GUJARAT TECHNOLOGICAL UNIVERSITY

BRANCH NAME: PRODUCTION ENGINEERING
SUBJECT NAME: Productivity Improvement Methods
SUBJECT CODE: 2172502
B.E. 7th SEMESTER

Type of course: Under Graduate

Prerequisite: NIL

Rationale: The course aims to impart basic skills of application of various methods for Productivity Improvement.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks						Total Marks
				Theory Marks			Practical Marks			
L	T	P	C	ESE (E)	PA (M)		PA (V)		PA (I)	
					PA	ALA	ESE	OEP		
3	0	2	5	70	20	10	20	10	20	150

Content:

Sr. No.	Content	Total Hrs	% Weightage
1	**Productivity Management** Definition, Concept and Importance of productivity, Difference between Production and Productivity, Tools of productivity, Reasons for low productivity, Factors that help increasing productivity, Productivity index, Kinds of productivity measurement, Causes of low productivity and techniques of their elimination, Factors affecting productivity, Technical methods to improve productivity, Main contributors to productivity improvement, Advantages from increased productivity.	**8**	17
2	**Method Study** Definition, Concept , Objectives and Procedure of method study, Process chart symbols, recording techniques like Flow process charts, Operation, Flow and Two handed Process charts, Flow diagram, String diagram, Multiple Activity chart, Operation Analysis, Analysis of motion, Motion economy, Design of work place layout, Therbligs, SIMO chart.	**6**	17
3	**Work Measurement** Definition, Concept and Objectives of work measurement, Stop watch procedure for collecting time study data, Time estimating techniques like analytical estimating, Predetermine Motion Time System-PMTS, Elemental Motion Time System, Basic Motion Time System, Method Time Measurement, Work factor.	**8**	17

4	**Ergonomics** Introduction, Principles, Work system design, Man-machine system, Human behavior and equipment design, Tools, Techniques and applications, Effect of environment on performance of worker	**6**	12
5	**Performance Rating, Wage Payment & Incentive Plans** Introduction, Various incentive schemes, Performance Rating	**4**	8
6	**Business Process Re-engineering (BPR).** Introduction, Development of Business Process Re-engine, BPR is not for everyone, Advantages of BPR, Steps involved in BPR, Application of BPR, Training for BPR, When to reengineer, Ways to fail at BPR, Requirements of BPR, Human Resource Engineering, Fundamentals of BPR, Implementation methodology of BPR, Organizational re-engineering, Organizational re-engineering process, Reengineering values, Approach to re-engineering, Re-engineering tools, What re-engineering is not, Kinds of changes that occurs in re-engineering, succeeding	**8**	21
7	**CONTEMPORARY ISSUES IN PRODUCTIVITY** Activities of National Productivity Council and other organizations, Productivity Scenario and changes.	**4**	8
	Total	**44**	100%

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	**U Level**	**A Level**	**N Level**	**E Level**	**C Level**
7	14	21	7	7	14

Legends: R: Remembrance; U = Understanding; A = Application and above Levels (Revised Bloom's Taxonomy)

Note: This specification table shall be treated as a general guideline for students and teachers. The actual distribution of marks in the question paper may vary slightly from above table

Reference Books:

1. Introduction to Work study, ILO, Oxford
2. Work Study, Khanna , Dhanpat Rai Publications
3. Total Quality Management , K.C.Arora, Katsons
4. Industrial Engineering and Management, Khana, Dhanpat Rai
5. Industrial Engineering and Management, Reddy, New Age
6. Industrial Engineering and Management , Verma,

Course Outcome:

After learning the course the students should be able to:

1. Understand Productivity.
2. Differentiate Method Study & Work Measurement..
3. Apply Ergonomics Principles.

4. Analyze Wedge payment & Incentive Plans..
5. Implement reengineering.
6. Understand different Maintenance methods.

List of Experiments:

1. Introduction to Productivity & implement different tools to measure productivity of any Organization.
2. To perform Flow process charts.
3. To perform Two handed Process charts.
4. To prepare String diagram,
5. To perform Multiple Activity chart.
6. To prepare Design of work place layout.
7. To calculate Standard time of given job.
8. To conduct experiment on Performance Rating: Dealing Cards & Walking Distance.

Design based Problems (DP)/Open Ended Problem:

NA

Major Equipment:

Nil

List of Open Source Software/learning website:

1. **http://nptel.ac.in/**

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.