



**GITAM INSTITUTE OF MANAGEMENT (GIM)**  
**Gandhi Institute of Technology and Management (GITAM)**  
**(Declared as Deemed to be University u/s 3 of UGC Act. 1956)**  
**Visakhapatnam – 45.**

<b>Course Code:MAN 306</b>	<b>Course Title: Statistical Quality Control and Six Sigma</b>	
<b>Semester: VI</b>	<b>Course Type: Core</b>	<b>Credits: 3</b>
<b>Home Programme(s):BBA(BA)</b>		<b>Batch/Academic Year: 2020-23</b>
<b>Course Leader: Prof. Ch. Venkataiah</b>		

### Course description and learning objectives

Statistical quality control refers to the use of statistical methods in the monitoring and maintaining of the quality of products and services. SQC is used to analyze the quality problems and solve them. Six sigma measures the quality of business performance for processing a product. Business score card emphasize on the implementation of measurement system so that it can be used to write business performance.

### Objectives

- To enable the students to understand and diagnose the levels or standards that depends on many factors and lack of quality while processing the end products.
- To enable them to evaluate various options in reaching financial decisions, whether personal or business- related.

### Learning objectives:

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

	<b>Course Outcomes</b>	<b>Assessment</b>
CO1	To enable the students to understand and diagnose the levels or standards, importance of quality while processing the end products.	A1, A3, A4
CO2	Understand and create control charts for a given product/services.	A1, A2, A3, A4
CO3	Understand the importance of acceptance sampling in manufacturing/service sectors.	A2, A3& A4
CO4	Understand the elements of six sigma business score card	A3, A4

### Course outline and indicative content

#### UNIT – I (8 Sessions)(CO1, CO2, L1 & L2)

Introduction to control charts, process and product control, control charts,  $3\sigma$  control limits, tools for statistical quality control, creating control charts for variable.

#### UNIT – II (8 Sessions)(CO2, L2& L3)

Construction of control charts for attributes, p-chart for fraction defective, d-chart for number of defective, interpretation of p-chart. Control charts for number of defects per unit: limits for c-chart, c-chart for variable sample size or u-chart, application c-chart and Natural tolerance limits and specification limits.

#### UNIT – III (8 Sessions) (CO2, CO3, L2, L3 & L4)

Acceptance sampling by attributes- acceptance quality level, lot tolerance proportion or percent defective, process average fraction defective, consumers risk, producers risk, rectifying inspection plans, average outgoing quality limit, O.C curve, single sampling plan, double sampling plan and sequential sampling plan.

#### UNIT – IV (8 Sessions) (CO3, CO4, L3, L4& L5)

Six sigma- Basics of six sigma, traditional approach of six sigma, break through approach to six sigma-measure, variation, cost of quality, six sigma measurements, Analyze, improve control: challenges in implementing six sigma.

### UNIT – V (8 Sessions) (CO1, CO2, L1, L2& L3)

Elements of six sigma business score card: Leadership and profitability, Management and improvement, Employees and innovation, Purchasing and supplier management, Operational execution, Sales and distribution, Service and growth, Six sigma business score card and measurements, Business performance index, Corporate DPU and DPMO, Corporate sigma level.

Assessment methods			
Task	Task type	Task mode	Weightage(%)
A1. Mid Exam	Individual	Written	20
A2. Coursera	Individual	Presentation	10
A3. Assignment/Project	Group	Presentation & Report	10
A4. End Term Exam	Individual	Written (short/long)	60

### Mapping COs-Blooms levels- Assessment Tools

Knowledge dimension / Cognitive dimension	L1. Remember	L2. Understand	L3. Apply	L4. Analyze	L5. Evaluate	L6. Create
Factual Knowledge						
Conceptual Knowledge		CO1(A1, A4)	CO1(A1, A3, A4)			
Procedural Knowledge				CO2 (A1, A3), CO3(A2, A3, A4)	CO4 (A2, A3), CO5 (A4)	
Meta Cognitive Knowledge						

### Learning and teaching activities

Classroom Teaching, Power Point Presentation, Application in real life situation, Problem Solving, Project, Assignment etc.

### Teaching and learning resources

E-Resources, Cases, E-Books, Websites, E-Library, Handouts.

### CO PO Mapping

This is to map the level of relevance of the Course Outcome (CO) with Programme Outcome (PO). 0= No Relevance; 1= Low Relevance; 2= Medium Relevance; 3= High Relevance

CO PO Mapping	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	Sum
Internal									
C01	3	0	0	0	0	0	0	3	6
C02	3	2	2	0	2	3	2	3	8
C03	0	3	0	3	0	0	2	3	11
C04	3	0	0	3	0	2	2	3	13
C05	0	0	3	0	3	0	0	3	9
<b>Target Level Max.</b>	<b>9</b>	<b>3</b>	<b>3</b>	<b>6</b>	<b>3</b>	<b>4</b>	<b>4</b>	<b>15</b>	<b>47</b>

**BBA (BA) Program Outcomes**

- Ability to apply analytics techniques to analyze and interpret the data.
- Ability to use tools such as Microsoft Excel, SPSS, R, Weka and Tableau to solve business analytics problem
- Ability to understand the business problem with their knowledge in different functional areas of management
- Ability to work with structured, semi – structured and unstructured data.
- Ability to perform descriptive, predictive and prescriptive analytics.
- Have necessary skills and understanding to take up advanced topics in the area of analytics and thus enhance their career.