

GUJARAT TECHNOLOGICAL UNIVERSITY

B.E. SEMESTER : VIII

RUBBER TECHNOLOGY

Subject Name: **AUTOMATION & CONTROL IN RUBBER INDUSTRIES**

Sr. No.	Course Contents	Total Hrs
1.	Instrumentation & Process Control: Industrial managements for measurement & Control of process variables such as temp., pressure, gas, Concentration, Sp. gravity, pH, liquid level, liquid flow, humidity etc., Principles of automatic control, Proportional, Integral & derivative modes of control, elements of analogue & digital computer application, microprocessor control.	6
2.	Specifications: The writing of specifications, Materials, Subcomponents, Machine settings, Manual Operations, products.	4
3.	Process-Capability Studies: Utility & General Considerations, Design of processing trails, Empirical modeling & statistical analysis of process performance, Representation & optimization of process performance, tolerance bands & process precision.	6
4.	Process Monitoring: General considerations temp. Measurement pressure measurement, position, Displacement & viscosity measurement, product Dimensions & wt., energy & power measurement, Data acquisition system, Data analysis & presentation.	8
5.	Process Control: General consideration, Local automatic & closed-lopp control, adaptive control, sequence control, safety & machine integrity, computer control systems.	6
6.	Quality Control: General considerations, sampling inspection, patrol inspection & validation, subjective inspection etc. New methods like Six sigma.	6
7.	Automation and Control in the Rubber Industry: Introduction, Background, Reasons to Institute Change, Reasons to Postpone Change, Component Testing, Dimensional and Destructive Testing, Vehicle Testing.	6
8.	Computer Integrated Manufacturing (CIM): Introduction, Process, Sensors, Computer, Measurements, Control, Display, CIM.	6
9.	Improving Rubber Testing with Microcomputers: Introduction, Microcomputers and Hardware for Data Acquisition, Sensors used in Rubber testing, Signal Conditioning, Analog to digital Conversion, Interfacing to Microcomputers.	6

Practical and Term Work:

It should be based on theories

Textbooks:

- Rubber Processing & Production Organisation By: Philip K. Freakley
- Rubber Products Manufacturing Technology By: Anil K. Bhowmick

Reference Books:

- Industrial Instrumentation By: Donald Eckman
- Automatic Process Control By: Donald Eckman