GANPAT UNIVERSITY									
FACULTY OF MANAGEMENT STUDIES									
Programme	Bachelor of Business Administration				Branch / Spec.	Business Analytics			
Semester	VI				Version	1.0.0.0			
Effective from Academic Year		2025-26			Effective for the Batch Admitted in			July 2023	
Subject Code	6A03SQC		Subject Name		Statistical Quality Control and Six Sigma				
Teaching Scheme					Examination Scheme (Marks)				
(Per week)	Lecture (DT)		Practical (Lab.)	Total		CE	SEE	Total	
	L	TU	P	TW					
Credit	04	00	00	00	04	Theory	40	60	100
Hours	04	00	00	00	04	Practical	00	00	00

Pre-requisite:

1A02FOS Fundamental of Statistics, 2A03BUS Business Statistics

Objective:

- To introduce the principles of quality management and process control.
- To understand Statistical Quality Control (SQC) as a tool for business decision-making.
- To explore Six Sigma methodologies and their application in business analytics.
- To integrate Lean and Six Sigma principles for business process improvement.

Learning Outcomes/Course Outcomes:

On successful completion of the course, the students will be able to:

CO1- Learn quality management concepts and their role in business.

CO2- Apply SQC tools to monitor and improve business processes.

CO3- Understand the Six Sigma methodology and its business impact.

CO4- Use Lean Six Sigma for process optimization in business analytics.

Mapping of PO-CO and PSO-CO:

Course Outcome (CO) No.	PO-CO Mapping						PSO-CO Mapping			
	PO1	PO2	PO3	PO4	PO5	PO6	PSO1	PSO2	PSO3	PSO4
CO1	3	2	2	1	2	1	3	2	1	2
CO2	2	3	3	3	2	1	3	3	3	2
CO3	3	2	3	3	2	2	3	3	3	2
CO4	2	3	3	3	2	3	3	3	3	3

Theory Syllabus

Unit	Content	Hrs.
1	**Quality Management and Statistical Quality Control**: Introduction to Quality, its Evolution, and Importance in Business, Quality Control vs Quality Assurance in Business Process, Process Variation in Business data, Importance of data-driven decision-making in quality control, 7 Quality Control Tools, Control Chart and Process Monitoring with its Business Application: X-R Charts, p- charts and c-charts.	15
2	**Business Process Control and Capability Analysis:** Quality Control in Service and Manufacturing Sectors: Difference in Quality Control for Product vs Service, Concept of Process Capability: Cp, Cpk, Process Improvement Strategies in Business Contexts, Concept of Sampling in Business Decision Making, Quality Audits: Industry Standards and ISO Certifications, General Case Studies on Business Improvement	15
3	**Six Sigma Methodology for Business Optimization:** Introduction to Six Sigma, Evolution, Principles of Six Sigma, Benefits of Six Sigma in Business Analytics, Six Sigma Methodologies: DMAIC (Define, Measure, Analyze, Improve, Control), DMADV (Define, Measure, Analyze, Design, Verify), Tools for Six Sigma Implementation: Cause- Effect Diagram, 5 Whys, Failure Mode and Effect Analysis (FMEA), Root Cause Analysis.	15
4	**Lean Six Sigma and Future Trends in Business Analytics:** Introduction to Lean and Six Sigma Integration, Lean Principles: Waste Elimination, Continuous Improvement, Synergy between Lean and Six Sigma in Business, Lean Tools for Business Optimizations: 5S, Kaizen, Value Stream Mapping, Just in Time, Business Process Reengineering and Digital Transformation, Cost-Benefit Analysis in Six Sigma Projects, Future Trends In Business Analytics and Six Sigma: Role of AI, IoT and Big Data In Quality Management, Industry 4.0 and Smart Manufacturing.	15

	Exam: Theory 80%, Numerical 20%	
Text Book:		
	Douglas C. Montgomery – *Introduction to Statistical Quality Control*	
Reference Books:		
	• Evans, J R and W M Lindsay, An Introduction to Six Sigma and Process Improvement, CENGAGE Learning. • Mitra, Amitava. Fundamentals of Quality Control and Improvement, Wiley India Pvt Ltd. • Mikel Harry & Richard Schroeder – Six Sigma: The Breakthrough Management Strategy • Pyzdek & Keller – The Six Sigma Handbook • Joseph Juran – Juran's Quality Handbook • Kaoru Ishikawa – Guide to Quality Control	
Online Resource:		
	• https://onlinecourses.nptel.ac.in/noc21_mg24/preview • https://archive.nptel.ac.in/courses/110/105/110105123/	