RAJIV GANDHI PROUDYOGIKI VISHVAVIDYALAYA (DIPLOMA WING)
BHOPAL P05 DIPLOMA IN PRODUCTION ENGINEERING
PART A:- PROCESS OF CURRICULUM DEVELOPMENT

LIST OF IDENTIFIED PROFESSIONAL ROLES

1. To apply knowledge of mathematics, science, and engineering.
2. To design and conduct experiments, as well as to analyze and interpret data.
3. To design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.
4. To function on multidisciplinary teams.
5. To identify, formulate, and solve engineering problems.
6. To understand professional and ethical responsibility.
7. To communicate effectively.
8. To understand the impact of engineering solutions in a global, economic, environmental, and societal context.
9. To engage in lifelong learning.
10. To use the techniques, skills, and modern engineering tools necessary for engineering practice.

LIST OF SELECTED TERMINAL BEHAVIORS

1. To apply knowledge of mathematics, science, and engineering.

   TB-1 To understand various elements of Estimating & Costing.

   TB-2 To understand Process of estimating in various shops of manufacturing

2. To design and conduct experiments, as well as to analyze and interpret data.
   NIL
3. To design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability.

   TB-1 To understand causes & Methods of Depreciation.

   TB-2 To understands various methods of overheads allocation.

   TB-3 To design a Job of each shop of manufacturing to understand way of calculating cost incurred in each shop.

4. To function on multidisciplinary teams. NIL

5. To identify, formulate, and solve engineering problems NIL

6. To understand professional and ethical responsibility. NIL

7. To communicate effectively. NIL

8. To understand the impact of engineering solutions in a global, economic, environmental, and societal context. NIL

9. To engage in lifelong learning.

   TB-1, To undertands all elements of estimation & Costing

   TB-2, To perform estimation of each job from various manufacturing Processes.

   TB-3, To Make the process plan for each job.

10. To use the techniques, skills, and modern engineering tools necessary for engineering practice. NIL

COs FOR SELECTED TERMINAL BEHAVIORS

1. To apply knowledge of mathematics, science, and engineering.
   TB-1,To understand various elements of Estimating & Costing
   CO2: Estimate the cost of a product based on manufacturing methods
   CO3: Estimate the machining time to manufacture a given product

2. To design and conduct experiments, as well as to analyze and interpret data. NIL

3. To design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability. NIL

4. To function on multidisciplinary teams. NIL

5. To identify, formulate, and solve engineering problems. NIL

6. To understand professional and ethical responsibility. NIL

7. To communicate effectively. NIL

8. To understand the impact of engineering solutions in a global, economic, environmental, and societal context.NIL

9. To engage in lifelong learning.
   TB-1, To undertands all elements of estimation & Costing.
   CO1: Predict the parameters to evolve the cost of any product
   TB-2, To perform estimation of each job from various manufacturing Process
   CO2: Estimate the cost of a product based on manufacturing methods
   CO3: Estimate the machining time to manufacture a given product
   TB-3, To Make the process plan for each job
   C05: Determining the Manufacturing Sequence and Prepare the documents for process planning

10. To use the techniques, skills, and modern engineering tools necessary for engineering practice.NIL

CO GROUPING AND COURSE FORMATION

COURSE NAME: - ESTIMATION COSTING AND PROCESS PLANNING(503)

(Total 100 Hrs. Total 100 Marks)

LIST OF COs:-

CO1: Predict the parameters to evolve the cost of any product.(20Hrs, 20 marks)

CO2: Estimate the cost of a product based on manufacturing methods. (20Hrs, 20 marks)

CO3: Estimate the machining time to manufacture a given product. (20Hrs, 20 marks)

C04: Discuss the steps involved in process planning..(20Hrs, 20marks)

C05: Determining the Manufacturing Sequence and Prepare the documents for process planning. (20Hrs, 20 marks)

LOs FORMATION

COURSE NAME: - ESTIMATION COSTING AND PROCESS PLANNING (503)
(Total 100 Hrs. , Total 100 Marks)

List of COs and Los

CO1: Predict the parameters to evolve the cost of any product. **(20hrs, 20 marks)**
LO1: To explain methods of costing and elements of cost estimation. (10 Hrs., 10Marks)
LO2: To explain overhead allocation and calculation of depreciation cost. (10Hrs, 10 Marks)

CO2: Estimate the cost of a product based on manufacturing methods. **(20 Hrs, 20 marks)**
LO1: To explain the different types of jobs and estimation of foundry shop. **(**10Hrs, 10 marks)
LO2: To explain about the forging Shop and welding shop. **(**10Hrs, 10 marks)

CO3: Estimate the machining time to manufacture a given product**. (20Hrs, 20 marks)**
LO1 :To explain the estimation of machining time and calculation for Lathe operation **(**10 Hrs, 10 marks)
LO2 :To explain the calcuation of machining Time for Drilling and Boring.**(10**Hrs, 10 marks)

CO4: Discuss the steps involved in process planning**. (20 Hrs,20 marks)**
LO1: To explain the different methods of process planninga and material evaluation. (10Hrs, 10 marks)
LO2: Steps in process selection-Production equipment and tooling selection. **(10**Hrs, 10 marks)

CO5: Determining the Manufacturing Sequence and Prepare the documents for process planning **(20Hrs, 20 marks)**
LO1: Determining the Manufacturing Sequence.**(**10Hrs, 10 marks)
LO2: Set of documents for process planning and Economics of process planning..**(**10Hrs, 10 marks)

PART B:- CURRICULUM OF PRODUCTION ENGINEERING

RGPV (Diploma Wing) Bhopal			COURSE PLAN			Format -2		Sheet No. ½
Course Name		**ESTIMATION COSTING AND PROCESS PLANNING**			Semester		FIFTH	
Branch	PRODUCTION ENGINEERING		Course Code	503	No. of Cos	05	No. of LOs	10
Total Hrs. of Teaching Learning	100	Total Marks	100	Total no. of Assessments		Types of Assessments		No. of External Assessments	

DESCRIPTION OF OUTCOMES			T-L Hrs.	Max. Marks
CO 1	P055031	**Predict the parameters to evolve the cost of any product**	20	20
Los	PO550311	To explain methods of costing and elements of cost estimation	10	10
	PO550312	To explain overhead allocation and calculation of depreciation cost.	10	10
CO 2	P055032	**Estimate the cost of a product based on manufacturing methods.**	20	20
Los	PO550321	To explain the different types of jobs and estimation of Foundry Shop.	10	10
	PO540322	To explain about the forging Shop and welding shop.	10	10
CO 3	P055033	**Estimate the machining time to manufacture a given product.**	20	20
Los	PO550331	To explain the estimation of machining time and calculation for Lathe operation	10	10
	PO550332	To explain the calcuation of machining Time for Drilling and Boring.	10	10
CO 4	P055034	**Discuss the steps involved in process planning.**	20	20
Los	PO550341	To explain the different methods of process planning and Material evaluation.	10	10
	PO550342	Steps in process selection-Production equipment and tooling selection.	10	10
CO 5	P055035	**Determining the Manufacturing Sequence and Prepare the documents for process planning**	20	20
Los	PO550351	Determining the Manufacturing Sequence.	10	10
	PO550352	Set of documents for process planning - Economics of process planning..	10	10

RGPV (DIPLOMA WING) BHOPAL	OCB CURRICULUM FOR THE COURSE	FORMAT- 3	Sheet No. 1/3

Branch	PRODUCTION ENGINEERING	Semester	FIFTH

Course Code	503	Course Name	**ESTIMATION COSTING AND PROCESS PLANNING**	Teach Hrs	Marks

CourseOutcome 1	**Predict the parameters to evolve the cost of any product**	20	20
Learning Outcome 1	To explain methods of costing and elements of cost estimation	10	10
CONTENT	Importance of costing and estimation –methods of costing-elements of cost estimation –Types of estimates – Estimating procedure- Estimation labor cost.		
Method of Assessment	Paper pen test		
Learning Outcome 2	To explain overhead allocation and calculation of depreciation cost.	10	10
CONTENT	Definition and classification of overheads, methods of overheads allocation - Definition & Concept, causes of depreciation methods of depreciation calculation.		
Method of Assessment	Paper pen test		
CourseOutcome 2	**Estimate the cost of a product based on manufacturing methods.**	20	20
Learning Outcome 1	To explain the different types of jobs and estimation of foundry shop.	10	10
CONTENT	Estimation of Different Types of Jobs, Process, Materials and Man- power - Pattern cost, production time for casting, material cost of casting, moulding cost, batch production time.		
Method of Assessment	Paper pen test		
Learning Outcome 2	To explain about the forging Shop and welding shop.	10	10
CONTENT	Process, Materials and Man power - Forging gross and net weight of forging, forging losses, materials cost, labour cost. Welding Shop: Process, materials and Manpower Gas and Arc. Welding terminology, production operation time, labour cost, materials cost, cost elements.		
Method of Assessment	Paper pen test		
CourseOutcome 3	**Estimate the machining time to manufacture a given product.**		
Learning Outcome 1	To explain the estimation of machining time and calculation for Lathe operation	10	10
CONTENT	Estimation of Machining Time - Importance of Machine Time Calculation- Calculation of Machining Time for Different Lathe Operations.		
Method of Assessment	Paper pen test		
Learning Outcome 2	To explain the calcuation of machining Time for Drilling and Boring.	10	10

CONTENT	Calculation of Machining Time for Drilling and Boring.		
Method of Assessment	Paper pen test		
Course Outcome 4	**Discuss the steps involved in process planning.**	20	20
Learning Outcome 1	To explain the different methods of process planning.	10	10
CONTENT	Process engineering, its scope and relation with product engineering and manufacturing, production system, types and characteristics. Methods of process planning.		
Method of Assessment	Paper pen test		
Learning Outcome 2	Steps in process selection and production equipment and tooling selection.	10	10
CONTENT	Steps in process selection-Production equipment and tooling selection		
Method of Assessment	Paper pen test		
Course Outcome 5	**Determining the Manufacturing Sequence and Prepare the documents for process planning**	20	20
Learning Outcome 1	**Determining the Manufacturing Sequence.**	10	10
CONTENT	Operation, classifications and the manufacturing sequence, purpose of major process sequence		
Method of Assessment	Paper pen test		
Learning Outcome 2	**To explain the set of documents for process planning and economics of process planning.**	10	10
CONTENT	Set of documents for process planning and economics of process planning.		
Method of Assessment	Paper pen test		

CO1:LO1

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 01	LO Code 01	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Predict the parameters to evolve the cost of any product**
LO Description	To explain methods of costing and elements of cost estimation

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Importance of costing and estimation –methods of costing-elements of cost estimation –Types of estimates – Estimating procedure- Estimation labor cost.	Traditional Lecture method	Teacher will explain the contents. Teacher will conduct Progressive test/ give Assignment.	10		Handout, Book.	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test/	For the given learning content, Students write answer of questions	10	Progressive test/ End semester exam/	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO1:LO2

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 01	LO Code 02	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Predict the parameters to evolve the cost of any product**
LO Description	To explain overhead allocation and calculation of depreciation cost.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Definition and classification of overheads, methods of overheads allocation - Definition & Concept, causes of depreciation methods of depreciation calculation.	Traditional Lecture method	Teacher will explain the content.. Teacher willconduct Progressive test/quiz	10		Handout, Book,	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test/	For the given learning content, Students write answer of questions	10	Progressive test/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO2:LO1

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 02	LO Code 01	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Estimate the cost of a product based on manufacturing methods.**
LO Description	To explain the different types of jobs and estimation of foundry shop.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Estimation of Different Types of Jobs, Process, Materials and Man- power - Pattern cost, production time for casting, material cost of casting, moulding cost, batch production time.	Traditional Lecture method + assignment	Teacher will explain the contents and providehandout to students. Teacher will conduct Progressive test/assignment.	10		Handout, Book	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions.	10	Progressive Test paper/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO2:LO2

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 02	LO Code 02	Format No. 4

COURSE NAME	STEEL FABRICATION
CO Description	**Estimate the cost of a product based on manufacturing methods.**
LO Description	To explain about the forging Shop and welding shop.

SCHEME OF STUDY

S. No.	Learning Content	Teaching–Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Process, Materials and Man power - Forging gross and net weight of forging, forging losses, materials cost, labour cost. Welding Shop: Process, materials and Manpower Gas and Arc. Welding terminology, production operation time, labour cost, materials cost, cost elements.	Traditional Lecture method + Practical (Welding Shop)	Teacher will explain the learing outcome.	10		Handout, Book.	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions	10	Practical file/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO3:LO1

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 03	LO Code 01	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Estimate the machining time to manufacture a given product.**
LO Description	To explain the estimation of machining time and calculation for Lathe operation

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Estimation of Machining Time - Importance of Machine Time Calculation- Calculation of Machining Time for Different Lathe Operations.	Traditional Lecture method	Teacher will explain the contents to students.	10	-	Handout, Book	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions	10	Practical file/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO3:LO2

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 03	LO Code 02	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Estimate the machining time to manufacture a given product.**
LO Description	To explain the calcuation of machining Time for Drilling and Boring.

SCHEME OF STUDY

S. No.	Learning Content	Teaching–Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Calculation of Machining Time for Drilling and Boring.	Traditional Lecture method + Assignment + Quiz	Teacher will explain thecontentsto students.	10	-	Handout, Book	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions,	10	Assigment/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO4:LO1

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 04	LO Code 01	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Discuss the steps involved in process planning.**
LO Description	To explain the different methods of process planning

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Process engineering, its scope and relation with product engineering and manufacturing, production system, types and characteristics. Methods of process planning.	Traditional Lecture method	Teacher will explain the contents. Teacher will conduct Progressive test/ give Assignment	10		Handout, Book	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions.	10	Progressive Test paper/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO4:LO2

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 04	LO Code 02	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Discuss the steps involved in process planning.**
LO Description	Steps in process selection and production equipment and tooling selection.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Steps in process selection and production equipment and tooling selection.	Traditional Lecture method	Teacher will explain the contents. Teacher will conduct Progressive test	10		Handout, Book	

SCHEME OF ASSESSMENT

S.No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions.	10	Progressive Test paper/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

CO5:LO1

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 05	LO Code 01	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Determining the Manufacturing Sequence and Prepare the documents for process planning**
LO Description	Determining the Manufacturing Sequence.

SCHEME OF STUDY

S. No.	Learning Content	Teaching-Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Operation, classifications and the manufacturing sequence, purpose of major process sequence	Traditional Lecture method	Teacher will explain thecontentsto students	10	-	Handout, Book	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions.	10	Progressive Test paper/ End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF .ANY)

CO5:LO2

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 503	CO Code 05	LO Code 02	Format No. 4

COURSE NAME	**ESTIMATION COSTING AND PROCESS PLANNING**
CO Description	**Determining the Manufacturing Sequence and Prepare the documents for process planning.**
LO Description	To explain the set of documents for process planning and economics of process planning.

SCHEME OF STUDY

S. No.	Learning Content	Teaching – Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Set of documents for process planning and economics of process planning.	Traditional Lecture method	Teacher will explain the contents to students	10	-	Handout, Book,	

SCHEME OF ASSESSMENT

S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Paper pen test	For the given learning content, Students write answer of questions.	10	Progressive Test paper/End semester exam	Internal /External

ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)

Reference Books:

1. Cost Control by G. R. Sharma. (National Productivity Council)
2. Engineer' s Giude to Costing (Institute of cost works Accounts)
3. Mechanical Estimating And Costing by T.R. Banga and & S. C. Sharma (KhannaPub.)
4. Mechanical Estimation and Costing by R.L. Shrimali& P.C. Jain (Jain Pub. House)
5. Mechanical Estimation And Costing (Resource Persons of Hill Publishing Co.T.T.T.I, Madars Tata McGraw Hill)
6. Machine Shop Estimation by Nordoff.
7. Learning Packing In Costing And Estimating (T.T.T.I. Bhopal Publication)
8. Process Engineering For Manufacturing By Eary and Johnson (Prentice Hall)
9. Fundamentals of Process Engineering by Benjamin W. Nicbel, Alon & Ropy
10. Produce Design And Process Engineering (McGraw Hill)
11. YantrikiAbhiyantrikiAbhikalpan (Hindi) by K. D. Saxena. (Deepak Prakashan,Morar, Gwalior)