

**F.E. FIRST SEMESTER**  
**Course Code – 210103**  
**Course Name: Environmental and Civil Engineering**

Credit Points	Teaching Hrs/Week	Practical Hrs/Week
5	3	2

<b>Objective</b>	1. To make the students aware of basic concepts and conventional as well as modern techniques used in civil engineering. 2. To introduce basic areas in civil engineering and fundamentals of environmental science to the students.
<b>Prerequisites</b>	12 <sup>th</sup> Pass with Physics, Chemistry and Mathematics

Unit	Topic Name	Details	Hrs
<b>I</b>	<b>Introduction to Civil Engineering</b>	(A) Significance and Nature of civil engineering, introduction to the main areas of Civil Engineering 1) Surveying 2) Quantity Surveying 3) Structural Engineering 4) Geotechnical and Foundation engineering 5) Construction Technology and Construction Management 6) Water Resources engineering 7) Transportation Engineering 7) Earthquake Engineering and Disaster Management (B) Role of civil Engineer adverse site conditions to work etc, Infrastructure Development and use of modern equipment techniques like EDM, Digital Theodolite, GPS, GIS, Introduction and applications of softwares for Designing/Drafting.	7
<b>II</b>	<b>Surveying and Map Making</b>	A) Linear and Angular measurements- introduction to traditional methods like chaining and offsetting for linear measurements, compass & theodolite for angular measurements. B) Concepts for preparing the maps and introduction to cartography, area measurement by planimeter, introduction to leveling and contouring.	7
<b>III</b>	<b>Materials and construction</b>	A) Various materials of construction and their uses for specific purposes depending on their properties, introduction to concrete and concreting, introduction and applications of smart and composite materials. B) Types of structures and suitability, introduction to foundations and machine foundations components of superstructure with reference to suitability of materials, requirements of good masonry, automation in construction.	7

<b>IV</b>	<b>Building Planning and Legal Aspects</b>	<p>A) Introduction of Building planning principles and building bylaws, interpreting an architectural/civil building plan.</p> <p>B) Introduction to – Land Acquisition Act 1894, DC rules, Environment Protection Act and other Legal provisions for control of Air, Water and Land Pollution and vehicles maintenance and catalytic converter.</p>	7
<b>V</b>	<b>Environmental Science</b>	<p>A) Basic concepts – ecosystems and ecology, biodiversity and extinction threats, Human centered and Life centered world views, development and sustainability</p> <p>B) Inter-relationship between population and resources, human impact on ecosystems, awareness and social responsibility.</p>	7
<b>VI</b>	<b>Environmental Pollution and Conservation of Natural Resources</b>	<p>A) Industrialisation and Urbanisation- global and Indian scenario, types of pollution with focus on Air, Water and Land pollution- causes/sources, ill effects and remedial/control measures, introduction to the measurements of pollutants.</p> <p>B) Need for energy and utilization/extraction of energy sources, social responsibility, energy crisis, conservation of natural resources, applying general simple principles/techniques such as recycling, vermiculture, forestation, rain water harvesting, promoting efficient, mass transportation, inter linking of water resources etc.</p>	7

<b>Lab/ Term Work</b>
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| <ol style="list-style-type: none"> <li>1. Linear Measurements- offsetting.</li> <li>2. Study and use of prismatic compass.</li> <li>3. Compass survey.</li> <li>4. Simple profile leveling exercise</li> <li>5. Differential Levelling Exercise</li> <li>6. Study of Modern equipment in Civil Engineering</li> <li>7. Study of Building Drawings and Building Planning</li> <li>8. Building Planning and Drawing</li> <li>9. Use of Digital Planimeter.</li> <li>10. Study of Environmental impact assessment (report)</li> <li>11. Two field visits</li> <li>12. Report writing</li> </ol> |
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Text Books	<ol style="list-style-type: none"> <li>1) Surveying and Levelling (Vol. I)- T.P. Kanetkar, S.V. Kulkarni PVG Prakashan, Pune 24<sup>th</sup> edition &amp; 13<sup>th</sup> edition</li> <li>2) Building construction- Bindra S. P., Arora S. P. Dhanpat Rai Publication, New Delhi 4<sup>th</sup> edition.</li> <li>3) Environmental science- working with earth- G. Tyler Miller Jr.</li> <li>4) Elements of cartography- Arthur Rokinson, Joel Morrison, Phillips Muehrcke Wiley Inc., 6<sup>th</sup> edition</li> <li>5) An introduction to composite Materials- D. Hall, T.W. Clyne: Cambridge University Press: 2<sup>nd</sup> edition</li> </ol>
Reference Books	<ol style="list-style-type: none"> <li>1) Surveying (Vol I and Vol II)- B. C. Punmia: Laxmi Publication Bangalore.</li> <li>2) Building design and Drawing: an integrated approach to built environment – Shah M.G., Kale C.M. : 4<sup>th</sup> edition.</li> <li>3) Air Pollution- Rao M.S.N., Rao H. V. M., 1<sup>st</sup> edition</li> </ol>
Related Websites	

Examination Scheme	Internal Assessment = 40	Punctual submission of Assignments, Surprise Test and Pre-announced Tests
	Term Work = 25	Punctual submission of weekly Lab Work, Viva and Submission of Lab records at the end of term on due date.
	Final Theory Paper = 60	Written

