



C. U. SHAH UNIVERSITY
Wadhwan City

FACULTY OF: - Technology and Engineering
DEPARTMENT OF: - CE/IT/EC/MECH/EEE/AUTO/IC/EE/CIVIL
SEMESTER: - II
CODE: - 4TE02BCS1
NAME OF THE SUBJECT – Basics of Civil and Structural Engineering (BCSE)

Teaching and Evaluation Scheme :-

Subject Code	Name of the Subject	Teaching Scheme (Hours)				Credits	Evaluation Scheme							
		Th	Tu	Pr	Total		Theory				Practical (Marks)			Total
							Sessional Exam		University Exam		Internal		University	
							Marks	Hrs	Marks	Hrs	Pr/Viva	TW	Pr	
4TE02BCS1	Basics of Civil and Structural Engineering (BCSE)	4	0	2	6	5	30	1.5	70	3	30	20	---	150

Objectives: -To explore the basic mechanism of the structure and its strength along with survey and field work to incorporate the latest technological development to fulfill the need of the industry.

Prerequisites: - Looking to the wide field of the civil engineering and mechanics there was a need of comprehensive course.

Course outline:-

Sr. No.	Course Content	No. of Hours
SECTION-1 (Basic of Civil Engineering)		
1	Surveying: Surveying and leveling, Object and uses, Primary divisions, Fundamental principles, Classification of surveying, Plans and maps, Scales, Units of measure. Methods of linear measurements, Instruments used in chaining; Chain surveying, Ranging, Errors in Chaining, Conventional symbols. Types and uses of compass, Bearings, Whole Circle Bearings and Reduced Bearings. Leveling, object and uses, terms used in leveling, leveling instruments, methods of leveling, contours; characteristics and applications.	12
2	Modern tools of surveying and mapping: Introduction to Global Positioning System, Remote Sensing and Geographic Information System	6
3	Construction Materials: Requirement, types, uses, properties and importance of Civil Engineering materials like Stone, Bricks, Lime, Cement, Ferrous and Non Ferrous Metals, Ceramic Materials, Timber, Sand, Aggregate, Mortar and Concrete.	8
SECTION-2 (Basic of Structural Engineering)		
4	Introduction: Scalar and Vector Quantities, composition and resolution of vectors, system of units, definition of space, time, particle, rigid body, force.	6



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5	Fundamentals of Statics: Principles of statics, coplanar, concurrent and non-concurrent, parallel and non-parallel forces, composition and resolution of forces, moments & couples - their properties, combination of coplanar couples and forces, equilibrant, equilibrium, free body diagrams, analytical conditions of equilibrium for coplanar force systems.	9
6	Truss: Simple determinate plane trusses and analysis for member forces using methods of joints and methods of sections.	9
7	Distributed forces, center of gravity and moment of inertia: Center of gravity of lines, plane areas, volumes and bodies, Pappus–Guldinus theorems, moment of inertia, polar moment of inertia & radius of gyration of areas, parallel & perpendicular axes theorems.	10

Learning Outcomes :-

By studying this course ,

- The students will get an overview of surveying, building planning.
- The course provides an essential tool to understand the basics of civil engineering works that an engineer come across in professional as well as personal life.
- The students learn to prepare the layouts of buildings and other infrastructures with basic knowledge of structure mechanism.

Books Recommended :-

1. “Surveying Volume I & II”, **Dr. B. C. Punamia**, Laxmi Publications
2. “Surveying Volume I & II”, **Dr. K. R. Arora**
3. “Surveying Volume I & II”, **S. K. Duggal** Tata McGraw Hill
4. “Surveying and leveling- Vol.I”, **T. P. Kanetkar & Kulkarni**, Pune Vidyarthi Griha Prakashan
5. “Surveying and levelling”, **N. N. Basak**, Tata McGraw Hill
6. “Surveying and levelling”, **S. C. Rangwala**, Charotar Publication
7. “Fundamentals of surveying”, **S. K. Roy**, Prentice Hall India, New Delhi
8. “Engineering Mechanics (Statics)”, **Beer and Johnston**, Tata McGraw Hill
9. “Applied Mechanics”, **S. B. Junnarkar & H. J. Shah**
10. “Engineering Mechanics”, **A. K. Taya**, IUmesh Publications.
11. “Engineering Mechanics Vol. I & II”, **Beer & Johnson**, Tata McGraw Hill.
12. “Strength of material”, **S. Ramamrutham**, Dhanpatrai & sons.
13. “Engineering Mechanics”, **R. S. Khurmi**, S. Chand.
14. “Strength of Materials”, **S. Ramamrutham & R. Narayan**, Dhanpatrai & sons.

E- Resources:-

1. <http://www.nptel.iitm.ac.in/courses.php?branch=Civil>
2. <http://www.nptel.iitm.ac.in/video.php?courseId=1053>
3. <http://www.nptel.iitm.ac.in/courses/Webcoursecontents/IITDelhi/Mechanics%20Of%20Solids/index.htm>
4. <http://www.nptel.iitm.ac.in/courses.php?branch=Civil>
5. <http://www.nptel.iitm.ac.in/courses/Webcourse-contents/IIT-ROORKEE/SURVEYING/home.htm>
6. <http://www.nptel.iitm.ac.in/video.php?courseId=1040>
7. <http://www.nptel.iitm.ac.in/video.php?courseId=1059>