GUJARAT TECHNOLOGICAL UNIVERSITY

TEXTILE TECHNOLOGY (29)

BASIC ENGINEERING IN TEXTILE

SUBJECT CODE: 2132905

B.E. SEMESTER III

Type of course: Engineering

Prerequisite: Zeal to learn the subject

Rationale: This subject provides basic knowledge of some of the areas of Mechanical Engineering which are considered to be important areas for Textile Engineers / Technologists.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
L	T	P	C	Theory Marks			Practical Marks			
				ESE (E)	PA (M)		PA (V)		PA (I)	
					PA	ALA	ESE	OEP		
3	0	0	3	70	20	10	0	0	0	100

Content:

Sr. No.	Topics	Teaching Hrs.	Module Weightage
1.	**Method study** Definition of method study; Techniques of method study; Process chart; Two Handed Motion chart; S charts.	4	11 %
2.	**Work measurement** Definition of work measurement; Relation between measurement and method study; Methods of work measurement; Time Study with stop watch; work sampling; standard time data. Calculations of workloads.	4	11 %
3.	**Introduction to C.P.M., PERT**	5	12 %
4.	**Basic of operation research and linear programming** Definition, characteristics, scope and limitations of OR. Concepts of linear programming and O.R. techniques in relation to textile application including formulation of problems, solution of problems using Graphical methods, Simplex methods, etc.	7	19 %
5.	**Transportation method** North west corner method, Row minima method, Column minima method, Least cost entry method, Vogel's approximation method, Modified distribution method.	3	8 %
6.	**Assignment problem** Hungarian method for solution, non square matrix, restriction on assignments, Maximization problem,	3	8 %
7.	**Mill steam generation** Coal fired boiler, Water tube boiler package type of boiler, Boiler operation and maintenance, Distribution of steam to various departments, Boiler water treatment	5	12 %
8.	**Humidification and Air conditioning** Need for humidification and air conditioning, Different methods	3	8 %

	employed for humidification, Description of unit humidifiers air washer humidification plant, Unit air conditioners. Temperature and humidity requirements for different processes Control of humidity in the shops, maintenance of humidification plants.		
9.	**Maintenance** Importance of breakdown maintenance vs. preventive maintenance. Importance of inspection and quality measurement in preventive maintenance.	2	5 %

Reference Books:

1. Industrial engineering and Management Science-Banga, Sharma,and Agarwal
2. Industrial engineering and Management- O.P.Khanna
3. Industrial engineering and Personnel Management- M.Mahajan
4. Operation research –S. Kalavathy
5. Operations Research –KantiSwarup,P.K.Gupta and ManMohan
6. Operations Research-Premkumar Gupta,D.S.Hira
7. Elements of Mechanical Engineering- Prof.P.S.Desai,Prof.S.B.Soni
8. Standard boiler operators-Stephen M. Elonka
9. Refrigeration and Air-conditioning-Dom Kundwar
10. Fluid Mechanics and Fluid Machinery- Dr.R.K.Bansal

Course Outcome:

After learning the course the students should be able to

1. Modify the Methods of different operations performed by the operators on the basis of Method Study.
2. Minimize the duration of time intervals use by operators during different operations on the basis of Time Study.
3. Predict the cost and time of completion of Project/ Product.
4. Check the performance of Boilers for generation of steam for different operations, if required.
5. Set the humidity and temperature of different departments of textile industries as per the requirements.
6. Decide the preventive and break down maintenance schedules for different machines.

List of Open Source Software/learning website: http://nptel.iitm.ac.in, World Wide Web, Google Search Engine etc.

ACTIVE LEARNING ASSIGNMENTS: Preparation of power-point slides, which include videos, animations, pictures, graphics for better understanding theory and practical work – The faculty will allocate chapters/ parts of chapters to groups of students so that the entire syllabus to be covered. The power-point slides should be put up on the web-site of the College/ Institute, along with the names of the students of the group, the name of the faculty, Department and College on the first slide. The best three works should submit to GTU.