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**SEMBODAI RUKMANI VARATHARAJAN ENGINEERING COLLEGE**

**Department Of Mechanical Engineering**

**Course Plan**

**Academic Year: 2023-2024**

**ODD Semester (REGULATION-2017)**

SUB NAME : **ME8793 PROCESS PLANNING & COST ESTIMATION**

YEAR/SEM : **IV /VII**

STAFF NAME: **Mr.VEERAPANDIAN.K**

**SYLLABUS**

# ME8793 PROCESS PLANNING & COST ESTIMATION L T P C

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**COURSEOBJECTIVES:**

1. To introduce the process planning concepts to make cost estimation for various products after process planning.
2. To introduce the process planning concepts to make cost estimation for various products after process planning.
3. To perform estimation of machining time for various manufacturing operations

**UNIT I INTRODUCTION TO PROCESS PLANNING 9**

Introduction- methods of process planning-Drawing interpretation-Material evaluation – steps in process selection-.Production equipment and tooling selection

**UNIT II PROCESS PLANNING ACTIVITIES 9**

Process parameters calculation for various production processes-Selection jigs and fixtures election of quality assurance methods - Set of documents for process planning-Economics of process planning- case studies

**UNIT III INTRODUCTION TO COST ESTIMATION 9**

Importance of costing and estimation –methods of costing-elements of cost estimation –Types of estimates – Estimating procedure- Estimation labor cost, material cost- allocation of over head charges- Calculation of depreciation cost

**UNIT IV PRODUCTION COST ESTIMATION 9**

Estimation of Different Types of Jobs - Estimation of Forging Shop, Estimation of Welding Shop, Estimation of Foundry Shop

**UNIT V MACHINING TIME CALCULATION 9**

Estimation of Machining Time - Importance of Machine Time Calculation- Calculation of Machining Time for Different Lathe Operations ,Drilling and Boring - Machining Time Calculation for Milling, Shaping and Planning -Machining Time Calculation for Grinding.

**TOTAL: 45 PERIODS**

**COURSEOUTCOMES:** At the end of the course, students would:

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| **CO-1** | select the process, equipment and tools for various industrial products. |
| **CO-2** | prepare process planning activity chart. |
| **CO-3** | explain the concept of cost estimation. |
| **CO-4** | compute the job order cost for different type of shop floor. |
| **CO-5** | calculate the machining time for various machining operations. |

**TEXTBOOKS**

**TEXT BOOK-1:**

Peter scalon, “Process planning, Design/Manufacture Interface”, Elsevier science

Technology Books, Dec 2002 .

**TEXT BOOK-2:**

Sinha B.P, “Mechanical Estimating and Costing”, Tata-McGraw Hill publishing co, 1995.

# REFERENCES:

**RB.1.** Chitale A.V. and Gupta R.C., “Product Design and Manufacturing”, 2nd Edition, PHI, 2002.th

**RB.2.** Ostwalal P.F. and Munez J., “Manufacturing Processes and systems”, 9 1998.

Edition, John Wiley,

**RB.3.** Russell R.S and Tailor B.W, “Operations Management”, 4th Edition, PHI, 2003.

**RB.4.** Mikell P. Groover, “Automation, Production, Systems and Computer Integrated

Manufacturing”, Pearson Education 2001.

**RB.5.** Dr.V.Jeyakumar., “Process planning and cost estimation”, 12th Edition, Lakshmi Publications,

2017

**UNIT I:** **INTRODUCTION TO PROCESS PLANNING**

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| **Sl. No.** | **TOPICS** | **Lecture Hours** | **Book /**  **Chapter/**  **Pages** | **Teaching Aids/ Method** | **Instructional Delivery Level** | **CO** | **PO/ PSO** |
|  | 1.1 Introduction | 1 | RB5/ch1/Pg-1.1 – 1.2 | BB | Understanding | CO1 | PO2/  PSO2 |
|  | 1.2 Methods of process planning | 2,3 | RB5/ch2/Pg-1.3 – 1.23 | LCD | Understanding | CO1 | PO2/  PSO2 |
|  | 1.3 Drawing interpretation | 4 | RB5/ch3/Pg-1.24 – 1.34 | BB | Remembering | CO1 | PO2/  PSO2 |
|  | 1.4 Material evaluation | 5,6 | RB5/ch4/Pg-1.35 – 1.47 | BB | Understanding | CO1 | PO2/  PSO2 |
|  | 1.5 Steps in process selection | 7 | RB5/ch5/Pg-1.47 – 1.51 | LCD | Understanding | CO1 | PO2/  PSO2 |
|  | 1.6 Production equipment and tooling selection | 8,9 | RB5/ch6/Pg-1.57 – 1.70 | BB | Understanding | CO1 | PO2/  PSO2 |

**UNIT II: PROCESS PLANNING ACTIVITIES**

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| **Sl. No.** | **TOPICS** | **Lecture hours** | **Books/ Chapter** | **Teaching Method/ Aids** | **Instructional Delivery Level** | **CO** | **PO/ PSO** |
|  | 2.1 Process parameters calculation for various production processes | 10,11 | RB5/ch1/Pg2.1 – 2.14 | BB | Apply | CO2 | PO2/  PSO2 |
|  | 2.2 Selection jigs and fixtures election of quality assurance methods | 12,13 | RB5/ch2/Pg2.15 – 2.23 | BB | Understanding | CO2 | PO2/  PSO2 |
|  | 2.3 Set of documents for process planning | 14,15,16 | RB5/ch3/Pg2.24 – 2.41 | LCD | Understanding | CO2 | PO2/  PSO2 |
|  | 2.4 Economics of process planning case studies | 17,18 | RB5/ch4/Pg2.42 – 2.58 | BB | Apply | CO2 | PO2/  PSO2 |

**UNIT III: INTRODUCTION TO COST ESTIMATION**

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| **Sl. No.** | **TOPICS** | **Lecture Hours** | **Books / Chapter** | **Teaching Method/ Aids** | **Instructional Delivery Level** | **CO** | **PO/ PSO** |
|  | 3.1 Importance of costing and estimation | 19 | RB5/ch1/Pg3.1 – 3.4 | BB | Understanding | CO3 | PO2/  PSO2 |
|  | 3.2 Methods of costing | 20 | RB5/ch2/Pg3.22 – 3.33 | LCD | Understanding | CO3 | PO2/  PSO2 |
|  | 3.3 Elements of cost estimation | 21 | RB5/ch2/Pg3.24 – 3.36 | LCD | Understanding | CO3 | PO2/  PSO2 |
|  | 3.4 Types of estimates | 22 | RB5/ch1/Pg3.4 – 3.9 | BB | Understanding | CO3 | PO2/  PSO2 |
|  | 3.5 Estimating Procedure | 23 | RB5/ch1/Pg3.15 – 3.19 | BB | Apply | CO3 | PO2/  PSO2 |
|  | 3.6 Estimation labour cost, material cost | 24,25 | RB5/ch3/Pg3.37 – 3.55 | BB | Apply | CO3 | PO2/  PSO2 |
|  | 3.7 Allocation of overhead charges | 26 | RB5/ch4/Pg3.56 – 3.87 | BB | Apply | CO3 | PO2/  PSO2 |
|  | 3.8 Calculation of depreciation cost | 27 | RB5/ch5/Pg3.88 – 3.102 | BB | Apply | CO3 | PO2/  PSO2 |

**UNIT IV: PRODUCTION COST ESTIMATION**

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| **Sl.**  **No.** | **TOPICS** | **Lecture Hour** | **Books referred/ Chapter** | **Teaching Method/ Aids** | **Instructional Delivery Level** | **CO** | **PO/**  **PSO** |
|  | 4.1 Estimation of different types of jobs | 28,29 | RB5/ch1/Pg4.1 – 4.15 | LCD | Apply | CO4 | PO2/  PSO2 |
|  | 4.2 Estimation of forging shop | 30,31,32 | RB5/ch2/Pg4.15 – 4.32 | BB | Apply | CO4 | PO2/  PSO2 |
|  | 4.3 Estimation of welding shop | 33,34 | RB5/ch3/Pg4.33 – 4.69 | BB | Apply | CO4 | PO2/  PSO2 |
|  | 4.4 Estimation of foundry shop | 35,36 | RB5/ch4/Pg4.70 – 4.95 | BB | Apply | CO4 | PO2/  PSO2 |

**UNIT V: MACHINING TIME CALCULATION**

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| **Sl. No.** | **TOPICS** | **Lecture Hour** | **Books / Chapter** | **Teaching Aids/ Methods** | **Instructional Delivery Level** | **CO** | **PO/**  **PSO** |
|  | 5.1 Estimation of Machining time & its importance | 37 | RB5/ch1/Pg  5.1 – 5.2 | LCD | Apply | CO5 | PO2/  PSO2 |
|  | 5.2 Calculation of machining time for different lathe operations | 38,39,40 | RB5/ch2,4/Pg  5.3 – 5.16, 5.22 – 5.57 | BB | Apply | CO5 | PO2/  PSO2 |
|  | 5.3 Calculation of machining time for Drilling and Boring | 41 | RB5/ch3/Pg  5.17 – 5.21 | BB | Apply | CO5 | PO2/  PSO2 |
|  | 5.4 Machining time calculation for Milling | 42 | RB5/ch6/Pg  5.65 – 5.75 | BB | Apply | CO5 | PO2/  PSO2 |
|  | 5.5 Machining time calculation for Shaping | 43 | RB5/ch5/Pg  5.58 – 5.61 | BB | Apply | CO5 | PO2/  PSO2 |
|  | 5.6 Machining time calculation for Planning | 44 | RB5/ch5/Pg  5.62 – 5.65 | BB | Apply | CO5 | PO2/  PSO2 |
|  | 5.7 Machining time calculation for Grinding | 45 | RB5/ch7/Pg  5.76 – 5.81 | BB | Apply | CO5 | PO2/  PSO2 |

**Activities if any:**

**Different Types of problem given a discuss about the problems.**

**Step 1:** Discuss about different types of problems in all units.

**Step 2:** From the whole unit the different types of questions based upon exam point are given to

all the students.

**Step 3:** The students have to prepare the questions and done the problems.

**Step 4:** The teacher will correct their assignments and discuss about their mistakes.

**Content beyond syllabus**

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| **S. No** | **Topics** | **Lecture hours** | **Books / Chapter** | **Teaching aids** | **Instructional Delivery Level** | **PO / PSO** |
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| 1 | Preparation for Quatation | 46,47 | RB5/ch7/Pg  3.76 – 3.81 | BB | Understanding | PO2/  PSO2 |  |  |

**Signature of the Staff Signature of the HOD**