TEACHING PLAN: TOTAL QUALITY MANAGEMENT AND SIX SIGMA

SCHOOL:	ACADEMIC SESSION- 2022- 2024	FOR STUDENTS' BATCH: MGTM - 404P

1	Course code	MGTM - 404P
2	Course Title	TOTAL QUALITY MANAGEMENT AND SIX SIGMA
3	Credits	4
4	Learning Hours	Contact Hours: 60 Assessment: 20 Guided Study: 20 Total hours: 100
5	Course Objective	(1) To Understand the concept of Quality (2) To Understand the implication of Quality on Business. (3) To Implement Quality Implementation Programs. (4) To have exposure to challenges in Quality improvement Programs. (5) To understand the principles of total quality management.
6	Course Outcomes	1. To understand and apply the principles of total quality management. 2. Choose appropriate statistical technique for improving processes. 3. Develop the organizational, competitive and economic potential of quality. 4. Integrate requirement of quality improvement programs.
7	Outline syllabus:	

7.01	Paper Code	Unit	Introduction	Reference number	Teaching methods
7.02	Paper Code. MGTM – 404P Unit I	(a)	Basics of Total Quality: Evolution of Quality, Definitions of Quality, Symptoms of a Non Quality Business https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 2.2-2.7	PPT White Board +PPT
		(b)	What is Total Quality, Total Quality Control (TQC), https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB 2 5 - 6	White Board +PPT
		(d)	Dimensions of Quality (Kano's Model), Quality Challenge to Industry, Need for Quality Improvement: https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 1.13- 1.13	PPT White Board +PPT
		(e)	Impact of quality improvement, Differences between ISO 9000 and TQM. https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 1.14-1.19	PPT White Board +PPT

7.03	Paper Code. MGTM – 404P Unit II	(a)	Types of problems, QC Tools, Approaches to problem Identification, Quality improvement Methodologies, https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 5.8- 5.30	White Board + PPT
		(b)	, Problem solving process, Seven basic QC Tools, Applications of problem solving Tools, Seven Management Tools https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 5.57- 5.65	White Board + PPT
		(c)	Applications of problem solving Tools, Seven Management Tools https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 9.2-9.8	White Board + PPT
		(d)	Tree diagram, Matrix diagram, Matrix data analysis, Process decision program chart, Arrow diagram. https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 9.12-9.15	White Board + PPT
7.04	Paper Code. MGTM – 404P Unit III	(a)	Continuous process improvement, Juran trilogy, PDSA cycle, 5S, Supplier partnership,https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 388-411	White Board + PPT
		(b)	Partnering, Sourcing, Benchmarking, https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 473-486	White Board + PPT
		(c)	Quality Function Deployment (QFD), https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 436 - 472	White Board + PPT
		(d)	House of quality, Taguchi quality loss function https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 473-486	White Board + PPT

		(e)	Total Productive Maintenance (TPM). https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 506-519	White Board + PPT
		(f)	Taguchi quality loss function, Total Productive Maintenance (TPM) https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 355-367	White Board + PPT
7.5	Paper Code. MGTM – 404P Unit IV	(a)	Continuous Improvement: Kaizen Umbrella, Kaizen and Management, Kaizen and Innovation, https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 3-10	White Board +PPT
		(b)	Main Kaizen practice: Management, Kaizen and Labour-Management relations https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 798-802	White Board +PPT
		(c)	Cultural change for Kaizen, 3-MUs checklist of Kaizen activities, https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB2 803-815	White Board +PPT
		(d)	5-S Kaizen movement, 4 Ms checklist. https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB 2 782-797	White Board +PPT
7.06	Paper Code. MGTM – 404P Unit – V	(a)	Quality engineering and Six Sigma, DMAIC process for process and design improvement. https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB1 8.46 - 8.49	White Board +PPT
		(b)	Acceptance Sampling, SPC (Statistical Process Control). https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB3 520-524	White Board +PPT
		(c)	), Taguchi methods for robust design, Six Sigma sustainability; Case studies. https://onlinecourses.nptel.ac.in/noc20_mg19/preview	TB 1 10.5-10.6	White Board +PPT

8	**Course Evaluation**	
8.10	**CA: 40%**	
8.1	**Attendance**	5%
8.1.2	**Assignmient**	20%
8.1.3	**Theory**	15%
8.1.4	**Class test**	15%
8.1.5	**Presentation**	5%
8.1.6	**Any other**	--
8.2	**MTE(IA)**	20%
8.3	**End-term examination: 40%**	
9	**Text Books & References**	
9.1	**Text books**	TB1: Lt. Gen. H.Lal, "Total Quality Management", Wiley Eastern Limited 1990. TB2: Greg Bounds – Beyond Total Quality Management. Mcgraw Hill, 1994. TB3: Menon, H.G, "TQM in New product manufacturing" Mcgraw Hill 1992.
9.2	**References**	R1: George E Dieter, Linda C. Schmidt, -Engineering Designal, Mcgraw – Hill International Edition, 4thn Edition , 2009 , ISBN 978-007-127189. R2: http://iugaza.edu.ps/ashokry/files/2013/08/ TQM-and- COURSE-DESCRITION.pdf.
9.3	**Video References**	https://www.youtube.com/watch?v=YKwcxjUnots&list=PLAT40Ilaw_oZsZRrNx5YuBm73hiGz6gfO https://onlinecourses.nptel.ac.in/noc20_mg19/preview. https://www.youtube.com/watch?v=KfFez57ay6E https://www.youtube.com/watch?v=CPlXjz9H_Rs https://www.youtube.com/watch?v=_kyMqhtqUnY

Mapping of Outcomes v. Topics

Outcome no. → Syllabus topic↓	1	2	3	4	5
Paper Code.Unit I (a)	√				
Paper Code. Unit I (b)	√				
Paper Code. Unit I (c)	√				
Paper Code.Unit II (a)		√			
Paper Code. Unit II(b)		√			
Paper Code. Unit II(c)		√			
Paper Code.Unit III (a)			√		
Paper Code. Unit III(b)			√		
Paper Code. Unit III(c)			√		
Paper Code.Unit IV (a)				√	
Paper Code. Unit IV(b)				√	
Paper Code. Unit IV(c)					√

QUESTION BANK

Unit-I: Introduction to Total Quality Management

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1. Trace the evolution of quality management and discuss the significance of quality in business.
2. Define Total Quality Management (TQM) and explain its key principles.
3. Discuss the symptoms of a non-quality business and the implications of poor quality.
4. Compare and contrast Total Quality Control (TQC) with other quality management approaches.
5. Explain Kano's Model and how it helps in understanding different dimensions of quality.
6. Differentiate between ISO 9000 and TQM standards, highlighting their respective focuses.
7. Evaluate the need for quality improvement in organizations and its impact on overall performance.

Unit-II: Problem Solving and QC Tools

1. Identify and discuss different types of problems encountered in organizational settings.
2. Explain the problem-solving process and the various approaches to problem identification.
3. Describe the seven basic Quality Control (QC) tools and their applications in problem-solving.
4. Illustrate the use of Tree diagram and Matrix diagram in problem analysis.
5. Discuss the significance of Seven Management Tools and their role in quality improvement.
6. Analyze real-world scenarios where QC tools have been effectively utilized to enhance quality.
7. Evaluate the effectiveness of problem-solving methodologies in improving organizational processes.

Unit-III: TQM Principles and Tools

1. Explain the concept of continuous process improvement and its importance in Total Quality Management.
2. Discuss Juran trilogy and its relevance in quality management practices.
3. Describe the Plan-Do-Study-Act (PDSA) cycle and its application in continuous improvement.
4. Evaluate the significance of 5S methodology and its impact on workplace efficiency.
5. Discuss the importance of Supplier Partnership and its role in ensuring quality across the supply chain.
6. Explain the concept of Benchmarking and its implementation in improving organizational performance.
7. Analyze the role of Quality Function Deployment (QFD) in translating customer needs into product specifications.

Unit-IV: Kaizen

1. Define Kaizen and discuss its significance in continuous improvement initiatives.
2. Explain how Kaizen is integrated with 5S methodology for enhancing workplace productivity.
3. Discuss the role of management in driving Kaizen initiatives within an organization.
4. Evaluate the cultural changes required for successful Kaizen implementation.
5. Describe the 3-MUs checklist of Kaizen activities and its application in process improvement.
6. Discuss the main practices involved in Kaizen and their impact on organizational performance.
7. Analyze the role of labor-management relations in fostering a culture of Kaizen within an organization.

Unit-V: Six Sigma

1. Define Six Sigma and explain its importance in achieving process and design improvement.
2. Describe the DMAIC process and its stages for continuous improvement.
3. Discuss the concept of Acceptance Sampling and its role in quality assurance.
4. Explain the principles of Statistical Process Control (SPC) and its application in process monitoring.
5. Evaluate the effectiveness of Taguchi methods for robust design in minimizing variation.
6. Discuss the sustainability of Six Sigma initiatives and their long-term impact on organizational performance.
7. Analyze case studies showcasing successful implementation of Six Sigma in various industries.

PROJECTS (To be given to group of students)

1. Implementing DMAIC methodology to reduce defects in manufacturing processes.
2. Developing a Quality Function Deployment (QFD) system for translating customer requirements into product features.
3. Conducting a benchmarking study to improve service quality in the healthcare sector.
4. Implementing 5S methodology to enhance workplace efficiency and safety in a manufacturing plant.
5. Using Statistical Process Control (SPC) techniques to optimize production processes and minimize variation.