Birla Institute of Technology & Science, Pilani
Hyderabad Campus

BIRLA INSTITUTE OF TECHNOLOGY AND SCIENCE, PILANI
FIRST SEMESTER 2020-2021
COURSE HANDOUT (PART-II)

Date: 17/08/2020

In addition to Part-I (General Handout for all courses appended to the timetable), this portion gives further specific details regarding the course.

Course Code *: ME F443*
Name of the Course **: Quality Control Assurance and Reliability**
Instructor-In-Charge **: AMRITA PRIYADARSHINI**

I. Course Description:

Basic concepts of probability and probability distributions, standard probability distribution, sampling and sampling distributions, confidence intervals, testing significance, statistical tolerance, various types of control charts, statistical process control techniques, value analysis, defect diagnosis and prevention, basic concepts of reliability, reliability design evaluation and control, methods of applying total quality management, production process.

II. Scope and Objective of the Course:

The subject aims to introduce students to the ideas of quality management and the use of statistical methods in this field. At the end of this subject, students be able to learn about understand the role of quality control and quality improvement in organizations, apply the ideas of TQM to organizations and identify appropriate strategies for dealing with issues of quality, identify which type of control chart is appropriate for particular data, apply that control chart and draw conclusions, design simple factorial experiments, analyze data from factorial experiments and draw conclusions. Concepts of reliability and methods to improve product and system reliability are dealt with. The course is tailored to enable practicing engineers to become successful managers in a sustained manner to provide business houses the leading edge.

III. Textbook

1. Mitra. A, “Fundamental of Quality Control and Improvement”, Prentice Hall of India Ltd., 2nd Edition, 3rd Indian Reprint, 2004.

Reference Books

1. Gryna F.M., Chua, R. C. H. and Defeo, J. A., “Juran’s Quality Planning and Analysis for Enterprise Quality”, Tata McGraw Hill, 5th Edition 2007.
2. Douglas C. Montgomery, “Introduction to Statistical Quality Control”, John Wiley & Sons, 4th Edition, 2003.

IV. Course Contents

Topic& Learning Objectives	No of	Source

	Lectures	
Introduction to Total quality control and the total quality system	2	T1& class notes
Some philosophies and their impact on quality	2	T1& class notes
Quality management: Practices, tools and standards	3	T1& class notes
Fundamentals statistical concepts and techniques in quality control and improvement	4	T1& class notes
Data analysis and sampling	2	T1& class notes
Statistical Process Control using control charts	4	T1& class notes
Control chart or variables	5	T1& class notes
Control charts for attributes	5	T1& class notes
Process capability analysis	6	T1& class notes
Acceptance sampling plans	4	T1& class notes
Reliability	3	T1& class notes
Experimental Design and the Taguchi method	5	T1& class notes

V. Evaluation Scheme and Schedule:

EC No.	Component	Duration	Weightage (%)	Date, time	Nature
1	Test I	30 min	15	September 10 – September 20 (during scheduled class Hour)	OB
2	Test II	30 min	15	October 9- October 20(during scheduled class hour)	OB
3	Test III	30 min	15	November 10- November 20 during scheduled class hour)	OB
4	Surprise quiz	-	10		OB
5	Assignments/ Course Project	-	15		OB
6	Comprehensive exam	2 hours	30	TBA	OB

Course Project:

1. One course project will be required on one of the following general topic areas: Developing a MATLAB code for one of the topics discussed in the course. For example, Control chart for attribute, Control chart for variables, Hypothesis testing, Design of experiments, Reliability engineering etc. (10%)

2. Assignments based on solving the assigned problems using MINITAB software (5%)

VI. Chamber Consultation Hour: To be announced in the class.

VII. Notices concerning the course: All notices concerning the course will be displayed on the CMS notice board.

VIII. Make-up Policy: Make-up will be permitted only in genuine medical cases with prior permission. No make ups for quiz, assignments and projects.

IX. Academic Honesty and Integrity Policy: Academic honesty and integrity are to be maintained by all the students throughout the semester and no type of academic dishonesty is acceptable.

NOTE: The border cases in final grading will be decided based on mainly class room attendance and attentiveness in the classroom.

Instructor-In-Charge