PROPOSAL

FOR

M. TECH. CIVIL

in

CONSTRUCTION TECHNOLOGY AND MANAGEMENT
## SCHEME FOR M.TECH. CIVIL (CONSTRUCTION TECHNOLOGY & MANAGEMENT)
### P G DEGREE COURSE

### SEMESTER - I

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course No.</th>
<th>Subject</th>
<th>Examination Schedule</th>
<th>Teaching Schedule</th>
<th>Time of Exams(Hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td>P/D</td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>MCM-101</td>
<td>Project Planning &amp; Control</td>
<td>3</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>MCM-102</td>
<td>Civil Engineering Materials</td>
<td>3</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>MCM-103</td>
<td>Quantitative Methods in Construction Management</td>
<td>3</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>4</td>
<td>Departmental Elective-I</td>
<td></td>
<td>3</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>MCM-104</td>
<td>Computational Laboratory for Construction Management (Lab-I)</td>
<td>-</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>12</td>
<td>4</td>
<td>20</td>
</tr>
</tbody>
</table>

### SEMESTER - II

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course No.</th>
<th>Subject</th>
<th>Examination Schedule</th>
<th>Teaching Schedule</th>
<th>Time of Exams(Hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td>P/D</td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>MCM-201</td>
<td>Construction Methods &amp; Equipment</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>2</td>
<td>MCM-202</td>
<td>Management of Quality &amp; Safety in Construction</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>3</td>
<td>MCM-203</td>
<td>Building Services &amp; Maintenance Management</td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>4</td>
<td>Departmental Elective-II</td>
<td></td>
<td>3</td>
<td>1</td>
<td>-</td>
</tr>
<tr>
<td>Sr. No.</td>
<td>Course No.</td>
<td>Subject</td>
<td>Examination Schedule</td>
<td>Teaching Schedule</td>
<td>Time of Exams(Hrs.)</td>
</tr>
<tr>
<td>---------</td>
<td>------------</td>
<td>--------------------------------</td>
<td>----------------------</td>
<td>-------------------</td>
<td>---------------------</td>
</tr>
<tr>
<td></td>
<td>MCM- 204</td>
<td>Quality Control in Construction</td>
<td></td>
<td>-</td>
<td>40 60 100 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(Lab-II)</td>
<td></td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>12</td>
<td>4 4 240 200 60 500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(i)

**SEMESTER –III**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course No.</th>
<th>Subject</th>
<th>Examination Schedule</th>
<th>Teaching Schedule</th>
<th>Time of Exams(Hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MCM- 301</td>
<td>Construction Economics &amp; Finance</td>
<td></td>
<td>3 4 6 40 - 100 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MCM- 302</td>
<td>Seminar</td>
<td></td>
<td>4 6 40 - 100 1</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dissertation / Major Project starts</td>
<td></td>
<td>- 1 1 100 - 100 1</td>
<td></td>
</tr>
</tbody>
</table>

**SEMESTER –IV**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Subject</th>
<th>Time of Exams(Hrs.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Dissertation, Evaluation &amp; Viva Voce</td>
<td></td>
</tr>
</tbody>
</table>

* List of Electives for M. Tech. Civil (Construction Technology & Management)*

1. MCM-401 Construction Engineering Practices
2. MCM-402 Construction & Contract Management
3. MCM-403 GIS in Construction Engineering and Management Reliability
4. MCM-404 Reliability Analysis in Construction Management
5. MCM-405 Systems Design and Value Analysis
6. MCM-406 Recent Advances in Construction Materials

* The candidates will opt for one of these electives in each of I, II, III semesters in such a way so as not to opt the same elective more than once.

DISSEERATION GRADE

A > 85%
B = 75% - 85%
C = 60% - 75%
D = 50% - 60%
Work-study, work breakdown structure, Time estimates, Applications of CPM/PERT, statical concepts, Man-
Material-Machinery-Money optimization, scheduling, monitoring, updating. Cost functions, time-cost trade off,
resource planning-leveling and allocation. Resources - based networks, crashing, master networks, interface
activities and dependencies, line of balancing techniques, application of digital computers. Material management-
purchases management and inventory control, ABC analysis. Human Resource Management.

Reference Books:
   Publishing Company, New Delhi, 1998
2) Calin M. Popescu, Chotchal Charoenngam, Project Planning, Scheduling and Control in Construction : An
3) Chris Hendrickson and Tung Au, Project Management for Construction - Fundamental Concepts for
   Owners, Engineers, Architects and Builders, Prentice Hall Pittsburgh, 2000
4) Moder, J., C. Phillips and E. Davis, Project Management with CPM, PERT and Precedence Diagramming,
   1985

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05)
questions.

Reference Books:

4) Mindass and Young, "Concrete", Prentice Hall.1998

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.
Introduction and concepts of probability and statistics. Linear programming, Transportation and assignment problems. Dynamic programming, Queuing theory, Decision theory, Games theory simulations applied to construction, Modifications and improvement on CPM/PERT techniques.

Reference Books:
3) Veerarajan.T., Probability Statistics and Random processes, TMH, First reprint, 2004

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.
# List of Experiments:

**PRIMAVERA**

1. Planning and Scheduling of Multi storied building
2. Planning and scheduling of Road Project
3. Prepare the resource sheet, assign and level the resource
4. Preparing different reports available in Primavera
5. Plot the variance graphs for the given Project
Factors affecting selection of equipment - technical and economic, construction engineering fundamentals, Analysis of production outputs and costs, Characteristics and performances of equipment for Earth moving, Erection, Material transport, Pile driving, Dewatering, Concrete construction (including batching, mixing, transport, and placement) and Tunneling.

Reference Books:
6. Deodhar, S.V. Construction Equipment and Job Planning Khanna Publishers Delhi, 1988
7. Dr. Mahesh Varma, Construction Equipment and its planning and application, Metropolitan Book Company, New Delhi 1983

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.


Reference Books:


Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.

Standard fire, fire list, fire resistance, classification of buildings, means of escape, alarms, etc. Engineering services in a building as a systems. Lifts, escalators, cold and hot water systems, waster water systems, and electrical systems.


Reference Books:

3) Hand book for Building Engineers in Metric systems, NBC, New Delhi, 1968
6) William H. Severns and Julian R. Fellows, Air conditioning and refrigeration, John Wiley and sons,
M.Tech Civil (Construction Technology and Management), Second Semester
MCM-204 Quality Control in Construction (Lab-II)

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P/D</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>-</td>
<td>-</td>
<td>4</td>
<td>4</td>
</tr>
</tbody>
</table>

Max Marks : 100
Practical : 60 Marks
Sessional : 40 Marks
Duration : 3 Hours

List of Experiments:
1. Mix Design of Concrete
2. Tests on fresh concrete
3. Tests on hardened concrete
4. In-situ Strength determination by Rebound Hammer.
6. Pull-Out Tests on concrete
7. Effect of Chemical admixtures on fresh and harden properties of concrete
8. Effect of mineral admixtures on fresh and harden properties of concrete
9. Tests on Bitumen materials
10. Tests on Course aggregates for road construction

Reference Books:
4) Mindass and Young, "Concrete", Prentice Hall.1998

**Reference Books:**


Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.
Concrete Construction methods: form work design and scaffolding, slip form and other moving forms, pumping of concrete and grouting mass concreting (roller compacted concrete), ready mixed concrete, various methods of placing and handling concrete, Accelerated curing, Hot and cold weather concreting, Under water concreting, Pre-stressing.

Reference Books:
3) Jerry Irvine, Advanced Construction Techniques CA Rockers, 1984
5) Sharma S.C. Construction Equipment and Management, Khanna Publishers, Delhi, 1988
6) Deodhar, S.V. Construction Equipment and Job Planning Khanna Publishers Delhi, 1988
7) Dr. Mahesh Varma, Construction Equipment and its planning and application, Metropolitan Book Company, New Delhi 1983

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.

**Reference Books:**

3) Joseph T. Bockrath, Contracts, the Legal Environment for Engineers and Architects, McGraw Hiii, 2000
4) Oxley Rand Posicit, Management Techniques applied to the Construction Industry, Granda Publishing Ltd., 1980

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.
M.Tech Civil (Construction Technology and Management)
MCM-403 GIS in Construction Engineering and Management Reliability

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P/D</th>
<th>Total</th>
<th>Max Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>


**Reference Books:**


Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.
M.Tech Civil (Construction Technology and Management)
MCM-404 Reliability Analysis in Construction Management

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P/D</th>
<th>Total</th>
<th>Max Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>

Theory : 60 Marks
Sessional : 40 Marks
Duration : 3 Hours


Reference Books:

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.

Reference Books:

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.
## M. Tech Civil (Construction Technology and Management)

### MCM-406 Recent Advances in Construction Materials

<table>
<thead>
<tr>
<th>L</th>
<th>T</th>
<th>P/D</th>
<th>Total</th>
<th>Max Marks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>1</td>
<td>-</td>
<td>4</td>
<td>100</td>
</tr>
</tbody>
</table>

- **Theory**: 60 Marks
- **Sessional**: 40 Marks
- **Duration**: 3 Hours


### Reference Books:


4. Mindass and Young, "Concrete", Prentice Hall. 1998

Note: Eight (08) questions are to be set covering all the syllabus. Students will be required to attempt any five (05) questions.