UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Mathematics-III
Course Code: M301
L-T Scheme: 3-1 **Course Credits: 4**

Introduction:

The goal of this mathematics course is to provide high school students and college freshmen an introduction to basic mathematics and especially show how mathematics is applied to solve fundamental engineering problems. The Topics to be covered (tentatively) include:

Fourier Series & Fourier Transform.

Introduction to Functions of a Complex Variable & Conformal Mapping.

Basic Probability Theory.

Partial Differential Equation (PDE) and Series solution of Ordinary Differential Equation (ODE).

Course Objectives:

In this course, the students will learn differentiation and integration of Complex functions and mappings in the complex plane. They are introduced to Fourier Transforms to stimulate interest in communications, control and signal processing to prepare them for follow up courses in these areas. They also learn to extend and formalize knowledge of the theory of probability and random variables and get motivated to use of statistical inference in practical data analysis. They are also introduced to Partial Differential Equations, their types and solutions.

Learning Outcomes:
Knowledge:

At the end of this course, students will be able to

1. Understand and analyze analytic functions, evaluate line integrals of complex functions.
2. Apply fundamental mathematical properties of the Fourier transform including linearity, shift, symmetry, scaling modulation and convolution and calculate the Fourier transform or inverse transform of periodic functions.
3. Construct probability distributions of a random variable based on real world situation and use it to compute the mean and variance; approximate a given data to fit a curve and analyze and interpret the correlation between two sets of data.
4. Form PDE by eliminating arbitrary constants / functions and solve linear PDEs by direct method and separation of variables.

Application:

1. Fourier transforms (FT) take a signal and express it in terms of the frequencies of the waves that make up that signal.
2. Probability is used in Weather forecasting, calculating and in many more engineering applications.
3. At the end of this course the student should be able to apply the above mentioned concepts to engineering problems.

Course Contents:

Unit 1: **Fourier Series & Fourier Transform:** Introduction, Periodic functions: Properties, Even & Odd functions: Properties, Euler's Formulae for Fourier Series, Fourier Series for functions of period 2π, Fourier Series for functions of period $2l$, Dirichlet's conditions, Sum of Fourier series. Theorem for the convergence of Fourier Series (statement only). Fourier Series of a function with its periodic extension. Half Range Fourier series: Construction of Half Range Sine Series, Construction of Half Range Cosine

Series. Fourier Integral Theorem (statement only), Fourier Transform of a function, Fourier Sine and Cosine Integral Theorem (statement only), Fourier Cosine & Sine Transforms. Fourier, Fourier Cosine & Sine Transforms of elementary functions. Properties of Fourier Transform: Linearity, Shifting, Change of scale, Modulation. Fourier Transform of Derivatives. Convolution Theorem (statement only), Inverse of Fourier Transform.

Unit 2: **Introduction to Functions of a Complex Variable & Conformal Mapping:** Complex functions, Concept of Limit, Continuity and Differentiability. Analytic functions, Cauchy-Riemann Equations (statement only). Sufficient condition for a function to be analytic. Harmonic function and Conjugate Harmonic function, related problems. Construction of Analytic functions: Milne Thomson method, related problems.

Unit 3: Basic Probability Theory: Classical definition and its limitations, Axiomatic, definition. Some elementary deduction: i) $P(O)=0$, ii) $0 \leq P(A) \leq 1$, iii) $P(A')=1-P(A)$ etc. where the symbols have their usual meanings. Frequency interpretation of probability. Addition rule for 2 events (proof) & its extension to more than 2 events (statement only). Related problems. Conditional probability & Independent events. Extension to more than 2 events (pairwise & mutual independence). Multiplication Rule. Examples. Baye's theorem (statement only) and related problems.

Definition of random variable. Continuous and discrete random variables. Probability density function & probability mass function for single variable only. Distribution function and its properties (without proof). Definitions of Expectation & Variance, properties & examples. Some important discrete distributions: Bernoulli, Binomial & Poisson distributions and related problems. Some important continuous distributions: Normal distributions and related problems.

Unit 4: Partial Differential Equation (PDE) and Series solution ofOrdinary Differential Equation (ODE): Basic concepts of PDE. Origin of PDE, its order and degree, concept of solution in PDE. Introduction to different methods of solution: Separation of variables, Laplace & Fourier transforms methods.

Solution of Initial Value & Boundary Value PDE's by Separation of variables, Laplace &Fourier transform methods.

PDE I: One dimensional Wave equation.
PDE II: One dimensional Heat equation.
PDE III: Two dimensional Laplace equation.

Text Books

1. Engineering Mathematics-III(B.K Pal and K.Das) [All course]

Reference Books:

1. Brown J.W and Churchill R.V: Complex Variables and Applications, McGraw-Hill.
2. Das N.G.: Statistical Methods, TMH.
3. Grewal B S: Higher Engineering Mathematics, Khanna Publishers.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Data Structure & Algorithm
Course Code: CS(CE)301
L-T Scheme: 3-1 **Course Credits: 3**

Introduction:

This course examines data structures and algorithms basics. The Topics to be covered (tentatively) include:

- Abstract Data Type and Data Type
- Time and space analysis of algorithms
- Linear Data structures
- Non-linear Data structures
- Sorting, Searching and Hashing

Objectives:

In this course we will study the basic components of data structure and algorithm.Students are expected to be capable of understanding the data structures, their advantages and drawbacks, how to implement them in C, how their drawbacks can be overcome and what the applications are and where they can be used. The way different modules in the operating system interact and work together to provide the basic services of an operating system.

Learning Outcomes:

Knowledge:

1. To learn about the data structures/ methods/algorithms mentioned in the course with a comparative perspective so as to make use of the most appropriate data structure/ method/algorithm in a program to enhance the efficiency (i.e. reduce the run-time) or for better memory utilization, based on the priority of the implementation.
2. To understand at least the efficiency aspects of the graph and sorting algorithms covered in this course.
3. To convert an inefficient program into an efficient one using the knowledge gathered from this course.

Application:

1. To implement different types of linked list.
2. To implement graph algorithm for any network
3. To implement sorting and searching.

Course Contents:

Unit 1: Introduction-Data and data structure, Abstract Data Type and Data Type. Algorithm efficiency and analysis, time and space analysis of algorithms – order notations.

Unit 2: Linear Data structures–Array, Linked List, Stack, Queue and Recursion with their types, different operations and applications

Unit 3: Nonlinear Data structures–Graph, Trees, Minimum spanning tree with their types, different operations and applications.

Unit 4: Sorting, Searching and Hashing- Bubble sort and its optimizations, insertion sort, shell sort, selection sort, merge sort, quick sort, heap sort (concept of max heap, application – priority queue), radix sort. Sequential search, binary search, interpolation search. Hashing functions, collision resolution techniques.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Text Books

1. YashavantKanetkar, Abduln A.P.J. Kalam," Data Structure Through C",2nd edition, BPB Publications
2. Seymour Lipschutz, "Data Structures",Revised First edition,McGraw Hill Education.

References

1. Langsam,Augestein, Tenenbaum:Data Structures using Cand C++, 2nd Edn, 2000,
2. Horowitz and Sahani:Fundamental ofData Structuresin C,2ndEdn, 2008
3. Kruse, Tonso, Leung: Data Structures and ProgramDesign in C, 2000
4. Richard F.Gilberg&BehrouzForouzan: Data Structures, APseudocodeApproach withC, 2001.
5. Weiss: DataStructures and AlgorithmAnalysis in C/C++, 3rdEdn, 2006

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Basic Environmental Engineering
Course Code: CH301
L-T Scheme: 2-1 **Course Credits: 3**

Introduction:

This course introduces the basic principles behind the environmental phenomena and how anthropogenic activities are affecting those environmental processes. The different administrative measures taken to safeguard our environment are also discussed in this course. The Topics to be covered (tentatively) include:

- Ecology
- Air pollution and control
- Water Pollution and Control
- Land Pollution
- Noise Pollution
- Environmental Management

Objectives:

In this course we will study about the pattern of growing human population and its effect on the planet. We will be familiarizing with the consequences of anthropogenic activities and measures to mitigate their harmful effects. We will learn about the mechanism behind the global issues like global warming, acid rain, water pollution, etc.

Learning Outcomes:

Knowledge:

1. To introduce the patterns of population growth and associated problems.
2. To familiarize with the cause, effect and control measures of various human made degrading processes.
3. To enable the students to know the mechanism behind the devices to control pollution.
4. To familiarize with administrative laws to mitigate various environmental problems.

Application:

1. To understand the problems associated with pollution
2. To familiarize with the global environmental issues.
3. To understand the principles behind various control devices.
4. To understand and comply with the various government environmental laws.

Course Contents:

Unit 1: Introduction, Ecology, Air pollution and control

Unit 2: Water Pollution and Control

Unit 3: Land Pollution, Noise Pollution

Unit 4: Environmental Management

Text Books

1. Gourkrishna Damohapatra, Basic Environmental Engineering and Elementary Biology, Vikas publishing.

References

1. A.K. De, Environmental Chemistry, New Age International.

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UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Solid Mechanics
Course Code: CE301
L-T Scheme: 3-0 **Course Credits: 3**

Introduction: The course on solid mechanics provides a basic understanding of the concepts of stress and strain**,** which involves normal stress, shear stress and bearing stress. It explores the concept of Hooke's Law and Poisson's Ratio. It also explores the concept of stress-strain diagram of ductile and brittle materials. It also takes into account the concept of deflection of beams and beam statics**.** It also takes into account the bending of beams and introduction to thin cylindrical and spherical shells.

Objectives:
In this subject we will explore the basic concepts of mechanics and their applications in the field of civil engineering practical problems. The concept of deflection of beams under the application of external loading will be taken into account. The concept of plane trusses and their analysis will be discussed in details which includes the analysis of sections and analysis of joints. The concept of thin cylinder and spherical shells will also be discussed along with practical problems.

Learning Outcomes:
Knowledge:
The students will develop a clear understanding of the following concepts:
Normal stress, Shear stress, Bearing stress, Normal strain, Shearing strain; Hooke's law; Poisson's ratio; Stress-strain diagram of ductile and brittle materials; Elastic limit; Ultimate stress; Yielding; Modulus of elasticity; Factor of safety. Basic kinematic assumption, moment of inertia, elastic flexure formulae and its application, Bending and shear stress for regular sections, shear centre. Deflection of statically determinate beams: Fundamental concepts: Elastic curve, moment Curvature relationship, governing differential equation, boundary conditions: Direct integration solution. Hoop stress and meridional - stress and volumetric changes. Torsion: Pure torsion, torsion of circular solid shaft and hollow shafts, torsional equation, torsional rigidity, closed coil helical; springs Columns: Fundamentals, criteria for stability in equilibrium, column buckling theory, Euler's load for columns with different end conditions, limitations of Euler's theory – problems, eccentric load and secant formulae.

Application:
The students will learn to apply the basic concept of mechanics to the practical civil engineering problems. The students will be able to relate the deflection of beams concept with the practical scenario when the structure will be subjected to external loads. The response and behavior of the structures will be clear.

Course Contents:
Unit 1: **Review of Basic Concepts of Stress and Strain:** Normal stress, Shear stress, Bearing stress, Normal strain, Shearing strain; Hooke's law; Poisson's ratio; Stress-strain diagram of ductile and brittle materials; Elastic limit; Ultimate stress; Yielding; Modulus of elasticity; Factor of safety.

Unit 2: Beam Statics: Support reactions, concepts of redundancy, axial force, shear force and bending moment diagrams for concentrated, uniformly distributed, linearly varying load, concentrated moments in simply supported beams, cantilever and overhanging beams

Unit 3: Symmetric Beam Bending: Basic kinematic assumption, moment of inertia, elastic flexure formulae and its application, Bending and shear stress for regular sections, shear centre. Deflection of

statically determinate beams: Fundamental concepts: Elastic curve, moment Curvature relationship, governing differential equation, boundary conditions: Direct integration solution.

Unit 4: Analysis of determinate plane trusses: Concepts of redundancy, Analysis by method of joints, method of sections. Two Dimensional Stress Problems: Principal stresses, maximum shear stresses, Mohr's circle of stresses, construction of Mohr's circle.

Unit 5: Introduction to thin cylindrical & spherical shells: Hoop stress and meridional - stress and volumetric changes. Torsion: Pure torsion, torsion of circular solid shaft and hollow shafts, torsional equation, torsional rigidity, closed coil helical; springs Columns: Fundamentals, criteria for stability in equilibrium, column buckling theory, Euler's load for columns with different end conditions, limitations of Euler's theory – problems, eccentric load and secant formulae.

Text Books

1. R.K.Bansal Strength Of Materials By Laxmi Publications.
2. Ramamrutham Strength Of Materials.
3. S.S.Bhavikatti Strength Of Materials By Vikas Publishing House Private Limited.
4. Elements Of Strength Of Materials By S.P. Timoshinko and D.H.Young By EWP Private Limited.

References

1. R.Subramanian Strength Of Materials By Oxford University Press.
2. Nag And Chandra Fundamentals Of Strength Of Materials By WIE Publications.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Surveying
Course Code: CE302
L-T Scheme: 3-1 **Course Credits: 4**

Introduction:

This course helps to understand the basic principles behind surveying and leveling operations and also discuss about the on field surveying methods. The Topics to be covered (tentatively) include:

- Chain surveying
- Compass surveying
- Plane table surveying
- Levelling
- Computation of area and volume
- Contouring
- Theodolite surveying
- Simple and transition curves
- Tachometry
- Total station

Objectives:

In this course we will study the basics of surveying and levelling. We will understand the methods of different types of surveying operations. We will learn the application of field books, calculation of area of the proposed site and volume of the earthwork.

Learning Outcomes:

Knowledge:

1. To introduce the basic concepts of surveying
2. To familiarize the students with different types of surveying and the instruments used
3. To enable the students to understand the methods of surveying
4. To familiarize the students with technical problems and errors during field work

Application:

1. To understand the fundamentals of surveying methods
2. To familiarize with the instruments and learn to take the readings.
3. To understand the various methods and their practical usage.
4. To understand the errors and the methods to eliminate those errors.

Course Contents:

Unit 1: Introduction, Chain Surveying, Compass Surveying, Plane Table Surveying

Unit 2: Levelling, Contouring, Calculation area and volume

Unit 3: Theodolite Surveying, Simple and Transition Curves

Unit 4: Tachometry, Introduction to Total Station

Text Books

1.N.N Basak Surveying and Leveling, McGraw Hill Education

References

1. S.K.Duggal, Surveying:-Vol- I &II

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UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Building Material & Construction
Course Code: CE 303
L-T Scheme: 3-1 **Course Credits: 4**

Introduction: This course examines the basic concepts of building materials and construction and broadly covers the following topics: Cement, Bricks, Mortars, Foundation and Stairs.

Objectives:
The students will be able to understand the commonly used building materials and their properties. The students will understand the following concepts:Function of Foundations, Essential requirement of good foundation, Different types of shallow and deep Foundations Brick masonry: Definitions, Rules for bonding, Type of bonds – stretcher bond, Header bond, English bond, Flemish Bond, Comparison of English Bond and Flemish Bond (one and one and half brick thick wall) Wall, Doors and Windows: Load bearing wall, Partition wall, Reinforced brick wall Common types of doors and windows of timber and metal.

Learning Outcomes:
Knowledge:
The student will develop a clear understanding of the following concepts:
Classification, Characteristics of good bricks, Ingredients of good brick earth, Harmful substance in brick Earth, Different forms of bricks, testing of bricks as per BIS. Defects of bricks. Aggregates: Classification, Characteristics, Deleterious substances, Soundness, Alkali – aggregates reaction, Fine aggregates, Coarse aggregates, Testing of aggregates Lime: Impurities in limestone, Classification, Slaking and hydration, Hardening, Testing, Storage, Handling Cement & Concrete: Cement: OPC: Composition, PPC, Slag cement, Hydration, setting time Concrete: Types, ingredients, W/C ratio, Workability, Different grades in cement concrete, Tests on cement concrete. Classification, Uses, Characteristics of good mortar, Ingredients. Cement mortar, Lime mortar, Lime cement mortar, special mortars Wood and Wood Products: Classification of Timber, Structure, Characteristics of good timber, Seasoning of timber, Defects in Timber, Diseases of timber, Decay of Timber, Preservation of Timber Testing of Timber, Veneers , Plywood, Fibre Boards, Particle Boards, Chip Boards , Black Boards, Button Board and Laminated Boards, Applications of wood and wood products Paints, Enamels and Varnishes: Composition of oil paint, characteristic of an ideal paint, preparation of paint, covering power of paints, Painting: Plastered surfaces, painting wood surfaces, painting metal Surfaces. Defects, Effect of weather, enamels, distemper, water wash and colour wash, Varnish, French Polish, Wax Polish Miscellaneous Materials: Gypsum: Classification, Plaster of Paris, Gypsum wall Plasters, Gypsum Plaster Boards, Adhesives, Heat and sound insulating materials, Geo-synthetics. Function of Foundations, Essential requirement of good foundation, Different types of shallow and deep Foundations Brick masonry: Definitions, Rules for bonding, Type of bonds – stretcher bond, Header bond, English bond, Flemish Bond, Comparison of English Bond and Flemish Bond (one and one and half brick thick wall) Wall, Doors and Windows: Load bearing wall, Partition wall, Reinforced brick wall Common types of doors and windows of timber and metal. Technical Terms, Requirements of good stair, Dimension of steps, Classification, Geometric design of a dog legged stair case Flooring: Components of a floor, selection of flooring materials, Brick flooring, Cement concrete flooring, mosaic, marble, Terrazzo flooring, Tiled roofing Plastering and Pointing: Plastering with cement mortar, Defects in plastering, pointing, whitewashing, colour washing, Distempering, Roofs: Types, Pitched roofs and their sketches, Lean – to roof, King Post – Truss, Queen post truss and Simple steel Truss , Roof Covering materials: AC sheets GI sheet.

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Course Description

Course Contents:

Unit 1: **Bricks:** Classification, Characteristics of good bricks, Ingredients of good brick earth, Harmful substance in brick Earth, Different forms of bricks, testing of bricks as per BIS. Defects of bricks. Aggregates: Classification, Characteristics, Deleterious substances, Soundness, Alkali –aggregates reaction, Fine aggregates, Coarse aggregates, Testing of aggregates Lime: Impurities in limestone, Classification, Slaking and hydration, Hardening, Testing, Storage, Handling Cement & Concrete: Cement: OPC: Composition, PPC, Slag cement, Hydration, setting time Concrete: Types, ingredients, W/C ratio, Workability, Different grades in cement concrete, Tests on cement concrete.

Unit 2:Mortars: Classification, Uses, Characteristics of good mortar, Ingredients. Cement mortar, Limemortar, Lime cement mortar, special mortars Wood and Wood Products: Classification of Timber, Structure, Characteristics of good timber, Seasoning of timber, Defects in Timber, Diseases of timber, Decay of Timber, Preservation of Timber Testing of Timber, Veneers , Plywood, Fibre Boards, Particle Boards, Chip Boards , Black Boards, Button Board and Laminated Boards, Applications of wood and wood products Paints, Enamels and Varnishes: Composition of oil paint, characteristic of an ideal paint, preparation of paint, covering power of paints, Painting: Plastered surfaces, painting wood surfaces, painting metal Surfaces. Defects, Effect of weather, enamels, distemper, water wash and colour wash, Varnish, French polish, and Wax Polish Miscellaneous Materials: Gypsum: Classification, Plaster of Paris, Gypsum wall Plasters, Gypsum Plaster Boards, Adhesives, Heat and sound insulating materials, Geo-synthetics.

Unit 3: Foundations: Function of Foundations, Essential requirement of good foundation, Different types of shallow and deep Foundations Brick masonry: Definitions, Rules for bonding, Type of bonds – stretcher bond, Header bond, English bond, Flemish Bond, Comparison of English Bond and Flemish Bond (one and
one and half brick thick wall) Wall, Doors and Windows: Load bearing wall, Partition wall, Reinforced brick wall Common types of doors and windows of timber and metal.

Unit 4: Stairs: Technical Terms, Requirements of good stair, Dimension of steps, Classification, Geometric design of a dog legged stair case Flooring: Components of a floor, selection of flooring materials, Brick flooring, Cement concrete flooring, mosaic, marble, Terrazzo flooring, Tiled roofing Plastering and Pointing: Plastering with cement mortar, Defects in plastering, pointing, whitewashing, colour washing, Distempering, Roofs: Types, Pitched roofs and their sketches, Lean – to roof, King Post – Truss, Queen post truss and Simple steel Truss , Roof Covering materials: AC sheets GI sheet.

Text Books

1. Building Materials S.K. Duggal.
2. Building Materials P.C. Varghese PHI.
3. Engineering Materials S.C. Rangwala.
4. Concrete Technology M. S. Shetty.
5. Concrete Technology[A.M. Nevile& J.J. Brooks Pearson Education.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Data structure & Algorithm Lab
Course Code: CS(CE)391
L-T-P scheme: 0-0-3 **Course Credit: 2**

Objectives:

1. Develop problem solving ability using Programming.
2. Develop ability to design and analyze algorithms.
3. Introduce students to data abstraction and fundamental data structures.
4. Develop ability to design and evaluate Abstract Data Types and data structures.
5. Apply data structure concepts to various examples and real life applications

Learning Outcomes:

The course will use hands on practice and applying the knowledge gained in theory course to different day to day real world applications..Upon the completion of data structure and algorithm practical course, the student will be able to:

- **Understand** and implement different type of data structure techniques
- **Analyze** the hashing method..
- **Implement** different type os sorting searching techniques.

Course Contents:

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

Exercise No.1: Implementation of array operations
Exercise No. 2: Stacks and Queues: adding, deleting elements
Exercise No. 3: Circular Queue: Adding & deleting elements
Exercise No. 4: Merging Problem: Evaluation of expressions operations on Multiple stacks & queues
Exercise No. 5: Implementation of linked lists: inserting, deleting, and inverting a linked list.
Exercise No. 6: Implementation of stacks & queues using linked lists, Polynomial addition, and Polynomial multiplication
Exercise No. 7: Sparse Matrices: Multiplication, addition.
Exercise No. 8: Recursive and Non-recursive traversal of Trees
Exercise No. 9: Threaded binary tree traversal. AVL tree implementation
Exercise No. 10: Application of Trees. Application of sorting and searching algorithms

Text Book:

1. Yashavant Kanetkar, Abduln A.P.J. Kalam," Data Structure Through C",2nd edition, BPB Publications
2. Seymour Lipschutz,"Data Structures",Revised First edition,McGraw Hill Education.

Recommended Systems/Software Requirements:

1. Intel based desktop PC with minimum of 166 MHZ or faster processor with at least 64 MB RAM and 100 MB free disk space.
2. Turbo C or TC3 complier in Windows XP or Linux Operating System.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Solid Mechanics Lab
Course Code: CE 391
L-T-P scheme: 0-0-3 **Course Credit: 2**

Objectives:
1. To understand the basic concepts of mechanics of materials.
2. To discover the fundamental concepts of stress and strain.
3. To learn the practical relationship between load applied and the response developed by the material.

Learning Outcomes: The students will be able to develop and understand the clear concepts of stress and strain. The various tension and compression test performed on the material gives them a clear differentiation between the nature of loads and the response involved. The impact testing gives them a clear understanding of the sudden applied loading under sudden impact loading and the response developed by the structures. The student will also have a concept of fatigue loading and failure of the specimens due to fatigue loading.

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

1. Tension test on Structural Materials: Mild Steel and Tor steel (HYSD bars).
2. Compression Test on Structural Materials: Timber, bricks and concrete cubes.
3. Bending Test on Mild Steel.
4. Torsion Test on Mild Steel Circular Bar.
5. Hardness Tests on Ferrous and Non-Ferrous Metals: Brinnel and Rockwell Tests.
6. Test on closely coiled helical spring.
7. Impact Test: Izod and Charpy.
8. Demonstration of Fatigue Test.

Text Book:

1. Fundamentals Of Strength Of Materials S Ramamrutham.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Surveying Practice-I Lab
Course Code: CE 392
L-T-P scheme: 0-0-3 **Course Credit: 2**

Objectives:
1. To learn and understand the concepts and perform the surveying of construction with the help of different methods of surveying like chain surveying, compass surveying, plane table surveying and levelling.
2. To understand and differentiate between compass surveying, plane table surveying, levelling and contouring.
3. To operate the various instruments of surveying like surveyors compass, to measure the distance between any two inaccessible points, to efficiently operate the dumpy levels and understand the level difference between inaccessible points.

Learning Outcomes: The students will have a clear understanding of the basic concepts of surveying. They will develop a clear understanding of the various steps of surveying with different instruments. Surveying is the first step before any construction activity and the students will be able to develop the concepts of chain surveying, compass surveying, and plane table surveying, levelling and contouring.

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

1. Chain surveying
Preparing index plans, Location sketches, Ranging, Preparation of map, Heights of objects using chain and ranging rods, getting outline of the structures by enclosing them in triangles/quadrilaterals, Distance between inaccessible points, Obstacles in chain survey.

2. Compass surveying
Measurement of bearings, Preparation of map, Distance between two inaccessible points by chain and compass, Chain and compass traverse.

3. Plane Table survey
Temporary adjustments of plane table and Radiation method, Intersection, Traversing and Resection methods of plane tabling, Three-point problem.

4. Levelling
Temporary adjustment of Dumpy level, Differential levelling, Profile levelling and plotting the profile, Longitudinal and cross sectioning, Gradient of line and setting out grades, Sensitiveness of Bubble tube.

5. Contouring
Direct contouring, Indirect contouring – Block levelling, Indirect contouring – Radial contouring, Demonstration of minor instruments.

Text Book:
1. Surveying Volume I And Volume II By B.C.PunmiaBy Laxmi Publications Limited.

UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR

Course Description

Title of Course: Building Design & Drawing Lab
Course Code: CE 393
L-T-P scheme: 0-0-3 **Course Credit: 2**

Objectives:
1. The students will be able to draw efficiently the line diagram, plan, elevation and sectional drawings for buildings.
2. The students will have a clear knowledge of the details of reinforcements for a RCC staircase.
3. The students will develop a fundamental concept of various types of foundation and basic concepts of pile foundation.

Learning Outcomes: The students will have a clear understanding of the various structural components of the building and the concept of scale factor to the actual ratio of drawing proportionately various components. The students will have a clear idea of the types of foundation and the types of footing for a RCC column and develop a understanding of the pile foundation. The students will be able to draw the line diagram, plan, elevation and sectional drawings of the following: Residential Buildings, Office Buildings and Schools. The students will also develop a understanding of the types of roof trusses, RCC roof with details of reinforcements and King Post and Queen Post trusses. They will have a clear knowledge of the proportioning and design of stair cases and details of reinforcements for RCC staircase.

Course Contents:
Exercises that must be done in this course are listed below:
1. Foundations
Spread foundation for walls and columns; Footing for a RCC column, raft and pile foundations.

2. Doors and Windows
Glazed and paneled doors of standard sizes; Glazed and panelled windows of standard sizes; special windows and ventilators.

3. Stairs
Proportioning and design of a dog-legged, open well RCC stair case for an office / Residential building; Details of reinforcements for RCC stair cases; Plan and elevation of straight run, quarter turn, dog-legged and open well stair cases.

4. Roofs and Trusses
Types of sloping roof, lean-to roofs, RCC roof with details of reinforcements, King post and Queen post trusses.

5. Functional Design of Buildings
To draw the line diagram, plan, elevation and section of the following: Residential Buildings (flat, pitched and combined roofs), Office Buildings (flat roof), School .The designs must show positions of various components including lift well and their sizes. Introduction to drawing by using software package.

Text Book:
1. Principles of Building Drawing Shah & Kale.
2. Text Book of Building Construction Sharma &Kaul.
3. Building Construction B C Punmia.