FACULTY OF PHYSICAL PLANNING & ARCHITECTURE

SYLLABUS

FOR

M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT
(Credit Based Evaluation and Grading System)

(Semester-I-II)

Examinations: 2019-20

GURU NANAK DEV UNIVERSITY,
AMRITSAR.

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(ii) Subject to change in the syllabi at any time.
Please visit the University websit
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT  
(Credit Based Evaluation and Grading System)

SEMESTER-I

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Type</th>
<th>Credits</th>
<th>L</th>
<th>T</th>
<th>U</th>
<th>Duration of Exams</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>CTM 101</td>
<td>Construction Management</td>
<td>DC</td>
<td>03</td>
<td>02</td>
<td>01</td>
<td>0</td>
<td>03 hrs</td>
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<td>2</td>
<td>CTM 102</td>
<td>Advanced Construction Techniques</td>
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<td>03</td>
<td>02</td>
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<td>3</td>
<td>CTM 103</td>
<td>Building Services</td>
<td>DC</td>
<td>03</td>
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<td>4</td>
<td>CTM 104</td>
<td>Construction Equipment</td>
<td>DC</td>
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<td>02</td>
<td>01</td>
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<td>5</td>
<td>CTM 105</td>
<td>Computer Lab-II</td>
<td>DC</td>
<td>05</td>
<td>02</td>
<td>03</td>
<td>0</td>
<td>Viva-Voce</td>
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Elective Subjects (Any One of the Following)

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<thead>
<tr>
<th>Sr. No.</th>
<th>Course Code</th>
<th>Course Title</th>
<th>Course Type</th>
<th>Credits</th>
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<th>T</th>
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<th>Duration of Exams</th>
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<tr>
<td>6</td>
<td>CTM 106</td>
<td>Advanced Construction techniques</td>
<td>DE</td>
<td>03</td>
<td>02</td>
<td>01</td>
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<td>7</td>
<td>CTM 107</td>
<td>Construction Personnel Management</td>
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<td>03</td>
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<tr>
<td>8</td>
<td>CTM 108</td>
<td>Quantitative techniques in Construction Management</td>
<td>DE</td>
<td>03</td>
<td>02</td>
<td>01</td>
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<td>03 hrs</td>
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Total 20 12 8 0

SEMESTER-II

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<th>Sr. No.</th>
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<th>Course Title</th>
<th>Course Type</th>
<th>Credits</th>
<th>L</th>
<th>T</th>
<th>U</th>
<th>Duration of Exam</th>
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<td>1.</td>
<td>CTM 151</td>
<td>Construction Costing &amp; Finance management</td>
<td>DC</td>
<td>03</td>
<td>02</td>
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<td>0</td>
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<td>2.</td>
<td>CTM 152</td>
<td>Maintenance and Rehabilitation of Structures</td>
<td>DC</td>
<td>03</td>
<td>02</td>
<td>01</td>
<td>0</td>
<td>3 hrs</td>
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<td>3.</td>
<td>CTM 153</td>
<td>Materials Management</td>
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<td>02</td>
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<td>0</td>
<td>3 hrs</td>
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<td>4.</td>
<td>CTM 154</td>
<td>Energy Conservation Techniques In Building Construction</td>
<td>DC</td>
<td>03</td>
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<td>5.</td>
<td>CTM 155</td>
<td>Project Formulation and Appraisal</td>
<td>DC</td>
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<td>02</td>
<td>01</td>
<td>0</td>
<td>Presentation &amp; Report Submission</td>
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Total 17 10 05 0

Note: Every student would be required to undergo industrial training of four weeks duration after
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-I)
(Credit Based Evaluation and Grading System)

Course Code: CTM 101
Course Title: CONSTRUCTION MANAGEMENT
Duration of Exam: 3hrs
Credits:03 (L=2, T=1,U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project:20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

PURPOSE
To study the elements of construction project management consisting of owners’ perspective, organization, design and construction procedures, resource utilization and cost estimation

OBJECTIVES
1. To study how the owner view a project in consideration with project life cycle, construction agencies legal requirements etc.
2. To study the various types of organization and their impact on and suitability to construction projects
3. To study the design and construction procedures along with labour material and equipment utilization
4. To study the elements of cost of a project

Section-A
INTRODUCTION TO PROJECT
Concept of a Project – Characteristic features – Project Life cycle – Phases –Project Management – tools and techniques for project management – role of project managers.

Section-B
ROLE OF PROJECT MANAGEMENT
Development of project plan and objectives – programming – scheduling – project organization – organization and project team – role of communication in project management – controlling systems.

Section-C
WORKING SYSTEMS
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-I)
(Credit Based Evaluation and Grading System)

Section-D

PROJECT DIRECTION
Project direction – direction during production stage – value engineering review – stages –
directives – project coordination – procedure – interface management – project control – scope for
progress control – overall project progress control – stages – methods. Basic concept – Labour
requirements – Labour productivity – site productivity – Equipment Management – Material
management – procurement organization – procurement planning – functions of material
management – inventory control

REFERENCES
1. Prasanna Chandra, “Project Planning, Analysis, Selection, Implementation and review”, Tata
Mcgraw Hill, 2009.
2. Chitkara, K.K “Construction Project Management: Planning Scheduling and control”, Tata
3. Frederick E. Gould, “Construction Project Management”, Went worth Institute of Technology,
Vary E. Joyce, Massachusetts Institute of Technology, 2000.
2008.
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMSEER-I)  
(Credit Based Evaluation and Grading System)

Course Code: CTM 102  
Course Title: Advanced Construction Techniques  
Credits:03 (L=2, T=1, U=0)

Minor Test: 20%  
Assignment/Seminar/Case Study/Minor Project:20%  
Quiz/Group Discussion: 10%  
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

PURPOSE
To bring about a complete understanding of advanced construction techniques in sub structure super structure and repair construction

OBJECTIVES
To study the substructure construction techniques.
1. To create awareness on tall structure construction elements
2. To know about the techniques used for large span structures.
3. To know about the recent and advancement in construction techniques.
4. To study the elements of repair construction.

Section-A

SUB STRUCTURE CONSTRUCTION

Section-B

TALL STRUCTURES CONSTRUCTION
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-I)  
(Credit Based Evaluation and Grading System)  

Section-C  
LARGE SPAN STRUCTURES CONSTRUCTION  

Section-D  
SPECIAL STRUCTURE CONSTRUCTION  

REFERENCES  
7 Micheal T.Kubal ,”Construction Waterproofing Handbook”.  

M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMSEER-I)
(Credit Based Evaluation and Grading System)

Course Code: CTM 103             Duration of Exam: 3hrs
Course Title: Building Services                  Credits:03 (L=2, T=1,U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project:20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

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PURPOSE
To study the elements of building services like water supply sanitation, electrical installations air

OBJECTIVES
1. To study the components of water supply and sanitation arrangements in a building
2. To study the rudiments of electrical installations in a building
3. To bring about an exposure to air conditioning and fire safety arrangement
4. To introduce the concepts of intelligent building

WATER SUPPLY SYSTEMS
Water quality, Purification and treatment- water supply systems-distribution systems in small towns –types of pipes used- laying jointing, testing-testing for water tightness plumbing system for building-internal supply in buildings- municipal bye laws and regulations - Rain Water
Harvesting - Sanitation in buildings-arrangement of sewerage systems in housing -pipe systems-
storm water drainage from buildings -septic and sewage treatment plant – collection, conveyance and disposal of town refuse systems –.

VENTILATION AND ITS IMPORTANCE
Ventilation and its importance-natural and artificial systems-Window type and packaged air-
conditioners-chilled water plant –fan coil systems-water piping –cooling load –air conditioning systems for different types of buildings –protection against fire to be caused by A.C. Systems.
SAFETY REGULATIONS
Causes of fire in buildings-safety regulations-NBC-planning considerations in buildings like Non-combustible materials, construction, staircases and A.C. systems, special features required for physically handicapped and elderly in building types-heat and smoke detectors-dry and wet risers-Automatic sprinklers

INTELLIGENT BUILDINGS
Intelligent buildings-Building automation-Smart buildings- Building services in high rise buildings-Green buildings-Energy efficient buildings for various zones-Case studies of residence, office buildings and other buildings in each zones.

REFERENCES
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESTER-I)
(Credit Based Evaluation and Grading System)

Course Code: CTM 104         Duration of Exam: 3hrs
Course Title: Construction Equipment      Credits:03 (L=2, T=1,U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four
Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are
required to attempt five questions, selecting at least one question from each Section. The fifth
question may be attempted from any Section.

PURPOSE
To introduce various construction equipment and study the efficient utilization of the same using
scientific principles

OBJECTIVES
1. To introduce various construction equipment for earthwork, material handling and other
   miscellaneous purposes.
2. To study the working of the equipment mentioned above and apply scientific principles for
effectively utilizing them.

Section-A
EQUIPMENT MANAGEMENT
Identification –Planning - Equipment Management in Projects – Maintenance Management –
Replacement - Cost Control of Equipment – Depreciation Analysis, Methods of calculation of
depreciation- Safety Management.

Section-B
EARTHWORK EQUIPMENT
Fundamentals of Earth Work Operations - Earth Moving operations-Types of Earthwork
Equipment - Tractors, Motor Graders, Scrapers, Front end Loaders, Earth Movers – capacity
calculations.

Section-C
PUMPS USED IN CONSTRUCTION
Equipment for Dredging, Trenching, Tunneling, Drilling and Blasting. Equipment for
compaction - Types of pumps used in Construction - Equipment for Grouting – Pile Driving
Equipment- Equipment of Erection and demolition.
FORKLIFTS EQUIPMENTS, DEMOLITION

REFERENCES
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-I)
(Credit Based Evaluation and Grading System)

Course Code: CTM 105
Duration of Exam: Viva Voce
Credits: 05 (L=2, T=3, U=0)

Course Title: COMPUTER APPLICATION IN CONSTRUCTION MANAGEMENT
(Theory and Practice)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

PURPOSE
To bring about an understanding of use of computers for solving scheduling and other related problems by applying critical path methods

OBJECTIVES
1. To review the basics of computer hardware
2. To study the preparation of the detailed estimation.
3. To apply the concepts studied under 1 and 2 above to scheduling and other related problems.

Section-A
INTRODUCTION TO COMPUTERS

Section-B
CONSTRUCTION DRAWINGS AND SPECIFICATIONS
Basic skills and techniques required producing construction drawings and specifications conforming to current building codes and standards- Laboratory assignments develop visualization skills in order to examine the integration of construction systems-organization of working drawings and specifications.

Section-C
QUANTITY TAKEOFF
Estimating – Types of estimates- Terms Involved in Estimation – Quantity takeoff men, material, machinery and duration-A complete Estimate of a project- A Case study

Section-D
PROJECT PLANNING AND SCHEDULING
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESTER-I)
(Credit Based Evaluation and Grading System)

REFERENCES

PRACTICE
EXPERIMENT I-MS EXCEL
Quantity takeoff by using MS EXCEL - Estimation of Quantities stage wise – Carryout the rate analysis and costing for different stages of work - Preparation and delivery of the bid or proposal of an engineering construction project.

EXPERIMENT II
Preparation of Planning and Scheduling by using MS PROJECT - scheduling for a small construction project - Allocation of resource- Tracking of a Project-Cost analysis- Reports preparation.

EXPERIMENT III
Preparation of Planning and Scheduling by using PRIMAVERA - scheduling for a small construction project - Allocation of resource- Tracking of a Project-Cost analysis- Reports preparation.

LIST OF EQUIPMENTS / SOFTWARES / TOOLS REQUIREMENTS
1. MS OFFICE
2. MS PROJECT
3. PRIMAVERA

REFERENCES
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-I)  
(Credit Based Evaluation and Grading System)

Course Code: CTM 106  
Course Title: ADVANCED CONSTRUCTION TECHNIQUES

Duration of Exam: 3hrs  
Credits: 03 (L=2, T=3,U=0)

Minor Test: 20%  
Assignment/Seminar/Case Study/Minor Project:20%  
Quiz/Group Discussion: 10%  
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

OBJECTIVE: To study and understand the latest construction techniques applied to engineering construction for sub structure, super structure, special structures, rehabilitation and strengthening techniques and demolition techniques.

Section-A
SUB STRUCTURE CONSTRUCTION
Box jacking - Pipe jacking - Under water construction of diaphragm walls and basement - Tunneling techniques - Piling techniques - Driving well and caisson - sinking cofferdam - cable anchoring and grouting - Driving diaphragm walls, Sheet piles - Laying operations for built up offshore system - Shoring for deep cutting - Large reservoir construction - well points - Dewatering for underground open excavation.

Section-B
SUPER STRUCTURE CONSTRUCTION FOR BUILDINGS
Vacuum dewatering of concrete flooring – Concrete paving technology – Techniques of construction for continuous concreting operation in tall buildings of various shapes and varying sections – Erection techniques of tall structures, Large span structures – launching techniques for heavy decks – in-situ prestressing in high rise structures, Post tensioning of slab- aerial transporting – Handling and erecting lightweight components on tall structures.

Section-C
CONSTRUCTION OF SPECIAL STRUCTURES
Erection of lattice towers - Rigging of transmission line structures – Construction sequence in cooling towers, Silos, chimney, sky scrapers - Bow string bridges, Cable stayed bridges – Launching and pushing of box decks – Construction of jetties and break water structures – Construction sequence and methods in domes – Support structure for heavy equipment and machinery in heavy industries – Erection of articulated structures and space decks.
REHABILITATION AND STRENGTHENING TECHNIQUES

Reference Books:

1. Jerry Irvine, Advanced Construction Techniques, CA Rocketr, 1984
6. Construction Technology: Analysis, and Choice, 2ed, Bryan, Wiley India
8. Construction Equipment Planning and Applications – Dr. Mahesh Varma
9. Brochures Published by various agencies associated with construction. 5. Journals such as CE & CR. Construction world, International Construction.
10. Document Reports of actual major works executed.
12. Dr. Kumar Niraj Jha, — Formwork for Concrete Structures‖ , Mc Graw Hill Publication
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-I)  
(Credit Based Evaluation and Grading System)

Course Code: CTM 107  
Course Title: CONSTRUCTION PERSONNEL MANAGEMENT  
Duration of Exam: 3hrs  
Credits: 03 (L=2, T=3, U=0)  
Minor Test: 20%  
Assignment/Seminar/Case Study/Minor Project: 20%  
Quiz/Group Discussion: 10%  
End Semester Examination: 50%  

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PURPOSE
To Introduce the elements of human behaviour and their impact on construction personnel management.

OBJECTIVES

1. To bring about awareness on fundamentals of human behaviour under varying stress conditions.
2. To apply the studied behaviour pattern to manpower planning in organizational setups.
3. To study the means of management of construction personnel and utility of training as a tool for improvement.

Section-A
MANPOWER PLANNING
Manpower Planning, Organizing, Staffing, directing, and controlling – Personnel Principles.  

Section-B
PERFORMANCE MANAGEMENT
Introduction to the field of people management -basic Individual psychology motivation-job design and performance management -Managing groups at work – self-managing work teams- Intergroup behaviour and conflict in organizations –Leadership- Behavioral aspects of decision-making; and communication for people management.
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESTER-I)  
(Credit Based Evaluation and Grading System)

Section-C

PERFORMANCE APPRAISAL
Compensation- Wages and Salary, Employee Benefits, employee appraisal and assessment-
Employee services -Safety and Health -Discipline and discharge -Special Human resource problems, Performance appraisal-Employee hand book and personnel manual -Job descriptions and organization structure and human relation. Productivity of Human resources.

Section-D

HUMAN RESOURCES TRAINING
Identification of training needs- training calendar- outsourcing for training- in-house training-
training to overcome deficiencies- evaluation of training.

REFERENCES
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-I)
(Credit Based Evaluation and Grading System)

Course Code: CTM 108       Duration of Exam: 3hrs
Course Title: QUANTITATIVE TECHNIQUES IN CONSTRUCTION MANAGEMENT
Credits: 03 (L=2, T=3, U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

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PURPOSE
To bring about an exposure to quantitative techniques applied to construction industry

OBJECTIVES
1. To review the basics of Optimization principles
2. To study the optimization techniques and simulation of models
3. To apply the concepts studied under 1 and 2 above to inventory, scheduling and other related problems

Section-A
INTRODUCTION TO OPERATIONS RESEARCH
Introduction to Operations research-Linear programming-Graphical and Simplex Methods-Duality and Post-Optimality Analysis- Dynamic programming- Capital Budgeting problem, Reliability improvement problem, Shortest path method.

Section-B
OPTIMIZATION TECHNIQUES

Section-C
INVENTORY MANAGEMENT
Application to Production Scheduling-Single machine scheduling, Flow Shop Scheduling, Job shop Scheduling -Inventory control, Economic order quantity (EOQ), Quantity Discounts, Safety Stock.
TIMIZATION THEORY
Replacement Theory - Decision Theory-Decision Rules-Decision making under conditions of certainty, risk and uncertainty - Decision trees-Utility Theory- Bayes theory. Cost concepts- Break-even -Analysis-Pricing techniques- Theory applications

REFERENCES
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMSEER-II)  
(Credit Based Evaluation and Grading System)

Course Code: CTM 151             Duration of Exam: 3hrs
Course Title: Construction Costing & Finance Management       Credits:03 (L=2, T=1,U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project:20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

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Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

PURPOSE
To bring about an exposure to construction economics, financing and accounting methods and their usefulness in controlling construction projects.

OBJECTIVES
1. To study the elements of construction economics
2. To study the need for financial management and means of achieving the same
3. To study a few accounting methods
4. To study the elements of lending to the contractors

Section-A
ADVANCES IN CONSTRUCTION MANAGEMENT
Role of Construction Management in industrial development - Advances in Construction Management and engineering economics - Support matters of economy as related to engineering Market demand and supply- choice of technology and quality control and quality production - Audit in economic, Law of returns governing production.

Section-B
MATERIAL SELECTION
Construction development in housing, transport and other infrastructures –Economics of ecology, environment, energy resources, local material selection, form and functional designs – Construction workers - Urban problems - Poverty - Migration - Unemployment - Pollution.

Section-C
NEED FOR FINANCIAL MANAGEMENT
The need for financial management - Types of financing - Short term borrowing -Long term borrowing –Leasing - Equity financing - Internal generation of funds -External commercial borrowings - Assistance from government budgeting support and international finance corporations - analysis of financial statement – Balance Sheet - Profit and Loss account - Funds flow statement - Ratio analysis – Investment and financing decision –Financial control Job control and centralized management.
OVERVIEW OF CASH BASIS ACCOUNTING

General overview - Cash basis of accounting - Accrual basis of accounting - Percentage - Completion method - Completed contract method - Accounting for tax reporting purposes and financial reporting purposes.

REFERENCES

M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESTER-II)
(Credit Based Evaluation and Grading System)

Course Code: CTM 152
Course Title: Maintenance and Rehabilitation of Structures
Credits: 03 (L=2, T=1, U=0)
Duration of Exam: 3hrs
Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

PURPOSE
To study the damages, repair and rehabilitation of structures

OBJECTIVES
1. To study about Durability of Different Types of Buildings
2. To know about the Phases of Maintenance
3. To study about the Techniques for Repair and Strengthening Measures

Section-A
DURABILITY

Section-B
PHASES OF MAINTENANCE

Section-C
MATERIALS FOR REPAIR
Materials- Materials For Repair - Special Mortar And Concretes, Concrete Chemicals, Special Cements And High Grade Concrete – Expansive Cement, Polymer Concrete, Sulphur Infiltrated Concrete, Ferro Cement, Fiber Reinforced Concrete- Admixtures Of Latest Origin.
TECHNIQUES FOR REPAIR, STRENGTHENING MEASURES
Techniques for Repair- Surface Repair – Material Selection – Surface Preparation - Rust Eliminators And Polymers Coating For Rebars During Repair – Repair Of Cracks In Concrete And Masonry-Methods Of Repair - Epoxy Injection, Mortar Repair For Cracks -Guniting And Shotcreting -Waterproofing Of Concrete Roofs.

REFERENCES
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESTER-II)
(Credit Based Evaluation and Grading System)

Course Code: CTM 153                    Duration of Exam: 3hrs
Course Title: Materials Management      Credits: 03 (L=2, T=1, U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project: 20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
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PURPOSE
To define and describe the effective purchase, utilization and storage of materials

OBJECTIVES
1. To Study about the material organizing and purchasing
2. To Study about the material supply and demand
3. To Study about the material storage and causes of wastage of materials

MATERIAL CLASSIFICATION

MATERIAL PURCHASING
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT  (SEMESEER-II)  
(Credit Based Evaluation and Grading System) 

Section-C 

STORE MANAGEMENT 

Section-D 

WASTE MANAGEMENT 
Scrap & Obsolete Materials-Management of surplus obsolete and scrap materials – reasons for accumulation of surplus obsolete and scrap materials – methods of disposal – regulations and procedures 

REFERENCES 
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-II) (Credit Based Evaluation and Grading System)

Course Code: CTM 154
Course Title: Energy conservation Techniques In Building Construction

Duration of Exam: 3hrs
Credits:03 (L=2,T=1, U=0)

Minor Test: 20%
Assignment/Seminar/Case Study/Minor Project:20%
Quiz/Group Discussion: 10%
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

PURPOSE
To bring an about exposure to different sources and production systems of energy and their effective management adopting appropriate design methodology in construction.

OBJECTIVES
1. To study the sources of energy and energy production in relation to heating, ventilating and air conditioning.
2. To study the elements related to quality of energy utilization
3. To study the concepts underlying energy management by adopting appropriate design methodology in providing energy related services.

Section-A

FUNDAMENTALS OF ENERGY

Section-B

ENERGY AND RESOURCE CONSERVATION
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-II)
(Credit Based Evaluation and Grading System)

Section-C

ENERGY IN BUILDING DESIGN
-Preliminary Investigation -Goals and policies -Energy audit -Types of Energy audit -Analysis of results –Energy flow diagram -Energy consumption /Unit Production- identification of wastage -Priority of conservative measures –Maintenance of energy management programme

Section-D

ENERGY MANAGEMENT

REFERENCE BOOKS
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESEER-II)
(Credit Based Evaluation and Grading System)

Course Code: CTM 155  
Course Title: Project Formulation and Appraisal  
Credits: 03 (L=2, T=1, U=0)  
Duration of Exam: 3hrs  
Minor Test: 20%  
Assignment/Seminar/Case Study/Minor Project:20%  
Quiz/Group Discussion: 10%  
End Semester Examination: 50%

Instructions for the Paper Setters:
Eight questions of equal marks (Specified in the syllabus) are to be set, two in each of the four Sections (A-D). Questions may be subdivided into parts (not exceeding four). Candidates are required to attempt five questions, selecting at least one question from each Section. The fifth question may be attempted from any Section.

PURPOSE
To introduce and study formulation, costing, appraisal and finance of construction projects

OBJECTIVES
1. To study elements of project formulation and appraisal
2. To study the costing and financial aspects of projects
3. To study the implications of private sector participation in construction projects

PROJECT INITIATION
Project Initiation: Capital investments- Capital budgeting – feasibility study –preliminary analysis – market, technical, financial, economic and ecological – Market and Demand analysis- Detailed technical analysis

TIME VALUE OF MONEY

COSTING
Costing: Investment Criteria- Discounting criteria-Net present value (NPV), Benefit cost ratio(BCR), internal rate of return(IRR)- Non-Discounting criteria - Pay Back Period, Accounting rate of return(ARR), Urgency - Investment analysis in practice.
DIFFERENT INFRASTRUCTURE PROJECTS
Private sector participation in Infrastructure Development Projects – Build operate own transfer (BOOT), Build operate transfer (BOT), Build operate lease transfer (BOLT), Design Build operate transfer (DBOT) - Technology Transfer and Foreign Collaboration - Case Study.

REFERENCES
M.TECH CONSTRUCTION TECHNOLOGY AND MANAGEMENT (SEMESTER-II)  
(Credit Based Evaluation and Grading System)

INDUSTRIAL TRAINING (4 week practical training in Industry)  
(Training to be undergone after II semester)  
Prerequisite

PURPOSE
To provide practical exposure in Civil Engineering related organizations.

OBJECTIVES
1. Students have to undergo four – week practical training in Construction Technology and Management related organizations so that they become aware of the practical applications of theoretical concepts studied in the class rooms.
2. Students have to undergo four-week practical training in Civil Engineering related organizations of their choice but with the approval of the department. At the end of the training student will submit a report as per the prescribed format to the department.

ASSESSMENT PROCESS
This course is mandatory and a student has to pass the course to become eligible for the award of degree. The student shall make a presentation before a committee constituted by the department which will assess the student based on the report submitted and the presentation made. Marks will be awarded out of 100 and appropriate grades assigned as per the regulations.