Gautam Buddha University, Greater Noida

School of Engineering (Mechanical Engineering)

Degree	Course Name	Course Code	Marks:100
M. Tech. in Manufacturing	Quality Engineering in Manufacturing	MEM 601	SM+MT+ET 25+25+50
Semester	**Credits**	**L-T-P**	**Exam.**
	3	3-0-0	

Unit I

Quality Engineering: An overall quality system; Quality engineering in production design; Quality engineering in design of production processes. **(06 Hours)**

Unit II

Loss Function and Quality Level: Derivation and use of quadratile loss function; Eeconomic consequences of tightening tolerances as a means to improve quality; Eevaluations and types tolerances (N-type, S-type and L-type); Tolerance design and tolerancing: Functional limits, tolerance design for N-type. L-type and S-type characteristics. **(10 Hours)**

Unit III

Tolerance Allocation for Multiple Components; Parameter and Tolerance Design: Introduction to parameter design; Signal to noise ratios; Parameter design strategy; Some of the case studies on parameter and tolerance designs. **(07 Hours)**

Unit IV

Analysis of Variance (ANOVA): NO-way ANOVA; One-way ANOVA; Two-way ANOVA; Critique of F-test; ANOVA for four level factors; Multiple level factors. **(07 Hours)**

Unit V

Orthogonal Arrays: Typical test strategies; Better test strategies; Efficient test strategies; Steps in designing; Conducting and analyzing an experiment; Interpolation of experimental results: Interpretation methods; Percent contributor; Estimating the mean. **(10 Hours)**

Unit VI

IS-9000 Quality System: BDRE; 6-sigma; Bench marking; Quality circles Brain Storming; Fishbone diagram; Problem analysis.

(05 Hours)

Recommended Books:

1. Quality Engineering in Production Systems; G. Taguchi, A. Elsayed et al; McGraw Hill Intl. Edition,1989.
2. Taguchi Techniques for Quality Engineering; Phillip J. Ross; McGraw Hill, Intl. 2nd Edition, 1995.
3. Quality Management; Kanishka Bedi; Oxford University Press; 10th Edition, 2013.
4. Taguchi Methods Explained: Practical Steps to Robust Design; Papan P. Bagchi; Prentice Hall Pvt. Ltd., New Delhi.
5. Design of Experiments Using the Taguchi Approach; Ranjit K. Roy; John Wiley & sons. Inc. 2001.