

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Organizational Behavior**

**Course Code: HU501**

**L-T Scheme: 3-0**

**Course Credits: 3**

### **Introduction:**

This course helps students to learn about the intricacies of work and politics within an organization. The basic outcome of this course would be:

- To understand the term organization
- To understand how it works in professional field.
- To brush up skills that will lead to success
- To understand Leadership
- To learn theories that will help to relate
- To handle stress
- To avoid conflicts
- To understand the basics of workplace and beyond.

### **Objectives:**

Students in this course learn to get accustomed to workplace and they understand how to keep going in this world called profession. This course teaches them to be more confident and the theories which talks about the basic survival within the professional world.

### **Learning Outcomes:**

#### **Knowledge:**

1. Learning about organization
2. Personality development
3. Job satisfaction and factors responsible for the same
4. Motivation theories
5. Group behavior
6. Communication process
7. Organizational politics
8. Handling stress

### **Course Contents:**

**Unit 1:** Organizational Behaviour: Definition, Importance, Historical Background, Fundamental Concepts of OB, Challenges and Opportunities for OB. Personality and Attitudes: Meaning of personality, Personality Determinants and Traits, Development of Personality, Types of Attitudes, Job Satisfaction. Perception: Definition, Nature and Importance, Factors influencing Perception, Perceptual Selectivity, Link between Perception and Decision Making. Motivation: Definition, Theories of Motivation Maslow's Hierarchy of Needs Theory, McGregor's Theory X & Y, Herzberg's Motivation-Hygiene Theory, Alderfer's ERG Theory, McClelland's Theory of Needs, Vroom's Expectancy Theory

**Unit 2:** Group Behaviour: Characteristics of Group, Types of Groups, Stages of Group Development, Group Decision Making. Communication: Communication Process, Direction of Communication, Barriers to Effective Communication. Leadership: Definition, Importance, Theories of Leadership Styles.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Unit 3:** Organizational Politics: Definition, Factors contributing to Political Behaviour. Conflict Management: Traditional vis-a-vis Modern View of Conflict, Functional and Dysfunctional Conflict, Conflict Process, Negotiation – Bargaining Strategies, Negotiation Process.

**Unit 4:** Organizational Design: Various Organizational Structures and their Effects on Human Behaviour, Concepts of Organizational Climate and Organizational Culture.

### **Text Books**

Robbins, S. P. & Judge, T.A.: Organizational Behavior, Pearson Education, 15th Edn.  
Resources, PHI, 10th Edn.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Foundation Engineering**

**Course Code: CE501**

**L-T Scheme: 3-1**

**Course Credits: 4**

### **Introduction:**

:

- To understand the concept of active and passive earth pressures
- It helps students to analyze stability of earth slopes
- This course covers ultimate, net and safe bearing capacities, allowable bearing pressure, and effect of ground water table on bearing capacity
- This course equips students with problem solving abilities, calculations of stability of finite slopes, bearing capacity of footing subjected to eccentric loading, foundation settlement etc.

### **Objectives:**

- 1) Prepare civil engineering students for a career in foundation engineering
- 2) Prepare civil engineering students to design foundation excavations/retaining walls and analyze the stability of structures on or below slopes

### **Learning Outcomes:**

#### **Knowledge:**

1. Be able to comprehend and utilize the geotechnical literature to establish the framework for foundation design.
2. Be able to plan and implement a site investigation program including subsurface exploration to evaluate soil/structure behavior and to obtain the necessary design parameters.
3. Be able to carry out laboratory and field compaction tests for preparation of foundation surfaces and placement of engineered fill.
4. Be able to determine allowable bearing pressures and load carrying capabilities of different foundation systems.

#### **Application:**

1. To design retaining walls.
2. To design earth slopes and embankments
3. To calculate bearing pressure and settlement
4. To design shallow and deep foundation.

### **Course Contents:**

**Unit 1:** Earth pressure theories: Plastic equilibrium of soil, Earth pressure at rest, Active & passive earth pressure, Rankine's & Coulomb's earth pressure theories, wedge method of analysis, estimation of earth pressure by graphical construction (Culmann Method).

**Book:** *Soil Mechanics and Foundation Engineering* by Dr. K.R Arora (Chapter 19)

*Geotechnical Engineering* by V.N.S Murthy (Chapter 11)

**Unit 2:** Retaining wall & sheet pile structures: Proportions of retaining walls, stability checks, cantilever and anchored sheet piles, free earth and fixed earth method of analysis of anchored bulk heads

**Book:** *Soil Mechanics and Foundation Engineering* by Dr. K.R Arora (Chapter 20)

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Unit 3:** Stability of slopes: Analysis of finite and infinite slopes, Swedish And friction circle method, Taylor's stability number, Bishop's method of stability analysis

**Book:** *Soil Mechanics and Foundation Engineering* by Dr. K.R Arora (Chapter 18)

*Geotechnical Engineering* by V.N.S (Chapter 10)

**Unit 4:** Site investigation & soil exploration: Planning of sub-surface exploration, methods, sampling, samples, Insitu tests: SPT, SCPT, DCPT, Field vane shear, Plate load test

**Book:** *Soil Mechanics and Foundation Engineering* by Dr. K.R Arora (Chapter 17)

*Geotechnical Engineering* by V.N.S Murthy (Chapter 9)

**Unit 5:** Shallow foundations : Safe bearing capacity, Terzaghi's bearing capacity theory, effect of depth of embedment, water table, eccentricity of load, foundation shape on bearing capacity, Bearing capacity as per IS 6403.

**Book:** *Soil Mechanics and Foundation Engineering* by Dr. K.R Arora (Chapter 23)

*Geotechnical Engineering* by V.N.S Murthy (Chapter 12)

**Unit 6:** Settlement analysis of shallow foundation: Immediate and consolidation settlement, correction for rigidity and dimensional effects, settlement in various types of soil, IS-1904 and 8009 recommendations, Allowable bearing capacity

**Book:** *Geotechnical Engineering* by V.N.S Murthy (Chapter 13)

**Unit 7:** Deep foundations: Pile: Types, load transfer mechanism, Determination of load carrying capacities of piles by static and dynamic formulae, Recommendations of IS 2911, Pile group: Group efficiency, Negative skin friction, pile load test

**Book:** *Soil Mechanics and Foundation Engineering* by Dr. K.R Arora (Chapter 25)

*Geotechnical Engineering* by V.N.S Murthy (Chapter 15)

### **Text Books**

1. *Soil Mechanics and Foundation Engineering* by Dr. K.R Arora
2. *Geotechnical Engineering* by V.N.S Murthy

### **References**

1. Foundation Analysis & Design J.E. Bowels McGraw Hill
2. Relevant latest IS Codes (IS 6403, IS 1904, IS 8009, IS 2911) Bureau of Indian Standard

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Design of RC Structures**

**Course Code: CE502**

**L-T Scheme: 3-1**

**Course Credits: 4**

### **Introduction:**

This course covers the structural design of reinforced concrete members by limit state method as per design guidelines of IS456:2000. The Topics to be covered (tentatively) include:

- Structural design of reinforced concrete beams (including singly reinforced, doubly reinforced, T-beam, L-beam)
- Structural design of reinforced concrete slabs (including one way slabs, one way continuous slab, two way slabs)
- Structural design of reinforced concrete columns (including uniaxial and biaxial loading criteria)
- Structural design of reinforced concrete footings (including isolated footings)
- Structural design of reinforced concrete dog-legged staircase (including both waist type and tread type)
- Concept and design of shear and bond
- Concept of different design philosophies (including introduction to working stress method)

### **Objectives:**

In this course students will understand the development and concept of different design philosophies and extend their study to the behavior and design of various reinforced concrete members subjected to gravity loads. The study will include deflections due to bending of beams, axial load-moment interaction for uniaxial and biaxial bending of columns, design and detailing of continuous one-way beams and slabs, design and detailing of two-way slabs, and design for shear and bond, design of isolated footings and staircase.

### **Learning Outcomes:**

#### **Knowledge:**

On successful completion of the course students will be able to:

1. Understand basic reinforced concrete concepts
2. Understand design process
3. Sizing of reinforced concrete members
4. Use and apply design codes; understand design loads for strength their importance in limit state design.
5. Ability to design and check for serviceability (crack and deflection) and ultimate limit state conditions in accordance to the Indian standard code (IS 456:2000)

### **Course Contents:**

**Unit 1:** Introduction: Principles of design of reinforced concrete members-Working stress and Limit State method of design

**Book:** Pillai and Menon, "Reinforced Concrete Design" – Chapter 2, Chapter 3

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Unit 2:** Working stress method of design: Basic concepts and IS code provisions (IS: 456 2000) for design against bending moment and shear forces \* Balanced, under reinforced and overreinforced beam/ slab sections; design of singly and doubly reinforced sections

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 4

**Unit 3:** Limit state method of design: Basic concepts and IS code provisions (IS: 456 2000) for design against bending moment and shear forces; concepts of bond stress and development length; Use of ‘design aids for reinforced concrete’ (SP:16).

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 5, Chapter 6, Chapter 8

**Unit 4:** Analysis, design and detailing of singly reinforced rectangular, ‘T’, ‘L’ and doubly reinforced beam sections by limit state method.

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 5

**Unit 5:** Design and detailing of one-way and two-way slab panels as per IS code provisions.

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 5, Chapter 11

**Unit 6:** Design and detailing of continuous beams and slabs as per IS code provisions

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 5

**Unit 7:** Staircases: Types; Design and detailing of reinforced concrete doglegged staircase

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 12

**Unit 8:** Design and detailing of reinforced concrete short columns of rectangular and circular cross sections under axial load. Design of short columns subjected to axial load with moments (uniaxial and biaxial bending) – using SP 16.

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 13

**Unit 9:** Shallow foundations: Types; Design and detailing of reinforced concrete isolated square and rectangular footing for columns as per IS code provisions by limit state method

**Book:** Pillai and Menon, “Reinforced Concrete Design” – Chapter 14

### **Text Books**

1. Pillai and Menon, “Reinforced Concrete Design”, Tata Mcgraw Hill.
2. B.C. Punmia, Ashok Kumar Jain, Arun Kumar Jain, “R.C.C. Designs”, PanWorld Books

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Concrete Technology**

**Course Code: CE503**

**L-T Scheme: 3-0**

**Course Credits: 3**

### **Introduction:**

This course covers the skills and knowledge required to understand the science and technology of the materials used in the production of concrete and relate these to the uses of concrete in civil construction.. It also includes understanding of various chemical and physical properties of concrete in plastic as well hardened state. The Topics to be covered (tentatively) include:

- Types and manufacturing process of various types of cements and its reaction with water
- Classification of aggregates, its physical and mechanical properties and its role in concrete production
- Types and chemical phenomena involved in various types of admixtures and its role in production of quality concrete mix
- Concept of workability and its relationship with concrete's strength
- Stages of concrete production
- Testing on hardened concrete
- Concrete mix design as per guidelines given in IS 10262 (2009)

### **Objectives:**

This course is designed for providing an advanced understanding on cement chemistry such as hydration reaction and the ultimate concrete properties, chemical and physical interaction of aggregates and admixtures with the hydrated cement paste and their effects on the performance of fresh and hardened concrete.

### **Learning Outcomes:**

#### **Knowledge:**

On successful completion of the course students will be able to:

1. Develop in depth knowledge on types, manufacture of cement and its properties
2. Develop a thorough understanding on the hydration of PC, influence of other cementitious materials and admixtures and additives on the progress of hydration reaction and on the hydration products being produced in the concrete microstructure.
3. Concept of workability and its relationship with concrete's strength

### **Course Contents:**

**Unit 1:** Concrete as a Structural Material, Chemical Composition of Cement, Hydration of Cement, Heat of Hydration and Strength, Tests on Cement and Cement Paste – fineness, consistency, setting time, soundness, strength. Types of Portland cement – ordinary, Rapid hardening, low\*heat, sulphate resisting, Portland slag, Portland pozzolana, super sulphated cement, white cement.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

Quality of Water – Mixing Water, Curing Water, Harmful Contents

**Book:** M.S. Shetty, “Concrete Technology” – Chapter 1, Chapter 2

**Unit 2:** Aggregates – Classification, Mechanical and Physical Properties, Deleterious Substances, Alkali-Aggregate Reaction, Sieve Analysis, Grading Curves, Fineness modulus, Grading Requirements. Testing of Aggregates – Flakiness, Elongation Tests, Aggregate Crushing Value, Ten Percent Fines Value, Impact Value, Abrasion Value

**Book:** M.S. Shetty, “Concrete Technology” – Chapter 3

**Unit 3:** Admixtures – different types, effects, uses, Retarders and Super plasticizers.

**Book:** M.S. Shetty, “Concrete Technology” – Chapter 5

**Unit 4:** Properties of Fresh Concrete – Workability, Factors Affecting Workability, Slump Test Compacting Factor Test, Flow Table Test, Segregation, Bleeding, Setting Time, Mixing and Vibration of Concrete, Mixers and Vibrators, Curing methods, Maturity.

**Book:** M.S. Shetty, “Concrete Technology” – Chapter 6

**Unit 5:** Strength of Concrete – Water/Cement ratio, Gel/Space ratio, Strength in Tension, Compression,

Effect of Age on Strength, Relation between Compressive and Tensile Strength, Fatigue Strength, Stress Strain Relation and Modulus of Elasticity, Poisson’s Ratio, Shrinkage and Creep, Compression Test on Cubes, Cylinders, Introduction to Non Destructive Tests (Rebound hammer & Ultrasonic pulse velocity)

**Book:** M.S. Shetty, “Concrete Technology” – Chapter 7, Chapter 10

**Unit 6:** Mix Design by I.S. 10262 (2009), Light-weight, Polymer and Fibre-reinforced concrete

**Book:** M.S. Shetty, “Concrete Technology” – Chapter 11, IS 10262:2009

### **Text Books**

1. M.S. Shetty, “Concrete Technology”, S. Chand.
2. Neville, “Concrete Technology”, Pearson Education
3. M.L. Gambhir, “Concrete Technology”, Tata McGraw Hill
4. IS 10262 (2009): Guidelines for concrete mix design proportioning



# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Engineering Geology**

**Course Code: CE504**

**L-T Scheme: 3-0**

**Course Credits: 3**

### **Introduction:**

Engineering geology is the application the geologic sciences to engineering practice for the purpose of assuring that the geologic factors affecting the location, design, construction, operation and maintenance of engineering works are recognized and adequately provided for. Engineering geologists investigate and provide geologic and geotechnical recommendations, analysis, and design associated with human development.

Engineering geologic studies may be performed during the planning, environmental impact analysis, civil or structural engineering design, value engineering and construction phases of public and private works projects, and during post-construction and forensic phases of projects. Works completed by engineering geologists include; geologic hazards, geotechnical, material properties, landslide and slope stability, erosion, flooding, dewatering, and seismic investigations, etc. The principal objective of the engineering geologist is the protection of life and property against damage caused by geologic conditions.

### **Objectives:**

The objectives of this course are to learn and apply the principle or engineering geological fundamentals of:

- ) Origin, Internal and surface structures of the earth.
- ) Identification of the minerals types of clay minerals their properties and effects on engineering project.
- ) Types of rock (Igneous, Sedimentary, and Metamorphic), Civil engineering importance of rock forming minerals.
- ) Sedimentary processes (Weathering, erosion, deposition), Metamorphism and volcanic eruptions.
- ) Geological structures (Joint, veins, crack, faults, and fold), reasons of formation for each type and their side effects on the engineering projects.
- ) Types of Dams and Tunnels.
- ) Types of maps, how we can draw the topographic map by using computer programming.
- ) Types of Mass wasting, factors increasing instability and methods of stabilization.
- ) Study ground water, factors affecting on the variation of water table depth and methods of searching for ground water.

### **Learning Outcomes:**

1. Be able to identify and characterize intact rock/rock mass properties.
2. Be able to identify and classify rock using basic geologic classification systems.
3. Be able to apply geologic concepts and approaches on rock engineering projects.
4. Understand the role of geology in the design and construction process of underground openings in rock.
5. Be able to use the geologic literature to establish the geotechnical framework needed to properly design and construct heavy civil works rock projects.
6. Have knowledge of the basic engineering index properties and geotechnical parameters needed to estimate and evaluate ground behavior in underground rock openings.
7. Have knowledge of design and construction procedures required to safely control rock behavior in underground openings.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

### **Course Contents:**

**Introduction:** Geology and its importance in Civil Engineering.

**Mineralogy:** Definition, internal and external structure of minerals, study of crystals, Classification and physical properties of minerals.

### **Classification of Rocks:**

**Igneous rocks:** Origin, mode of occurrence, form & texture, classification and engineering importance  
**Sedimentary Rocks:** Process of sedimentation, classification and engineering importance. **Metamorphic Rocks:** Agents & type of metamorphism, classification and engineering.

**Weathering of rocks:** Agents and kinds of weathering soil formation & classification based on origin.

**Geological work of rivers:** Origin and stages in the system, erosion, transportation and deposition.

**Structural geology:** Introduction to structural elements of rocks, dip & strike, definition, description, classification of folds, faults and joints, importance of geological structures in Civil Engineering.

**Earthquakes and seismic hazards:** Causes and effects, seismic waves and seismographs, Mercalli's intensity scale and Richter's scale of magnitude.

**Engineering properties of rocks:** Porosity, Permeability, Compressive strength, Tensile strength and Abrasive resistance.

**Rocks as construction materials:** Qualities required for building and ornamental stones, foundations, concrete aggregate, railway ballast, road metal, pavement, flooring and roofing.

**Geophysical exploration:** Methods of Geophysical Exploration, Electrical resistivity method field procedure – sounding and profiling, electrode configuration, and interpretation of resistivity data. Geophysical surveys in ground water and other Civil Engg. Projects.

**Applied Geology:** Surface and subsurface geological and geophysical investigations in major Civil Engg. Projects. Geological studies of Dams and reservoir sites, Geological studies for selection of tunnels and underground excavations.

**Landslides:** Types of landslides, causes, effects and prevention of landslides.

### **Reference Books**

1. Engineering Geology, S K Duggal, H K Pandey N Rawal, McGraw Hill India
2. Engineering and General Geology, Paryin Singh, Katson Publishing House Delhi 1987
3. Engineering Geology for Civil Engineers, D. Venkat Reddy, OXFORD, IBH 1995

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Soil Mechanics Lab-II**

**Course Code: CE 591**

**L-T-P scheme: 0-0-3**

**Course Credit: 2**

### **Objectives:**

1. The students will be able to differentiate between different types of soils and characteristics of each type of soil.
2. The students will be involved in the collection of the field samples and identification of the types of soils without natural testing.
3. The students will be able to determine the natural moisture content of the soil.
4. The students will be able to determine the compressibility characteristics of the soil by Oedometer test which involves the co-efficient of consolidation and compression index.

**Learning Outcomes:** The students will develop a clear understanding of the different types of soils and will be able to identify the types of soils as per the Indian Standards. The students will be able to determine the moisture contents and specific gravity of cohesive soils and cohesion less soils. The students will also develop a clear understanding of the compaction characteristics of the soil. The students will develop a understanding of the Triaxial Test that is to determine the shear parameters of the soil. They will also develop the basic concepts of Direct Shear Test and to find out the compressive strength of the soil. The students will be exposed to the concepts of Standard Penetration Test which involves the collection of field samples and performing tests for the determination of various soil parameters like bearing capacity, compressive strength.

### **Course Contents:**

**Practical that must be done in this course are listed below:**

1. Determination of compressibility characteristics of soil by Oedometer test ( co-efficient of consolidation & compression Index).
2. Determination of unconfined compressive strength of soil.
3. Determination of Shear parameter of soil by Direct shear test.
4. Determination of undrained shear strength of soil by Vane shear test.
5. Determination of shear parameter of soil by Triaxial test (UU).
6. Standard Penetration Test.
7. Expt No. 6 by large groups in the field.

### **Text Book:**

1. Soil testing by T.W. Lamb (John Willey).
2. SP-36 (Part-I & Part –II).
3. Soil Mechanics Laboratory Manual by B. M. Das, OXFORD UNIVERSITY PRESS.
4. Measurement of engineering properties of soil by E.Jaibaba Reddy & K. Ramasastrri.

# **UNIVERSITY OF ENGINEERING AND MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Concrete Lab**

**Course Code: CE 592**

**L-T-P scheme: 0-0-3**

**Course Credit: 2**

### **Objectives:**

1. The students will develop a clear understanding of the various tests conducted on concrete in both fresh and hardened states.
2. They will develop the concepts of workability, slump test, Vee-bee compacting test and compaction factor tests which are conducted on fresh concrete to determine the fresh concrete properties.
3. The students will be able to perform mix design of concrete and as per the proportion develop concrete mixes of different compressive strengths.
4. The students will be able to perform and analyze the various properties of concrete in hardened state like compressive strength, Split Tensile Strength, Flexure Tests.
5. The students will be exposed to non-destructive testing like Rebound Hammer and Ultrasonic Pulse Velocity test.

**Learning Outcomes:** The students will be able to understand the various tests which are performed on cement like specific gravity, normal consistency, setting time. The students will also develop a clear understanding of the compressive strength on cement mortar cubes. The students will also develop a clear understanding of the various tests on fine aggregates like sieve analysis, fineness modulus, moisture content, bulk density. The students will also develop concepts on various tests conducted on coarse aggregate like fineness modulus, bulk density.

### **Course Contents:**

**Practicals that must be done in this course are listed below:**

1. Tests on cement – specific gravity, fineness, soundness, normal consistency, setting time, compressive strength on cement mortar cubes.
2. Tests on fine aggregate – specific gravity, bulking, sieve analysis, fineness modules, moisture content, bulk density and deleterious materials.
3. Tests on coarse aggregate - specific gravity, sieve analysis, fineness modulus, bulk density.
4. Tests on Fresh Concrete: Workability: Slump, Vee-Bee, Compaction factor tests.
5. Hardened Concrete: Compressive strength on Cubes, Split tensile strength, Static modulus of elasticity, Flexure tests , Non destructive testing (Rebound hammer & Ultrasonic pulse velocity).
6. Mix Design of Concrete.

### **Text Book:**

1. Relevant latest IS codes on Aggregates, Cement & Concrete [269, 383, 2386, 10262(2009), SP23].
2. Laboratory manual of concrete testing by V.V. Sastry and M. L. Gambhir.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Quantity Surveying, Specifications & Valuation**

**Course Code: CE 593**

**L-T-P scheme: 0-0-3**

**Course Credit: 2**

### **Objectives:**

1. The students will develop the basic concepts of the types of estimates, approximate estimates, items of work, unit of measurement and unit rate of measurement.
2. The student will be able to calculate the details of measurements and calculation of quantities with cost, bill of quantities and abstract of quantities.
3. The students will develop the concept of analysis and schedule of rates for Earthwork, Brick Flat Soling, DPC, PCC and RCC work.
4. The students will have a clear understanding of the specifications of the materials like bricks, cement, fine and coarse aggregates.

**Learning Outcomes:** The students will develop a clear concept of the type of estimates and will be able to affectively determine the project cost of the any tender being undertaken. The students will be exposed to the concept of Bar Bending Schedule and quantity estimate of single storied building. The students will also develop the understanding of the specification of works like plain cement concrete, reinforced cement concrete, first class brickwork, cement plastering. The students will develop the basic concepts of valuation of work like Gross Income, Net Income, Depreciation, Mortgage and Valuation Table.

### **Course Contents:**

**Practicals that must be done in this course are listed below:**

1. **Quantity Surveying:** Types of estimates, approximate estimates, items of work, unit of measurement, unit rate of payment.
2. **Quantity estimate** of a single storied building, Bar bending schedule.
3. **Details of measurement** and calculation of quantities with cost, bill of quantities, abstract of quantities. Estimate of quantities of road, Underground reservoir, Surface drain, Septic tank. Analysis and schedule of rates: Earthwork, brick flat soling, DPC, PCC and RCC, brick work, plastering, flooring and finishing, Specification of materials: Brick, cement, fine and coarse aggregates, Specification of works: Plain cement concrete, reinforced cement concrete, first class brickwork, cement plastering, pointing, white washing, colour washing, distempering, lime punning, painting and varnishing.
4. **Valuation:** Values and cost, gross income, outgoing, net income, scrap value, salvage value, market value, Book Value, sinking fund, capitalised value, Y. P., depreciation, obsolescence, deferred income, freehold and leasehold property, mortgage, rent fixation, valuation table .

### **Text Book:**

1. Estimating, costing, Specification and Valuation in Civil Engineering by M. Chakroborty.
2. Estimating and Costing in Civil Engineering” by B.N. Dutta, USB Publishers & Distributers.
3. Civil Estimating, Costing and Valuation by Agarwal / Upadhay.

# **UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Course Description**

**Title of Course: Engineering Geology Lab**

**Course Code: CE594**

**L-T-P scheme: 0-0-3**

**Course Credit: 3**

### **Objectives:**

1. To understand the role of geology in the design and construction process of underground openings in rock.
2. To apply geologic concepts and approaches on rock engineering projects.
3. To identify and classify rock using basic geologic classification systems.
4. To use the geologic literature to establish the geotechnical framework needed to properly design and construct heavy civil works rock projects.
5. To identify and characterize intact rock/rock mass properties.

### **Learning Outcomes:**

1. Have knowledge of the field and laboratory test procedures and be able to interpret test results to estimate intact and rock mass properties.
2. Study photographs and use observational approach to identify different categories of rock behavior in actual underground openings.

### **Course Contents:**

**Exercises that must be done in this course are listed below:**

Exercise No.1: To study of Physical properties of minerals

Exercise No.2: To Study various rock forming minerals.

Exercise No.3: Study of crystals with the help of crystal models

Exercise No.4: Identification of Rocks and Minerals [Hand Specimens]

Exercise No.5: Microscopic study of Rocks and minerals

Exercise No.6: Study of Geological maps, interpretation of geological structures.

### **Text Book:**

Engineering Geology Practicals (Lab. Practice) by M.T.M. Reddy,