GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

IV - SEMESTER

Course Title: Sheet Metal Processing Technology

(Course Code: 1343401)

Diploma Programme in which this course is offered	Semester in which offered
Mechanical (Manufacturing Technology)	Fourth Semester

Module.	Topics	Hours
Module 1	**Sheet metal Processing - Press tools** 1.1 Introduction to Press tool 1.2 Types of Press tool 1.2.1 Blanking tool 1.2.2 Piercing tool 1.2.3 Progressive tool 1.2.4 Compound tool 1.2.5 Bending tool 1.2.6 Forming tool 1.2.7 Embossing tool 1.2.8 Coining tool 1.2.9 Trimming tool 1.2.10 Cutoff tool 1.2.11 Sheet metal components used in Auto industry	5 h
Module 2	**Shearing Theory** 2.1 Blanking / Piercing 2.2 Stages of Shearing	2 h
Module 3	**Cutting Clearance / Angular Clearance** 3.1 Effect of Cutting Clearance on Component – Cut Edge Characteristics and Tool Life 3.1.1 Optimum Clearance 3.1.2 Excessive Clearance 3.1.3 Insufficient Clearance 3.1.4 Relationship between Piece Part Size and Punch and Die Size 3.2 Angular Clearance	3 h
Module 4	**Cutting Force** 4.1 Determination of Cutting force 4.2 Methods to reduce Cutting force	2 h
Module 5	**Blanking and Piercing** 5.1 Introduction to Blanking Tool 5.1.1 Parts and Function 5.1.2 Materials Used 5.2 Introduction to Piercing Tool 5.2.1 Parts and Function 5.2.2 Materials Used	2 h
Module 6	**Compound Tool and Progressive Tool** 6.1 Parts and Function 6.2 Materials Used 6.3 Advantages of Compound Tool	3 h

	6.4 Advantages of Progressive Tool 6.5 Comparison of Compound and Progressive Tool	
Module 7	**Strip Layout** 7.1 Importance of Strip Layout 7.2 Different types of Strip layout 7.3 Production requirements on Strip layout 7.3.1 Grain direction 7.3.2 Burr Side	2 h
Module 8	**Bending** 8.1 Introduction to V Bending, U Bending 8.2 Plastic deformation due to Bending 8.3 Effect of Grain direction in Bending operation 8.4 V Bending tools – Parts, Function and Materials used 8.5 U Bending tools – Parts, Function and Materials used	4 h
Module 9	**Deep Drawing** 9.1 Deep Drawing Operation 9.2 Draw Tool – Parts, Function and Materials used 9.3 Defects in Drawn Components 9.3.1 Wrinkling and Puckering 9.3.2 Remedial measures to overcome Wrinkling and Puckering	3 h
Module 10	**Coining and Embossing** 10.1 Coining Operation 10.1.1 Coining Tool – Parts, Function and Materials used 10.1.2 Application of Coining Operation 10.2 Embossing Operation 10.2.1 Embossing Tool – Parts, Function and Materials used 10.2.2 Application of Embossing Operation 10.3 Difference between Coining and Embossing	2 h
Module 11	**Parting and Cut off** 11.1 Parting Operation 11.2 Cut off Operation 11.3 Difference between Parting and Cut off 11.4 Application of Parting and Cut off	1 h
Module 12	**Main Parts of Power Press** 12.1 Base 12.2 Frame 12.3 Ram 12.4 Pitman 12.5 Driving Mechanism 12.6 Controlling Mechanisms 12.7 Flywheel 12.8 Brakes 12.9 Balster Plate	2 h
Module 13	**Working Principle, Specification and Application of the following types of Presses** 13.1 OBI Press 13.2 Straight Slide Press 13.3 Press Brake 13.4 Double Action Press 13.5 Triple Action Press 13.6 Hydraulic Press	3 h

Module 14	**Tool Handling** 14.1 Die Change Cart 14.2 Die Splitter / Die Turner 14.3 Pneumatic Die Lifters 14.4 Die change Tables 14.5 Die Movers	3 h
Module 15	**Strip feeding** 15.1 Coil holder 15.2 Straightener 15.3 Roll feeder 15.4 Scrap cutter	2 h
Module 16	**Documentation in Press Shop**	1 h