

## Construction Methods and Technology

<b>Course Title</b>	:	Construction Methods and Technology
<b>Course Code</b>	:	
<b>Credit Unites</b>	:	4

L	T	P	SW	FW	Total Credits
2	1	0	2	0	4

<b>Course Objective</b>	:	The course aims at understanding the significance and the role that the construction materials, methods, equipment and technology plays in a construction project and develop the ability to critically think and choose right construction material, apply best suited construction method, select appropriate construction equipment for enhanced productivity and technology best suited to the site specific requirements with specific consideration to ecology and sustainability
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<b>Pre-requisites</b>	:	Must have the knowledge of civil engineering and familiarity with National Building Code, IS codes of practices like IS 456, IS 383, IS 800 and other associated National and International Codes of Practices
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<b>Student Learning Outcomes (SLO)</b>	:	Upon successful completion of the course, students will be able to:
		<ol style="list-style-type: none"> <li>1. Demonstrate professional understanding and knowledge of sustainable construction material, methods and technology</li> <li>2. Develop resource-based construction method statement and choosing suitable construction technology.</li> <li>3. Propose the combination of suitable construction material, methods, technology and equipment.</li> <li>4. Interpret construction specifications, with all technical parameters associated with the construction materials, methods and technology.</li> </ol>

**Course Content / Syllabus:**

<b>Modules</b>	<b>Weightage (%)</b>
<b>Module I – Introduction to the sustainable building materials</b>	<b>30%</b>
Introduction to the eco-friendly practices in selecting different building materials and sustainable construction techniques with an understanding of project life cycle. Different types of concrete – steel and other light weight and modern construction materials including glass, engineered wood, polymers and nano materials used for sustainable construction projects.	
<b>Module II – Methods of construction</b>	<b>25%</b>
Construction Site Layout and Logistics - consolidation Centre, overview of traditional and modern method of Construction - method statement, construction specifications - different types of modern methods of construction – onsite, offsite, Mechanised.	
<b>Module III – Construction technology</b>	<b>25%</b>
Underground Construction – groundwater control – piling and foundations - trenchless technology – rock excavation – drill & blast – tunneling works- tall buildings - concrete pumping – underwater construction. Overview of temporary structures - in construction – formworks & scaffolding – requirements and selection – failure of formworks	
<b>Module IV – Construction equipment</b>	<b>20%</b>
Working principle – productivity enhancement - commonly used Construction Equipment for Earthwork, Concrete Construction - Lift & shift – piling - paving tools, plants and machinery, Cost economics of commonly used construction equipment	

<b>Pedagogy for Course Delivery</b>	:	<p>Lectures would present the key conceptual material In order to prepare for lectures, the student must read the readings set for the class, and should prepare short notes on them. The lecturers will bring the important issues to your attention and add other information that may not be gleaned from the weekly readings. During the course, additional examples may be presented that are relevant to the completion of this course. Lecture slides and/or notes will be uploaded/mailed on LMS. These are not substitutes for the lecture. Many students find it beneficial to take print-outs of the lecture slides and/or notes to the lecture and to annotate them with comments, examples, etc. These will generally be available before the lecture.</p> <p>Tutorials would be interactive, collaborative sessions in which students attempt to practice concepts presented at the lecture with their peers. In every tutorial the students are required to discuss the exercises followed by solving the discussion questions, if any. The exercises will be done in a small group of five people and presented to all participants</p>
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Lab / Practical details, if applicable: NIL

Assessment / Examination Scheme:

Theory Lecture / Tutorial (%)	Lab / Practical / Studio (%)
100	0

Theory Assessment (Lecture & Tutorial)

Continuous Assessment / Internal Assessment				End Term Examination
Components	Project / Home Assignment / Presentation	Class Test	Attendance	50%
Weightage (%)	30%	15%	5%	

Lab / Practical / Studio Assessment:

Continuous Assessment / Internal Assessment				End Term Examination
Components	Test / Assignments	Project / Presentation	Attendance	
Weightage (%)				

Notional Hours:

Lecture Contact	30
Tutorial Contact	15
Self-Work	75
Field Work	0
Assessment	10
<b>Total Session</b>	<b>130</b>

Text & References:

Textbooks

1. Peurifoy, R., Schexnayder, C.J., Shapira, A. and Schmitt, R. (2010), *Construction Planning, Equipment, and Methods*, 8th ed., McGraw-Hill.

Reference Books

1. Jha, K. N. (2012), *Formwork for Concrete Structures*, Tata McGraw Hill.
2. Bryan, T. (2010), *Construction Technology: Analysis and Choice*, John Wiley and Sons
3. Allen, E. (1985), *Fundamentals of Building Construction: Materials and Methods*, Wiley.
4. Yit Lin Chew, M. (2012), *Construction Technology for Tall Buildings*, 4th ed., World Scientific.
5. Chudley, R. and Greeno, R. (2006), *Advanced Construction Technology*, Pearson Prentice Hall.

Any Other Study Material:

1. SP 7: 2016 (Volume 1&2) - *National Building Code – 2016*, IS codes 383, 456, 800, 10262 and IS 15883 (Part 1 to 12) and other related *Indian standard codes of practice*