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| Image result for nit meghalaya logo | **National Institute of Technology Meghalaya**An Institute of National Importance | **CURRICULUM** |
| Programme | **Bachelor of Technology in Civil Engineering** | Year of Regulation | **2020-21** |
| Department | **Department of Civil Engineering** | Semester | **I** |
| CourseCode | Course Name | **Pre requisite** | Credit Structure | Marks Distribution |
| L | T | P | C | INT | MID | END | Total |
| **CE 101** | **Engineering Drawing** | **Nil** | **1** | **0** | **4** | **3** | **50** | **50** | **100** | **200** |
| CourseObjectives | **To develop the student’s ability to understand the role and importance of technical drawings in engineering drawing process, and application of BIS and ISO conventions.** | Course Outcomes | CO1 | **Apply BIS conventions to draw letters, lines and dimensions** |
| **To develop the student’s ability to understand the proper representation and practice of Lines, Lettering, and dimensioning.** | CO2 | **Develop various types of scales associated with engineering drawing and maps.** |
| **To develop student’s ability to understand the importance of types of scales.** | CO3 | **Construct points, lines, curves, polygons, planes and solids.** |
| **To develop the student’s ability to construct plane geometry.** | CO4 | **Illustrate the system of projection with respect to the observer, object and the reference planes.** |
| **To develop the student’s ability to understand the concepts of projection and their application in technical drawing.** | CO5 | **Create orthographic, isometric, multi-view drawing, andsectional views of objects.** |
| **To develop the student’s ability to apply projection technique to draw Multi-view, pictorial view (Isometric View) drawings.** | CO6 | **Illustrate the development process of surfaces of various objects.** |
| **To develop the student’s ability to understand development process of surfaces of various objects.** |
| No. | COs | Mapping with Program Outcomes (POs) | Mapping with PSOs |
| PO1 | PO2 | PO3 | PO4 | PO5 | PO6 | PO7 | PO8 | PO9 | PO10 | PO11 | PO12 | PSO1 | PSO2 | PSO3 |
| 1 | CO1 | **2** | **2** | **2** | **0** | **2** | **0** | **0** | **0** | **1** | **3** | **0** | **1** | **3** | **0** | **0** |
| 2 | CO2 | **2** | **2** | **2** | **0** | **2** | **0** | **0** | **0** | **1** | **3** | **0** | **1** | **3** | **0** | **0** |
| 3 | CO3 | **2** | **2** | **2** | **0** | **2** | **0** | **0** | **0** | **1** | **3** | **0** | **1** | **3** | **0** | **0** |
| 4 | CO4 | **2** | **2** | **2** | **0** | **2** | **0** | **0** | **0** | **1** | **3** | **0** | **1** | **3** | **0** | **0** |
| 5 | CO5 | **2** | **2** | **2** | **0** | **2** | **0** | **0** | **0** | **1** | **3** | **0** | **1** | **3** | **0** | **0** |
| SYLLABUS |
| No. | Content | Hours | COs |
| I | **Introduction**Importance of Engineering Drawing, drawing Instruments and materials, B.I.S. and ISO conventions | 04 | CO1 |
| Lines, Lettering, and Dimensioning | CO1 |
| II | **Plane Geometry**Geometrical Construction: line, arc, and angle, divisions of straight line and circumference, construction of polygon | 04 | CO3 |
| III | **Scales**Construction of scales – plane scale, diagonal scale, Vernier scale, functional scale; concept of conversion scale and nomogram | 04 | CO2 |
| IV | **Conic Sections and other Curves**Construction of Ellipse, Parabola, Hyperbola, Rectangular Hyperbola, Cycloidal Curves: Cycloid, Involute | 04 | CO3 |
| V | **Projection**Principle of Projection and Orthographic Projection | 04 | CO4 |
| Projection of points and lines | CO4 |
| Projection of Planes | CO4 |
| VI | **Solid Geometry**Types of Solids: polyhedral, prisms, pyramids, cylinder, cone, sphere, auxiliary projection method | 04 | CO4 |
| Orthographic projection of solids: one view, two view and three view drawings, Missing view, rules for selection of views | CO4 |
| VII | Sectional view, section plane perpendicular to the HP & VP and other Various positions, true shape of sections | 03 | CO4 |
| VIII | Classification, line of intersection, line/generator method and section plane method: intersection of two prisms, two cylinders, intersection of cone and cylinder | 03 | CO4 |
| IX | Method of development, parallel line development, radial line development, developments of cylinder, cone, prism, pyramid, true length of edges – oblique surface. | 03 | CO5 |
| X | Terminology, isometric scale, isometric view and isometric projection, isometric axes, and lines, missing view | 03 | CO4 |
| Total Hours | **36** |  |
| **Essential Readings** |
| 1. N.D. Bhatt, Engineering Drawing, Chrotar Publishing House.
 |
| 1. Dhananjay A Jolhe, Engineering drawing, TMH, 2008
 |
| 1. M.B. Shah and B.C. Rana, Engineering Drawing, Pearson, 2009.
 |
| **Supplementary Readings** |
| 1. T E French, C J Vierck and R J Foster, Graphic Science and Design, 4th edition, McGraw Hill, 1984
 |
| 1. W J Luzadder and J M Duff, Fundamentals of Engineering Drawing, 11th edition, Prentice-Hall of India, 1995.
 |
| 1. K Venugpoal, Engineering Drawing and Graphics, 3nd edition, New Age International, 1998.
 |
| 1. Gary R. Bertoline, Eric N. Wiebe, Nathan W. Hartman, William A. Ross, Technical graphics Communication, 4th Edition, McGraw Hill Higher Education, 2009
 |
| 1. Frederick E. Giesecke, Shawna Lockhart, Marla Goodman, Cindy M. Johnson Technical Drawing With Engineering Graphics, 15th Edition, Prentice Hall, 2016
 |
| 1. SP 46: 2003, Engineering Drawing Practice for schools and colleges.
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