

**M.G.M'S COLLEGE OF ENGINEERING NANDED**  
**DEPARTMENT OF CIVIL ENGINEERING**  
**DETAILS OF COURSE OUTCOME**

**CLASS – S.E. CIVIL**

**1) Engineering Mathematics – III**

**Course Outcomes**

- 1) Student will demonstrate basic knowledge of L.D.E., Vector, P.D.E., F.T. & Probability.
- 2) Student will show the understanding of impact of Engineering Mathematics in Civil.
- 3) Student will demonstrate their understanding of mathematical ideas from multiple perspectives, such as by
  - (a) using the internal connections between geometry, algebra, and numerical computation,
  - (b) applying the connections between theory and applications, or
  - (c) distinguishing between a formal proof and a less formal arguments and understanding the different roles these play in mathematics.

**2) STRENGTH OF MATERIALS**

**Course Outcomes**

- 1) Students are able to understand the behaviour of material under different loading
- 2) Student are able to understand and calculate the different type of stress like, simple stress, shear stress, direct stress and bending stress in the material
- 3) Students are students are able to understand and calculate the shear force and bending moment for beam of different loading
- 4) Students are able to calculate the deflection of beam for different loading

**3) FLUID MECHANICS-I**

**Course Outcomes**

- 1) Student are able to understand the fluid characteristics and their application in different material manufacturing industry
- 2) Student are able to measure the pressures at various conditions with different types of pressure measuring devices
- 3) Students are able to calculate the discharges of fluid
- 4) Student are able to calculate the force acting on submerged bodies

**4) SURVEYING**

**Course Outcomes**

- 1) The students are able to understand the use of different surveying instruments and their use
- 2) Students are able to calculate compute the area and earthwork for different works by using surveying instruments.
- 3) Students are able to do the surveying of different civil engineering projects

## **5) BUILDING CONSTRUCTION**

### **Course Outcomes**

- 1) Students are able to understand the property , use , advantage and disadvantage of different material used in construction
- 2) Students are able to understand the component of building with their function
- 3) Students are able to understand construction procedure of different components

## **6) FLUID MECHANICS –II**

### **Course Outcomes:-**

1. Students will be able to apply their knowledge of fluid mechanics in addressing problems in open channels.
2. They will possess the skills to solve problems in uniform, gradually and rapidly varied flows in steady conditions.
3. Problems pertain to design, construction as well as efficient working of various types of hydraulics structures and machines is considerably simplified by using dimensional analysis and model studies.
4. Impact Of Jet on vanes which is a base for analysis and design of turbo machines.
5. They will have knowledge in hydraulic machines( pumps and turbines)

## **7) ADVANCED SURVEYING**

### **Course Outcomes:-**

- 1) Students are able to do trigonometric and Geodetic Survey
- 2) Students are able to understand the surveying with advance instrument like remote sensing, GPS and GIS.
- 3) Students are able to understand the hydrographic survey
- 4) Students are able to understand the triangulation adjustment

## **8) CONCRETE TECHNOLOGY**

### **Course Outcomes**

- 1) After completion of this subject student will be familiar with different ingredients of concrete.
- 2) Students will be familiar with properties of different ingredients of concrete.
- 3) Student will be familiar with different admixtures.
- 4) Student will familiar with properties of fresh and harden concrete.
- 5) Student will be able to prepare concrete mix design.
- 6) Students will be familiar with special concretes.

## **9) THEORY OF STRUCTURES - I**

### **Course Outcomes:**

- 1) After completion of this subject student will be able to analyze Fixed and continuous beams.
- 2) Student will be able to analyze moving loads and will be able to draw influence line diagrams for simply supported beams.
- 3) Student will also be able to analyze columns.
- 4) Student will also be able to analyze three hinge arches and three hinge suspension bridges.

## **10) BUILDING PLANNING AND DRAWING**

### **Course Outcomes:**

- 1) After completion of this students will able to understand basic principles of building design and planning.
- 2) They will explore building drawing as a way of discovering and developing ideas for designing residential, commercial and public buildings.
- 3) The student develops basic drawing skills; create multilayer architectural and working drawing drawings.

## **11) PROFESSIONAL COMMUNICATION SKILLS**

### **Course Outcomes:**

1. Students would understand the concept, process and importance of Professional Communication
2. Students would acquire English Speaking and Writing Skills
3. Students would develop Presentation Skills

## **CLASS – Third Year**

### **1) ENGINEERING GEOLOGY**

#### **Course outcomes**

- 1) As a students in the Bachelor of Engineering (Civil Engineering) will undertake courses in geology Such as Rock and mineral.
- 2) Students are able to understand the different geological structures and their impact on civil engineering structure.
- 3) Students are able to decide the suitable site selection for civil engineering structures
- 4) Students are able to know the different geological hazards and its mitigation
- 5) Students are able to understand the different method of geological exploration
- 6) Students are able to identify the different rocks and minerals based on their property
- 7) Students are able to understand the use of different rock and mineral

### **2) GEOTECHNICAL ENGINEERING – I**

#### **Course Outcomes: -**

- 1) Students are able to classify soils
- 2) Students are able to know how water affect the soil parameters
- 3) Students are able to understand the compaction, consolidation and shear strength parameters of soil.
- 4) Students are able to calculate the compaction, consolidation and shear strength of soil

### **3) THEORY OF STRUCTURES – II**

#### **Course Outcomes: -**

- 1) The student will have the knowledge on advanced methods of analysis of structures like flexibility and stiffness method, kanis method, Moment distribution method, Slope and deflection method
- 2) Students are able to do the analysis of beam by using advance method of analysis
- 3) Students are able to do analysis of portal frame

### **4) DESIGN OF STEEL STRUCTURES-I (Steel) LSM**

- 1) Students are able to design the connection of steel structure
- 2) Students are able to design the tension and compression members
- 3) Students are able to design the beam and roof truss in steel structure
- 4) Students able to design the plate and gantry design

## **5) Transportation Engineering-I**

### **Course Outcome :**

On successful completion of the course, the students shall be able to understand the following

1. Basic concept about Highway Engineering
2. To understand the principles of Highway geometrics design as per IRC standards
3. Perform geometric design for the Highway& Basic concept of Pavement design
4. To understand Types of pavements & Materials required for highway construction.
5. To understand Construction procedure for different type of pavements.
6. To understand maintenance procedure for different type of pavements.
7. To understand the Traffic engineering& different types of traffic control device.
8. Basic idea about the Bridge engineering & Components parts of a bridge

## **6) GEOTECHNICAL ENGINEERING – II**

### **Course outcome**

- 1) Student will solve actual problems of stability with various material,
- 2) Studnets are able to apply various theories and predict the risk factor.

## **7) ENVIRONMENTAL ENGINEERING –I**

### **Course outcome**

Upon successful completion of course the student will be able to:

- 1) Plan and design water supply systems for a rural/urban area
- 2) Use population forecasting methods.
- 3) Design various water treatment units and plan their operations on the basis of raw water quality and water demand.
- 4) Apply knowledge of advanced water treatment processes for individual water purification

## **8) DESIGN OF STRUCTURES- II (RCC) LSM**

### **Course outcome**

- 1) Students have explored the stream “Limit State Method of Design for R.C. Structures” and are equipped with knowledge of different methods of design and its classifications.
- 2) Students have been introduced to Limit State Analysis as well which has opened their wisdom for redistribution of moments.
- 3) Students are now competent to Design the structures for Limit Sate of Collapse for Flexure (i.e. Singly, Doubly, Fanged beam sections, Slabs, Staircase and Footing etc), Compression (i.e. Column), Bon, Torsion and for Shear
- 4) Students are competent to Design the structures for Limit Sate of Serviceability for Deflection and Cracking.

## 9) Transportation Engineering-II

### Course Outcome:-

- 1) In Airport Engineering students will get knowledge of Airport planning, layout and runway and taxiway components.
- 2) Students will get the feel of fundamentals of railway engineering from the syllabus. under railway Engineering students get knowledge of railway geometrics, Signaling & interlocking Points, crossing and turnouts etc.
- 3) Similarly students get knowledge regarding fundamentals of tunnel its excavation methods, support systems, and executional aspects of tunnel

## 10) Water Resources Engineering –I

### Course Outcome :

- 1) Student will know the different terminologies related with hydrology .
- 2) Students will analyze hydrological parameters required for water resource management.
- 3) Student will assess ground water potential .
- 4) Students will identify suitable method of irrigation and drainage of waterlogged area .

## 11) a) Infrastructure Engineering –I (Elective- I)

### Course Outcome

After the completion of this course the students would be able to:

- 1) Understand the role of Private sector in infrastructure growth.
- 2) Know stages of an Infrastructure Project Lifecycle.
- 3) Consider challenges to Successful Infrastructure Planning and Implementation.
- 4) Understand the strategies for Successful Infrastructure Project Implementation.
- 5) Prepare Strategies for Successful Infrastructure Project Implementation.
- 6) Understand the need to plan, develop and maintain infrastructure at a high level.
- 7) Understand the importance of Risk Management for the successful completion Infrastructure Projects

## b) SOLID WASTE MANAGEMENT (Elective-I)

### COURSE OUTCOMES:

course outcomes.

- 1) Explain municipal solid waste management systems with respect to its physical properties, and associated critical considerations in view of emerging technologies
- 2) Outline sources, types and composition of solid waste with methods of handling, sampling and storage of solid waste.
- 3) Select the appropriate method for solid waste collection, transportation, redistribution and disposal.
- 4) Describe methods of disposal of solid waste.

### **c) ADVANCE STRUCTURAL ANALYSIS. (Elective-I)**

#### **Course Outcome**

- 1) Students are able to do the mathematical/computational methods for the analysis of basic structural elements to make
- 2) Students are able to do the suitable approximations so that an indeterminate structure is reduced to a determinate structure

### **d) Advanced Concrete Technology (Elective-I)**

- 1) Students are able to decide the use of supplement cementitious in concrete, use of different admixture and its application as per requirement.
- 2) Students are capable to understand the special concrete, its properties and application as per requirement.
- 3) Students are able to do concrete mix design for required strength of concrete with different approach.
- 4) Students are able to know details of ready mix concrete plant.
- 5) Students are able to understand the durability of concrete, assessment and inspection of hardened concrete.

# CLASS – Final Year

## 1) Environmental Engineering –II

### Outcomes of course:

1. Students understood Sewage quantity and quality for better treatment so as to reduce scarcity by recycling waste water
2. Students understood industrial waste water quantity and quality for achieving better sanitation in society

## 2) Design of Structure – III

### Course outcome:

- 1) On the successful completion of course the students will be able to understand the difference between prestressed construction and RCC construction.
- 2) Also able to design the flat slab, combined footings, earth retaining structures and liquid retaining structures.

## 3) Water Resources Engineering – II

### Course outcome:

1. Students understood all type of dams and reservoirs.
2. Students understood Spillways, Gates & Energy dissipaters.
3. Students understood various canal structures, river training works et

## 4) PROFESSIONAL ETHICS

### Course Objectives:

1. Students are able to understand the functioning of different civil engineering related Industries / firms.
2. Students are able to aware on application of different drawings, contract documents in civil engineering.
3. Students are able to understand insight of code of ethics, duties and responsibilities as a Civil Engineer

## 5) a) STRUCTURAL DYNAMICS- (Elective – II)

### Course Outcomes:

- 1: Students are now explored to Dynamic Equilibrium
- 2: Student are now introduced to Single and Multi Degree of Freedom System for Dynamic System
- 3: Students are now introduced to Modal Analysis
- 4: Students are now introduced to earthquake engineering



## **b) Advance Steel Structures (Elective-II)**

### **Course Outcome :**

- 1) At the end of the course, students will be able to apply the recommendations in IS800:2007 to design steel structures economically and safely.
- 2) They will be able to design moment connections, portal frames and multi-Storey rigid frames, Bridges, Water Tank and tower.
- 3) They will be able to do both elastic and plastic design of steel structures.

## **c) GROUND WATER ENGINEERING- ( ELECTIVE-II)**

### **Course Outcome :**

- 1) It is desired that students after undergoing academic study sessions as cited this above shall be competent and able to work as Engineers in the field of Ground Water Engineering with confidence and success.

## **d) Air Pollution and control (Elective -II)**

### **Course outcomes**

1. The students completing the course will have an understanding of the nature and characteristics of air pollutants, and basic concepts of air quality management.
2. Ability to identify, formulate and solve air pollution problems.
3. Ability to design stacks and particulate air pollution control devices to meet applicable Standards

## **e) TOWN AND COUNTRY PLANNING (Elective-II)**

- 1) Student are able to understand the evaluation of town planning
- 2) Students are able to understand the planning of legislation
- 3) Students are able to understand the urban and rural development
- 4) Studeants are able to understand the fundamentals of planning

## **f) CONSTRUCTION MANAGEMENT AND EQUIPMENT (ELECTIVE-II)**

### **Course Outcomes:**

- 1) On completion of this course the students will have the knowledge of construction equipment's practices and techniques to be used in the field.
- 2) Be able to apply theoretical and practical aspects of project management techniques to achieve project goals.
- 3) Become familiar with construction equipment and their capabilities

- 4) Learn how to best utilize construction equipment on site work and heavy civil projects
- 5) Properly select heavy equipment based on applications, utilization, productivity, and other factors

## **6) PROFESSIONAL PRACTICE**

### **Course Outcome :**

- 1) The above course of syllabus gives ample scope for the students to pick up diverse aspects of the subject Professional Practice.
- 2) student shall be able to serve in different organizations carrying out different project works and infrastructure activities. And even it is ensured that a student shall start his career as a consultant in this field .

## **7) Foundation Engineering**

### **Course Outcome:-**

- 1) The study of Foundation engineering .subject develops the knowledge & confidence level of the students to select the proper type of foundation & its safe & economic design

## **8) PROJECT PLANNING AND MANAGEMENT**

### **Course Outcomes:**

- 1) The students will be able to understand and apply the knowledge of management functions like planning, scheduling, executing and controlling to construction projects.
- 2) The students will be able to demonstrate their capability for preparing the project networks to work out best possible time for completing the project.
- 3) The students will be able to understand and exercise the time- cost relationship in practices.
- 4) The students will be able to implement the safety aspects during the execution of civil engineering project.
- 6) The course will inculcate the managerial skills among the students which will be helpful for them in future during actual execution of projects.
- 7) On completion of this course the students will know different legal aspect and its provisions for construction project
- 8) The students will be able to carry out the Human resource Management efficiently.
- 9) The students will be able to plan for Equipment's and material requirements.
- 10) On completion of this course the students will know the various management techniques for successful completion of construction projects.

### **9) a) SEISMIC DESIGN OF STRUCTURES (ELECTIVE-III)**

#### **Course Outcomes:**

- 1: Students are now explored to the stream of 'Seismology'
- 2: Students are now introduced Earthquake force on building structures
- 3: Students are now introduced Ductile Design of Structures
- 4: Students are now introduced to retrofitting

### **9) b) HYDROPOWER ENGINEERING (Elective -III)**

#### **Course Outcome :**

- 1) It is desired that students after undergoing academic study sessions as cited this above shall be competent and able to work as Engineers in the field of **Hydropower Engineering** with confidence and success

### **9) c) Advance Reinforced Concrete Structure (Elective -III)**

#### **Course outcome**

- 1) On the successful completion of course the student will be able to understand the design of special component of pile and pile cap,
- 2) Student are able to design the deep beam, shear wall, rise tread and curved staircase design.
- 3) Student are able to understand the importance of Reinforcement detailing, and ductile detailing

### **9) d) INDUSTRIAL WASTE WATER TREATMENT (IWWT) (ELECTIVE-III)**

#### **Course outcome**

1. Understand Characterize different industrial wastes
2. Suggest treatment alternative based on characteristics of industrial waste.
3. Demonstrate basic knowledge of legislation for pollution control
4. Understand manufacturing process and treatment of wastewater of different industries

## **9) e) CONSTRUCTION PROJECT ECONOMICS (ELECTIVE-III)**

### **Course Outcomes:**

- 1) Students are able to perform and evaluate present worth, future worth and annual worth analyses on one of more economic alternatives.
- 2) Students are able to perform and evaluate payback period and capitalized cost on one or more economic alternatives.
- 3) Students are able to carry out and evaluate benefit/cost, life cycle and breakeven analyses on one or more economic alternatives
- 4) On completion of this course the students will be able to know Life cycle costing, Financial Planning and Management for the construction project, Economical analysis for Inventory control

## **9) f) ADVANCE SOIL ENGINEERING (ELECTIVE-III)**

### **Course Outcomes:**

- 1) This course will enable the students to recognize the major geosynthetics applications and their significance.
- 2) They develop the knowledge of problem solving, analysis and design. Students will understand various IS codes.