



SAMRAT ASHOK TECHNOLOGICAL INSTITUTE

(Engineering College), VIDISHA M.P.

(An Autonomous Institute Affiliated to RGPV Bhopal)

-----CIVIL ENGINEERING-----

Semester/Year		I/I		Program			B.Tech				
Subject Category	ESC	Subject Code:	CEA103	Subject Name:		Engineering Mechanics					
Maximum Marks Allotted											
Theory				Practical			Total Marks	Contact Hours			Total Credits
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz		L	T	P	
60	20	10	10	30	10	10	150	3	-	2	4
Prerequisites:											
Physics and Mathematics.											
Course Objective:											
Students are expected to learn the basic concepts of Engineering Mechanics and to think clearly and critically the solution of Engineering problems with this knowledge in their respective fields.											
Course Outcomes:											
After completion of the course, the student will be able to:											
<ol style="list-style-type: none"> 1. Understand the basic concepts and fundamental principles of Engineering Mechanics. 2. To enhance their understanding and apply this knowledge in their specific courses for the analysis and design problems. 											
UNITs	Descriptions							Hrs.	CO's		
I	Equilibrium of System of Forces : Force Systems Basic concepts, Particle and Rigid Body equilibrium; Coplanar-Concurrent and Non-concurrent Forces, Components in Space, Resultant, Moment of Forces and its Applications; Equilibrium of System of Forces, Free body diagrams, Equations of Equilibrium of Coplanar Systems; Static Indeterminacy, Friction-Application problems such as Impending motion of connected bodies, ladder friction & belt drives.							9	CO1 & CO2		
II	Trusses: Introduction to various types of Trusses, Analysis of forces in the members of a Perfect truss: Method of joints, Method of Section, Graphical Methods.							7	CO1 & CO2		
III	Analysis of Beams and Simple Frames : Types of Beams, loading and supports; Shear Force, Bending moment, Axial Force diagrams for various types of determinate beams and frames.							7	CO1 & CO2		
IV	Centroid and Moment of Inertia : Centroid of simple figures from first principles, centroid of composite sections; Moment of inertia of plane sections from first principles, Moment of inertia of standard sections and composite sections, Product of Inertia, Principal Moment of Inertia.							9	CO1 & CO2		
V	Kinetics of Rigid Bodies: Basic terms, general principles in dynamics; Types of motion, Instantaneous centre of rotation in plane motion and simple problems; D'Alembert's principle and its applications in plane motion and connected bodies; Work Energy principle and its application in plane motion of connected bodies; Kinetics of rigid body rotation							8	CO1 & CO2		
Guest Lectures (if any)											

Total Hours	40
Suggestive list of experiments:	
<ol style="list-style-type: none"> 1. To verify law of Polygon of forces. 2. To find the reaction at the supports of a Simply Supported Beam and verify the law of Superposition of Forces. 3. To determine the Coefficient of friction between different surfaces using a horizontal plane. 4. To find the Coefficient of friction between Rope and Drum. 5. To verify Shear Force at a given section of a Simply Supported Beam. 6. To verify Bending Moment at a given section of a Simply Supported Beam. 	
Text Book-	
<ol style="list-style-type: none"> 1. Shesha Prakash and Mogaveer; Elements of Civil Engg & Engg. Mechanics; PHI 2. Civil Engineering materials, TTTI, Chandigarh. 3. R.C. Hibbler– Engineering Mechanics: Statics & Dynamics 	
Reference Books-	
<ol style="list-style-type: none"> 1. Engineering Mechanics by R.K. Bansal 2. Beer & Johnston, Vector Mechanics for Engineering–Statics & Dynamics. 3. Engineering Mechanics by Bhavi Katti 	
Modes of Evaluation and Rubric	
<p>Quiz, Assignment, Midterm exam, End term exam and Practical Viva. Rubric: End term exam. Practical: 50% Quiz and 50% Viva.</p>	
List/Links of e-learning resource	
<p>https://nptel.ac.in/courses/122/104/122104015/</p> <p>https://nptel.ac.in/courses/105/106/105106116/</p> <p>https://nptel.ac.in/courses/105/106/105106201/</p>	
Recommendation by Board of studies on	08-06-2023
Approval by Academic council on	
Compiled and designed by	
Subject handled by department	Civil Engineering Department



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-----CIVIL ENGINEERING-----

Semester/Year		II/I		Program			B.Tech				
Subject Category	ESC	Subject Code:	CEA101	Subject Name:		Basic Civil Engineering					
Maximum Marks Allotted								Contact Hours			Total Credits
Theory				Practical			Total Marks	L	T	P	
End Sem	Mid-Sem	Assignment	Quiz	End Sem	Lab-Work	Quiz					
60	20	10	10	30	10	10	150	3	-	2	4
Prerequisites:											
Nil											
Course Objective:											
Students are expected to learn the basic concepts of Civil Engineering and to think clearly and critically the solution of Engineering problems with this knowledge in their respective fields.											
Course Outcomes:											
After completion of the course, the student will be able to:											
<ol style="list-style-type: none"> 1. Understand the basic concepts and fundamental principles of Civil Engineering. 2. To enhance their understanding and apply this knowledge in their specific courses for the analysis and design problems. 											
UNITs	Descriptions							Hrs.	CO's		
I	Building Materials: Stones, bricks, cement, lime, timber-their types, properties, tests & uses, laboratory tests of concrete and mortar Materials: Workability and Strength properties of Concrete, Preparation of concrete, compaction, curing, etc.							8	CO1 & CO2		
II	Elements of Building Construction: Various components of a building and their functions, Types of foundations, Brick masonry walls, plastering and pointing, floors, roofs, Doors, windows, lintels, staircases – types and their suitability							8	CO1 & CO2		
III	Surveying & Positioning: Introduction to surveying Instruments – levels, theodolites, plane tables and related devices. Electronic surveying instruments etc. Measurement of distances – conventional and EDM methods, measurement of directions by different methods, measurement of elevations by different methods. Reciprocal levelling.							10	CO1 & CO2		
IV	Mapping & Sensing: Mapping details and contouring, Profile Cross sectioning and measurement of areas, volumes, application of measurements in quantity computations, Survey stations, Introduction of remote sensing and its applications.							7	CO1 & CO2		
V	Transportation Engineering: Role of Transportation in National development, Transportation Ways, Surface- Transportation and Aviation, BOT & BOOT Projects for Highways, Elements of Traffic Engineering and Traffic Control							7	CO1 & CO2		
Guest Lectures (if any)											
Total Hours								40			

Suggestive list of experiments:	
<ol style="list-style-type: none"> 1. To find the Consistency of cement. 2. To find the Initial & Final Setting time of cement. 3. To find the Fineness of cement. 4. To find the Specific Gravity of cement. 5. To find compressive strength of cement. 6. To find the Specific Gravity of sand 7. To find the sieve analysis and zoning of sand 8. To find the bulking and water absorption of sand. 9. Testing of coarse aggregate: Specific Gravity, sieve analysis, water absorption 10. To find the Water Absorption and compressive strength of Brick. 	
Text Book-	
<ol style="list-style-type: none"> 1. Building Construction by Sushil Kumar. 2. Civil Engineering materials, TTTI, Chandigarh. 3. Surveying Vol. I & II by Dr. B. C. Punamia Publication Laxmi Publication Delhi 4. Building Construction, Author: Dr. B. C. Punamia, Publisher: Laxmi Pub. Delhi 5. Engineering Material, Author: Dr. S.C. Rangwala, Publisher: Charotar Pub. House 6. Highway Engineering, Author: Khanna S. K. and Justo C. E.G., Publisher: Nemchand and Brothers 	
Reference Books-	
<ol style="list-style-type: none"> 1. Shesha Prakash and Mogaveer; Elements of Civil Engg & Engg. Mechanics; PHI 2. Building Materials by S.C. Rangwala-Charotar publications House, Anand 3. Building Construction by Sushil Kumar. 4. Surveying Vol. I and II, Author: S. K. Duggal, Publisher: Tata Macgraw hill Publication New Delhi 	
Modes of Evaluation and Rubric	
<p>Quiz, Assignment, Midterm exam, End term exam and Practical Viva. Rubric: End term exam. Practical: 50% Quiz and 50% Viva.</p>	
List/Links of e-learning resource	
<p>http://www.nptel.iitm.ac.in/courses.php?branch=Civil http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT</p>	
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