	National Institute of Technology Meghalaya An Institute of National Importance	CURRICULUM

Programme	**Bachelor of Technology**	Year of Regulation	**2018**
Department	**Civil Engineering**	Semester	**I**

Course Code	Course Name	Credit Structure				Marks Distribution			
		L	T	P	C	INT	MID	END	Total
CE 101	**Engineering Drawing**	**1**	**0**	**4**	**3**	**50**	**50**	**100**	**200**

Course Objectives	Course Outcomes	
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.	CO1	Understand the lettering, lining and dimensioning process in engineering drawing
To develop the student's ability to understand the proper representation and practice of Lines, Lettering, and dimensioning.	CO2	Understand the importance of various types of scales associated with engineering drawing
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	Create orthographic, isometric, multi-view drawing, and create sectional views of objects.
To develop the student's ability to understand the concepts of projection and their application in technical drawing.	CO5	Illustrate the development process of surfaces of various objects.
To develop the student's ability to apply projection technique to draw Multi-view, pictorial view (Isometric View) drawings.		
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	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**3**	**0**	**0**
2	CO2	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**3**	**0**	**0**
3	CO3	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**3**	**0**	**0**
4	CO4	**0**	**0**	**0**	**0**	**2**	**0**	**0**	**0**	**1**	**3**	**0**	**1**	**3**	**0**	**0**
5	CO5	**0**	**0**	**0**	**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	**01**	**CO1**
	Lines, Lettering, and Dimensioning	**05**	**CO1**
II	**Plane Geometry** Geometrical Construction: line, arc, and angle, divisions of straight line and circumference, construction of polygon	**05**	**CO3**
III	**Scales** Construction of scales – plane scale, diagonal scale, Vernier scale, functional scale; concept of conversion scale and nomogram	**05**	**CO2**
IV	**Conic Sections and other Curves** Construction of Ellipse, Parabola, Hyperbola, Rectangular Hyperbola, Cycloidal Curves: Cycloid, Involute	**05**	**CO3**
V	**Projection** Principle of Projection and Orthographic Projection	**01**	**CO4**
	Projection of points and lines	**05**	**CO4**
	Projection of Planes	**05**	**CO4**
VI	**Solid Geometry** Types of Solids: polyhedral, prisms, pyramids, cylinder, cone, sphere, auxiliary projection method	**01**	**CO4**
	Orthographic projection of solids: one view, two view and three view drawings, Missing view, rules for selection of views	**05**	**CO4**
VII	Sectional view, section plane perpendicular to the HP & VP and other Various positions, true shape of sections	**05**	**CO4**
VIII	Classification, line of intersection, line/generator method and section plane method: intersection of two prisms, two cylinders, intersection of cone and cylinder	**05**	**CO4**
IX	Method of development, parallel line development, radial line development, developments of cylinder, cone, prism, pyramid, true length of edges – oblique surface.	**05**	**CO5**
X	Terminology, isometric scale, isometric view and isometric projection, isometric axes, and lines, missing view	**05**	**CO4**
	Total Hours	**58**	

Essential Readings

1. N.D. Bhatt, Engineering Drawing, Chrotar Publishing House.
2. Dhananjay A Jolhe, Engineering drawing, TMH, 2008
3. 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

2. W J Luzadder and J M Duff, Fundamentals of Engineering Drawing, 11th edition, Prentice-Hall of India, 1995.
3. K Venugpoal, Engineering Drawing and Graphics, 3nd edition, New Age International, 1998.
4. Gary R. Bertoline, Eric N. Wiebe, Nathan W. Hartman, William A. Ross, Technical graphics Communication, 4th Edition, McGraw Hill HigherEducation, 2009
5. Frederick E. Giesecke, Shawna Lockhart, Marla Goodman, Cindy M. Johnson Technical Drawing With Engineering Graphics, 15th Edition, PrenticeHall, 2016
6. SP 46: 2003, Engineering Drawing Practice for schools and colleges.