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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** | | | | | |
| Course  Code | | 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** | |
| Course  Objectives | | **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. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |