COURSE STRUCTURE

Course Code	**CVE 102B**			
Course Category	**Engineering Science**			
Course Title	**Basics to Civil Engineering**			
Teaching Scheme and Credits	**L**	**Laboratory**	**Credits**	
Weekly load hrs	**3**	**2**	**2+0+1 = 3**	

Pre-requisites: H. S.C Mathematics, Physics, Chemistry

Course Objectives:

1. To impart inter-disciplinary approach essential for an engineer.
2. To prepare engineering students with modern techniques used in Civil Engineering.
3. To prepare students to make drawings using different software.
4. To prepare engineering graduates with the knowledge of bye laws of construction and sustainable development using concept of environment.

Course Outcomes:

At the end of the course, students will be able to

1. Differentiate between various branches of civil engineering and understand the significance of an interdisciplinary approach needed for an engineer. (CL-II)
2. Apply modern survey techniques in relevant field applications. (CL-III)
3. Understand the role of a civil engineer in planning, regulating constructions and achieving sustainable development. (CL-II)

Course Contents:

Importance of Interdisciplinary approach in Civil Engineering: Role of Engineer in national development, Importance of an interdisciplinary approach in engineering. Importance of various areas of Civil Engineering: Surveying, Construction engineering, Fluid Mechanics, Transportation engineering, Irrigation engineering, Project management, Structural and Earthquake engineering, Geology, Environmental engineering, Infrastructure Development.

INFRASTRUCTURE and Project Management: Project feasibility studies, Interdisciplinary infrastructure provisions, monitoring and maintaining projects, software used in project management, Drone Survey, Management and control of resources, Smart cities.

Advanced Survey Techniques : Conventional Survey: Contouring, Types of maps, and their uses, Google Maps; Modern survey methods using levels, Theodolite, EDM, laser, total station and GPS, GIS, Measuring areas from maps using digital planimeter, Surveying software, surveying by total station, Photographic and Aerial Surveys.

Modern Construction Techniques and Materials: Introduction to automation in construction, MIS, MS Project, Conventional materials, Eco-friendly materials in construction, Introduction to Smart Materials.

Integrated built environment and byelaws : Principles of Planning(only Introduction), Byelaws, Concept of built up area, carpet area, plinth area, Plot area, FSI, Role of byelaws in regulating the environment, Concept of Green building.

Sustainable development and waste management: Methods of Harnessing the energies, Effect of pollution on environment, Engineer's role in achieving sustainable development, Environmental Impact Assessment (EIA), Solid waste management, e waste management

List of experiments

1) Study of any 4 types of maps and explaining their uses, study from Google earth.
2) Computation of Reduced Levels using Auto Level.
3) Comparative analysis between collimation plane method and Rise and Fall Method.
4) Application of Digital Level in contouring.
5) Measurement of angles using prismatic compass.
6) Measurement of area by Digital Planimeter of Toposheet.
7) Introduction to photogrammetry and Drone survey.
8) Developing and Drawing of plan, elevation and Section of a building.
9) Use of various functions provided in the Total Station.
10) Survey of current trend in Civil Engineering and application.
11) Application of GIS and GPS in Civil Engineering.
12) Use of Civil Engineering software.
13) Exercise on sustainable development.

Learning Resources:

Reference Books:

1. Shah M.G., Kale C. M., Patki S. Y., "Building Drawing with an integrated approach to Built Environment", Tata McGraw-Hill, 2012.
2. Kanetkar T. P., Kulkarni S. V., "Surveying and Levelling (Vol. I)", Pune Vidyarthi Griha Prakashan, 2006.

Supplementary Reading:

1. Dugal K. N., "Elements of Environmental Engineering", 8th ed., S. Chand, 2008.

Web Resources:

Weblinks:

Infrastructure Development: https://www.youtube.com/watch?v=3HzIhmbqA4I
Pile Foundation **:** https://www.youtube.com/watch?v=NmU0sL-BMf4
Reinforced Concrete Building Design: https://www.youtube.com/watch?v=Ku121R4rUrA
India's Greenest Building: https://www.youtube.com/watch?v=HSDQQQJP2DY
Solar Power Plant: https://www.youtube.com/watch?v=ZLgOoMSlS3Y
Pollution: https://www.youtube.com/watch?v=zOhkuh7j2HA
Engineer's and Sustainable Development: https://www.youtube.com/watch?v=3WBKA8xG9IU

MOOCs:

Pedagogy:

1. PPTs , Videos
2. Group Activity
3. Co Teaching

Assessment Scheme:

Class Continuous Assessment (CCA) (50 marks)

Assignments	Test	Presentations	Case study	MCQ	Oral	Attendance
15 (30%)	15 (30%)	15 (30%)	Nil	Nil	Nil	5 (10%)

Laboratory Continuous Assessment (LCA) (50 marks)

Practical	Oral based on practical	Site Visit	Mini Project	Problem based Learning	Any other
50 marks (100%)		-	-	-	-

Term End Examination : (50 marks)

End-term examination based on entire syllabus (50 marks); Duration 2 hrs.