

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>		<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
				<i>M</i>	<i>0</i>	<i>2</i>				<i>1</i>	<i>1</i>	
<b>COURSE NAME</b>	<b>Tool Engineering</b>											
<b>CO Description</b>	Explain concepts of metal cutting.											
<b>LO Description</b>	Explain metal cutting process, cutting tool geometry and tool signature.											
<b>SCHEME OF STUDY</b>												
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>			
1	Mechanics of chip formation, single point cutting tool- Cutting tool geometry, nomenclature and tool signature, Types of metal cutting process-orthogonal, oblique and form cutting.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	05	02	Handouts, chalk board, PPT, text book, charts, video film.						
<b>SCHEME OF ASSESSMENT</b>												
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>				
1	Paper pen test	Student will be asked to explain metal cutting/ cutting tool geometry/ tool signature.		10	Test paper + Rating scale			Internal				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>												
Part of progressive test -I												

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				<i>1</i>	<i>2</i>	
<b>COURSE NAME</b>		<b>Tool Engineering</b>											
<b>CO Description</b>		Explain concepts of metal cutting.											
<b>LO Description</b>		Calculate cutting parameters of single point cutting tool.											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Cutting force- merchant circle, types of chips, chip thickness ratio, shear angle, numerical problems.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	08	NIL	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>			<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>				
1	Theory Exam	Student will be asked to calculate cutting parameters for a given condition.			10	Question paper + rating scale			External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
End semester theory exam													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				<i>1</i>	<i>3</i>	
<b>COURSE NAME</b>	<b>Tool Engineering</b>												
<b>CO Description</b>	Explain concepts of metal cutting.												
<b>LO Description</b>	Calculate tool wear, tool life of a single point cutting tool.												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Tool wear- Types of wear, Tool life -Taylor’s tool life equation. Machinability – definition, factors affecting machinability, machinability index, Economics of metal cutting.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	07	NIL	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>			<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>				
1	Theory Exam	Student will be asked to calculate tool wear, tool life of a tool for given cutting operation.			10	Question paper + rating scale			External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
End semester theory exam													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				<i>2</i>	<i>1</i>	
<b>COURSE NAME</b>		<b>Tool Engineering</b>											
<b>CO Description</b>		Select tool materials, holding devices for cutting applications.											
<b>LO Description</b>		Select appropriate cutting tool material for cutting applications.											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Cutting tool materials- types, compositions, properties and applications. Carbide inserts- types, ISO designation and applications. Other inserts like CBN and PCBN, types of ceramic coatings. Cutting fluids – types, characteristics and applications.	Lab demonstration, hands on practice, lab assignments, quiz, assignment.	Teacher will explain and demonstrate the learning content. The students will learn through the practice.	05	02	Handouts, chalk board, PPT, text book, charts, video film, lab manual.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Laboratory test by observation	Student will be asked to select appropriate tool materials for a given cutting applications.		10	Observation schedule/check-list /rating scales /rubrics/models				Internal				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Part of Lab Work													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				2	2	
<b>COURSE NAME</b>		<b>Tool Engineering</b>											
<b>CO Description</b>		Select tool materials, holding devices for cutting applications.											
<b>LO Description</b>		Select a holder, sharpening method for a tool.											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Tool holders for turning, milling and CNC machines, Tool selection for CNC machines. ISO designation of tool holders, Tool sharpening method for single point cutting tool.	Lab demonstration, hands on practice, lab assignments, quiz, assignment.	Teacher will explain and demonstrate the learning content. The students will learn through the practice.	04	04	Handouts, chalk board, PPT, text book, charts, video film, lab manual.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Laboratory test by observation	Student will be asked to select a) tool holder for a given machining operation b) tool sharpening method for a given tool.		15	Observation schedule/check-list /rating scales /rubrics/models				External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Part of end sem practical exam													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				<i>3</i>	<i>1</i>	
<b>COURSE NAME</b>	<b>Tool Engineering</b>												
<b>CO Description</b>	Describe tool geometry of multi point cutting tool.												
<b>LO Description</b>	Explain tool geometry of drill, tap, reamer.												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Drilling Twist drill nomenclature, reamers, drill bit-parallel, taper shank Cutting parameters, deep hole drilling, tapping, thread die.	Interactive classroom teaching, demonstration, quiz, assignments, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	05	02	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Paper pen test	Student will be asked to explain tool geometry of a given drill/tap/reamer.		10	Test paper + Rating scale				Internal				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Part of progressive test- II													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>		<b>Course Code</b>		<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>			<i>3</i>	
<b>COURSE NAME</b>	<b>Tool Engineering</b>										
<b>CO Description</b>	Describe tool geometry of multi point cutting tool.										
<b>LO Description</b>	Explain tool geometry of milling cutters.										
<b>SCHEME OF STUDY</b>											
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>		
1	Milling: Milling Cutters, cutting parameters (specification and tool materials, angles) milling operations- plain milling, side milling, face milling, form milling, gang milling, end milling, milling indexing.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	05	03	Handouts, chalk board, PPT, text book, charts, video film.					
<b>SCHEME OF ASSESSMENT</b>											
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>			
1	Theory Exam	Student will be asked to explain a given milling cutters.		10	Question paper + rating scale			External			
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>											
End semester theory exam											

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				<i>3</i>	<i>3</i>	
<b>COURSE NAME</b>		<b>Tool Engineering</b>											
<b>CO Description</b>		Describe tool geometry of multi point cutting tool.											
<b>LO Description</b>		Explain grinding wheel signature, super finishing processes.											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Grinding: Grinding wheel composition, shapes-straight, cylinder, tapered two sides, recessed one side, straight cup, dish. designation and selection criteria for different operations, application on the basis of abrasive materials and wheel type Super finishing processes Definition, types - Honing, lapping, burnishing, buffing and polishing.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	05	03	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Theory Exam	Student will be asked to explain a) grinding wheel signature b) given super finishing processes.		10	Question paper + rating scale				External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
End semester theory exam													

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					<i>M</i>	<i>0</i>	<i>2</i>				<i>4</i>	<i>1</i>	
<b>COURSE NAME</b>	<b>Tool Engineering</b>												
<b>CO Description</b>	Select a suitable die for a given application.												
<b>LO Description</b>	Explain construction, working, application of progressive die.												
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Concept of press tool- types, working, components and their functions. Die clearance- concept, definition, reasons, effects and applications Scrap strip layout- concept, importance and method to prepare. Types, working and applications of stock stop, pilots, strippers and knock outs. Progressive cutting die- scrap strip layout, dimension of punches, punches arrangement, die block and die shoe, stripper plate.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	05	02	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>			<b>External / Internal</b>					
1	Assignment	Student will be asked to explain construction/ working, application of a given progressive die.		10	Question paper + rating scale			Internal					
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Part of term work													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>		<b>Course Code</b>		<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>			<i>4</i>	
<b>COURSE NAME</b>	<b>Tool Engineering</b>										
<b>CO Description</b>	Select a suitable die for a given application.										
<b>LO Description</b>	Explain construction, working, application of bending die, drawing die, forging die.										
<b>SCHEME OF STUDY</b>											
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching – Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>		
1	Bending dies- types, parts, functions, working and applications of bending die. Bend allowance and spring back. Drawing dies- types and method to determine blank size for drawing operation, types, sketch, working and applications of drawing dies (embossing, curling, bulging, coining, swaging and hole flanging). Forging dies- terminology, types, sketch, working and application.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	06	02	Handouts, chalk board, PPT, text book, charts, video film.					
<b>SCHEME OF ASSESSMENT</b>											
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>		
1	Theory Exam	Student will be asked to explain construction/working, application of bending die/drawing die/forging die		10	Question paper + rating scale				External		
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>											
End semester theory exam											

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				<b>4</b>	<b>3</b>	
<b>COURSE NAME</b>		<b>Tool Engineering</b>											
<b>CO Description</b>		Select a suitable die for a given application.											
<b>LO Description</b>		Select a suitable die for a given application.											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Application and selection criteria of progressive die, bending die, drawing die, forging die.	Lab demonstration, hands on practice, lab assignments, quiz, assignment.	Teacher will explain and demonstrate the learning content. The students will learn through the practice.	05	02	Handouts, chalk board, PPT, text book, charts, video film, lab manual.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Laboratory test by observation	Student will be asked to select a suitable die for a given application.		10	Observation schedule/check-list /rating scales /rubrics/models				Internal				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
Part of Lab work													

<b>RGPV (Diploma Wing ) Bhopal</b>		<b>SCHEME FOR LEARNING OUTCOME</b>			<b>Branch Code</b>			<b>Course Code</b>			<b>CO Code</b>	<b>LO Code</b>	Format No. 4
					<i>M</i>	<i>0</i>	<i>2</i>				<i>5</i>	<i>1</i>	
<b>COURSE NAME</b>		<b>Tool Engineering</b>											
<b>CO Description</b>		Design jig, fixture.											
<b>LO Description</b>		Describe construction, working and applications of jigs, fixtures.											
<b>SCHEME OF STUDY</b>													
<b>S. No.</b>	<b>Learning Content</b>	<b>Teaching –Learning Method</b>	<b>Description of T-L Process</b>	<b>Teach Hrs.</b>	<b>Pract. /Tut Hrs.</b>	<b>LRs Required</b>			<b>Remarks</b>				
1	Concept, definition of jigs and fixtures, difference between jigs and fixtures. jigs- types, constructions, working and applications fixtures- types, constructions, working and applications.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	06	02	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
<b>S. No.</b>	<b>Method of Assessment</b>	<b>Description of Assessment</b>		<b>Maximum Marks</b>	<b>Resources Required</b>				<b>External / Internal</b>				
1	Theory exam	Student will be asked to describe construction, working and applications of a given jig / fixture.		10	Question paper + rating scale				External				
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
End semester theory exam													

RGPV (Diploma Wing ) Bhopal		SCHEME FOR LEARNING OUTCOME			Branch Code			Course Code			CO Code	LO Code	Format No. 4
					M	0	2				5	2	
<b>COURSE NAME</b>		Tool Engineering											
<b>CO Description</b>		Design jig, fixture.											
<b>LO Description</b>		Describe construction, working, application of locators, clamping devices.											
<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, definitions of locators and clamping devices. Use of locating and clamping principle (3-2-1 principle) Degree of freedom- concept and importance. Locator- types, constructions, working and applications. Clamping devices- types, constructions, working and applications.	Interactive classroom lecture method, handout, video display, tutorial	Student will learn the processes through the discussion with the teacher on content provided by teacher and random quiz taken by them.	05	02	Handouts, chalk board, PPT, text book, charts, video film.							
<b>SCHEME OF ASSESSMENT</b>													
S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required			External / Internal						
1	Theory exam	Student will be asked to describe construction, working, application of a given locators/ clamping devices.	10	Question paper + rating scale			External						
<b>ADDITIONAL INSTRUCTIONS FOR THE HOD/ FACULTY (IF ANY)</b>													
End semester theory exam													

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		<i>M</i>	<i>0</i>	<i>2</i>				5	3	

<b>COURSE NAME</b>	<b>Tool Engineering</b>
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<b>CO Description</b>	Design jig, fixture.
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<b>LO Description</b>	Design a suitable jig, fixture for a component.
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**SCHEME OF STUDY**

S. No.	Learning Content	Teaching –Learning Method	Description of T-L Process	Teach Hrs.	Pract. /Tut Hrs.	LRs Required	Remarks
1	Design considerations and procedure for jigs and fixtures. jig and fixture materials full proofing and ejecting techniques.	Lab demonstration, hands on practice, lab assignments, quiz, assignment.	Teacher will explain and demonstrate the learning content. The students will learn through the practice.	04	04	Handouts, chalk board, PPT, text book, charts, video film, lab manual.	

**SCHEME OF ASSESSMENT**

S. No.	Method of Assessment	Description of Assessment	Maximum Marks	Resources Required	External / Internal
1	Laboratory test by observation	Student will be asked to design a suitable jig/fixture for a given component.	15	Observation schedule/check-list /rating scales /rubrics/models	External

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

Part of end practical exam

**List of practical:**

Sr No	Practical Outcome
1	Demonstration tool geometry of single point cutting tool.
2	Draw designation of carbide tools.
3	Practice on selection of appropriate cutting tool material for a given application using data book and manufacturer's catalog.
4	Use different tool holders and their use with specific applications.
5	Re-sharpen any one single point cutting tool with given specification.
6	Demonstrate tool geometry of drill, tap, reamer.
7	Demonstration of tool geometry of milling cutters for various milling operations.
8	Demonstration of grinding wheel signature.
9	Demonstrate different press and its parts.
10	Demonstration of bending, drawing and forging dies.
11	Practice on selection of suitable die for given application.
12	Use of locators and clamping devices in workshop.
13	Design a suitable jig and fixture for a given component.

**Text Books:**

Sr No	Name of Authors	Titles of the Book	Name of the Publisher
1	Donaldson Anglin	Tool Design	Tata Mc Graw Hill
2	P. C. Sharma	A Text Book OF Production Engineering	S Chand & Co.
3	H. M. T	Production Technology	Tata Mc Graw Hill
4	R. K. Jain	Production Technology	Khanna Publishers
5	A.S.T.M.E	Fundamental of tool design.	Prentice-Hall of India.
6	M.H.A. Kempster	Introduction to Jig and Tool Design	Viva ublication
7	P. H. Joshi	Jigs and Fixtures	Tata Mc Graw Hill
8	P. H. Joshi	Press Tools	Tata Mc Graw Hill
9	American Society of Tool and Manufacturing Engineers	Tool engineer's handbook	Mc Graw Hill

RGPV (DIPLOMA WING) BHOPAL		OBE CURRICULUM FOR THE COURSE		FORMAT-3	Sheet No.
Branch	Mechanical Engineering			Semester	VI
Course Code		Course Name	Tool Engineering		
<b>Course Outcome 1</b>	<b>Explain concepts of metal cutting.</b>			<i>Teach Hrs</i>	<i>Marks</i>
<i>Learning Outcome 11</i>	<i>Explain metal cutting process, cutting tool geometry and tool signature.</i>			<b>07</b>	<b>10</b>
Contents	Mechanics of chip formation, single point cutting tool- Cutting tool geometry, nomenclature and tool signature, Types of metal cutting process- orthogonal, oblique and form cutting.				
Method of Assessment	Paper pen test (Part of progressive test 1 – Internal)				
<i>Learning Outcome 12</i>	<i>Calculate cutting parameters of single point cutting tool.</i>			<b>08</b>	<b>10</b>
Contents	Cutting force- merchant circle, types of chips, chip thickness ratio, shear angle, numerical problems.				
Method of Assessment	Theory Exam (Part of end semester theory examination – External)				
<i>Learning Outcome 13</i>	<i>Calculate tool wear, tool life of a single point cutting tool.</i>			<b>07</b>	<b>10</b>
Contents	Tool wear- Types of wear, Tool life -Taylor's tool life equation. Machinability – definition, factors affecting machinability, machinability index, Economics of metal cutting.				
Method of Assessment	Theory Exam(Part of end semester theory examination – External)				
<b>Course Outcome 2</b>	<b>Select tool materials, holding devices for cutting applications.</b>			<i>Teach Hrs</i>	<i>Marks</i>
<i>Learning Outcome 21</i>	<i>Select appropriate cutting tool material for cutting applications.</i>			<b>07</b>	<b>10</b>
Contents	Cutting tool materials- types, compositions, properties and applications. Carbide inserts- types, ISO designation and applications. Other inserts like CBN and PCBN, types of ceramic coatings. Cutting fluids – types, characteristics and applications.				
Method of Assessment	Laboratory test by observation(Part of lab work- Internal)				
<i>Learning Outcome 22</i>	<i>Select a holder, sharpening method for a tool</i>			<b>08</b>	<b>15</b>
Contents	Tool holders for turning, milling and CNC machines, Tool selection for CNC machines. ISO designation of tool holders, Tool sharpening method for single point cutting tool.				
Method of Assessment	Laboratory test by observation (Part of end semester practical examination- External)				
<b>Course Outcome 3</b>	<b>Describe tool geometry of multi point cutting tool.</b>			<i>Teach Hrs</i>	<i>Marks</i>

<i>Learning Outcome 31</i>	<i>Explain tool geometry of drill, tap, reamer.</i>	<b>07</b>	<b>10</b>
Contents	Drilling- Twist drill nomenclature, reamers, drill bit-parallel, taper shank Cutting parameters, deep hole drilling, tapping, thread die.		
Method of Assessment	Paper pen test (Part of progressive test 2 – Internal)		
<i>Learning Outcome 32</i>	<i>Explain tool geometry of milling cutters.</i>	<b>08</b>	<b>10</b>
Contents	Milling- Milling Cutters, cutting parameters (specification and tool materials, angles), milling operations- plain milling, side milling, face milling, form milling, gang milling, end milling, milling indexing.		
Method of Assessment	Theory Exam(Part of end semester theory examination – External)		
<i>Learning Outcome 33</i>	<i>Explain grinding wheel signature, super finishing processes.</i>	<b>08</b>	<b>10</b>
Contents	Grinding- Grinding wheel composition, shapes- straight, cylinder, tapered two sides, recessed one side, straight cup, dish. designation and selection criteria for different operations, application on the basis of abrasive materials and wheel type. Super finishing processes- Definition, types - Honing, lapping, burnishing, buffing and polishing.		
<b>Method of Assessment</b>	Theory Exam (Part of end semester theory examination – External)		
<b>Course Outcome 4</b>	<b>Select a suitable die for a given application.</b>	<i>Teach Hrs</i>	<i>Marks</i>
<i>Learning Outcome 41</i>	<i>Explain construction, working, application of progressive die.</i>	<b>07</b>	<b>10</b>
Contents	Concept of press tool- types, working, components and their functions. Die clearance- concept, definition, reasons, effects and applications Scrap strip layout- concept, importance and method to prepare. Types, working and applications of stock stop, pilots, strippers and knock outs. Progressive cutting die- scrap strip layout, dimension of punches, punches arrangement, die block and die shoe, stripper plate.		
Method of Assessment	Assignment (Term Work-Internal)		
<i>Learning Outcome 42</i>	<i>Explain construction, working, application of bending die, drawing die, forging die.</i>	<b>08</b>	<b>10</b>
Contents	Bending dies- types, parts, functions, working and applications of bending die. Bend allowance and spring back. Drawing dies- types and method to determine blank size for drawing operation, types, sketch, working and applications of drawing dies (embossing, curling, bulging, coining, swaging and hole flanging). Forging dies- terminology, types, sketch, working and application.		
Method of Assessment	Theory Exam (Part of end semester theory examination – External)		
<i>Learning Outcome 43</i>	<i>Select a suitable die for a given application.</i>	<b>07</b>	<b>10</b>
Contents	Application and selection criteria of progressive die, bending die, drawing die, forging die.		
Method of Assessment	Laboratory test by observation(Part of lab work- Internal)		

<b>Course Outcome 5</b>	<b>Design jig, fixture.</b>	<i>Teach Hrs</i>	<i>Marks</i>
<i>Learning Outcome 51</i>	<i>Describe construction, working and applications of jigs, fixtures.</i>	<b>08</b>	<b>10</b>
Contents	Concept, definition of jigs and fixtures, difference between jigs and fixtures. jigs- types, constructions, working and applications. fixtures- types, constructions, working and applications.		
Method of Assessment	Theory exam (Part of end semester theory examination – External)		
<i>Learning Outcome 52</i>	<i>Describe construction, working, application of locators, clamping devices.</i>	<b>07</b>	<b>10</b>
Contents	Concept, definitions of locators and clamping devices. Use of locating and clamping principle (3-2-1 principle) Degree of freedom- concept and importance. Locator- types, constructions, working and applications. Clamping devices- types, constructions, working and applications.		
Method of Assessment	Theory exam(Part of end semester theory examination – External)		
<i>Learning Outcome 53</i>	<i>Design a suitable jig, fixture for a component.</i>	<b>08</b>	<b>15</b>
Contents	Design considerations and procedure for jigs and fixtures. jig and fixture materials full proofing and ejecting techniques.		
Method of Assessment	Laboratory test by observation (Part of end semester practical examination- External)		