



GUJARAT TECHNOLOGICAL UNIVERSITY

Program Name: Bachelor of Vocation

Level: Under Graduate

Branch: Production Technology

Course / Subject Code: 21130308

Course / Subject Name: Draughtsman Mechanical

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|-------------------------|----------------------|
| w. e. f. Academic Year: | 2021-22 |
| Semester: | III |
| Category of the Course: | OJT Elective Subject |

| | |
|----------------------|--|
| Prerequisite: | Basic understanding of engineering graphics concepts and computer usage. |
| Rationale: | Proficiency in CAD, workplace safety practices, and effective teamwork equips students to perform technical tasks accurately, safely, and efficiently on the shop floor, ensuring smooth coordination with design, manufacturing, and quality control in line with industry standards. |

Course Outcome:

After Completion of the Course, Student will able to:

| No | Course Outcomes |
|----|---|
| 01 | Create precise and accurate technical drawings using CAD software. |
| 02 | Understand and apply engineering principles in drafting. |
| 03 | Apply basic workplace safety practices and use appropriate personal protective equipment. |
| 04 | Communicate technical information effectively through detailed drawings. |

Teaching and Examination Scheme:

| Teaching Scheme (in Hours) | | | Total Credits L+T+ (PR/2) | Assessment Pattern and Marks | | | | Total Marks |
|-------------------------------|---|----|------------------------------|------------------------------|-------------|----------------------|---------|----------------|
| L | T | PR | C | Theory | | Tutorial / Practical | | |
| | | | | ESE (E) | PA / CA (M) | PA/CA (I) | ESE (V) | |
| 0 | 0 | 15 | 15 | 0 | 0 | 100 | 100 | 200 |

Course Content:

| Unit No. | Content | No. of Hours | % of Weightage |
|----------|--|--------------|----------------|
| 1. | Make or modify 2D mechanical engineering drawings using CAD system. <ul style="list-style-type: none">Understand main features and working methods of CAD and modification of 2D mechanical engineering designs.Identify and obtain job specifications from valid sources like CAD software's, drawing tools, existing drawings/designs, | 150 | 70 |



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approved sketches / illustrations, and identify raw material, measuring tools and their calibration, dimensions, limits and tolerances, surface finish, shapes, cycle time and production rates. Understand types of measurements and dimensions like lengths, depths, flatness, surface finish, squareness, parallelism, hole size/fit, angles and recesses, runout and roundness, standards reference documents from limits and fits, tapping drills chart, contraction allowances.

- Preparation of work areas for make & modification of 2D engineering drawings
- Basic daily maintenance of work area and good housekeeping activities like removing and disposing swarf, keeping work areas free from foreign objects and dirt, waste papers, drawings tools etc generators; invertors; consumables – electrodes, dyes; Hard drive, CD/DVD, External storage device, holders, cables and accessories.
- Understand the different work holding devices like other tools like measuring tools like steel rulers, micrometers, Vernier, gauges, dial test indicators, surface finish equipment and height masters.
- Produce drawings method combining different drafting principles/methods, relevant changes /modifications, regulations, Design features, first angle, Third angle.
- Perform Design/Drawings using different devices like Keyboard, Mouse, light pen, Digitizer/Table, scanner, printer, plotter etc.
- Draughtsman Practices/ methods using detail drawing, sub-assembly drawings, installation drawings, exploded views /drawings, CAD software standards, national / International standards, codes of practice, customer standards / requirements, following different types of drawings layers for detaining dimensions/geometrical tolerances, elevation/plan/side/sectional and details views, adding of line types, dimension styles, title, text styles, color codes, scale etc.



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|--------------|--|------------|------------|
| 2. | <p>Use basic health and safety practices at the workplace</p> <ul style="list-style-type: none"> • Understand importance of complying health safety and environmental regulation at work place. • Understand hazards associated, revolving and moving parts, hot metal particles, sharp cutting tools, lifting and holding work holding devises, burrs and sharp edges on the component. • Be able to identify job site hazards like sharp edged heavy tools, gas cylinders, welding radiations, chemicals, fumes, obstructions in corridors, naked wires / cables etc. • Understand: Different types of fire; use of appropriate fire extinguishers risk and accidents; safe working practices and methods of accident prevention at work place. • Importance of using protective clothing like leather or asbestos gloves, flame proof aprons, flame proof overalls buttoned to neck, cuffless (without folds), trousers, reinforced footwear, helmets/hard hats, cap and shoulder covers, ear defenders/plugs, safety boots, knee pads, particle masks, glasses/goggles/visors, hand shields, machine guards, residual current devices, shields, dust sheets, respirator etc. | 30 | 20 |
| 3. | <p>Work effectively with others</p> <ul style="list-style-type: none"> • Able to receive and pass information from and to authorized persons and seeking clarification from authorized persons where required. • Able to communicate by avoiding use of abusive language; display respect to others. • Respect others time by completing given task in time, avoiding gossip and avoid conflict. | 20 | 10 |
| Total | | 200 | 100 |

Suggested Specification Table with Marks (Theory):

| Distribution of Theory Marks | | | | | |
|------------------------------|---------|---------|---------|---------|---------|
| R Level | U Level | A Level | N Level | E Level | C Level |
| | | | | | |



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| | | | | | |
|----|----|----|-----|---|---|
| 10 | 15 | 40 | 110 | 5 | 5 |
|----|----|----|-----|---|---|

Where R: Remember; U: Understanding; A: Application, N: Analyze and E: Evaluate C: Create (as per Revised Bloom's Taxonomy)

References/Suggested Learning Resources:

(a) Books:

1. N.D. Bhatt, Engineering Drawing, Charotar Publishing House
2. Sham Tickoo, AutoCAD 2024 for Engineers and Designers, CAD/CIM Technologies
3. K.U. Mistry, Safety and Health in Industry, Nirali Prakashan
4. Stephen P. Robbins, Organizational Behavior, Pearson Education

(b) Open-source software and website:

1. <https://www.freecad.org>
2. <https://nptel.ac.in>

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