

B.E Semester: VI Mechanical Engineering

Subject Name: Engineering Costing & Estimating

A. Course Objective

- To present a problem oriented in depth knowledge of Engineering Costing & Estimating.
- To address the underlying concepts, methods and application of Engineering Costing & Estimating.

B. Teaching / Examination Scheme

SUBJECT		Teaching Scheme				Total Credit	Evaluation Scheme					Total Marks
		L	T	P	Total		THEORY		IE	CIA	PR. / VIVO	
CODE	NAME	Hrs	Hrs	Hrs	Hrs		Hrs	Marks	Marks	Marks	Marks	
ME606	Engineering Costing & Estimating	3	0	0	3	3	3	70	30	20	-	120

C. Detailed Syllabus

1 **INTRODUCTION**

Related terminology, Estimating: Importance and aim, objectives, functions, organization of Estimating department, Estimating Procedure, Constituents of Estimation, Costing- Definition, aims, procedure for Costing, types of costs, Costing controls, Difference between Estimating and Costing, Control of Costs, Elements of PPC and Time & Motion Studies, Allowance, Overheads, Profit and Pricing Policy.

2 **COSTING:**

Elements of Costs, Costing methodology for raw materials, Products and Services, Nature of Costs-Direct, Traceable and Non traceable, Wastage. Determining of Cost of raw materials, manufactured products, labor, indirect expenses, methods of overhead allocation.

3 **INVENTORY CONTROL:**

Cost factors in inventory control, inventory carrying cost, ordering cost, EOQ, lead time, safety stock, reorder level, minimum level, max. level, Types of inventory control systems- Perpetual inventory control system, ABC method etc. Valuation of materials issued from store- FIFO, LIFO, etc.

4 **LABOUR COSTING:**

Introduction, factors influencing wage rate, methods of wage payments for direct and indirect labour-time wage system, piece rate system, Wage incentives: different plans,

5 **DEPRECIATION & BREAK EVEN ANALYSIS:**

Introduction, purpose, methods for calculating depreciation-straight line method, Diminishing balance method, sum of year digit method, machine hour basis method, Break even analysis: Introduction, assumptions in break even analysis, important terms and definitions, calculation of breakeven point, advantages and limitations.

6 **ESTIMATING**

Definition, Different types, Methods adopted for estimation, Use of Standard data, parameter estimating, statistical estimating, feedback systems, importance, purpose and functions of estimating, Mensuration.

7 **ESTIMATION IN MACHINE SHOP & FOUNDRY SHOP**

Calculation of volume of machined component operation time calculation for turning, knurling, facing, drilling, boring, reaming, threading, milling, tapping, shaping, cutting, various grinding operations, planning etc. Pattern cost estimation: material, labor, overheads, estimation of foundry costs material, labor other costs.

8 **ESTIMATION IN FORGING, WELDING AND SHEET METAL WORK**

Forging process: and types, forging operations, Estimation procedure, estimating losses and time.
Welding: Type of welding processes, types of joints. Preparation cost, Actual welding cost; material, labour, finishing on cost, power cost, factors affecting welding cost. Gas cutting cost: material, labour finishing on cost.
Sheet Metal Work: Operations in sheet metal work, joints, blank layout and size, estimation of time, capacity and types of processes.

9 **BUDGET AND BUDGETORY CONTROL**

Budget, objectives, classification of budgeting, Budgetory control, securing flexibilities of budgeting, limitation of budget. Operational and capital budgets, Cash flow schedules, Estimating cost, Preparing an annual budget for the Engg. Department.

10 **ENGINEERING CONTRACTS**

Introduction, Types of contracts and similarities. Terms of payments, firm price contracts, cost reimbursable contracts, Target of cost contracts, schedule of rate contracts, bill of quantities contracts, compound contracts, contract policy, legal rights and commercial interests

D. Lesson planning

<u>SR.NO</u>	<u>DATE/WEEK</u>	<u>UNIT NO</u>	<u>%WEIGHTAGE</u>	<u>TOPIC NO</u>
1	1 ST , 2 ND , 3 RD	1,2	20	1,2
2	4 TH , 5 TH , 6 TH	3,4	20	3,4
3	7 TH , 8 TH , 9 TH	5,6	20	5,6
4	10 TH , 11 TH , 12 TH	7,8	20	7,8
5	13 TH , 14 TH , 15 TH	9,10	20	9,10

E. Instructional Method & Pedagogy

1. At the start of course, the course delivery pattern , prerequisite of the subject will be discussed
2. Lecture may be conducted with the aid of multi-media projector, black board, OHP etc. & equal weightage should be given to all topics while teaching and conduction of all examinations.
3. Attendance is compulsory in lectures and laboratory, which may carries five marks in overall evaluation.
4. One/Two internal exams may be conducted and total/average/best of the same may be converted to equivalent of 30 marks as a part of internal theory evaluation.
5. Assignment based on course content will be given to the student for each unit/topic and will be evaluated at regular interval. It may carry an importance of ten marks in the overall internal evaluation.
6. Surprise tests/Quizzes/Seminar/Tutorial may be conducted and having share of five marks in the overall internal evaluation.

7. The course includes a laboratory, where students have an opportunity to build an appreciation for the concept being taught in lectures.
8. Practical / Oral: The candidate shall be examined on the basis of term-work.

F. Students Learning Outcomes

- The student can identify different areas of Engineering Costing & Estimating.
- Can find the applications of all the areas in day to day life.

G. Recommended Demonstrate Materials

1. Mechanical Estimating and Costing By B.P. Sinha. Tata McGraw Hill Publishing Co. Ltd. N. Delhi
2. Mechanical Estimating and Costing T.R. Banga and S.C.Sharma, Khanna Publishers, Delhi-6
3. industrial Engineering & Operations management by S.K.Sharma & Savita Sharma,Kataria publishers
4. Process Planning & Cost Estimation by R. Kesoram & others, New Age International Pub., N. Delhi
5. Handbook of Engineering Management- Edited by Dennis Lock, Butterwork & Heinemanky Ltd.