

**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 life long 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 principle and application Computer Aided Technology. (504)
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  
  
NIL
10. To use the techniques, skills, and modern engineering tools necessary for engineering practice.  
NIL

## **FRAMED COs FOR SELECTED TERMINAL BEHAVIORS**

1. To apply knowledge of mathematics, science, and engineering.  
TB-1 To understand principle and application of Computer Aided Designing. (504)  
C03: Describe the importance of computer aided Engineering. (504)
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  
NIL
10. To use the techniques, skills, and modern engineering tools necessary for engineering practice.  
NIL

## **CO GROUPING AND COURSE FORMATION**

**COURSE NAME: - COMPUTER AIDED TECHNOLOGIES(504)**

(Total 100 Hrs., Total 100 Marks)

### **LIST OF COs: -**

CO1: Understand Computer Aided Drafting(20 Hrs., 20 marks)

CO2: Understand Computer Aided Design. (20 Hrs., 20 marks)

CO3: Understand Computer Aided Engineering (20 Hrs,20 marks)

CO4: Understand Group Technology & Computer Aided Process Planning. (20 Hrs., 20 marks)

CO5: Understand use of computers for managing Quality & Resource Management(20 Hrs., 20 marks)

## **LOs FORMATION**

**COURSE NAME: -COMPUTER AIDED TECHNOLOGIES (504)**

**(Total 100 Hrs., Total 100 Marks)**

List of COs and Los

CO1: Understand Computer Aided Drafting (20 Hrs, 20 marks)

LO1: To know the concept of Computer Aided Drafting hardware(10 Hrs., 10 Marks)

LO2: To know the concept of Computer Aided Drafting software. (10 Hrs., 10 Marks)

CO2: Understand Computer Aided Design. (20 Hrs, 20 marks)

LO1: To know concepts of Design. (10 Hrs., 10 Marks)

LO2: To familiarize with Designing Software Tools(10 Hrs., 10 Marks)

CO3: Understand Computer Aided Engineering (20 Hrs, 20 marks)

LO1: To know basics of CAE & CAA(10 Hrs., 10 Marks)

LO2: To know about Different Software Tools for CAE (10 Hrs., 10 Marks)

CO4: Understand Group Technology & Computer Aided Process Planning (20 Hrs, 20 marks)

LO1: Introduction to Group Technology (10 Hrs., 10 Marks)

LO2: Understand Computer Aided Process Planning (10 Hrs., 10 Marks)

CO5: Understand use of computers for managing Quality & Resource Management(20 Hrs, 20 marks)

LO1: To Know about quality management tools. (10 Hrs., 10 Marks)

LO2:To Know about Resource Management tools. (10 Hrs., 10 Marks)

## PART B: - CURRICULUM OF PRODUCTION ENGINEERING

RGPV (Diploma Wing) Bhopal			COURSE PLAN			<b>Format -2</b>		Sheet No.1/1		
Course Name		<b>COMPUTER AIDED TECHNOLOGIES</b>				Semester		FIFTH		
Branch	PRODUCTION ENGINEERING		Course Code	<b>504</b>	No. of CO's	05	No. of LO's	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 01	P055041	<b>Understand Computer Aided Drafting</b>					20	20		
Los	P0550411	To know the concept of <b>Computer Aided Drafting hardware</b>					10	10		
	P0550412	To know the concept of <b>Computer Aided Drafting software</b>					10	10		
CO 02	P055042	<b>Understand Computer Aided Design.</b>					20	20		
Los	P0550421	To know concepts of Design					10	10		
	P0550422	To familiarize with Designing Software Tools					10	10		
CO 03	P055043	<b>Understand Computer Aided Engineering</b>					20	20		
Los	P0550431	To know basics of CAE & CAA					10	10		
	P0550432	To know about Different Software Tools for CAE					10	10		
CO 04	P055044	Understand Group Technology & Computer Aided Process Planning					20	20		
Los	P0550441	Introduction to Group Technology					10	10		
	P0550442	Understand Computer Aided Process Planning					10	10		
CO 05	P055045	<b>Understand use of computers for managing Quality &amp; Resource Management</b>					20	20		
Los	P0550451	To Know about quality management tools.					10	10		
	P0550452	To Know about Resource Management tools					10	10		

RGPV (DIPLOMA WING) BHOPAL		OCB CURRICULUM FOR THE COURSE		FORMAT- 3	Sheet No. 1/2
Branch	PRODUCTION ENGINEERING		Semester	FIFTH	
Course Code	504	Course Name	COMPUTER AIDED TECHNOLOGIES		
<b>Course Outcome 1</b>	<b>Understand Computer Aided Drafting</b>			Teach Hrs	Marks
Learning Outcome 1	To know the concept of <b>Computer Aided Drafting hardware</b>			10	10
CONTENT	Introduction to application of computer graphics for visualizing concepts, workstation configuration for CAD application. Basic concepts of Computer Aided drafting software's, Introduction of 3D Modeling and animation, List of popular Computer Aided drafting tools.				
Method of Assessment	Paper pen test/ Laboratory assessment				
Learning Outcome 2	To know the concept of <b>Computer Aided Drafting software</b>			10	10
CONTENT	Basic concepts of Computer Aided drafting software, Introduction of 3D Modeling and animation, List of popular Computer Aided drafting tools. Basic commands of AutoCAD software – Draw, Modify, Dimensions etc.				
Method of Assessment	Paper pen test/ Laboratory assessment				
<b>Course Outcome 2</b>	<b>Understand Computer Aided Design.</b>			Teach Hrs	Marks
Learning Outcome 1	To know concepts of Design			10	10
CONTENT	Steps of Design, Design outcomes,				
Method of Assessment	Paper pen test				
Learning Outcome 2	To familiarize with Designing Software Tools			10	10
CONTENT	Difference between Drafting and Design software, List of popular CAD tools, Parametric modeling, constraints, and Design standards. Advantages of Manual Designing, Disadvantages of Manual Designing, Advantages of CAD, Disadvantages of CAD.				
Method of Assessment	Paper pen test/Laboratory assessment				
<b>Course Outcome 3</b>	<b>Understand Computer Aided Engineering</b>			Teach Hrs	Marks
Learning Outcome 1	To know basics of CAE & CAA			10	10
CONTENT	Concept, Application, Scope, Role of Computer Aided Analysis (CAA) in CAE				
Method of Assessment	Paper pen test/Laboratory assessment				

RGPV (DIPLOMA WING) BHOPAL		OCB CURRICULUM FOR THE COURSE		FORMAT- 3	Sheet No. 2/2
Branch	PRODUCTION ENGINEERING		Semester	FIFTH	
Course Code	504	Course Name	COMPUTER AIDED TECHNOLOGIES		
Learning Outcome 2	To know about Different Software Tools for CAE			10	10
CONTENT	Different Software Tools for CAE available in market. Different Tools popular in different industry sectors.				
Method of Assessment	Paper pen test/Laboratory assessment				
Course Outcome 4	Understand Group Technology & Computer Aided Process Planning			Teach Hrs	Marks
Learning Outcome 1	Introduction to Group Technology			10	10
CONTENT	Introduction, part families, Design& Mfg. attributes, Part classification & coding, Coding system structure e.g. Hierarchical, chain type & Hybrid structure system Benefits of group technology. Coding system e.g. Opitz system, MICLASS system CODE system, Types of GT M/c cells,				
Method of Assessment	Paper pen test/				
Learning Outcome 2	Understand Computer Aided Process Planning			10	10
CONTENT	Introduction to process planning, Route sheet, Need of CAPP, Types of CAPP System e.g.: Retrieval CAPP system & Generative CAPP system, Benefits of CAPP Systems				
Method of Assessment	Paper pen test/				
Course Outcome 5	Understand use of computers for managing Quality & Resource Management			Teach Hrs	Marks
Learning Outcome 1	To Know about quality management tools.			10	10
CONTENT	<b>Concept of CAI, CAQA &amp; CAQC</b> , Concept, Scope, Application, Tools used.				
Method of Assessment	Paper pen test				
Learning Outcome 2	To Know about Resource Management tools			10	10
CONTENT	<b>Concept of MRP, MRP-II, ERP</b> , History, Evaluation, Concept, Scope, Application, Tools used.				
Method of Assessment	Paper pen test				

## CO1:LO1

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code P05	Course Code 504	CO Code 01	LO Code 01	FormatNo .4
COURSE NAME		COMPUTER AIDED TECHNOLOGIES						
CO Description		Understand Computer Aided Drafting						
LO Description		To know the concept of Computer Aided Drafting hardware						
SCHEME OF STUDY								
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks	
1	Introduction to application of computer graphics for visualizing concepts, workstation configuration for CAD application. Basic concepts of Computer Aided drafting software's, Introduction of 3D Modeling and animation, List of popular Computer Aided drafting tools..	Traditional Lecture method	Teacher will explain the contents. Teacher will conduct Progressive test/ give Assignment.	10	-	Book		
SCHEME OFASSESSMENT								
S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal			
1	Paper pen test/ Practical assessment	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)								
List of the Practical <ul style="list-style-type: none"> <li>• Work station Configuration</li> <li>• Various Input/ Out Put Devices</li> </ul>								

CO1:LO2

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNINGOUTCO ME		Branch Code P05	Course Code 504	CO Code 01	LO Code 02	Format No.4
COURSE NAME		<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description		<b>Understand Computer Aided Drafting</b>						
LO Description		To know the concept of <b>Computer Aided Drafting software</b>						
<b>SCHEME OF STUDY</b>								
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks	
1	Basic concepts of Computer Aided drafting software, Introduction of 3D Modeling and animation, List of popular Computer Aided drafting tools. Basic commands of AutoCAD software – Draw, Modify, Dimensions etc.	Traditional Lecture method + Practical	Teacher will explain the content. Teacher will conduct Progressive test/quiz so that students explain 3D modelling	08	02	Handout, Book, Computer Lab		
<b>SCHEME OF ASSESSMENT</b>								
S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal			
1	Paper pen test/ <b>Practical assessment</b>	For the given learning content, Students write answer of questions and face Practical Viva	10	Progressive test/ End semester exam/ Practical file	Internal /External			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>								
<b>List of Practical</b>								
<ul style="list-style-type: none"> <li>• Auto CAD Command</li> <li>• 3 D Modeling Software</li> <li>• Various 3 D Modeling Software</li> </ul>								

## CO2: LO1

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 504	CO Code 02	LO Code 01	FormatNo .4	
COURSE NAME	<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description	<b>Understand Computer Aided Design.</b>						
LO Description	To know concepts of Design.						
<b>SCHEME OF STUDY</b>							
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut Hrs.	LRs Requi red	Remarks
1	Steps of Design, Design outcomes,	Traditional Lecture method + Assignment	Teacher will explain the content to students. Teacher will conduct Progressive test/give assignment so that students will know about design process	10	-	Book	
<b>SCHEME OF ASSESSMENT</b>							
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		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>							

CO2: LO2

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 504	CO Code 02	LO Code 02	Format No.4	
COURSE NAME	<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description	<b>Understand Computer Aided Design.</b>						
LO Description	To familiarize with Designing Software Tools						
<b>SCHEME OF STUDY</b>							
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut Hrs.	LRs Required	Remarks
1	Difference between Drafting and Design software, List of popular CAD tools, Parametric modeling, constraints, and Design standards. Advantages of Manual Designing, Disadvantages of Manual Designing, Advantages of CAD, Disadvantages of CAD.	Traditional Lecture method + Assignment	Teacher will explain the content to students. Teacher will conduct Progressive test/give assignment so that students will know about Designing Software Tools	10	-	Book	
<b>SCHEME OF ASSESSMENT</b>							
S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal		
1	Paper pen test/ Practical assessment	For the given learning content, Students write answer of questions.	10	Progressive Test paper/ End semester exam	Internal / External		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>							
List of Practical <ul style="list-style-type: none"> <li>• Popular CAD Tools</li> <li>• Automated CAD Design</li> </ul>							

CO3:LO1

RGPV (Diploma Wing) Bhopal	Scheme for Learning Outcome	Branch Code P05	Course Code 504	CO Code 03	LO Code 01	Format No. 0.4	
COURSE NAME	<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description	<b>Understand Computer Aided Engineering</b>						
LO Description	To know basics of CAE & CAA						
<b>SCHEME OF STUDY</b>							
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut Hrs.	LRs Required	Remarks
1	Concept, Application, Scope, Role of Computer Aided Analysis (CAA) in CAE	Traditional Lecture method + assignment	Teacher will explain the contents and provide handout to students. Teacher will conduct Progressive test/assignment so that students know about CAE & CAA	10	-	Handout, Book	
<b>SCHEME OF ASSESSMENT</b>							
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		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>							

CO3:LO2

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 504	CO Code 03	LO Code 02	Format No.4
COURSE NAME	<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description	<b>Understand Computer Aided Engineering</b>						
LO Description	To know about Different Software Tools for CAE						
<b>SCHEME OF STUDY</b>							
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut Hrs.	LRs Required	Remarks
1	Different Software Tools for CAE available in market. Different Tools popular in different industry sectors.	Traditional Lecture method + Assignment	Teacher will explain the contents to students. Teacher will conduct Progressive test/quiz so that students know about Different Software Tools for CAE	10	-	Handout, Book	
<b>SCHEME OF ASSESSMENT</b>							
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		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>							

CO4:LO1

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code P05	Course Code 504	CO Code 04	LO Code 01	Format No.4
COURSE NAME		<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description		Understand Group Technology & Computer Aided Process Planning						
LO Description		Introduction to Group Technology						
<b>SCHEME OF STUDY</b>								
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Tea ch Hrs	Pract./ Tut Hrs.	LRs Required	Remarks	
1	Introduction, part families, Design& Mfg. attributes, Part classification & coding, Coding system structure e.g. Hierarchical, chain type & Hybrid structure system Benefits of group technology. Coding system e.g. Opitz system, MICLASS system CODE system, Types of GT M/c cells,	Traditional Lecture method	Teacher will explain the contents to students. The students will learn about Group Technology	10	-	Book		
<b>SCHEME OF ASSESSMENT</b>								
S. No	Method of Assessment	Description of Assessment	Maximum Marks	Resour ces Requir ed	External / Internal			
1	Paper pen test/	For the given learning content, Students write answer of questions	10	Progress ive Test paper/ End semester exam	Internal /External			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>								

CO4:LO2

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code P05	Course Code 504	CO Code 04	LO Code 02	Format No.4
COURSE NAME		<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description		Understand Group Technology & Computer Aided Process Planning						
LO Description		Understand Computer Aided Process Planning						
<b>SCHEME OF STUDY</b>								
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut Hrs.	LRs Required	Remarks	
1	Introduction to process planning, Route sheet, Need of CAPP, Types of CAPP System e.g.: Retrieval CAPP system & Generative CAPP system, Benefits of CAPP Systems.	Traditional Lecture method	Teacher will explain the contents to students. The students will learn about Computer Aided Process Planning	10	-	Handout, Book		
<b>SCHEME OF ASSESSMENT</b>								
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		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>								

CO5:LO1

RGPV (Diploma Wing) Bhopal	SCHEME FOR LEARNING OUTCOME	Branch Code P05	Course Code 504	CO Code 05	LO Code 01	Format No.4	
COURSE NAME	<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description	<b>Understand use of computers for managing Quality &amp; Resource Management</b>						
LO Description	To Know about quality management tools.						
<b>SCHEME OF STUDY</b>							
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut Hrs.	LRs Required	Remarks
1	<b>Concept of CAI, CAQA &amp; CAQC</b> , Concept, Scope, Application, Tools used.	Traditional Lecture method + Assignment	Teacher will explain the contents to students. Students will learn about quality management tools.	10	-	Book	
<b>SCHEME OF ASSESSMENT</b>							
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	Assignment / End semester exam	Internal /External		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>							

CO5:LO2

RGPV (Diploma Wing) Bhopal		SCHEME FOR LEARNING OUTCOME		Branch Code P05	Course Code 504	CO Code 05	LO Code 02	Format No. 0.4
COURSE NAME		<b>COMPUTER AIDED TECHNOLOGIES</b>						
CO Description		<b>Understand use of computers for managing Quality &amp; Resource Management</b>						
LO Description		To Know about Resource Management tools.						
<b>SCHEME OF STUDY</b>								
S. No.	Learning Content	Teaching– Learning Method	Description of T-L Process	Teach Hrs.	Pract./ Tut Hrs.	LRs Required	Remarks	
1	<b>Concept of MRP, MRP-II, ERP</b> , History, Evaluation, Concept, Scope, Application, Tools used.	Traditional Lecture method	Teacher will explain the contents to students. Students will learn about Resource Management tools.	10	--	Book		
<b>SCHEME OF ASSESSMENT</b>								
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			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>								

## Reference Books:

1. <http://en.wikipedia.org/wiki/CAX>
2. GeroJohns, Artificial Intelligence in design
3. Lamit louis Garg, “Basic Pro engineer in 20 lessons – Thomsonle
4. Shah Jami J., Parametric & Feature Based CAD/CAM – Wiley International
5. Strockcheryl R, “ Exercise workbook for beginning AutoCAD, Industrial Publication
6. Bannach Danid T, “ Autodesk inventor from the top” – Autodesk Publication