Ref No:

SRI KRISHNA INSTITUTE OF TECHNOLOGY

COURSE PLAN

Academic Year 2019 – 20

Program:	B E – MECHANICAL
Semester :	VI
Course Code:	15ME664
Course Title:	TOTAL QUALITY MANAGEMENT
Credit / L-T-P:	3 / 3-0-0
Total Contact Hours:	40
Course Plan Author:	DINESH P

Academic Evaluation and Monitoring Cell
#29, Hesaraghatta Main road, Chimney Hills, Chikkabanavara P.O.,
Bengaluru – 560090, Karnataka, INDIA
Phone / Fax :+91 80 23721477 -STD- 080 23721315
Web:www.skit.org.in
E-mail:skit1princi@gmail.com/principal@skit.org.in

Table of Contents

Note : Remove “Table of Content” before including in CP Book
Each Course Plan shall be printed and made into a book with cover page
Blooms Level in all sections match with A.2, only if you plan to teach / learn at higher levels

17ME664 : Total Quality Management

A. COURSE INFORMATION

1. Course Overview

Degree:	BE	Program:	ME
Year / Semester :	3/VI	Academic Year:	2019-2020
Course Title:	Total Quality Management	Course Code:	15ME664
Credit / L-T-P:	3/3-0-0	SEE Duration:	180 Minutes
Total Contact Hours:	40	SEE Marks:	60 Marks
CIA Marks:	40	Assignment	1/ Module
Course Plan Author:	DINESH P	Sign	Dt:
Checked By:		Sign	Dt:

2. Course Content

Content / Syllabus of the course as prescribed by University or designed by institute. Identify 2 concepts per module as in G.

Module	Module Content	Teaching Hours	Module Concepts	Blooms Level
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.	8	QMS models	L2
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.	8	Elements of Quality Management	L2
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.	8	Roles of customers and Managers in Quality Management	L2,L3 &L4
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.	8	Quality Management Tools	L2,L3 &L4
5	**Tools and Techniques:** Benching marking, information technology, quality management systems, environmental management system, and quality function deployment. Quality by design, failure mode and effect analysis, product liability, total productive maintenance.	8	Process of Quality Management	L2,L3

3. Course Material

Books & other material as recommended by university (A, B) and additional resources used by course teacher (C).

1. Understanding: Concept simulation / video ; one per concept ; to understand the concepts ; 15 – 30 minutes
2. Design: Simulation and design tools used – software tools used ; Free / open source

3. Research: Recent developments on the concepts – publications in journals; conferences etc.

Module	Details	Available
A	**Text books (Title, Authors, Edition, Publisher, Year.)**	
1,2,3,4,5	Total Quality Management by Dale H. Besterfield – Pearson Education India Quality Management by P.L.Jain	In Lib
B	**Reference books (Title, Authors, Edition, Publisher, Year.)**	
1,2,3,4,5	Total Quality Management by Dr. H D Ramchandra	Dr. H D Ramchandra
C	**Concept Videos or Simulation for Understanding**	
C1	Quality Management Systems https://www.youtube.com/watch?v=ePZheUvsH0w-	
C2	Leadership concepts https://www.youtube.com/watch?v=HgDfCFkBAxM-	
C3	Customer Satisfaction and Customer Involvement https://www.youtube.com/watch?v=CnKeVs-_9zs-	
C4	Process Improvement and control https://www.youtube.com/watch?v=A0-vPJ0ad-44-	
C5	Tools and Techniques of quality system https://www.youtube.com/watch?v=w2m5eU8XDVI-	
D	**Software Tools for Design**	
	Quality Assurance Tools https://www.gurock.com	

4. Course Prerequisites

Refer to GL01. If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.
Students must have learnt the following Courses / Topics with described Content . . .

SNo	Course Code	Course Name	Module / Topic / Description	Sem	Remarks	Blooms Level
1	15ME51	Management & Engineering Economics	Planning	V		L2
2	15ME51	Management & Engineering Economics	Organizing And Staffing	V		L2

Note: If prerequisites are not taught earlier, GAP in curriculum needs to be addressed. Include in Remarks and implement in B.5.

5. Content for Placement, Profession, HE and GATE

The content is not included in this course, but required to meet industry & profession requirements and help students for Placement, GATE, Higher Education, Entrepreneurship, etc. Identifying Area / Content requires experts consultation in the area.
Topics included are like, a. Advanced Topics, b. Recent Developments, c. Certificate Courses, d. Course Projects, e. New Software Tools, f. GATE Topics, g. NPTEL Videos, h. Swayam videos etc.

Modules	Topic / Description	Area	Remarks	Blooms Level
4	Auditing Techniques	Higher Study	Gap	Understand L2
5	Cybernetic Analysis	Higher Study	Gap	Understand L2

B. OBE PARAMETERS

1. Course Outcomes

Expected learning outcomes of the course, which will be mapped to POs. Identify a max of 2 Concepts per Module. Write 1 CO per Concept.

#	Cos students should be able to...	Teach. Hours	Concept	Instr Method	Assessment Method	Blooms' Level
15ME664.1	The various approaches of TQM	8	Total Quality management systems	Chalk and Board	Assignment, Unit test and IA	L2 Understand
15ME664.2	The customer perception of quality	8	Leadership concepts and roles	Chalk and Board	Assignment, Unit test and IA	L2 Understand
15ME664.3	Customer needs and perceptions to design feedback systems.	8	Customer Satisfaction and Employee Involvement	Chalk and Board	Assignment, Unit test and IA	L2 Understand, L3 Apply, L 4 Analyse
15ME664.4	Statistical tools for continuous improvement of systems	8	Continuous and Statistical process improvement	Chalk and Board	Assignment, Unit test and IA	L2 Understand, L3 Apply, L 4 Analyse
15ME664.5	Tools and technique for effective implementation of TQM.	8	Quality function deployment	Chalk and Board	Assignment, Unit test and IA	L2 Understand, L3 Apply

Note: Identify a max of 2 Concepts per Module. Write 1 CO per concept.

2. Course Applications

Write 1 or 2 applications per CO.
Students should be able to employ / apply the course learnings to . . .

Modules	Application Area Compiled from Module Applications.	CO	Level
1	Continuous improvement	CO1	L2
2	Line management ownership	CO2	L2
3	Meeting customer requirements, Employee involvement and empowerment	CO3	L4
4	Systems to facilitate improvement	CO4	L4
5	Error prevention	CO5	L3

4. Mapping Justification

Mapping		Justification	Mapping Level
CO	**PO**	**-**	**-**
CO1	PO1	Engineering Knowledge: Acquisition of Engineering knowledge on quality systems is essential to accomplish solutions to complex engineering problems in quality management and system	L2
CO2	PO1	Engineering Knowledge: Acquisition of Engineering knowledge on fundamentals of leadership is essential to accomplish solutions to complex engineering problems in fundamentals of process planning and management of quality leadership	L2
CO2	PO8	Ethics: Apply business ethical principles and ethics management system	L2
CO2	PO9	Individual and Teamwork: Function effectively as an individual and as a member or leader in teams, and in multidisciplinary settings.	L2
CO2	PO10	Communication: Communicate effectively on engineering activities	L2

		being able to comprehend and write effective reports and documentation, make effective presentations, and give and receive clear instructions.	
CO3	PO1	Engineering Knowledge: Acquisition of Engineering knowledge on fundamentals of satisfaction is essential to accomplish solutions to engineering problems in customer satisfaction and management Knowledge of empowerment and teams	L2
CO3	PO2	Problem Analysis: Analysing the different parameters of customer satisfaction and employee involvement	L2
CO3	PO9	Individual and Teamwork: Function effectively as an individual and as a member or leader in teams, and in multidisciplinary settings.	L2
CO3	PO10	Communication: Communicate effectively on engineering activities being able to comprehend and write effective reports and documentation, make effective presentations, and give and receive clear instructions.	L2
CO4	PO1	Engineering Knowledge: Acquisition of Engineering knowledge on fundamentals of improvement is essential to accomplish solutions to complex engineering problems in process improvement and process control	L3
CO4	PO2	Problem Analysis: Analysing the different parameters of continuous process improvement and statistical process control.	L3
CO4	PO9	Individual and Teamwork: Function effectively as an individual and as a member or leader in teams, and in multidisciplinary settings.	L3
CO4	PO10	Communication: Communicate effectively on engineering activities being able to comprehend and write effective reports and documentation, make effective presentations, and give and receive clear instructions.	L3
CO5	PO1	Engineering Knowledge: Acquisition of Engineering knowledge on fundamentals of management systems is essential to accomplish solutions to engineering problems in QMS	L3

Note: Write justification for each CO-PO mapping.

4. Articulation Matrix

(CO – PO MAPPING)

-	-	Course Outcomes	Program Outcomes															
Modules	#	Cos Student will be able to	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2	PSO3	Level
1	15ME664.1	Understand Q M S parameters	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L2
2	15ME664.2	Understand Elements of Quality Management	2	-	-	-	-	-	-	2	2	2	-	-	-	-	-	L2
3	15ME664.3	Understand the Customer Satisfaction and Customer Involvement	2	2	-	-	-	-	-	-	2	2	-	-	-	-	-	L2
4	15ME664.4	Understand techniques for Continuous Process Improvement	2	2	-	-	-	-	-	-	2	2	-	-	-	-	-	L3
5	15ME664.5	Understand tools of TQM	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	L3
-	15ME664	**Average attainment (1, 2, or 3)**	1.8	2	-	-	-	-	-	2	2	2	-	-	-	-	-	-

-	*PO, PSO*	*1.Engineering Knowledge; 2.Problem Analysis; 3.Design / Development of Solutions; 4.Conduct Investigations of Complex Problems; 5.Modern Tool Usage; 6.The Engineer and Society; 7.Environment and Sustainability; 8.Ethics; 9.Individual and Teamwork; 10.Communication; 11.Project Management and Finance; 12.Life-long Learning; S1.Software Engineering; S2.Data Base Management; S3.Web Design*

5. Curricular Gap and Content

Topics & contents not covered (from A.4), but essential for the course to address POs and PSOs.

SNo	Gap Topic	Actions Planned	Schedule Planned	Resources Person	PO Mapping
1	Product life cycle and simulation	Seminar	2nd week / date	Dr XYZ, Inst	List from B4 above
2					
3					

Note: Write Gap topics from A.4 and add others also.

6. Content Beyond Syllabus

Modules	Gap Topic	Area	Actions Planned	Schedule Planned	Resources Person	PO Mapping
4	Auditing Techniques	Placement, GATE, Higher Study, Entrepreneurship.	Presentation by students	9th week / date	Dr ABC, Inst. Self	List from B4 above
5	Cybernetic Analysis	Placement, GATE, Higher Study, Entrepreneurship.	Presentation by students	13th week / date	Dr ABC, Inst. Self	List from B4 above

Note: Anything not covered above is included here.

C. COURSE ASSESSMENT

1. Course Coverage

Assessment of learning outcomes for Internal and end semester evaluation. Distinct assignment for each student. 1 Assignment per chapter per student. 1 seminar per test per student.

Module #	Title	Teaching Hours	No. of question in Exam						CO	Levels
			CIA-1	CIA-2	CIA-3	Asg	Extra Asg	SEE		
1	Principles and Practice, Quality Management Systems	08	2	-	-	1	1	2	CO1	L2
2	Leadership	08	2	-	-	1	1	2	CO2	L2
3	Customer Satisfaction and Customer Involvement. Employee involvement	08	-	2	-	1	1	2	CO3	L4
4	Continuous Process Improvements, Statistical process control	08	-	2	-	1	1	2	CO4	L4
5	Tools and Techniques	08	-	-	4	1	1	2	CO5	L3
-	**Total**	**40**	**4**	**4**	**4**	**5**	**5**	**10**	**-**	**-**

2. Continuous Internal Assessment (CIA)

Assessment of learning outcomes for Internal exams. Blooms Level in last column shall match with A.2.

Evaluation	Weightage in Marks	CO	Levels
CIA Exam – 1	30	CO1, CO2	L2
CIA Exam – 2	30	CO3, CO4	L4, L4
CIA Exam – 3	30	C05	L3
Assignment - 1	10	CO1, CO2	L2
Assignment - 2	10	CO3, CO4	L4, L4
Assignment - 3	10	C05	L3
Seminar - 1	–	–	–
Seminar - 2	–	–	–
Seminar - 3	–	–	–
Other Activities define – Slip test			
Final CIA Marks	**40**	**-**	**-**

D1. TEACHING PLAN - 1

Module - 1

Title:	Principles and Practice, Quality Management Systems	Appr Time:	8 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Understand various approaches to TQM	CO1	L2
b	***Course Schedule***	-	-
Class No	**Module Content Covered**	**CO**	**Level**
1	**Principles and Practice**: Definition, basic approach	C01	L2
2	Gurus of TQM, TQM Framework	C01	L2
3	Awareness, defining quality	C01	L2
4	Historical review	C01	L2
5	Obstacles	C01	L2
6	Benefits of TQM. **Quality Management Systems:** Introduction	C01	L2
7	Benefits of ISO registration	C01	L2
8	ISO 9000 series of standards, ISO 9001 requirements.	C01	L2
c	**Application Areas**	**CO**	**Level**
1	Continuous improvement	C01	L2
2	Challenging quantified goals and benchmarking	C01	L2
d	**Review Questions**	-	-
1	Define quality from different perspectives.	CO1	L2
2	Briefly explain the evolution of TQM	CO1	L2
3	List various gurus of TQM	CO1	L2
4	What is the contribution of Juran	CO1	L2
5	Define TQM. What is Zero defect	CO1	L2
6	What is Quality Management systems	C01	L2
7	What are the different series of standards of ISO 9000	C01	L2
8	What are the different characteristics of ISO Standards	C01	L2
9	What are the necessary steps to implement the ISO standards	C01	L2

	successfully		
10	Explain the process of ISO documentation	C01	L2
e	**Experiences**	-	-
1			
2			

Module – 2

Title:	**Leadership**	Appr Time:	8 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Understand the customer perception of quality	CO2	L2
b	***Course Schedule***	-	-
Class No	Module Content Covered	**CO**	**Level**
1	**Leadership:**Definition, characteristics of quality leaders	CO2	L1,L2
2	Leadership concept, characteristics of effective people	CO2	L2
3	Ethics, the Deming philosophy	CO2	L1,L2
4	Role of TQM leaders	CO2	L2
5	Implementation,core values	CO2	L3
6	Concepts and framework	CO2	L3
7	Strategic planning communication	CO2	L2
8	Decision making	CO2	L3
c	**Application Areas**	**CO**	**Level**
1	Line management ownership	CO2	L2
2	Commitment by senior management and all employees	CO2	L3
d	**Review Questions**	-	-
1	What are the characteristics of a quality leader	CO2	L2
2	What needs to be understand to be a quality leader	CO2	L2
3	What are the characteristics of process control	CO2	L2
4	What are the principles of process control	CO2	L2
5	Define ethics. What are the root causes of unethical behavior	CO2	L2
6	Elaborate the roles of TQM leaders in its implementation	CO2	L3
7	Explain the different steps of strategic planning	CO2	L3
8	Explain the various communication methods	CO2	L3
9	Explain Deming's view on leadership through his fourteen points	CO2	L3
10	Why decision making is crucial in business	CO2	L3
e	**Experiences**	-	-
1			
2			
3			
4			
5			

E1. CIA EXAM – 1

a. Model Question Paper - 1

Crs Code:	17ME664	Sem:	VI	Marks:	30	Time:	75 minutes		
Course:	Total Quality Management								
-	-	**Note: Answer any 2 questions, each carry equal marks.**					**Marks**	**CO**	**Level**
1	a	What is the basic approach for the success of TQM					5	CO1	L2
	b	What are the potential benefits of TQM					5	CO1	L2
	c	What are the obstacles to the implementation of TQM					5	CO1	L2
		OR							
2	a	Explain QMS.					5	CO1	L2
	b	What are the different series of standards of ISO 9000					5	CO1	L2
	c	What are the different characteristics of ISO Standards					5	CO1	L2
3	a	What are the characteristics of process control					5	CO2	L2
	b	Define ethics. What are the root causes of unethical behavior					5	CO2	L2
	c	What are the characteristics of a quality leader					5	CO2	L2
		OR							
4	a	Elaborate the roles of TQM leaders in its implementation					5	CO2	L2
	b	Explain the different steps of strategic planning					5	CO2	L2
	c	Explain the various communication methods					5	CO2	L2

b. Assignment -1

Model Assignment Questions									
Crs Code:	17ME664	Sem:	VI	Marks:	10	Time:			
Course:	Total Quality Management								
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.									
SNo	**USN**	**Assignment Description**					**Marks**	**CO**	**Level**
1		Define TQM. Briefly explain the evolution of TQM					5	CO1	L2
2		What is the contribution of Juran					5	CO1	L2
3		Explain the concept of quality loss function of Taguchi					5	CO1	L2
4		What is the contribution of Juran					5	CO1	L2
5		Define TQM. What is Zero defect					5	CO1	L2
6		What are the necessary steps to implement the ISO standards successfully					5	CO2	L2
7		Explain the process of ISO documentation					5	CO1	L2
8		Why do we need ISO registration. What are its benefits					5	CO1	L2
9		Explain the various communication methods					5	CO1	L2
10		Explain Deming's view on leadership through his fourteen points					5	CO1	L2
11		How can we overcome unethical behavior					5	CO2	L2
12		What are the core values, concepts and framework of TQM leadership					5	CO2	L2
13		What are the seven habits of highly effective people					5	CO2	L2
14		What are the characteristics of process control					5	CO2	L2
15		What are the principles of process control					5	CO2	L2
16		Explain the various communication methods					5	CO2	L2
17		Explain with an example the damages of miscommunication					5	CO2	L2
18		Discuss different principles of leadership					5	CO2	L2
19		Why are quality statements. What are their roles in improving the image of a company					5	CO2	L2
20		Explain Deming's view on leadership through his fourteen points					5	CO2	L2
21		Why decision making is crucial in business					5	CO2	L2

D2. TEACHING PLAN - 2

Module – 3

Title:	Introduction	Appr Time:	8 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Understand roles of customer needs and perceptions to design feedback systems.	CO3	L4
b	***Course Schedule***		
Class No	**Module Content Covered**	**CO**	**Level**
1	Customer Satisfaction: customer and customer perception of quality	CO3	L2
2	Feedback, using customer complaints	CO3	L2
3	Service quality, translating needs into requirements	CO3	L2
4	Customer retention,case studies.	CO3	L4
5	Employee Involvement – Motivation, employee surveys	CO3	L2
6	Empowerment, teams, suggestion system	CO3	L2
7	Recognition and reward, gain sharing, performance appraisal	CO3	L2
8	Unions and employee involvement, case studies.	CO3	L4
c	**Application Areas**	**CO**	**Level**
1	Meeting customer requirements	CO3	L4
2	Employee involvement and empowerment	CO3	L4
d	**Review Questions**	-	-
1	What is customer satisfaction	CO3	L2
2	What are the perception of customer about quality	CO3	L2
3	Write a short notes on customer feedback	CO3	L2
4	Explain the tools used in converting needs into requirements	CO3	L2
5	Why do we need customer complaints? How do we solve them.	CO3	L2
6	What are the barriers for a team's progress	CO3	L2
7	Discuss the influence of recognition and reward on employees	CO3	L2
8	What is the necessity of employee empowerment	CO3	L2
9	Explain different roles of team members to make it successful	CO3	L2
10	What is performance appraisal? What are its objectives.	CO3	L2
e	**Experiences**	-	-
1			
2			
3			
4			
5			

Module – 4

Title:	Continuous Process Improvement:	Appr Time:	8 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Understand statistical tools for continuous improvement of systems	CO4	L4
b	***Course Schedule***		
Class No	**Module Content Covered**	**CO**	**Level**
1	**Continuous Process Improvement**: Process, the Juran trilogy,	CO4	L2

	improvement strategies		
2	Types of problems, the PDSA Cycle	CO4	L3
3	Problem-solving methods, Kaizen, reengineering	CO4	L3
4	Six sigma, case studies.	CO4	L4
5	**Statistical Process Control** : Pareto diagram, process flow diagram Cause and effect diagram, check sheets,	CO4	L3
6	Control charts, state of control,out of control process,	CO4	L3
7	Histograms, statistical fundamentals Control charts for variables, control charts for attribute	CO4	L3
8	Scatter,diagrams, case studies	CO4	L4
c	**Application Areas**	**CO**	**Level**
1	Systems to facilitate improvement	CO4	L4
2	Reducing cycle times	CO4	L4
d	**Review Questions**	-	-
1	Explain Deming's cycle with an example.	CO4	L2
2	How Juran has contributed to the development of TQM.	CO4	L2
3	What is process? How do you improve the process.	CO4	L2
4	Explain the model of improvement processes.	CO4	L2
5	What are different improvement strategies.	CO4	L2
6	What are the different types of control charts	CO4	L2
7	Discuss different ways of measuring central tendency and depression	CO4	L2
8	Explain various conditions under which a process can be declared as out of control	CO4	L2
9	What are the various sources of variation? Explain.	CO4	L2
10	What are the different causes of variation? Describe	CO4	L2
e	**Experiences**	-	-
1			
2			
3			
4			
5			

E2. CIA EXAM – 2

a. Model Question Paper - 2

Crs Code:	17ME664	Sem:	VI	Marks:	30	Time:	75 minutes		
Course:	Total Quality Management								
-	**-**	**Note: Answer any 2 questions, each carry equal marks.**					**Marks**	**CO**	**Level**
1	a	Explain the KANO diagram					5	CO3	L2
	b	Write shot notes on employee survey					5	CO3	L2
	c	What is a team? Explain different forms of team					5	CO3	L2
		OR							
2	a	What is training. Explain various types of training					5	CO3	L2
	b	Explain how employee Unions affects employee involvement					5	CO3	L2
	c	What are the barriers for a team's progress					5	CO3	L2
3	a	Explain Juran Trilogy					5	CO4	L2
	b	Explain different improvement strategies.					5	CO4	L2
	c	Explain DMIAC process					5	CO4	L2
		OR							
4	a	Explain the procedure for preparing control chart for attributes					5	CO4	L2
	b	Explain the procedure for preparing control chart for variables					5	CO4	L2
	c	Briefly explain the concept of process capability and its importance in quality improvement					5	CO4	L2

b. Assignment – 2

Model Assignment Questions							
Crs Code:	17ME664	Sem:	VI	Marks:	10	Time:	
Course:	Total Quality Management						
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							

SNo	USN	Assignment Description	Marks	CO	Level
1		How do you in involve people in an organization	5	CO3	L2
2		What is the necessity of employee empowerment	5	CO3	L2
3		How do we make a meeting effective	5	CO3	L2
4		Write a short notes on gain sharing and performance appraisal	5	CO3	L2
5		Explain different methods of collecting voice of customers	5	CO3	L2
6		Explain the strategic process of retaining customers with a neat block diagram	5	CO3	L2
7		Explain the importance of employee motivation	5	CO3	L2
8		Describe various characteristics of successful teams	5	CO3	L2
9		Discuss the influence of recognition and reward on employees	5	CO3	L2
10		Explain advantages and drawbacks of performance appraisal	5	CO3	L2
11		Explain how do you improve the process	5	CO4	L2
12		What are different improvement strategic? Explain	5	CO4	L2
13		What problems are encountered during continuous improvement? Discuss	5	CO4	L2
14		Explain continuous improvement cycle (PDSA) with a neat block diagram	5	CO4	L2
15		Explain DMADV process	5	CO4	L2
16		What are the seven basic QC tools? Why are they used?	5	CO4	L2
17		What are the contribution of K.Ishikawa	5	CO4	L2
18		Explain seven QC tools with examples	5	CO4	L2
19		Explain various conditions under which a process can be declared as out of control	5	CO4	L2
20		Discuss different ways of measuring central tendency	5	CO4	L2
21			5	CO4	L2

D3. TEACHING PLAN - 3

Module – 5

Title:	**Tools and Techniques**	Appr Time:	8 Hrs
a	***Course Outcomes***	-	**Blooms**
-	The student should be able to:	-	**Level**
1	Understand the tools and technique for effective implementation of TQM.	CO5	L3
b	***Course Schedule***		
Class No	**Module Content Covered**	**CO**	**Level**
1	Benching marking, information technology	CO5	L3
2	Quality management systems	CO5	L3
3	Environmental management system	CO5	L3
4	Quality function deployment	CO5	L3
5	Quality by design	CO5	L3
6	Failure mode and effect analysis	CO5	L3

7	Product liability	CO5	L3
8	Total productive maintenance.	CO5	L3
c	**Application Areas**		
1	Error preventions	CO5	L3
2	Focus on processes and improvement plans	CO5	L3
d	**Review Questions**		
1	Explain benchmarking	CO5	L2
2	What is the necessity of benchmarking	CO5	L3
3	What are the different functions served by computers today? Explain	CO5	L3
4	What is EMS? How do you classify the ISO 14000 series of standards	CO5	L3
5	What are the potential benefits of QFD	CO5	L3
6	Why do we need to implement quality by design	CO5	L3
7	What is FMEA? What are the different forms	CO5	L3
8	What is the most significant part of the FMEA process	CO5	L3
9	What measures are taken to prevent product failures? Explain	CO5	L3
10	What is TPM? What are its objectives	CO5	L3
12	Explain the concept of Life cycles of individual items ?	CO5	L2
e	**Experiences**	-	-
1			
2			
3			
4			
5			

E3. CIA EXAM – 3

a. Model Question Paper - 3

Crs Code:	17ME664	Sem:	VI	Marks:	30	Time:	75 minutes		
Course:	Total Quality Management								
-	**-**	**Note: Answer any 2 questions, each carry equal marks.**					**Marks**	**CO**	**Level**
1	a	Explain the concept of benchmarking with a neat block diagram					5	CO5	L2
	b	Explain the benefits of EMS					5	CO5	L2
	c	Explain the concepts of QFD with an examples					5	CO5	L2
		OR							
2	a	Explain different steps involved in benchmarking					6	CO5	L2
	b	Explain the classification of ISO 14000 series of standards					6	CO5	L2
	c	Explain the four phase process of QFD with the help of block diagram					3	CO5	L2
3	a	What is QFD? How is it different from sequential engineering					5	CO5	L2
	b	What is quality by design? How is it different from sequential engineering					5	CO5	L2
	c	Explain the design of FMEA documentation					5	CO5	L2
		OR							
4	a	Explain the process of FMEA documentation					5	CO5	L2
	b	Explain the concept of product liability					5	CO5	L2
	c	Explain pillars of TPM					5	CO5	L3

b. Assignment – 3

Note: A distinct assignment to be assigned to each student.

Model Assignment Questions							
Crs Code:	17ME664	Sem:	VI	Marks:	10	Time:	
Course:	Total Quality Management						
Note: Each student to answer 2-3 assignments. Each assignment carries equal mark.							
SNo	**USN**	**Assignment Description**				**Marks**	**CO**	**Level**

1		What is EMS? How do you classify the ISO 14000series of standards	5	CO5	L3
2		Discuss the influence of information technology on commerce and learning	5	CO5	L3
3		What is the importance of website design on the present scenario	5	CO5	L3
4		What are the different quality statements? How they are important for the organization?	5	CO5	L3
5		Briefly explain different steps involved in benchmarking	5	CO5	L3
6		Explain the concept of benchmarking with a neat block diagram	5	CO5	L3
7		Explain the importance of quality statements with an example.	5	CO5	L3
8		Explain the benefits of EMS	5	CO5	L3
9		Discuss the necessity of benchmarking	5	CO5	L3
10		Explain different steps involved in benchmarking	5	CO5	L3
11		Explain the concepts of QFD with an examples	5	CO5	L3
12		Why do we need to implement quality by design	5	CO5	L3
13		What are the potential benefits of Quality by design	5	CO5	L3
14		What are the barriers and misconceptions about Quality by design	5	CO5	L3
15		What are the different stages of FMEA	5	CO5	L3
16		What is total productive maintenance? What are its objectives	5	CO5	L3
17		Explain 8 pillars of TPM	5	CO5	L3
18		How do you measures TPM? Explain	5	CO5	L3
19		Explain the process of FMEA documentation	5	CO5	L3
20		What are the different stages of FMEA	5	CO5	L3

F. EXAM PREPARATION

1. University Model Question Paper

Course:		Total Quality Management					Month / Year		May /2019	
Crs Code:		17ME664	Sem:	VI	Marks:	60	Time:		180 minutes	
-	**Note**	Answer all FIVE full questions. All questions carry equal marks.						**Marks**	**CO**	**Level**
1	a	Define TQM. List out the six basic approaches to TQM.						4	CO1	L2
	b	Sketch and explain TQM framework						8	CO1	L2
	c	Define quality and brief on historical review of quality control.						4	CO1	L2
		OR								
2	a	Explain briefly the contribution of Guru's of TQM.						7	CO1	L2
	b	What are the obstacles associated with the implementation of TQM? Explain any five.						5	CO1	L2
	c	What are the benefits of TQM?						4	CO1	L2
3	a	List seven habits of highly effective people.						2	CO2	L2
	b	Explain Deming's 14 points						14	CO2	L2
		OR								
4	a	Explain the characteristics of quality leaders.						6	CO2	L2
	b	Explain the role of TQM leaders.						10	CO2	L2
5	a	a. Explain customer perception of quality						6	CO3	L2
	b	With a neat sketch, explain how a KANO model helps in translating needs into requirements.						10	CO3	L2
		OR								
6	a	What is motivation? Explain Maslow's hierarchy of needs with a block diagram.						10	CO3	L2
	b	Brief on performance appraisal.						6	CO3	L2

7	a	Sketch the continuous process improvement cycle.	3	CO4	L2
	b	Brief on PDSA cycle with a sketch.	3	CO4	L2
	c	Sketch and explain Juran's triology.	10	CO4	L2
		OR			L2
8	a	Explain the following briefly with necessary diagrams: a. Pareto diagram b. Process flow diagram c. Cause -and effect diagram d. Scatter diagrams.	16	CO4	L2
9	a	Discuss briefly the following quality management tools: a. Nominal group technique b. Why analysis c. Affinity diagram d. Activity network diagram.	16	CO5	L2
		OR			
10	a	What is Benchmarking? Explain the process of benchmarking.	8	CO5	L2
	b	What are the advantages of quality of design?	4	CO5	L2
	c	Discuss the 4-stage of Failure mode effect analysis	4	CO5	L2

2. SEE Important Questions

Course:		Total Quality Management					Month / Year	May /2019	
Crs Code:		17ME664	Sem:	VI	Marks:	60	Time:	180 minutes	
	Note	Answer all FIVE full questions. All questions carry equal marks.					-	-	
Module	Qno.	Important Question					**Marks**	**CO**	**Year**
1	1	Define TQM and discuss briefly evolution of quality management					4	CO1	
	2	Explain the concept of quality loss function of Taguchi					4	CO1	
	3	Explain Briefly the contributions by any two quality GURU's					4	CO1	
	4	Why do we need ISO registration? What are its benefits					4	CO1	
2	1	Define leadership and briefly explain behaviors of a successful quality leader					4	CO2	
	2	Why decision making is crucial in business					4	CO2	
	3	Explain the various steps involved in strategic quality planning					5	CO2	
	4	Explain the various communication methods					3	CO2	
3	1	Define the term team. Briefly explain the different types of teams					4	CO3	
	2	With a neat sketch, enumerate how a KANO MODEL helps in Translating needs in to requirement					4	CO3	
	3	What is the necessity of employee empowerment					4	CO3	
	4	Briefly explain various tools for listening to the voice of the customer					4	CO3	
4	1	Explain Juran trilogy					4	CO4	
	2	How Juran has contributed to the development of TQM?					4	CO4	
	3	Explain the procedure of preparing control chart for attributes					16	CO4	
	4	What is re engineering? How does it contribute to the improvement of quality							
5	1	Explain the process of QFD					4	CO5	
	2	What is benchmarking? Explain the concept of benchmarking with a neat block diagram					4	CO5	
	3	What is quality by design? What are the potential benefits of quality by design					4	CO5	
	4	Explain 8 pillars of TQM					4	CO5	

G. Content to Course Outcomes

1. TLPA Parameters

Table 1: TLPA – Example Course

Module-#	Course Content or Syllabus (Split module content into 2 parts which have similar concepts)	Content Teaching Hours	Blooms' Learning Levels for Content	Final Blooms' Level	Identified Action Verbs for Learning	Instruction Methods for Learning	Assessment Methods to Measure Learning
A	*B*	*C*	*D*	*E*	*F*	*G*	*H*
1	**Principles and Practice**: Definition, basic approach, gurus of TQM, TQM Framework,awareness, defining quality, historical review, obstacles, benefits of TQM.	4	-L2	L2	-Understand	-Lecture	-Assignment
1	**Quality Management Systems:** Introduction, benefits of ISO registration, ISO 9000 series of standards, ISO 9001 requirements.	4	-L2	L2	-Understand-	-Lecture/Tutorial	-Assignment
2	**Leadership:** Definition, characteristics of quality leaders, leadership concept, characteristics of effective people, ethics.	3	-L2	L2	-Understand-	-Lecture-	-Assignment
2	The Deming philosophy, role of TQM leaders, implementation,core values, concepts and framework, strategic planning communication, decision making.	5	-L2 -L3	L3	-Understand -Apply	-Lecture	-Assignment
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.	4	-L2 -L3 -L 4	L4	-Understand-Analyzing	-Lecture/Tutorial	-Assignment
3	**Employee Involvement** – Motivation, employee surveys, empowerment, teams, suggestion system, recognition and reward, gain sharing, performance appraisal, unions and employee involvement, case studies.	4	-L2 -L3 -L 4	L4	-Understand -Apply-Analyzing	-Lecture	-Assignment
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.	4	-L2 -L3 -L 4	L4	-Understand -Apply-Analyzing	-Lecture	-Assignment
4	**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.	4	-L2 -L3 -L4	L4	-Understand -Apply-Analyzing	-Lecture	-Assignment
5	**Tools and Techniques:** Benching marking, information technology, quality management	4	-L2 -L3	L3	-Understa	-Lecture/	-Assignment

	systems, environmental management system, and quality function deployment.				nd -Apply	Tutorial	
5	Quality by design, failure mode and effect analysis, product liability, total productive maintenance.	4	-L2 -L3	L3	- Understa nd -Apply	- Lecture	- Assignment

2. Concepts and Outcomes:

Table 2: Concept to Outcome – Example Course

Mo dul e-#	Learning or Outcome from study of the Content or Syllabus	Identified Concepts from Content	Final Concept	Concept Justification (What all Learning Happened from the study of Content / Syllabus. A short word for learning or outcome)	CO Components (1.Action Verb, 2.Knowledge, 3.Condition / Methodology, 4.Benchmark)	Course Outcome **Student Should be able to ...**
A	*I*	*J*	*K*	*L*	*M*	*N*
1	-Approaches of TQM - Benefits of TQM	- Quality Parameters	Total Quality management	Quality Management Systems parameters and models	- Understand Q M S	Understand Q M S parameters
2	-Qualities of Leadership	- Elements of Quality Management	Leadership concepts and roles	Characteristics of Leader	-Understand concepts of leadership	Understand concepts of leadership
3	-Customer perception of Quality	-Role of customer in Quality Management -Roles of Managers in Quality Management	Customer Satisfaction Employee Involvement	Translating needs into requirements Motivation, Empowerment	-Understand the Customer Satisfaction -Analyzing the Customer Involvement	Understand the Customer Satisfaction and Customer Involvement roles of managers
4	- Improvement process Statistical Fundamentals	Techniques for Quality Improvement -Quality Management Tools	Continuous process improvement Statistical process improvement	Problem solving methods Statistical Tools	-Understand techniques for Continuous Process Improvement -Analyzing Quality Management Tools -Analyzing	Understand techniques for Continuous Process Improvement Quality Management Tools
5	-Information Technology	- TQM Models	Tools and Techniques	Benching marking	-Understand -Apply the tools of TQM	Understand tools of TQM