGMA AND PROCESS IMPROVEMENT by JAMES R. EVANS & WILLIAM M. LINDSAY, CENGAGE LEARNING