DIRECTORATE OF TECHNICAL EDUCATION

DIPLOMA IN MECHANICAL ENGINEERING

M SCHEME

2015 -2016 onwards

III YEAR

V SEMESTER

32053 – PROCESS PLANNING AND COST ESTIMATION

CURRICULUM DEVELOPMENT CENTRE

M-SCHEME

(Implements from the Academic year 2015-2016 onwards)

Course Name : DIPLOMA IN MECHANICAL ENGINEERING
Course Code : 1020
Subject Code : 32053
Semester : V
Subject Title : PROCESS PLANNING AND COST ESTIMATION

TEACHING AND SCHEME OF EXAMINATIONS:

No. of Weeks per Semester: 15 Weeks

Subject	Instructions		Examination			
	Hours/ Week	Hours/ Semester	Marks			Duration
PROCESS PLANNING AND COST ESTIMATION	5	75	Internal Assessment	Board Examination	Total	3 Hrs
			25	75	100	

Topics and Allocation of Hours:

Unit	Topics	Hours
I	PROCESS PLANNING	14
II	PROCESS SELECTION	14
III	WORK STUDY	14
IV	COST ESTIMATION	13
V	MACHINING TIME CALCULATIONS	13
	REVISION AND TEST	7
	Total	**75**

RATIONALE:

In the product manufacturing the process selection and planning are important. In this subject the work study, cost estimation and machining time calculations are discussed.

OBJECTIVES:

Understand the process planning.

Study the process selection.

Understand the work study and method study.

Study the cost estimation.

Study the machining time calculations.

PROCESS PLANNING AND COST ESTIMATION

DETAILED SYLLABUS

Contents: Theory

Unit	Name of the Topic	Hours
I	**Process Planning**	14
	Introduction - concept – Information required to do process planning - factors affecting process planning - process planning procedure - Make (or) Buy decision using Break Even Analysis - simple problems. Manual process planning - Introduction of Automated process planning and generator process planning - Advantage of computer aided process planning – Principle of line balancing - need for line balancing – Value Engineering – Definition - cost control Vs cost reduction - value analysis when to do - steps information needed - selection of product.	
II	**Process Selection**	14
	Process selection - technological choice - specific component choice - Process flow choice – Factors affecting process selection - machine capacity – analysis of machine capacity - process and equipment selection procedure - Determination of man, machine and material requirements - simple problems - selection of material – jigs - fixtures etc. - Factors influencing choice of	

machinery - selection of machinery - simple problems - preparation of operation planning sheet for simple components.

III Work Study **14**

Objectives of work study - Concept of work content – Techniques to reduce work content - method study – Procedure – Recording techniques used in method study - Micro motion study - Principles of motion economy - Therbligs - Simo chart - cycle graph - Chrono cycle graph - work measurement - Basic Procedures for the conduct of time study - calculation of standard time - simple problems – Ergonomics – definition – objectives – applications - working environment - work place layout - other areas.

IV Cost Estimation **13**

Introduction - Definition - Purpose of cost estimation - cost estimation Vs Cost accounting - components of cost – direct cost - indirect cost - overhead expenses - estimation of cost elements - set up time and economic lot size - tool change time - Inspection time - performance factor – overheads - different methods of apportioning overheads – Data required for cost estimating - Steps in making a cost estimate – problems - estimation of production cost of simple components such as coupling, shaft, crank etc. – problems.

V Machining Time Calculations **13**

Elements of metal machining - cutting speed - feed - depth of cut - procedure for assigning cutting variables - calculation of machining time for different lathe operations like - turning - facing - chamfering - parting - knurling and forming - Calculation of machining time for operations on drilling machine - machining time for shaping, planing, slotting, broaching and sawing operations - Machining time for face milling and slab milling operations - timing for thread cutting - estimation of total unit time - Procedure for doing the above machining calculations with formulae used - simple problems.

TEXT BOOKS:

1) Industrial Engineering & Management - O.P Khanna

2) Industrial Engineering & Production Management - Martand Telsang

REFERENCE BOOKS:

1) Production Engineering - P.C.Shrma.
2) Production and Costing - GBS Narang and V.Kumar
3) Mechanical Estimating and Costing - Banga & Sharma.