

# Civil and Infrastructure Engineering

Semester VII						
Sr. No	Course Code	Course Name	L	T	P	C
1	CE309T	<a href="#">Construction Engineering and Management</a>	2	1	0	6
2	CE401C	<a href="#">Civil and Infrastructure Engineering Design</a>	1	0	1	3
3	-	Institute Elective-V	2	1	0	6
4	-	HSS Basket 1 or 2 (Elective-II)	2	1	0	6
5	CE401P	BTP-I/Program Elective-I	0	0	6	6
		<b>Total Credits</b>				<b>27</b>

# Civil and Infrastructure Engineering

1	<b>Title of the course</b> (L-T-P-C)	<b>Construction Engineering and Management</b> <b>3-0-0-6</b>
2	<b>Pre-requisite courses(s)</b>	Nil
3	<b>Course content</b>	<p><b>Fundamentals of construction project management:</b> Introduction, Project Initiation, and Planning, Time Value of Money, Investment Analysis, Cost-Benefit Analysis; Construction schedule management: Work Breakdown Structures, Development of project activity networks, Precedence Diagram Method, Critical Path Method (CPM), Program Evaluation and Review Technique (PERT), Line Balance Methods in scheduling.</p> <p><b>Construction material management:</b> Resources in construction, Resource levelling, the crashing of project schedules, earned value analysis.</p> <p><b>Construction Quality and safety:</b> Safety and occupational hazards in construction, Fundamentals of quality control in construction, Safety in construction - Cost of Accidents - Safety norms - Safety aids.</p> <p><b>Introduction to Construction Contracts:</b> Estimation, Tenders &amp; Contracts - EOI- Prequalification - Types of Contracts - Terminology used, fundamentals of delay analysis and claims, Construction Finances – decision making.</p> <p><b>Advances in construction management:</b> Introduction to Building Information Modelling (BIM), Lean construction, and Integrated Project Delivery in construction</p>
4	<b>Texts/References</b>	<p><b>Reading:</b></p> <ol style="list-style-type: none"> <li>1. Kumar Neeraj Jha, “Construction Project Management: theory and practice” Pearson Education India; 2nd edition, 2015.</li> <li>2. F. Lawrence Bennett, “The Management of Construction: A Project Lifecycle Approach”, Routledge; 1st edition, 2016.</li> <li>3. S. Choudhury “Project Management”, McGraw Hill Education, 2017.</li> </ol> <p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Riggs, James L., David D. Bedworth, and Sabah U. Randhawa., “Engineering Economics”, McGraw Hill Education; 4th edition, 2004.</li> <li>2. Garold D. Oberlender, “Project management for engineering and construction”, McGraw Hill Education; Second edition, 2014.</li> <li>3. Chitkara, K. K. “Construction Project Management”, McGraw-Hill; Forth Edition, 2019.</li> </ol>

# Civil and Infrastructure Engineering

1	<b>Title of the course (L-T-P-C)</b>	<b>Civil and Infrastructure Engineering Design (1-0-1-3)</b>
2	<b>Pre-requisite courses(s)</b>	Nil
3	<b>Course content</b>	<ol style="list-style-type: none"> <li>1. Design of Shallow Foundation</li> <li>2. Manual Design of G+2 Storey Building</li> <li>3. Design of Deep Foundation</li> <li>4. Design Rigid Pavement</li> <li>5. Design of Flexible Pavement</li> <li>6. Design of Concrete Gravity Dam</li> <li>7. Design of a Retaining Wall</li> <li>8. Design of G+10 Storey Building</li> <li>9. Design of Beam Bridge</li> <li>10. Design of a Sewage Treatment Plant</li> </ol>
4	<b>Texts/References</b>	<p><b>References:</b></p> <ol style="list-style-type: none"> <li>1. Shah, V. L. and Karve, S. R. (2010). Illustrated Design of Reinforced Concrete Buildings, 9<sup>th</sup> Ed., Structures Publications, Pune.</li> <li>2. Varghese, P. C. (2009). Design of Reinforced Concrete Foundations, 1st Ed., Prentice Hall India Learning Private Limited, New Delhi.</li> <li>3. Huang, Y.H. (2008) Pavement Analysis and Design, Pearson Prentice Hall, New Jersey, USA.</li> <li>4. Yoder, E.J. and Witzak. M.W. (2012) Principles of Pavement Design, Second Edition, John Wiley and Sons, New York, USA.</li> <li>5. Victor, D. J. (2019). Essentials Of Bridge Engineering, Oxford&amp; IBH Publishing Co. Pvt. Ltd., 6<sup>th</sup> Ed., New Delhi.</li> <li>6. A Water Resources Technical Publication: Design of Gravity Dams (2011), U.S. Department of the Interior, Books Express Publishing, USA.</li> <li>7. Metcalf and Eddy (2002). Wastewater Engineering, Treatment, Disposal and Reuse, 4<sup>th</sup> Ed., Tata McGraw-Hill, New Delhi.</li> </ol>