Scheme of Examination B.E. First year (All Branches of Engineering)

Second Semester

Sub Code	Subjects	Workload in hrs			Credits	Marks					Minimum Passing Marks	
		L	T/A	P		Theory		Practical		Total		
						Internal	Uni	Internal	Uni		Theory	Practical
BSE2-1T	Mathematics-II	3	1	-	4	30	70	-	-	100	45	-
BSE2-2T	Advanced Engineering Materials	2	2	-	3	30	70	-	-	100	45	-
BSE2-3T	Applied Chemistry	3	2	-	4	30	70	-	-	100	45	-
BSE2-4T	Computational Skills	2	-	-	2	15	35	-	-	50	23	-
BSE2-6T	Basics of Electrical Engineering	2	-	-	2	15	35	-	-	50	23	-
BSE2-7T	Engineering Mechanics	2	-	-	2	15	35	-		50	23	-
BSE2-8T	Indian Culture & Constitution	2	-	-	Audit	50	-	-	-	Audit	-	-
BSE1-5P	Workshop Practices	-	-	4	2	-	-	50	50	100	-	50
BSE2-2P	Advanced Engineering Materials	-	-	2	1	-	-	25	25	50	-	25
BSE2-3P	Applied Chemistry			3	1.5	-	-	25	25	50	-	25
BSE2-4P	Computational Skills			2	1	-	-	25	25	50	-	25
Three weeks Induction Program												
	Total	**16**	**5**	**11**	**22.5**	**135***	**315**	**125**	**125**	**700**		

- L- Lecture , P-Practical, T- Tutorial, A- Activity (Half Credit per Hour)
* Audit course marks are not counted in total marks

   Guidelines
- Energy and Environment shall be taught by faculty of Chemistry and will come under board of Applied Science and Humanities (only by Chemistry Dept)
- Advance Engineering Materials shall be taught by faculty of Physics and will come under board of Applied Science and Humanities (only by Physics Dept)

Engineering Mechanics (BES2-7T)
Total Credits 2

Teaching Scheme
Lecture : 2

Examination Scheme
TU:**35** marks TI:**15** Marks

Duration of Exam : 2 Hours

The Course Objective Is To Impart Knowledge Of

1. To understand the effect of force and moment on the body.

2. To understand the concept of equilibrium and apply the conditions of equilibrium

3. To understand the concept of moment of inertia and apply on rectangular, square, circle or composite section of rectangular, square, circle.

4. To understand the principle of virtual work and apply on connected bodies.

5. To understand the work, energy, D Alemberts Principle and apply on connected bodies.

6. To understand the Impact, Impulse and apply on connected bodies

After the completion of course student will be able to

1. Students will be able to find effect of force on a body.

2. Students will be able to analyze the effect of a system of forces on a given body with the concepts of Equilibrium & Free body diagram.

3. Students will be able to calculate centroid/C.G. and moments of inertia.

4. Students will be able to solve problem of connected bodies by virtual work principal.

5. Students will be able to solve problem of connected bodies by work, energy, D Alemberts Principle.

6. Students will be able to solve problem of connected bodies by Impact, Impulse.

Unit - I : Important Vector Quantities: (10 Hrs)

Position-vector, moment of a force about a point about an axis, couples, couple moment as a free vector. Equivalent force systems: Resultant of a 2 dimensional distributed loads and three-dimensional general force system Wrench.

UNIT - II : Equations of Equilibrium: (10 Hrs)

Free body diagrams, Equations of equilibrium coplanar concurrent and Non-concurrent systems, General spatial force system.

Truss: Analysis of simple pin jointed frames by method of joints method of sections.

Friction forces: Law of Coulomb friction, problems involving dry friction, simple applications like wedges and band brakes.

Unit - III : (10 Hrs)

(Ds. Sajid Anwar)   (AvBhavadi)   v. Giriya (B.R.Chide)

Centriods and Moments of Inertia: Second Moment and products of inertia of plane areas, Moment of inertia of masses. Transfer theorems for moment of inertia and Product of inertia, Polar moment of inertia, Principal axes, Mohr''s circle of inertia.

Virtual Work: Introduction of Virtual work theorem: Principle of Virtual work applied to equilibrium of Mechanisms, simple beam, Pin jointed frames.

Unit -IV: (10 Hrs)

D'Alembert''s Principle, work Energy method, (Expressions based on center of mass).

Methods of Momentum : Linear impulse momentum, considerations for a system of particles, Consideration of linear momentums, Elastic impact of two bodies, Direct central impact.

Books Recommended:
1. Engineering Mechanics: F.L Singer

2. Engineering Mechanics: Tmoshenko & Young

3. Engineering Mechanics: Bear and Johnson

4. Engineering Mechanics: I.H.Shames

5. Engineering Mechanics: R.D.Askhedkar & P.B.Kulkarni