

COURSE MODULE

Faculty Name/s: Prof. Niranjana Kumar V S				Academic Year: 2024 - 2025			
Department: Mechanical Engineering							
Course Code	Course Title	Core/Elective	Prerequisite	Contact Hours			Total Hrs/ Sessions
				L	T	P	
BME613A	Total Quality Management	Professional Elective	Management	3	-	-	40
Objectives	Course objectives Students will be able to: <ul style="list-style-type: none"> • Understand various approaches to TQM • Understand the characteristics of quality leader and his role. • Develop feedback and suggestion systems for quality management. • Enhance the knowledge in Tools and Techniques of quality management 						
Teaching-Learning Process (General Instructions)	These are sample Strategies, which teacher can use to accelerate the attainment of the various course outcomes. <ul style="list-style-type: none"> • Adopt different types of teaching methods to develop the outcomes through PowerPoint presentations and Video demonstrations or Simulations. • Chalk and Talk method for Problem Solving. • Adopt flipped classroom teaching method. • Adopt collaborative (Group Learning) learning in the class. • Adopt Problem Based Learning (PBL), which fosters students' analytical skills and develops thinking skills such as evaluating, generalizing, and analyzing information. 						
MODULE 1							
Principles and Practice: Definition, basic approach, gurus of TQM, TQM Framework, awareness, defining quality, historical review, obstacles, benefits of TQM. Quality Management Systems: Introduction, benefits of ISO registration, ISO 9000 series of standards, ISO 9001 requirements.							
Teaching-Learning Process	1. Power-point Presentation, 2. Video demonstration or Simulations, 3. Chalk and Talk are used for Problem Solving/White board						
MODULE 2							
Leadership: Definition, characteristics of quality leaders, leadership concept, characteristics of effective people, ethics, the Deming philosophy, role of TQM leaders, implementation, core values, concepts and framework, strategic planning communication, decision making,							
Teaching-Learning Process	1. Power-point Presentation, 2. Video demonstration or Simulations, 3. Chalk and Talk are used for Problem Solving/White board						
MODULE 3							

Customer Satisfaction and Customer Involvement: Customer Satisfaction: customer and customer perception of quality, feedback, using customer complaints, service quality, translating needs into requirements, customer retention, case studies. Employee Involvement – Motivation, employee surveys, empowerment, teams, suggestion system, recognition and reward, gain sharing, performance appraisal, unions and employee involvement, case studies.			
Teaching-Learning Process	1. Power-point Presentation, 2. Video demonstration or Simulations, 3. Chalk and Talk are used for Problem Solving/White board		
MODULE 4			
Continuous Process Improvement: process, the Juran trilogy, improvement strategies, types of problems, the PDSA Cycle, problem-solving methods, Kaizen, reengineering, six sigma, case studies. Statistical Process Control: Pareto diagram, process flow diagram, cause and effect diagram, check sheets, histograms, statistical fundamentals, Control charts, state of control, out of control process, control charts for variables, control charts for attributes, scatter diagrams, case studies.			
Teaching-Learning Process	1. Power-point Presentation, 2. Video demonstration or Simulations, 3. Chalk and Talk are used for Problem Solving/White board		
MODULE 5			
Total Productive Maintenance (TPM): Definition, Types of Maintenance, Steps in introduction of TPM in an organization, Pillars of TPM – 5S, Jishu Hozen, Quality Maintenance, Planned Maintenance. Quality by Design (QbD): Definition, Key components of QbD, Role of QbD in Pharmaceutical Industry, Benefits and Challenges of QbD. Environmental Management Systems (EMS): Definition, Basic EMS, EMS under ISO 14001, Costs and Benefits of EMS			
Teaching-Learning Process	1. Power-point Presentation, 2. Video demonstration or Simulations, 3. Chalk and Talk are used for Problem Solving/White board		
Suggested Learning Resources: Books 1. Total Quality Management Dale H. Besterfield Pearson Education India, Edition 03. ISBN: 8129702606, 2. Total Quality Management for Engineers M. Zairi Wood head Publishing ISBN:185573024 3. Managing for Quality and Performance Excellence James R. Evans and William M Lindsay Cengage Learning. 9th edition 4. Four revolutions in management Shoji Shiba, Alan Graham, David Walden Oregon 1990 5. Organizational Excellence through TQM H. Lal New age Publications 200864 Engineering Optimization Methods and Applications A Ravindran, K, M. Ragsdell Willey India Private Limited 2nd Edition,2006 6. Introduction to Operations Research- Concepts and Cases F.S. Hillier. G.J. Lieberman Tata McGraw Hill 9th Edition,			
Course Outcomes	Course outcomes On completion of the course, the students will be able to		RBT Level
	CO1	Describe the various approaches of TQM	L2
	CO2	Infer the customer perception of quality	L3
	CO3	Analyse customer needs and perceptions to design feedback systems	L4
	CO4	Apply statistical tools for continuous improvement of systems.	L3

	CO5	Apply the tools and technique for effective implementation of TQM.	L3
<p>Assessment Details (both CIE and SEE) The weightage of Continuous Internal Evaluation (CIE) is 50% and for Semester End Exam (SEE) is 50%. The minimum passing mark for the CIE is 40% of the maximum marks (20 marks out of 50). A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to each subject/ course if the student secures not less than 35% (18 Marks out of 50)in the semester-end examination (SEE), and a minimum of 40% (40 marks out of 100) in the sum total of the CIE (Continuous Internal Evaluation) and SEE (Semester End Examination) taken together</p> <p>Continuous Internal Evaluation: Three Unit Tests each of 20 Marks (duration 01 hour)</p> <ul style="list-style-type: none"> • First test at the end of 5th week of the semester • Second test at the end of the 10th week of the semester • Third test at the end of the 15th week of the semester <p>Two assignments each of 10 Marks</p> <ul style="list-style-type: none"> • First assignment at the end of 4th week of the semester • Second assignment at the end of 9th week of the semester <p>Group discussion/Seminar/quiz any one of three suitably planned to attain the COs and POs for 20 Marks (duration 01 hours)</p> <ul style="list-style-type: none"> • At the end of the 13th week of the semester <p>The sum of three tests, two assignments, and quiz/seminar/group discussion will be out of 100 marks and will be scaled down to 50 marks (to have less stressed CIE, the portion of the syllabus should not be common /repeated for any of the methods of the CIE. Each method of CIE should have a different syllabus portion of the course). CIE methods /question paper is designed to attain the different levels of Bloom's taxonomy as per the outcome defined for the course.</p> <p>Semester End Examination: Theory SEE will be conducted by University as per the scheduled timetable, with common question papers for the subject (duration 03 hours) The question paper will have ten questions. Each question is set for 20 marks. Marks scored shall be reduced proportionally to 50 marks There will be 2 questions from each module. Each of the two questions under a module (with a maximum of 3 sub questions), should have a mix of topics under that module. The students have to answer 5 full questions, selecting one full question from each module.</p>			
<p>Activity Based Learning (Suggested Activities in Class)/ Practical Based learning</p> <ul style="list-style-type: none"> • Case studies • Quiz • Topic Seminar presentation • Assignments 			

The Correlation of Course Outcomes (CO's) and Program Outcomes (PO's)

Subject Code:	BME613A		TITLE: Total Quality Management					Faculty Name:		Niranjan Kumar V S			
List of Course Outcomes	Program Outcomes												Total
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	
CO-1	2	2	-	1	-	-	-	-	-	-	-	-	5
CO-2	2	3	3	2	-	-	1	-	2	2	-	2	17
CO-3	3	3	2	2	-	-	2	-	-	1	-	2	15
CO-4	3	3	2	3	2	-	1	-	-	1	-	-	15
CO-5	2	2	1	2	2	-	2	-	-	1	-	1	13

Total	12	13	8	10	4		6	-	2	5		5	65
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Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution - = No Contribution

The Correlation of Course Outcomes (CO's) and Program Specific Outcomes (PSO's)

Subject Code: BME613A	TITLE: Total Quality Management	Faculty Name:	Niranjan Kumar V S
List of Course Outcomes	Program Specific Outcomes		
	PSO1	PSO2	Total
CO-1	-	-	-
CO-2	2	-	2
CO-3	2	-	2
CO-4	2	-	2
CO-5	-	-	-
Total	06	-	06

Note: 3 = Strong Contribution 2 = Average Contribution 1 = Weak Contribution - = No Contribution