GUJARAT TECHNOLOGICAL UNIVERSITY

Master of Engineering
Subject Code: 3724614
Semester – II

Subject Name: Productivity Engineering & Management

Type of course: Elective

Prerequisite: Nil

Rationale:
The aim of this course is to make students understand and appreciate the importance of Productivity Engineering and how it is helpful to management to set goal. This subject provides an overview of productivity, in definition, measurement and management. It discusses the challenges of evaluating input and output factors, highlighting the basis of input measurement and taking into consideration the issues of technological change. It also explores the affinity of productivity and its various measures to management accounting with special focus on profitability of any Industries. Students can examines and analyses surveys relating to productivity practices and perceptions. Demonstrates the interrelationship of labour inputs with productivity and its relevance to managerial strategic decision making.

Teaching and Examination Scheme:

Teaching Scheme			Credits	Examination Marks				Total Marks
L	T	P	C	Theory Marks		Practical Marks		
				ESE (E)	PA (M)	ESE (V)	PA (I)	
03	0	02	04	70	30	30	20	150

Content:

Sr. No.	Content	Total Hrs
1	Introduction: Productivity basic concepts: Partial, Total Factor productivity, Types of productivity measure: Single, Multi-factor, productivity cycle, Productivity: Some perspectives.	03
2	Productivity Models: Kendrick-creamer model, Craig-Harris model, American productivity center model, Productivity accounting model,	04
3	Productivity Measurement Models: Models of productivity measurement: Production function models, Financial ratios, Production based models, Product oriented models, Surrogate models, Economic based model, Models based on systems approach. Productivity measurement at International, National and Organizational level, total productivity models, Productivity management in manufacturing and service sector, Productivity Evaluation models, Productivity improvement models and techniques	08
4	Productivity Measurement: A Conceptual framework: MBO and Productivity measurement, Key Performance Area in MBO, Performance	04

	Objectives-Productivity (PO-P) Model, its methodology, KPA's, Productivity indices.	
5	Productivity Measurement in Manufacturing Sector: Productivity Measurement in Small Size, Medium Size and in Large Size Organization considering KPA's, performance objectives and productivity indices calculations for these case to be studied.	**06**
6	PO-P application: Productivity Measurement in Service Sector: Need for measuring productivity in service sector, Productivity of an R & D System & Educational institution, methodology.	**04**
7	Productivity Management and Implementation Strategies: Productivity policy, Productivity measurement evaluation, Productivity improvement strategies: Organizational, Human and Technological.	**04**
8	Introduction to business process reengineering: Basics of BPR, Need for Reengineering, Benefits of BPR, Breakthrough Reengineering models, BPR guiding models, Key target of BPR, BPR in manufacturing industries.	**04**
9	BPR Implementation Methodology: BPR methodology, different phases of BPR, BPR methodology selection guidelines, different BPR methodologies and its comparison, BPR success factors, Barriers to BPR, BPR and relevant technologies.	**04**
10	Green Productivity: Green productivity and ways to measure green productivity, Feedback tools and system, Integrated Management of Productivity Activities (IMPACT Model), Productivity Indicators, Integrated Approach to Productivity Measurement.	**04**

Suggested Specification table with Marks (Theory):

Distribution of Theory Marks					
R Level	U Level	A Level	N Level	E Level	C Level
15	**20**	**25**	**20**	**10**	**10**

Legends: R: Remembrance; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create 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. Prem Vrat, Sardana, G. D. and Sahay, B. S, Productivity Management - A Systems Approach, Narosa Publishing House, New Delhi, 1998.

2. R. Radhakrishnan, S. Balasubramanian, Business Process Reengineering: Text and Cases, PHI Learning Private Limited, New Delhi, 2011.
3. Sumanth, David J., Productivity Engineering and Management, Tata McGraw Hill, New Delhi, 1990.
4. Rastogi, P. N. Re-Engineering and Re-inventing the Enterprise, Wheeler pub. New Delhi, 1995.
5. A Measurement Guide to Green Productivity - 50 Powerful Tools to Grow your Triple Bottom Line, Asian Productivity Organization (APO), Tokyo, 2003.
6. Productivity Measurement in the Service Sector, Asian Productivity Organization (APO), Tokyo, 2001.
7. Productivity Measurement in the Retail And Food Industry, Asian Productivity Organization (APO), Tokyo, 2012.
8. Measuring Productivity, OECD Manual, Measurement of Aggregate and Industry Level Productivity Growth, www.sourceOECD.org
9. A Guide to Productivity Measurement, SPRING Singapore, 2011

Course Outcomes:

Sr. No.	CO statement	Marks % weightage
CO-1	To understand the concept of Productivity it role and effect in management	25
CO-2	To understand productivity measurement and different models also its implementation and effect in industries.	30
CO-3	To Understand business process reengineering concept and its implementation.	25
CO-4	To understand the concept of green productivity and its role as productivity indicators.	20

Term Work:
The term work shall be based on the topics mentioned above.

List of Experiments:

The candidate shall be examined on the basis of term-work.

Major Equipment:

Nil

List of Open Source Software/learning website:

NPTEL