

**1<sup>st</sup> Year B. Tech. SYLLABUS****SEMESTER I – GROUP 1**

<b>Code</b>	<b>Subject</b>	<b>Lecture</b>	<b>Tutorial</b>	<b>Practical</b>	<b>Credit</b>
CH101	Chemistry	3	0	0	6
ME101	Engineering Mechanics	3	1	0	8
MA101	Mathematics - I	3	0	0	6
PH101	Physics - I	3	0	0	6
HS101	Communication Skills	2	0	0	4
<b>Practical</b>					
CH111	Chemistry Laboratory	0	0	2	2
ME111/ PH111	Workshop /Physics Laboratory	0	0	3	3
ME112	Engineering Drawing	1	0	3	5
<b>Total</b>		15	1	8	40

**SEMESTER I – GROUP 2**

<b>Code</b>	<b>Subject</b>	<b>Lecture</b>	<b>Tutorial</b>	<b>Practical</b>	<b>Credit</b>
CS101	Introduction to Computing	3	0	0	6
EE101	Basic Electrical & Electronics Sciences	3	1	0	8
MA101	Mathematics - I	3	0	0	6
PH101	Physics - I	3	0	0	6
CE101	Environmental Science	2	0	0	4
<b>Practical</b>					
CS111	Computing Laboratory	0	0	4	4
ME111/ PH111	Workshop /Physics Laboratory	0	0	3	3
EE111	Basic Electrical & Electronics Sciences Laboratory	0	0	3	3
<b>Total</b>		14	1	10	40

## SEMESTER II – GROUP 1

Code	Subject	Lecture	Tutorial	Practical	Credit
CS101	Introduction to Computing	3	0	0	6
EE101	Basic Electrical & Electronics Sciences	3	1	0	8
MA102	Mathematics - II	3	0	0	6
PH102	Physics - II	3	0	0	6
CE101	Environmental Science	2	0	0	4
<b>Practical</b>					
CS111	Computing Laboratory	0	0	4	4
ME111/ PH111	Workshop /Physics Laboratory	0	0	3	3
EE111	Basic Electrical & Electronics Sciences Laboratory	0	0	3	3
<b>Total</b>		14	1	10	40

## SEMESTER II – GROUP 2

Code	Subject	Lecture	Tutorial	Practical	Credit
CH101	Chemistry	3	0	0	6
ME101	Engineering Mechanics	3	1	0	8
MA102	Mathematics - II	3	0	0	6
PH102	Physics - II	3	0	0	6
HS101	Communication Skills	2	0	0	4
<b>Practical</b>					
CH111	Chemistry Laboratory	0	0	2	2
ME111/ PH111	Workshop /Physics Laboratory	0	0	3	3
ME112	Engineering Drawing	1	0	3	5
<b>Total</b>		15	1	8	40

**ME101****ENGINEERING MECHANICS****(3-1-0-8)**

Basic principles: Equivalent force system; Equations of equilibrium; Free body diagram; Reaction; Static indeterminacy. Structures: Difference between trusses, frames and beams, Assumptions followed in the analysis of structures; 2D truss; Method of joints; Method of section; Frame; Simple beam; types of loading and supports; Shear Force and bending Moment diagram in beams; Relation among load, shear force and bending moment. Friction: Dry friction; Description and applications of friction in wedges, thrust bearing (disk friction), belt, screw, journal bearing (Axle friction); Rolling resistance. Virtual work and Energy method: Virtual Displacement; Principle of virtual work; Applications of virtual work principle to machines; Mechanical efficiency; Work of a force/couple (springs etc.); Potential energy and equilibrium; stability. Center of Gravity and Moment of Inertia: First and second moment of area; Radius of gyration; Parallel axis theorem; Product of inertia, Rotation of axes and principal moment of inertia; Moment of inertia of simple and composite bodies. Mass moment of inertia. Kinematics of Particles: Rectilinear motion; Curvilinear motion; Use of Cartesian, polar and spherical coordinate system; Relative and constrained motion; Space curvilinear motion. Kinetics of Particles: Force, mass and acceleration; Work and energy; Impulse and momentum; Impact problems; System of particles. Kinematics and Kinetics of Rigid Bodies: Translation; Fixed axis rotational; General plane motion; Coriolis acceleration; Work energy; Power; Potential energy; Impulse-momentum and associated conservation principles; Euler equations of motion and its application.

**Text:**

1. Timoshenko and Young, Engineering Mechanics, 3<sup>rd</sup> Ed., McGraw Hill Publishers, 2006.
2. R. C. Hibbler, Engineering Mechanics, Vols. I and II, Pearson Press, 2002.

**References:**

1. J. L. Meriam and L. G. Kraige, Engineering Mechanics, Vol. I – Statics, Vol. II – Dynamics, 5<sup>th</sup> Ed., John Wiley, 2002.
2. I. H. Shames, Engineering Mechanics: Statics and Dynamics, 4<sup>th</sup> Ed., PHI, 2002.
3. F. P. Beer and E. R. Johnston, Vector Mechanics for Engineers, Vol. I -Statics, Vol. II – Dynamics, 3<sup>rd</sup> Ed., Tata McGraw Hill, 2000.

**ME131****WORKSHOP****(0-0-3-3)**

Introduction to wood working, hand tools and machines; Introduction to fitting shop tools, equipment and operations; Introduction to sheet metal work; Introduction to pattern making; Introduction to moulding and foundry practice; Introduction to welding shop tools, equipment and operations; Introduction to machine shop tools, equipment, machines and operations; Introduction to black smithy shop; Simple exercises in wood working, pattern making, fitting, sheet metal work, welding, machining, black smithy and moulding.

**Text:**

1. H. Choudhury, Elements of Workshop Technology, Vol. I, Asia Publishing House, 1986.

**References:**

1. H Gerling, All about Machine Tools, New Age International, 1995.
2. W A J Chapman, Workshop Technology, Oxford IBH, 1975.

**ME132**

**ENGINEERING DRAWING**

**(1-0-3-5)**

Importance of engineering drawing; Conventions and standards: ISO; Scales; Loci of points; Curves; Orthographic projections : points, lines, planes and solids; Sections of solids; Isometric projections; Development of surfaces; Multi-view drawing; Intersection of solids.

**Text:**

1. N D Bhatt and V M Panchal, Engineering Drawing, 43rd Ed., Charator Publishing House, 2001.
2. K Venugopal, Engineering Drawing and Graphics, 3rd Ed., New Age International, 1998.

**References:**

1. M B Shah and B C Rana, Engineering Drawing, 2nd Ed., Pearson Education, 2009.
2. T E French, C J Vierck and R J Foster, Graphic Science and Design, 4th Ed., McGraw Hill, 1984.
3. W J Luzadder and J M Duff, Fundamentals of Engineering Drawing, 11th Ed., PHI, 1995.
4. A.J. Dhananjay, Engineering Drawing, TMH, 2008.