**Engineering Graphics ( Course- 1-0-3)**

**Philosophy:**

* Drawing is the language of Engineers, Details of complex engineering components are better understood with the help of detailed drawing and sectional views
* Development of computer aided design models is the first step in analysis and simulation of engineering components

**Objective of Course**: To provide knowledge about the basic concepts of engineering drawing and the methods of generating Engineering drawing using CAD software

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| Class No. | Name of the topic | Syllabus | Usage in multi-disciplinary subjects |
| 1 | Introduction | Codal Guidelines for Drawing, Lettering, Scale, Types of lines, | Drawing techniques and ISO conventions |
| 2 | Curves used in engineering practices | Conic sections, Cycloid, Involute, Spiral | Lines for Engg drawing,  Conic section- Structure, components  Cycloid- Gear System and pumps, turbines  Involute- Gear Tooth  Spiral- Staircase |
| 3 | Projection of points and lines | Projection of points in different quadrants, projection of line inclined to one plane, Orthographic projection of lines inclined to both the reference planes | Visualization for drawing 3D object in 2D surface |
| 4 | Projection of planes | Orthographic projection of planes inclined to one plane and inclined to both the planes | Features of plane/Lamina/Plate |
| 5 | Introduction to CAD tools | Introduction to Layout, co-ordinate system, lines, polygons, curves, dimensioning.  Editing of existing drawings. | Basic drawing tools in CAD environment |
| 6 | Projection of solids | Orthographic projection of solids inclined to one plane and inclined to both the planes | Multi-view projection of 3D Engg components |
| 7 | Section of Solids | Section of Regular solids | Internal features of 3-D objects |
| 8 | Development of surface | Prism, Cylinder/Cone, Pyramids and truncated solids | Manufacturing of 3D Engg system from 2D sheets via rolling/folding |
| 9 | Isometric Projection - Examples | Isometric scale, Orthographic to Isometric Projection- Real Examples | Creating 3D view of objects from multiview 2D projection |
| 10 |
| 11 | Isometric Projection – Examples- Continued | Isometric to Orthographic Projection- Real Examples | Creating 2D layouts for 3D objects |

**TEXT BOOKS:**

1. Bhatt, N. D. and Panchal V. M., “Engineering Drawing”, Charator Publishing House
2. Ryan D. L. “Computer-aided graphics and design”, CRC press

**REFERENCE BOOKS:**

1. Chandra, A. M. and Chandra, Satish, “Engineering Graphics”, Narosa Publishing House, New Delhi 2011
2. Giesecke, Mitchell, “Technical Drawing”, Spencer, Hill, Dygdon and Novak, Macmillan Publishing Company. 2003
3. Venugopal K., “Engineering Drawing And Graphics + Autocad”, New Age International Publishers