GUJARAT TECHNOLOGICAL UNIVERSITY

COURSE NAME : MECHANICAL DRAFTING

1. RATIONALE :

The student of Mechanical Engineering Programme is basically responsible for manufacturing of various material components in shops. This course enable him shop floor professional skill by way of communicating through drawing amongst personnel working on shop floor. To meet the requirements of job functions as technician to the full extent, the student should be acquainted with relevant Indian Standard Specifications and computer as well.

2. SCHEME OF TEACHING :

TOPIC NO.	NAME OF TOPIC	NO.OF HOURS		
		LECT	PRACT	TOTAL
1.	Projections and Sections of Solids	04	24	29
2.	Development of Surfaces	04	06	10
3.	Intersection of Solids	04	08	11
4.	Details and Assembly Drawing of Machine Parts	04	20	25
5.	System of Limits and Fits as per BIS	04	02	05
6.	Welding and Machining Symbols and Piping Drawing	02	04	05
7.	Computer Graphics	06	20	27
		28	84	112

3. TECHNOLOGY RELATED SKILLS AND ENABLING OBJECTIVES :

TRS 1. Use Indian /ISO codes / standards / databooks.

EO's 1.1 Practice the codes, standards (Indian), databooksand handbook.

1.2 Interpret Indian standards, databooks and ISO.

1.3 Use Indian/ISO codes/standards/databooks.

TRS 2. Draw/ reproduce assembly and detailed drawings of machine parts as per standards.

EO's 2.1 Draw detailed drawings of machine parts as per Indian standards manually.

2.2 Draw detailed drawings of machine parts as per Indian standards using AUTOCAD.

2.3 Develop assembly drawings manually as well as using computer.

TRS 3. Use production drawings/material codes.

EO's 3.1 Discuss the application of production drawing and material codes.

3.2 Interpret Production drawing and material codes.

TRS 4. Use software and hardware for CAD.

EO's 4.1 Develop awareness of the software packages of CAD and hardware.

4.2 Draft drawing using CAD software.

4. COMMUNICATION SKILLS :

1. Deliver a talk on a topic fluently and confidently for five minutes (or more).
2. Follow written or oral instructions and interpret them to others.
3. Counsel people in work situations.
4. Describe an object, process or procedure.
5. Write assignments (classroom, library, home).

5. TOPICS AND SUB TOPICS :

1.0 : PROJECTIONS AND SECTIONS OF SOLIDS

1.1 Drawing of Projections of solids - in various position with respect to the reference planes.

1.2 Concepts of sectioning, Horizonal and vertical traces representing sectional planes - Sectional views of different solids in given various positions - auxiliary section and true shape of section.

1.3 Multiview Representation of simple object.

2.0 : DEVELOPMENT OF SURFACES

2.1 Importance of development of surfaces - Drawing of development of surfaces of various solid - surface development of combination of different solids and of sectioned solids.

3.0 : INTERSECTION OF SOLIDS

3.1 Importance - Various method for intersection of different solids.

4.0 : DETAILS AND ASSEMBLY DRAWING OF MACHINE PARTS

4.1 Importance - Terminology - Lay-out for production drawings as per B.I.S. code.

4.2 Detailed component drawings from given assembly.

4.3 Assembly drawing from given details of machine parts.

5.0 : SYSTEM OF LIMITS AND FITS AS PER B.I.S.

5.1 Importance, Terminology.

5.2 Selection of appropriate limits and fits as per B.I.S.

5.3 Symbols of tolerance of form and position.

6.0 : WELDING AND MACHINING SYMBOLS AND PIPING DRAWING

6.1 Symbols and conventions for welding and machining as per B.I.S.

6.2 Symbols and layout for piping.

7.0 : COMPUTER GRAPHICS

7.1 Introduction to Design and Drafting (AutoCAD)

7.2 General features

7.3 Basic drawing and Editing commands.

7.4 Use of dimensioning utilities.

7.5 Prepare copy from Auto CAD

NOTE: Demonstrate the use of BIS/ISO, codes, standards, data book while teaching topics.

6. LABORATORY EXPERIENCES/TERM WORK :

(A) PREPARE DRAWING SHEETS ON

(1) Projections of solids (Minimum 4 problems)

(2) Sections of solids (— Do —)

(3) Development of Surfaces (—Do—)

(4) Intersection of Solids (—Do—)

(5) Sectional orthographic Projectons (Three problems).

(6) Missing views and Sections (Three problems).

(7) Details production drawings of machine components including zone and fold mark, limit, fits and tolerances.

(8) Assembly production drawing of machine components (Manually).

(9) Pattern drawing showing draft and allowances of pattern.

(10) Forging Drawing

(B) PREPARE SKETCH BOOK

(1) Data of Drawing sheets Sr.No. 1 to 9 with solution of problems where needed.

(2) Exercises giving ideas of limits, fits and tolerances.

(3) Symbols * Welding symbols.

* Machining symbols.

(4) Piping symbols and piping drawing.

(C) USE AUTOCAD

(1) AutoCAD commands for preparation of production drawings.

(2) Production drawing of one component including zone and fold mark, limits, fits and tolerances (with the help of computer).

(3) Assembly production drawing of machine components. (with the help of computer).

8. REFERENCES :

Sr No.	Name of Book	Author	Publishers
1.	BIS - 696 - 1972		
2.	BIS - 919 - 1963		
3.	BIS - 2709 - 1964		
4.	Elementary Engineering Drawing	N.D.Bhatt	Charutar Book Stall Anand
5.	Machine Drawing	"	"
6.	Graphics for Engineers	W.J.Luzzadar	Prentice Hall India Pvt. Ltd., New Delhi
7.	Fundamentals of Drawing	K.R.Gopala Krishna	Subhas Publications, Avenue Road, Banglore.
8.	Machine Drawing	"	"
9.	Drafting and Graphics	Gia Chino Beukema	American Technical Society Chicago, Illinois
10.	Drafting Technology	Gleclino & Beukema	D.B.Taraporwala Sons & Co.Pvt.Ltd.,Bombay.
11.	Fundamentals of Tool Design	A.S.T.M.E. Frank W. Willson	Prantice Hall India Pvt.Ltd., New Delhi
12.	Tool Design (Revised Edition)	Donalson Lecain Goold	MacGrow Hill Book Co. New Delhi
13.	Mastering AUTO CAD	George Omura	
14.	Inside in AUTO CAD	Ralcer & Rice	