**GURU TEGH BAHADUR INSTITUTE OF TECHNOLOGY**

**G-8 AREA, RAJOURI GARDEN, NEW DELHI**

 **B.Tech. (Common to all Branches) Semester: Ist**

**Course: Engineering Graphics 1 Subject Code: ES157**

**Credit: 2, Period: 4**

**Course Outcomes (CO):**

CO1: To understand the theory of projections and projection of points.

CO2: Ability to do line projections.

CO3: Ability to do plane projections.

CO4: Ability to do solid projections and development of surfaces.

**Programme outcomes (level)**

PO1: Engineering Knowledge

PO2: Problem Analysis

PO3: Design/Development of solutions

PO4: Conduct Investigations of complex problems

PO5: Modern Tool Usage

PO9: Individual and Team Work

PO10: Communication

PO11: Project Management and Finance

PO12: Lifelong learning

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| **Course outcomes to Programme outcomes mapping:** **Scale1: Low, Scale2: medium, Scale3: High.** |
| **CO/PO** | **PO1** | **PO2** | **PO3** | **PO4** | **PO5** | **PO9** | **PO10** | **PO11** | **PO12** |
| **CO1** | 3 | 3 | 3 | 3 | 2 | 1 | 2 | 1 | 2 |
| **CO2** | 3 | 3 | 3 | 3 | 2 | 1 | 2 | 1 | 2 |
| **CO3** | 3 | 3 | 3 | 3 | 2 | 1 | 2 | 1 | 2 |
| **CO4** | 3 | 3 | 3 | 3 | 2 | 1 | 2 | 1 | 2 |

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**Lab Plan**

**Course: Engineering Graphics 1**

**B.Tech. (Common to all Branches)**

**Semester: Ist Subject Code: ES157**

**Credit: 2, Period: 4**

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| **Unit** | **Topic** | **No of Lectures** |
| **1** | **Introduction:** **Engineering Graphics/Technical Drawing, Introduction to drawing equipments and use of instruments, Conventions in drawing practice.** **Types of lines and their uses, BIS codes for lines, technical lettering as per BIS codes,** **Introduction to dimensioning, Types, Concepts of scale drawing, Types of scales** **Theory of Projections:** **Theory of projections, Perspective, Orthographic, System of orthographic projection:** **in reference to quadrants.** **Projection of Points:** **Projection in different quadrants, Projection of point on auxiliary planes. Distance between two points, Illustration through simple problems.** | **12** |
| **2** | **Projection of Lines:** **Line Parallel to both H.P. and V.P., Parallel to one and inclined to other,****Other typical cases:** **three view projection of straight lines,** **True length and angle orientation of straight line:** **Rotation method,** **Trapezoidal method and** **auxiliary plane method,** **traces of line.** | **8** |
| **3** | **Projection of Planes:** **Projection of Planes Parallel to one and perpendicular to other,** **Perpendicular to one and inclined to other,** **Inclined to both reference planes,** **Plane oblique to reference planes,** **Traces of planes.** **Planes Other than the Reference Planes:** **Introduction of other planes (perpendicular and oblique),** **their traces, inclinations etc.,** **Projections of points and lines lying in the planes, conversion of oblique plane into auxiliary plane and solution of related problems.** | **4** |
| **4** | **Projection of Solids:** **Projection of solids in first or third quadrant,** **Axis parallel to one and perpendicular to other,** **Axis parallel to one inclined to other,** **Axis inclined to both the principal plane,** **Axis perpendicular to profile plane and parallel to both H.P. and V.P.,** **Visible and invisible details in the projection,** **Use of rotation and auxiliary plane method.** **Development of Surface:** **Purpose of development, Parallel line, radial line and triangulation method,** **Development of prism, cylinder, cone and pyramid surface for both right angled and oblique solids, Development of surface.** | **16** |
| **Note: The sheets to be created shall be notified by the concerned teacher.**  |

**Textbooks:**

**1**. Engineering Drawing by N.D. Bhatt, 53rd Ed., Charotar Publishing House Pvt. Ltd., Gujarat,2017.

**References:**

1.Engineering Drawing by P.S. Gill, S.K Kataria & Sons, New Delhi, 2013.

2. Technical Drawing with Engineering Graphics by Frederick E. Giesecke, Shawna Lockhart, Marla Goodman, and Cindy M. Johnson, 15th Ed., Prentice Hall, USA, 2016

3. Engineering Drawing by M.B. Shah and B.C. Rana, 3rd Ed., Pearson Education, New Delhi, 2009.