

***INSTRUCTIONAL & ASSESSMENT SCHEME***

***DOMAIN - I CONSTRUCTION PLANNING & PROJECT MANAGEMENT***



**Centurion**  
**UNIVERSITY**

**DEPARTMENT OF CIVIL ENGINEERING  
SCHOOL OF ENGINEERING & TECHNOLOGY  
JAGANNATHA INSTITUTE FOR TECHNOLOGY & MANAGEMENT  
CENTURION UNIVERSITY OF TECHNOLOGY AND MANAGEMENT  
SEPTEMBER 2016**

**DOMAIN - I CONSTRUCTION PLANNING & MANAGEMENT**

<i>S. No.</i>	<i>Course Code</i>	<i>Course Title</i>	<i>Course Nature</i>	<i>Credits</i>
1	DMCE0111	Quality Control in Construction Industry	Theory + Practice	4
2	DMCE0113	Risk Management & Safety in Construction Industry	Practice	4
3	DMCE0114	Renovation of Buildings & Maintenance Management		4
4	DMCE0412	Prefabricated Structures		4
5	DMCE0513	Project Scheduling & Materials Management	Project + Practice	6
6	DMCE0300	Project	Project	6
7	DMCE0800	Internship	Internship	4
8			Total	32

**DMCE0111 Quality Control in Construction Industry - Learning / Practice Activities**

<b>Activity #</b>	<b>Details</b>	<b>Venue</b>	<b>Group / Individual</b>	<b>Resources List</b>
1)	Theory on Quality Control ▪ Principles of QMS, QCIP	Class Room	Lecture	<ol style="list-style-type: none"> <li>1. <i>DMCE0111 Quality Control in Construction Industry</i></li> <li>2. <i>Handout</i></li> <li>3. <i>MSDGC Contractor QC Plan Template</i></li> <li>4. <i>Common Mistakes in</i></li> <li>5. <i>Quality Control Process</i></li> <li>6. <i>Concrete Distress</i></li> <li>7. <i>Construction QC Inspection Report</i></li> <li>8. <i>Durability &amp; Deterioration of Concrete</i></li> <li>9. <i>Health Assessment of RC Structures</i></li> </ol>
2)	Practice Session 1 - QC Testing Procedure & QC Schedule preparation	Lab / Class Room	Individual	
3)	Practice Session 2 - QC Inspection Check list & Generation of sample inspection check list for ▪ A real estate / Irrigation / Highway project.	Lab / Class Room	Group	
4)	Practice Session 3 - QC Inspection schedule, Check list & Generation of sample inspection check list for form work in a ▪ A real estate / Irrigation / Highway project.	Lab / Class Room	Group	
5)	Practice Session 4 - QC Inspection schedule, Check list & Generation of sample inspection check list for Concreting in a ▪ A real estate / Irrigation / Highway project.	Lab / Class Room	Group	
6)	Practice Session 5 - Field visit to a project site	Field	Group	
7)	Practice Session 6 - Study of QC standards for various construction equipment	Lab / Class Room	Individual	
8)	Practice Session 7 - Field visit to ▪ Concrete batch mixing / Bitumen batch mixing unit.	Field	Group	
9)	Practice Session 8 - Report on Quality standards & Quality Assurance Practices for a selected organization. ( <i>Report 2</i> )	Lab / Class Room	Individual	
10)	Practice Session 9 - Field visit to a prefab unit and report generation on QC methods followed.	Field	Group	

Note each Session is 3 hrs.

**DMCE0113 Risk Management & Safety in Construction Industry - Learning / Practice Activities**

<b>Activity #</b>	<b>Details</b>	<b>Venue</b>	<b>Group / Individual</b>	<b>Resources List</b>
1)	Practice Session 1 - Importance of Risk Management studies <ul style="list-style-type: none"> <li>▪ Risk Analysis / Risk Mapping / Risk Classification and</li> <li>▪ Risk Management Process generally followed.</li> </ul>	Lab / Class Room	Group	<ol style="list-style-type: none"> <li>1. <i>PM Book</i></li> <li>2. <i>Project Risk Management - An Overview</i></li> <li>3. <i>Risk Management - Washington State DOT</i></li> <li>4. <i>Risk Management</i></li> <li>5. <i>Risk Management in Construction Project Networks - Finland</i></li> <li>6. <i>Case Studies</i></li> <li>7. <i>ABC of Construction Safety - Oregon</i></li> <li>8. <i>Handbook on Building Fire Codes</i></li> <li>9. <i>Health &amp; Safety in Construction - UK</i></li> <li>10. <i>Is Codes for Safety Requirements</i></li> <li>11. <i>NTPC Safety Rules</i></li> <li>12. <i>Safety, Health &amp; Environmental Issues - US</i></li> <li>13. <i>Insurance</i></li> </ol>
2)	Practice Session 2 - Risk causation theories <ul style="list-style-type: none"> <li>▪ Foundations of Major Injury,</li> <li>▪ Unsafe conditions and unsafe acts.</li> </ul>	Lab / Class Room	Group	
3)	Practice Session 3 - Risk Identification in construction industry and Study on risk identification process & preparing a preliminary check list / report for different construction activities viz., <ul style="list-style-type: none"> <li>▪ Multi-storeyed residential building / Commercial complex / Highway project / Bridge over railway crossing.</li> </ul>	Lab / Class Room	Group	
4)	Practice Session 4 - Understanding of safety precautions in <ul style="list-style-type: none"> <li>▪ Construction activity / Construction equipment usage</li> <li>▪ Managing electrical systems on site housing for staff, site office etc</li> </ul>	Lab / Class Room	Individual	
5)	Practice Session 5 - Study of construction safety management guidelines <ul style="list-style-type: none"> <li>▪ Safety inspection and safety audit and</li> <li>▪ Case studies of safety provisions w.r.t. selected organizations,</li> </ul>	Lab / Class Room	Group	
6)	Practice Session 6 - Visit to a project site visit for observing and noting the safety provisions adopted.	Field		
7)	Practice Session 7 - Preparing reports for safety code provisions for some construction activities as per IS Codes.	Lab / Class Room	Group	
8)	Practice Session 8 - Insurance in Construction Industry and various Insurance Policies <ul style="list-style-type: none"> <li>▪ Project Insurance / Fire Policy / Plant &amp; Machinery Insurance / Liquidity Damage Insurance</li> </ul>	Lab / Class Room	Group	

**DMCE0114 Renovation & Rehabilitation of RCC Buildings - Learning / Practice Activities**

<b>Activity #</b>	<b>Details</b>	<b>Venue</b>	<b>Group / Individual</b>	<b>Resources List</b>
1)	Practice Session 1 - Understanding the concepts of durability and degradation of concrete structures <ul style="list-style-type: none"> <li>▪ Defect identification / Action of chemical attack and</li> <li>▪ Different types of damages to the concrete structures in normal and marine environment.</li> </ul>	Lab / Class Room	Individual	<ol style="list-style-type: none"> <li>1. <i>Chemical Action and Strengthening</i></li> <li>2. <i>Condi. Assess't for Repair - NDM</i></li> <li>3. <i>Conservation Heritage Buildings</i></li> <li>4. <i>CPWD Handbook on R R of RCC Buildings</i></li> <li>5. <i>Fundamentals of Waterproofing</i></li> <li>6. <i>NDT Part I - Dr. Fixit</i></li> <li>7. <i>NDT Part II - Dr. Fixit</i></li> <li>8. <i>Preserv, Rehabil, Restor. &amp; Reconstn of Heritage Buildings</i></li> <li>9. <i>Renov. of Buildings Maint. Mangt - Dr. Fixit</i></li> <li>10. <i>Repair Practices and Materials</i></li> <li>11. <i>Sesmic Retrofitting</i></li> <li>12. <i>Waterproofing.doc</i></li> </ol>
2)	Practice Session 2 - Crack Diagnosis and its appraisal <ul style="list-style-type: none"> <li>▪ Reasons for crack development / Crack prevention,</li> <li>▪ Monitoring &amp; Measuring Crack propagation and</li> <li>▪ Preparing a report on crack repairing techniques.</li> </ul>	Lab / Class Room	Individual	
3)	Practice Session 3 - Rehabilitation & Retrofitting and their necessity. <ul style="list-style-type: none"> <li>▪ Leakage arrest &amp; Water proofing / Structural damage rectification / Termite treatment.</li> </ul>	Lab / Class Room	Individual	
4)	Practice Session 4 - Study and report preparation on strengthening of different structural elements <ul style="list-style-type: none"> <li>▪ Columns, Beams, Slabs and Foundation treatment.</li> </ul>	Lab / Class Room	Group	
5)	Practice Session 5 - Study and presentation of various methods of strengthening concrete through <ul style="list-style-type: none"> <li>▪ Surface impregnation by vacuum methods / Slurry injection,</li> <li>▪ Plate bonding, RCC Jacketing / Propping and supporting,</li> <li>▪ Fibre wrap technique and</li> <li>▪ Chemical and electro- chemical methods of repair.</li> </ul>	Lab / Class Room	Group	
6)	Practice Session 6 - Visits to different buildings in JITM campus and identify the repairs needed and to prepare a report repair schedule.	Field	Group	
7)	Practice Session 7 - Repair methods using <ul style="list-style-type: none"> <li>▪ Cement Mortars / Polymer Modified Cement Mortars,</li> <li>▪ Chemical &amp; Electro-chemical Methods.</li> </ul>	Lab / Class Room	Individual	
8)	Practice Session 8 - Special consideration in toilets, plumbing fittings, electrical drawings, choosing interiors, aesthetics, false ceiling, partitions etc.	Field	Group	
9)	Practice Session 9 - Discussion on Manual on Condition Assessment of Buildings for Repair & Upgrading,	Lab / Class Room	Group	

**DMCE0412 Prefabricated Structures - Learning / Practice Activities**

<b>Activity #</b>	<b>Details</b>	<b>Venue</b>	<b>Group / Individual</b>	<b>Resources List</b>
1)	Practice Session 1 - Understanding the principles of Prefabrication <ul style="list-style-type: none"> <li>▪ Need &amp; Materials,</li> <li>▪ Prefab Components &amp; Modular coordination and</li> <li>▪ Standardisation of components.</li> </ul>	Lab / Class Room	Individual	<ol style="list-style-type: none"> <li>1. <i>Formwork</i></li> <li>2. <i>Industrialized Building</i></li> <li>3. <i>Prefab RCC Structures</i></li> <li>4. <i>Prefab Structures - Erection of RCC Structures</i></li> <li>5. <i>Prefab Structures - Erection of Steel Structures</i></li> <li>6. <i>Steel Fabrication</i></li> </ol>
2)	Practice Session 8 - Prefab construction design and supervision. <ul style="list-style-type: none"> <li>▪ Dongyue Process.</li> </ul>	Lab / Class Room	Individual	
3)	Practice Session 3 - Formwork for prefabrication <ul style="list-style-type: none"> <li>▪ Requirements of good formwork and Types of formwork.</li> </ul>	Lab / Class Room	Individual	
4)	Practice Session 4 - Prefabrication of RCC structures <ul style="list-style-type: none"> <li>▪ Stages of manufacturing / Components / Curing,</li> <li>▪ Demoulding &amp; lifting / Storage &amp; Transportation.</li> </ul>	Lab / Class Room	Group	
5)	Practice Session 5 - Methods of RC Building erection <ul style="list-style-type: none"> <li>▪ Box - Type Blocks / Large Block Building,</li> <li>▪ Multi - story Frame Buildings,</li> <li>▪ Erection using Hinged Frame Indicators / Erection of RC Box - Type Roofs / Erection of columns and</li> <li>▪ Erection of Prefabricated foundation slab.</li> </ul>	Lab / Class Room	Group	
6)	Practice Session 6 - Erection of Steel Structures <ul style="list-style-type: none"> <li>▪ Elements of erection / Types of erection and</li> <li>▪ Longitudinal &amp; Unit methods of assembly.</li> </ul>	Lab / Class Room	Group	
7)	Practice Session 7 - Steel fabrication <ul style="list-style-type: none"> <li>▪ Workshop layout / Template &amp; Marking and</li> <li>▪ Pressing &amp; Forming.</li> </ul>	Lab / Class Room	Group	
8)	Practice Session 8 - Visit to any prefab unit and prepare a report on various aspects of prefabrication process followed.	<i>Field</i>	Group	

**DMCE0513 Project Scheduling & Materials Management - Learning / Practice Activities**

<b>Activity #</b>	<b>Details</b>	<b>Venue</b>	<b>Group / Individual</b>	<b>Resources List</b>
1)	Practice Session 1 - Understanding of WBS and preparing data for project management through <ul style="list-style-type: none"> <li>▪ Developing plan, sectional elevations of given buildings using AUTOCAD and Listing the materials and quantities.</li> </ul>	Lab / Class Room	Individual	1. <i>BOQ</i> 2. <i>Materials Management</i> 3. <i>Measurement Methods</i> 4. <i>Resource Scheduling</i> 5. <i>Schedule of Rates</i> 6. <i>Site Investigation</i> 7. <i>Tenders &amp; Bidding</i> 8. <i>DPR – Road Project</i> 9. <i>ERP 2</i>
2)	Practice Session 2 - Identification of material resources for one of the following civil construction works. <ul style="list-style-type: none"> <li>▪ Housing Project / Highway Project / Irrigation Structure.</li> </ul>	Lab / Class Room	Individual	
3)	Practice Session 3 - Learning the concepts of Resource Levelling & Resource allocation.	Lab / Class Room	Individual	
4)	Practice Session 4 - Learning the steps involved in site supervision and practicing the same.	Lab / Class Room	Group	
5)	Practice Session 5 - Get appraised of different measurement processes for different activities in civil construction works (through IS Codes)	Lab / Class Room	Group	
6)	Practice Session 6 - Study of M. Book and Filling Muster Roll (Form 21).	Field	Group	
7)	Practice Session 7 - Understand the steps involved in tendering and bidding process of construction projects.	Lab / Class Room	Group	
8)	Practice Session 8 - Preparation of scope, detailed estimates, BOQ and tender documents through assignments	Field	Group	
9)	Practice Session 9 - Understanding the significance of Specifications for different items in the construction works and the procedure of conducting Rate Analysis for a selected building.	Field	Individual	
10)	Practice Session 10 - Study of standard contract agreement formats.			

**DMCE0300 Project (Project - 6 Credits)**

<b><i>Topics</i></b>	<b><i>Reports / Assignments to be submitted for evaluation</i></b>
<ul style="list-style-type: none"> <li>➤ Project on a given Building / Highway / Irrigation Structure covering various aspects of Construction Project Planning and Management</li> <li>➤ Identification of the need for the structure,</li> <li>➤ Drawing board stage of planning the structure,</li> <li>➤ Planning of the structure proper,</li> <li>➤ Preparation of working drawings (Plans, Sectional Elevations) including reinforcement drawing,</li> <li>➤ Project Scheduling,</li> <li>➤ Resource Scheduling and Resource Levelling,</li> <li>➤ Complete Project Planning using MS Project Software.</li> </ul>	<ul style="list-style-type: none"> <li>➤ <i>During the project the students are required to</i> <ul style="list-style-type: none"> <li>▪ <i>Carry out the functional planning,</i></li> <li>▪ <i>Prepare a DPR,</i></li> <li>▪ <i>Design the structure using relevant software,</i></li> <li>▪ <i>Generate Plan, Sectional elevations for the building using Auto CAD and other software,</i></li> <li>▪ <i>Carrying out Work Break Down Structure,</i></li> <li>▪ <i>List the specifications for different items and materials,</i></li> <li>▪ <i>Prepare BOQ for various items,</i></li> <li>▪ <i>Arrive at the project cost as per standard rates,</i></li> <li>▪ <i>Generate a tender invitation letter and the tender documents and</i></li> <li>▪ <i>Identify the Contract Conditions and prepare a Contract Agreement.</i></li> </ul> </li> </ul>