Departmental Practical

Course Type	Course Code	Name of Course	L	T	P	Credit
DP	NCEC510	Advanced Testing laboratory	0	0	3	1.5

Course Objective
The course aims at imparting knowledge on advanced testing of methods related to Civil Engineering
Learning Outcomes
Upon successful completion of this course, the students should be able to: • Develop knowledge on materials and methods related to structural, geotechnical, water resources and transportation engineering.

Unit No.	Topics to be Covered	Contact Hours [P]	Learning Outcome
1	Determination of Compressive Strength of the Concrete Cube Specimens	03	Learn to determine the compressive strength of concrete cube samples
2	Determination of Splitting Tensile Strength of the Concrete Cylinder Specimens	03	Learn to determine the splitting tensile strength of cylindrical specimen
3	Determination of the Flexural Strength of the Concrete Specimens	03	Learn to determine the flexural strength of concrete beam specimen
4	Determination of Compressive Strength of Concrete by Rebound Hammer Test	03	Learn to determine the compressive strength of concrete by using the rebound hammer.
5	Determination of Quality of Concrete by Ultrasonic Pulse Velocity Test	03	Learn to determine the quality of concrete by using the Ultrasonic Pulse Velocity
6	Determination of the shear parameters of soil in triaxial apparatus	03	Learn to determine strength parameters of soil
7	Determination of the shear modulus (G) and damping ratio (D) of soil	03	Learn to determine shear modulus and damping ratio of various types of soil

Unit No.	Topics to be Covered	Contact Hours [P]	Learning Outcome
8	Characterization of geosynthetic materials	03	Learn to determine engineering characteristics of geosynthetics
9	Determination of the instantaneous velocity using Acoustic Doppler velocity meter	03	Learn the usage of Acoustic Doppler velocity meter for instantaneous velocity determination
10	Reducing the time to attain the peak of runoff hydrograph in simulated rainfall conditions	03	Understanding strategies for mitigating runoff and erosion
11	Determination of the co-efficient of discharge through a Trapezoidal Notch	03	Understating on discharge co-efficient of notches
12	Determination of the Flexural modulus (FM) of cement-stabilized overburden (OB) specimen	03	Learn the determination of stabilized marginal material for pavement application
13	Determination the Fatigue life (N) of cement-stabilized overburden (OB) specimen	03	Learn the determination of fatigue-life of stabilized material
14.	Determination of viscosity of bitumen using various types of viscometers	03	Learn the various procedures to determine viscosity of bitumen
	Total	**42**	

Text Books:

1. Gambhir, M. L. and Jamwal, N. (2014). Building and Construction Materials: Testing and Quality Control (Lab Manual Series), 1st Edition, McGraw Hill (India) Publishers.
2. Bowles, J.E. (2012). Engineering Properties of Soil and their Measurement, 4th Edition, McGraw Hill (India) Publishers.
3. Sivakugan, N., Arulrajah, A. and Bo, M.W. (2011). Laboratory Testing of Soils, Rocks and Aggregates, J.Ross Publishing.
4. Garg, S.K. (2015), 20th edition, "Hydrology and Water Resources Engineering", Khanna Publishers.
5. Som, S.K., Biswas, G. and Chakraborty, S. (2012). Introduction to Fluid Mechanics and Fluid Machines, 3rd Edition, Tata McGraw Hill Edu. Pvt. Ltd., India.

Reference Books:

1. Respective Indian Standard/ International Standard Codes of Practices.
2. .SP-36 (Part-1). Compendium of Indian standards on Soil Engineering, Bureau of Indian Standard, New Delhi