

KARANATAKA STATE OPEN UNIVERSITY

DIPLOMA IN CIVIL ENGINEERING

SEMESTER SYSTEM

SYLLABUS

I YEAR SYLLBUS
(Basic Engineering)
(Common to all Branches)

Subject Code	Subject Title	Max marks	Max Credits
Semester-I			
	Communication English	100	4
	Applied Mathematics-1	100	4
	Engineering Physics-I	100	4
	Engineering Chemistry-I	100	4
	Computer Application Lab	100	2
	Workshop Practice Lab	100	2
Semester -II			
	Applied Mathematics-II	100	4
	Engineering Physics-II	100	4
	Engineering Chemistry-II	100	4
	Engineering Graphics	100	4
	Physics Lab	100	2
	Chemistry Lab	100	2

**Civil Engineering
III Semester**

Subject Code	Subject Title	Max marks	Max Credits
	Engineering Mechanics	100	4
	Construction Materials	100	4
	Surveying	100	4
	Civil Engineering Drawing	100	4
	Surveying Lab -I	100	2
	Engineering Mechanics Lab	100	2

IV Semester

Subject Code	Subject Title	Max marks	Max Credits
	Theory of Structures	100	4
	Transportation Engineering	100	4
	Interior Design	100	4
	Water Resources Management	100	4
	CAD in Civil Engineering Lab -I	100	2
	Surveying Lab -II	100	2

V Semester

Subject Code	Subject Title	Max marks	Max Credits
	Structural Engineering	100	4
	Quantity Surveying	100	4
	Concrete Technology and Construction	100	4
	Environmental Engineering	100	4
	CAD in Civil Engineering Lab -II	100	2
	Construction Lab	100	2

VI Semester

Subject Code	Subject Title	Max marks	Max Credits
	Construction Management	100	4
	Hydraulics	100	4
	Town Planning	100	4
	Computer Application in Civil Engineering Lab	100	2
	Project	400	8

Total Marks = 3800

Total Credits = 122

SEMESTER : I
Subject Code : BE 101
Subject Title : Communication English

Structure of the Course Content

BLOCK 1 Grammar (Non-Textual)

- Unit 1: Functional Analysis
- Unit 2: Voice and parts of speech
- Unit 3: Direct and indirect speech
- Unit 4: Preposition

BLOCK 2 Grammars

- Unit 1: One word substitute
- Unit 2: Articles and question tags
- Unit 3: Prefixes and suffixes
- Unit 4: Tenses

BLOCK 3 Compositions

- Unit 1: Comprehension
- Unit 2: Simple passage
- Unit 3: Moral story
- Unit 4: Science and technology

BLOCK 4 Letter and dialogue Writing

- Unit 1: Letter writing - personal
- Unit 2: Letter writing - official
- Unit 3: Dialogue writing
- Unit 4: Hints development

BLOCK 5 Proses

- Unit 1: An Astrloger's day – R.K. Narayanan
- Unit 2: The sun, the planets and the stars – C.Jones
- Unit 3: The continuing spell of Ramanujam
- Unit 4: On saying 'please' – A.G.Gardiner

Books:

1. Orient Longman, Anna Salai, Chennai-600002.
2. The Advanced Learners Dictionary of Current English by A.S.Hornby, Oxford University Press. 1973
3. High School English Grammar and Composition by Wren & Martin, S.Chand & Co Ltd., 2005
4. Vocabulary in Practice - Part 1 to 4 by Glennis Pye, Cambridge University Press,
5. Learn Correct English by Shiv K. Kumar & Hemalatha Nagarajan, Pearson Longman, 2005
6. Essential English Grammar by Raymond Murphy, Cambridge University Press,
7. Common Errors in English by M.Thomas, Lotus Press, New Delhi, 2006
8. Basic English Usage by Michael Swan, ELBS/OUP, 1989
9. Communication Skills for Engineers by Mishra, Ist Edition, Pearson Longman
10. Basic English Dictionary by Longman Longman Ist Edition, Pearson Longman

SEMESTER : I
Subject Code : BE 102
Subject Title : Applied Mathematics - I

Structure of the Course Content

BLOCK 1 Algebra

- Unit 1: Determinants
- Unit 2: Matrices
- Unit 3: Permutation and combination
- Unit 4: Binomial Theorem

BLOCK 2 Complex numbers

- Unit 1: Real and imaginary parts
- Unit 2: Demoivre's Theorem
- Unit 3: Finding the n^{th} roots of unity
- Unit 4: Solving equations

BLOCK 3 Analytical geometry

- Unit 1: Pair of straight lines
- Unit 2: Circles
- Unit 3: Family of circles
- Unit 4: Concentric circles

BLOCK 4 Trigonometry

- Unit 1: Compound angles
- Unit 2: Multiple angles
- Unit 3: Sub multiple angles
- Unit 4: Sum and product formulae

BLOCK 5 Differential calculus

- Unit 1: Limits
- Unit 2: Differentiation
- Unit 3: Differentiation methods
- Unit 4: Successive differentiation

Books :

1. Engineering Mathematics by Dr M.K.Venkatraman, National Publishing Co.
2. Engineering Mathematics by Dr P.Kandasamy, S.Chand & Co, New Delhi
3. Higher Engineering Mathematics by Ramana, Tata McGraw Hill, New Delhi
4. Engineering Mathematics by Singh, Tata McGraw Hill, New Delhi
5. Advanced Engineering Mathematics by N.Bali,M.Goyal,C.Watkins,Lakshmi Publications (Pvt) Ltd, New Delhi
6. Engineering Maths by T.Veerarajan, Tata McGraw Hill, New Delhi
7. Schaum's Outline of Technical Mathematics by Paul Calter, Tata McGraw Hill, New Delhi
8. Engineering Mathematics Vol-III by Dr. B. Krishna Gandhi , Dr. T.K.V Iyengar, S.Ranganatham, , S.Chand & Co, New Delhi
9. Introduction to Engineering Mathematics by H.K. Dass, Dr.Rama Verma, S.Chand & Co, New Delhi
10. Applied Engineering Mathematics Vol-II by H.K.Dass, S.Chand & Co

SEMESTER : I
Subject Code : BE 103
Subject Title : Engineering Physics - I

Structure of the Course Content

BLOCK 1 S I units and Statics

- Unit 1: Fundamental quantities
- Unit 2: Derived quantities
- Unit 3: Concurrent forces
- Unit 4: parallelogram Law of forces

BLOCK 2 Properties of matter

- Unit 1: Stress and strain
- Unit 2: Young's modulus
- Unit 3: Viscosity
- Unit 4: Surface Tension

BLOCK 3 Dynamics

- Unit 1: Projectile Motion
- Unit 2: Angle of projection
- Unit 3: Circular Motion
- Unit 4: Application of circular motion

BLOCK 4 Rotational motions of rigidity bodies

- Unit 1: Moment of Inertia
- Unit 2: Kinetic energy
- Unit 3: Angular Momentum
- Unit 4: Kepler's Law

BLOCK 5 Remote sensing and sound

- Unit 1: Active and Passive remote sensing
- Unit 2: Microwave remote sensing
- Unit 3: Types of sound waves
- Unit 4: Acoustics

Books :

1. Physics by Resnick and Hoilday ,Wisley Toppan Publishers – England
2. Mechanics by Narayana Kurup , S. Chand Publishers – New Delhi
3. Engineering Physics by B.L. Theraja , S. Chand Publishers – New Delhi
4. Remote sensing by Dr.M.Anji Reddy, Jawaharlal Nehru Technological University –Hyderabad.
5. Engineering Physics by V.Rajendran, Tata McGraw Hill, New Delhi
6. Engineering Physics by Vikram Yadav, Tata McGraw Hill, New Delhi
7. Schaum's Outline of Physics for Engineering and Science by Michael Browne, Tata McGraw Hill, New Delhi
8. Modern Engineering Physics by A.S.Vasudeva, S. Chand Publishers, New Delhi
9. Engineering Physics Fundamentals & Modern Applications by P.Khare and A.Swarup, Lakshmi Publications (Pvt) Ltd, New Delhi
10. Engineering Physics by Dipak Chandra Ghosh,Nipesh Chandra Ghosh,Prabir Kumar Haldar, Lakshmi Publications (Pvt) Ltd, New Delhi

SEMESTER : I
Subject Code : BE 104
Subject Title : Applied Chemistry - I

Structure of the Course Content

BLOCK 1 Acids – Bases, Catalysis

- Unit 1: Theories of Acids and Bases
- Unit 2: Industrial application
- Unit 3: Positive and Negative catalyst
- Unit 4: Characteristics of Catalyst

BLOCK 2 Pollution

- Unit 1: Air Pollution
- Unit 2: Global warming
- Unit 3: Water Pollution
- Unit 4: Green Chemistry

BLOCK 3 Electro chemistry and corrosion

- Unit 1: Types of conductors
- Unit 2: Industrial applications of Electrochemistry
- Unit 3: Electrochemical theory
- Unit 4: Electroplating

BLOCK 4 Organic coatings

- Unit 1: Paint
- Unit 2: Varnish
- Unit 3: Adhesives
- Unit 4: Lubricants

BLOCK 5 Colloids and Ceramics

- Unit 1: Colloidal solution
- Unit 2: Brownian movement
- Unit 3: Water purification
- Unit 4: Ceramics

Books :

1. Inorganic chemistry by Soni PL, Sultan Chand & sons.
2. Organic chemistry by Soni PL, Sultan Chand & sons.
3. Engineering chemistry by Jain & Jain, Dhanpat rai & co
4. Engineering chemistry by Uppal , Khanna publishers
5. Environmental chemistry & Pollution control by Dara .SS, S. Chand & co
6. Environmental Pollution by . Tripathy .SN , Sunakar panda - Vrinda publication
7. Rain water Harvesting-hand book by Chennai Metro Water
8. Introduction to Engineering Chemistry by Minaxi B Lohani, Upma Misra, S.Chand & Co, New Delhi
9. Engineering Chemistry by Dr.A.K.Pahari, Dr.B.S.Chauhan, Lakshmi Publications (Pvt) Ltd, New Delhi
10. Advanced Engineering Chemistry by M.Senapati, Lakshmi Publications (Pvt) Ltd, New Delhi

SEMESTER : I
Subject Code : BE 105
Subject Title : Computer Application Lab

Practicals
Windows

- 1.a. Starting a program, running a program.
- b. Starting the Windows in safe mode
- c. Running multiple Programs and switching between windows.
- d. Moving the windows, and the task bar.
- e. Startup to MS-DOS prompts.
- 2.a. Creating and removing a folder.
- b. Making the taskbar wider, arranging icons on the Desktop.
- c. Displaying and hiding the taskbar clock.
- d. Controlling the size of start menu options.
- e. Creating shortcuts.
- 3.a. Installing a screen saver.
- b. Assigning Wallpaper to Desktop.
- c. Adding a program to the start menu.
- d. Recovering files and folders from Recycle bin.
- e. Customizing the mouse settings.
- 4 a. Expanding and collapsing a folder.
- b. Recognizing file types using icons.
- c. Running a program from explorer.
- d. Renaming a file or folder.
- e. Selecting two or more files for an operation.
- 5.a. Displaying the properties for a file or folder.
- b. Using cut and paste operations to copy a file.
- c. Using copy and paste operations to copy a file.
- d. Moving and copying files with mouse.
- e. Sorting a folder.
- 6.a. Finding a file or folder, by name.
- b. Defragmenting the disk using disk defragmenter.

- c. Compressing a file using WinZip.
- d. Controlling the speaker volume.
- e. Recording and saving an audio file.

MS Word

- a. Prepare a newsletter with borders, two columns text, header and footer and a graphic image and spell check the document.
- b. Create a table to show the paradigm of the verb “eat” in all 12 tenses

Tense		Present	Past	Future
Simple	He	Eats	Ate	Will eat
	I	Eat	Ate	Will eat
	You/They	Eat	Ate	Will eat
Continuous	He	Is eating	Was eating	Will be eating
	I	Am eating	Was eating	Will be eating
	You/They	Are eating	Was eating	Will be eating
Perfect	He	Has eaten	Had eaten	Will have eaten
	I	Have eaten	Had eaten	Will have eaten
	You/They	Have eaten	Had eaten	Will have eaten
Perfect continuous	He	Has been eating	Had been eating	Will have been eating
	I	Have been eating	Had been eating	Will have been eating
	You/They	Have been eating	Had been eating	Will have been eating

- c. Prepare your Bio-data/Resume
- d. Do the mail merge operation for sending applications to many companies with your resume

MS EXCEL

1. Create a worksheet in Excel for a company:
 - a. Copy, Move and Merge the cells
 - b. Adding Comments
 - c. Adding, Deleting the cells, Rows and Columns
 - d. Hiding and Unhiding the columns, Rows and gridlines.
2. Using formula and functions prepare worksheet for storing subject marks of ten

students and perform the following:

- a. Calculate the student wise total and average
 - b. Calculate the subject wise total and average
 - c. Calculate the overall percentage and also individual percentage of the student.
3. Create Bar Graph and Pie Chart for various data

MS Power Point

- a. Create a simple presentation with atleast 5 slides to introduce your friend and include sounds in slides.
- b. Create a presentation with 5 slides for the essay Astrologer's Day by R.K. Narayanan

Internet

- a. Creating an E-Mail account.
- b. Sending an E-Mail to a known Address
- c. Viewing an E-Mail received from your friend/relative.
- d. Printing an E-Mail received
- e. Use of Attachment Facility
- f. Use of Address Book Facility
- g. Use of Sent Folder
- h. Use of Save Draft Folder
- i. Use of Trash Folder
- j. Browse a given web-site address.
- k. Search a Particular topic through a Search engine.

SEMESTER : I
Subject Code : BE 106
Subject Title : Workshop Practice

Fitting

1. Fitting
2. V - Joint
3. L - Joint
4. T - Joint
5. Half round joint
6. Dovetail Joint
7. U – Joint
8. Hexagonal – Joint
9. Step - Joint
10. Drilling and Tapping M8
11. Drilling and Tapping M10

Wiring

1. Single lamp controlled by single switch.
2. Two Lamps controlled by Two independent switches.
3. Stair case Wiring
4. Fluorescent lamp circuit.
5. Circuit diagram of a fan
6. Circuit diagram of an iron box
7. Circuit diagram of a mixie
8. Soldering practice

Sheet Metal

1. Hemming
2. Seaming
3. Tray
4. Cylinder
5. Cone
6. Hopper
7. Dust Pan
8. Funnel

SEMESTER : II
Subject Code : BE 201
Subject Title : Applied Mathematics - II

Structure of the Course Content

BLOCK 1 Vector Algebra

- Unit 1: Introduction
- Unit 2: Vector Properties
- Unit 3: Product of Vectors
- Unit 4: Application of Vectors

BLOCK 2 Integral Calculus

- Unit 1: Integration
- Unit 2: Standard Integrals
- Unit 3: Integration by parts
- Unit 4: Bernoulli's Theorem and Applications

BLOCK 3 Differentiation

- Unit 1: Velocity and Acceleration
- Unit 2: Tangents and Normals
- Unit 3: Maxima and Minima
- Unit 4: Partial differentiation

BLOCK 4 Application of Integration

- Unit 1: Definite Integral.
- Unit 2: Area and Volume
- Unit 3: Solution of differential equations
- Unit 4: Second order differential equation with constant coefficients

BLOCK 5 Probability Distributions

- Unit 1: Continuous random variable
- Unit 2: Discrete random variable
- Unit 3: Discrete Distributions (Binomial, Poisson)
- Unit 4: Continuous Distribution

Books :

1. Engineering Mathematics by Dr M.K.Venkatraman, National Publishing Co.
2. Engineering Mathematics by Dr P.Kandasamy, S.Chand & Co, New Delhi
3. Higher Engineering Mathematics by Ramana, Tata McGraw Hill, New Delhi
4. Engineering Mathematics by Singh, Tata McGraw Hill, New Delhi
5. Advanced Engineering Mathematics by N.Bali,M.Goyal,C.Watkins,Lakshmi Publications (Pvt) Ltd, New Delhi
6. Engineering Maths by T.Veerarajan, Tata McGraw Hill, New Delhi
7. Schaum's Outline of Technical Mathematics by Paul Calter, Tata McGraw Hill, New Delhi
8. Engineering Mathematics Vol-III by Dr. B. Krishna Gandhi , Dr. T.K.V Iyengar, S.Ranganatham, , S.Chand & Co, New Delhi
9. Introduction to Engineering Mathematics by H.K. Dass, Dr.Rama Verma, S.Chand & Co, New Delhi
10. Applied Engineering Mathematics Vol-II by H.K.Dass, S.Chand & Co

SEMESTER : II
Subject Code : BE 202
Subject Title : Engineering Physics - II

Structure of the Course Content

BLOCK 1 Heat

- Unit 1: Heat - Kinetic Theory of Gases:
- Unit 2: Specific Heat
- Unit 3: Isothermal Changes
- Unit 4: Adiabatic Changes

BLOCK 2 Gases & Non Conversional Energy

- Unit 1: Liquefaction of Gases
- Unit 2: Joule Thomson Effect & Linde's process
- Unit 3: Renewable and Non-renewable sources
- Unit 4: Alternate sources of Energy-

BLOCK 3 Light & Magnetism

- Unit 1: Optical Instruments
- Unit 2: Lasers
- Unit 3: Basic definitions of Magnetism
- Unit 4: Hysteresis Loop

BLOCK 4 Electricity

- Unit 1: Basic laws
- Unit 2: Force on a moving charge
- Unit 3: Measuring Instruments
- Unit 4: Heating Effect of Electric Current

BLOCK 5 Dielectric effect & Electronics

- Unit 1: Chemical Effect of Electric Current
- Unit 2: Capacitor
- Unit 3: Semiconductors , PN Junction & Transistors
- Unit 4: Logic Gates

Books :

1. Physics by Resnick and Hoilday ,Wisley Toppan Publishers – England
2. Mechanics by Narayana Kurup , S. Chand Publishers – New Delhi
3. Engineering Physics by B.L. Theraja , S. Chand Publishers – New Delhi
4. Remote sensing by Dr.M.Anji Reddy, Jawaharlal Nehru Technological University –Hyderabad.
5. Engineering Physics by V.Rajendran, Tata McGraw Hill, New Delhi
6. Engineering Physics by Vikram Yadav, Tata McGraw Hill, New Delhi
7. Schaum's Outline of Physics for Engineering and Science by Michael Browne, Tata McGraw Hill, New Delhi
8. Modern Engineering Physics by A.S.Vasudeva, S. Chand Publishers, New Delhi
9. Engineering Physics Fundamentals & Modern Applications by P.Khare and A.Swarup, Lakshmi Publications (Pvt) Ltd, New Delhi
10. Engineering Physics by Dipak Chandra Ghosh,Nipesh Chandra Ghosh,Prabir Kumar Haldar, Lakshmi Publications (Pvt) Ltd, New Delhi

SEMESTER : II
Subject Code : BE 203
Subject Title : Applied Chemistry - II

Structure of the Course Content

BLOCK 1 Nuclear Chemistry

- Unit 1: Radio activity and definitions
- Unit 2: Half life period & Nuclear fission & fusion
- Unit 3: Applications of radioactive isotopes
- Unit 4: Abrasives

BLOCK 2 Fuels and Refractory's

- Unit 1: Fuels - classification
- Unit 2: Solid and Liquid Fuels
- Unit 3: Gas Fuels
- Unit 4: Refractory's

BLOCK 3 Water Treatment

- Unit 1: Water Treatment Methods
- Unit 2: EDTA Method
- Unit 3: Water -purification
- Unit 4: Lime and manufacturing process

BLOCK 4 Plastics and Rubber

- Unit 1: Thermoplastics,
- Unit 2: Thermo set plastics
- Unit 3: Natural rubber-
- Unit 4: Synthetic rubber

BLOCK 5 Metallurgy

- Unit 1: Tungsten & Titanium
- Unit 2: Powder metallurgy
- Unit 3: Purpose of alloying
- Unit 4: Non ferrous alloys

Books :

1. Inorganic chemistry by Soni PL, Sultan Chand & sons.
2. Organic chemistry by Soni PL, Sultan Chand & sons.
3. Engineering chemistry by Jain & Jain, Dhanpat rai & co
4. Engineering chemistry by Uppal , Khanna publishers
5. Environmental chemistry & Pollution control by Dara .SS, S. Chand & co
6. Environmental Pollution by . Tripathy .SN , Sunakar panda - Vrinda publication
7. Rain water Harvesting-hand book by Chennai Metro Water
8. Introduction to Engineering Chemistry by Minaxi B Lohani, Upma Misra, S.Chand & Co, New Delhi
9. Engineering Chemistry by Dr.A.K.Pahari, Dr.B.S.Chauhan, Lakshmi Publications (Pvt) Ltd, New Delhi
10. Advanced Engineering Chemistry by M.Senapati, Lakshmi Publications (Pvt) Ltd, New Delhi

SEMESTER : II
Subject Code : BE 204
Subject Title : Engineering Graphics

Structure of the Course Content

BLOCK 1 Drawing Office Practice

- Unit 1: Basics of Engg Drawing
- Unit 2: Dimensioning
- Unit 3: Scales
- Unit 4: Geometrical Constructions, conics and geometrical curves

BLOCK 2 Projection

- Unit 1: Orthographic Projection
- Unit 2: Projection of simple solids
- Unit 3: Section of Solids
- Unit 4: Half & Full Sectioning

BLOCK 3 Pictorial drawings

- Unit 1: Introduction
- Unit 2: Isometric Drawings
- Unit 3: Conversion of orthographic views

BLOCK 4 Development of Surfaces:

- Unit 1: Cube, Cylinder
- Unit 2: Prism
- Unit 3: Pyramids
- Unit 4: Tee and Elbow

BLOCK 5 AutoCAD

- Unit 1: Introduction
- Unit 2: AutoCAD commands
- Unit 3: Drawing -line, circle, arc, polygon,
- Unit 4: Drawing - ellipse, rectangle

Books :

1. Engineering Drawing by Gopalakrishnan.K.R., (Vol.I and Vol.II), Dhanalakshmi publishers, Edition 2, 1970
2. First Year Engineering Drawing by Barkinson & Sinha, Pitman Publishers, London, Edition 3, 1961
3. A Book on AutoCAD Release 2007.
4. Engineering Drawing by Shah/Rana, Ist Edition Pearson Longman
5. Machine Drawing with AutoCAD by Pohit/Ghosh, Ist Edition Pearson Longman
6. Engineering Graphics by Prof.P.J.Shah, S.Chand & Co, New Delhi
7. Computer Graphics including CAD,AUTOCAD &C by A.M.Kuthe, S.Chand & Co, New Delhi
8. Engineering Graphics by Dhawan R.K, S.Chand & Co, New Delhi
9. Auto CAD 2005 for Engineers by Ionel Simon, Lakshmi Publications (Pvt) Ltd, New Delhi
10. Engineering Drawing by Agrawal, Tata McGraw Hill, New Delhi

Drawing Practices

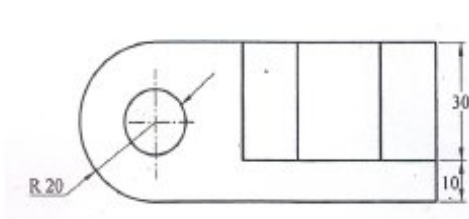


Fig - 1

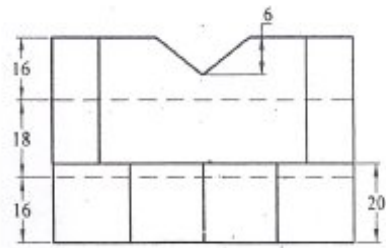


Fig- 2

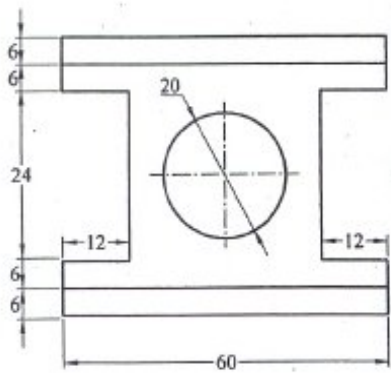


Fig. 3

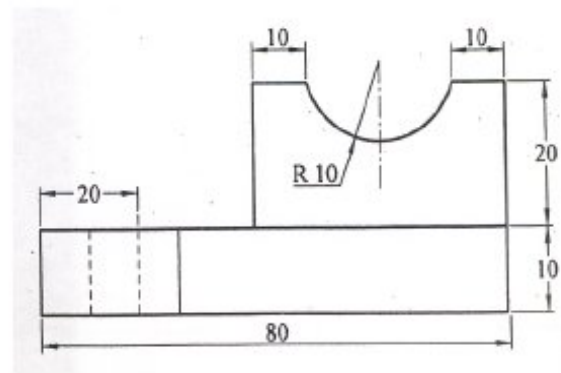


Fig. 4

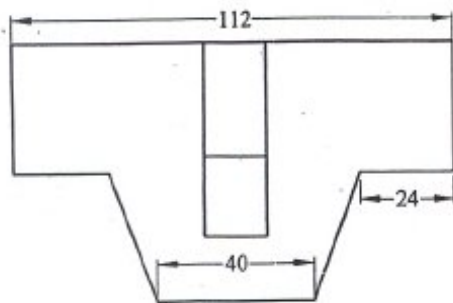


Fig. 5

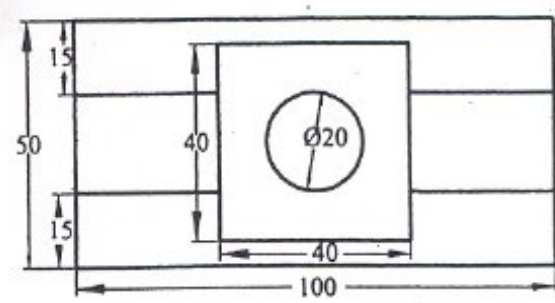


Fig. 6

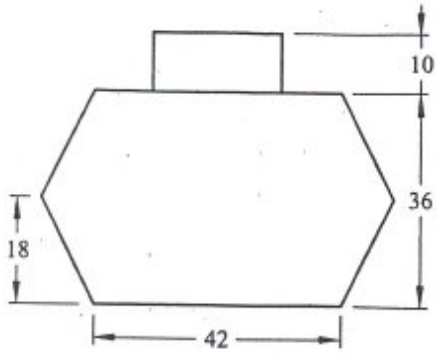


Fig. 7

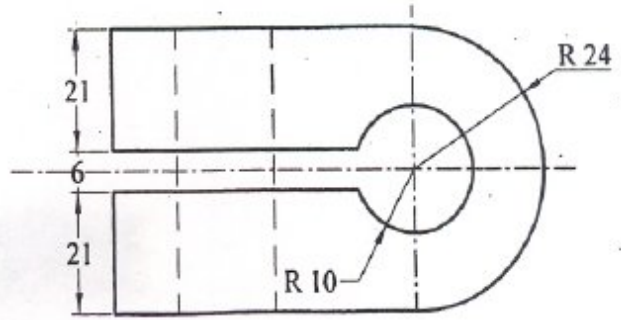


Fig. 8

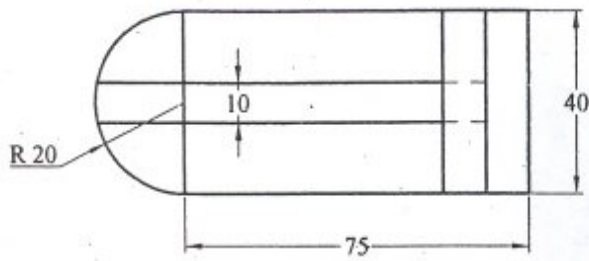


Fig. 9

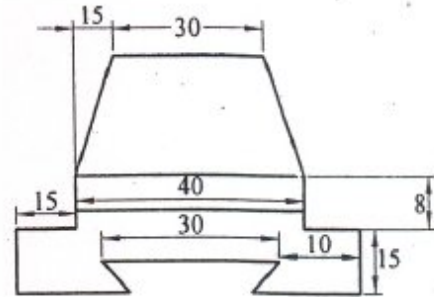


Fig. 10

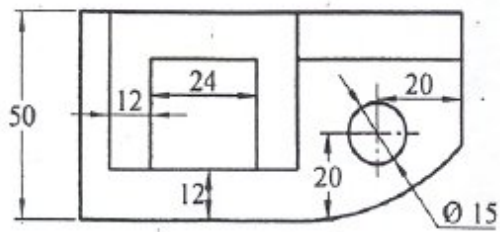


Fig.11

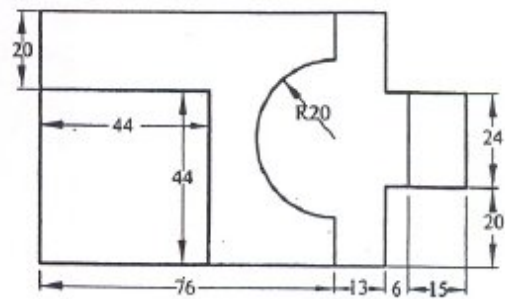


Fig. 12

SEMESTER : II

Subject Code : BE 205

Subject Title : Engineering Physics Lab

List of Experiments

1 VERNIER CALIPERS - To find the volumes of the solid cylinder and hollow cylinder using vernier callipers.

2 SCREW GAUGE – To find the thickness of (a) glass plate (b) given sphere using screw gauge. Hence calculate the volume of the glass plate and the sphere.

3 SIMPLE PENDULUM – To find the acceleration due to gravity in the laboratory, using simple pendulum. Calculate the acceleration due to gravity, by $L-T^2$ graph.

4 CONCURRENT FORCES -To verify the parallelogram law of forces and Lami's theorem.

5 COPLANAR – PARALLEL FORCES – To verify the conditions of the Co-planar parallel forces.

6 TORSION PENDULUM – To find the rigidity modulus of the thin wire and moment of inertia of the disc by using symmetric masses.

7 COMPARISON OF VISCOSITIES – To compare the coefficient of viscosities of two liquids by capillary flow method.

8 VISCOSITY OF A HIGHLY VISCOUS LIQUID – To find the coefficient of viscosity of a highly viscous liquid.

9 SURFACE TENSION: To find the surface tension of the given liquid by capillary

rise method

10 YOUNG'S MODULUS – To find the young's modulus of the material of the given metre scale.

11 SPECTROMETER – 1. To find the angle of the prism.

12 SPECTROMETER – 2. To find the refractive index of the material of the prism.

13 DEFLECTION MAGNETOMETER – To compare the magnetic moments of two given magnets by (a) Equal distance method and (b) Null method.

14 SONO METER – To find the frequency of the given tuning fork.

15 JOULE'S CALORIMETER – To determine the specific heat capacity of the given liquid.

16 COPPER VOLTAMETER – To determine electro – chemical – equivalent of copper.

17 OHM'S LAW – To determine the resistance of two given coils of wire using Ohm's law. Also verify the laws of resistances.

18 POTENTIO METER – To compare the e.m.fs of two given cells.

19 PN JUNCTION DIODE – For the given semiconductor diode draw (a) Forward bias (b) Reverse bias characteristic curves.

20 SOLAR CELLS – V. I. Characteristics.

SEMESTER : II

Subject Code : BE 206

Subject Title : Applied Chemistry Lab

List of Experiments

1. Qualitative Analysis

Acid radicals : Chloride, Carbonate, Sulphate, Nitrate

Basic radicals: Lead, Cadmium, Copper, Aluminium, Zinc, Calcium, Magnesium, Ammonium

Identification of acid and basic radicals in

1. Lime Stone (Calcium Carbonate)
2. Pollutant (Lead nitrate or Cadmium Carbonate)
3. Fertilizer (Ammonium sulphate)
4. Electrolyte (Ammonium Chloride)
5. Fungicide (Copper sulphate)
6. Coagulant (Aluminium Sulphate)
7. Mordant (Zinc Sulphate)
8. Gypsum (Calcium Sulphate)
9. Epsom (Magnesium Sulphate)

10. Analysis of an Effluent (containing pollutants like Lead, Cadmium, Zinc, and Copper). Students may be given above four pollutants, in four separate test tubes in solution form and asked to report metallic pollutants with procedure (Basic Radical Analysis Procedure) and their harmful effects.

2. VOLUMETRIC ANALYSIS (DOUBLE TITRATIONS)

ACIDIMETRY AND ALKALIMETRY

1. Estimation of Hydrochloric acid
2. Estimation of Sodium Hydroxide
3. Estimation of Sodium Carbonate
4. Comparison of Strengths of two bases

PERMANGANIMETRY

5. Estimation of Ferrous Ammonium Sulphate
6. Estimation of Ferrous Sulphate
7. Comparison of Potassium Permanganate.

WATER ANALYSIS

8. Estimation of Total Hardness by EDTA method.
9. Calculation of pH of four sample solutions and calculation of H⁺ Ion concentration for a particular sample solution.

Subject Code : CE301
Subject Title : Engineering Mechanics

Structure of the Course Content

BLOCK 1 Mechanical Properties of Materials

- Unit 1: Basic Definitions
- Unit 2: Stress
- Unit 3: Strain
- Unit 4: Stress-Strain Calculations

BLOCK 2 Geometrical Properties of Sections

- Unit 1: Basic Definitions
- Unit 2: Moment of Inertia
- Unit 3: Thin cylinders
- Unit 4: Thin Spherical Shells

BLOCK 3 Theory of Simple Bending

- Unit 1: Shear Force
- Unit 2: Bending Moment
- Unit 3: Cantilever
- Unit 4: Simple Bending

BLOCK 4 Torsion and Springs

- Unit 1: Theory of Torsion
- Unit 2: Torsional Rigidity
- Unit 3: Hollow Shaft
- Unit 4: Springs

BLOCK 5 Deflection

- Unit 1: Beams
- Unit 2: Friction
- Unit 3: Gear Drives
- Unit 4: Belt Drives

Books :

1. Applied Mechanics by A.K. Upadhyay, Charotar Publishers
2. Strength of Materials by R.S. Khurmi, S. Chand & Co
3. Applied Mechanics by SB Junnarkar, Dr. HJ Shara, Charator publishing house, Anand 388001
4. Strength of Materials by S. Ramamrutham Dhanpat Rai Pub. Co, New Delhi.
5. Strength of Materials by L. Negi, Tata McGraw Hill, New Delhi
6. Schaum's Outline Of Statics and Mechanics of Materials by William Nash, Tata McGraw Hill, New Delhi
7. Mechanics of Materials by Ferdinand Beer.E, Russell Johnson, Jr John DeWolf. David Mazurek, Tata McGraw Hill, New Delhi
8. Strength of Materials by S. Rattan, Tata McGraw Hill, New Delhi
9. Strength of Materials by B. Sarkar, Tata McGraw Hill, New Delhi
10. Mechanics of Materials by Ansel Ugural, Tata McGraw Hill, New Delhi

Subject Code : CE302

Subject Title : CONSTRUCTION MATERIALS AND PRACTICE

Structure of the Course Content

BLOCK 1 Construction Materials - I

Unit 1: Physical properties of materials

Unit 2: Rocks and Stones

Unit 3: Bricks

Unit 4: Lime and Pozzolanas

Unit 5: Cement

BLOCK 2 Construction Materials - II

Unit 1: Ceramic Products

Unit 2: Timber and Timber Products

Unit 3: Concrete

Unit 4: Paints and Varnishes

Unit 5: Glass, Metals and Plastics

BLOCK 3 Construction Practice - I

Unit 1: Foundation

Unit 2: Stone masonry

Unit 3: Brick masonry

Unit 4: Partition

Unit 5: Water Proofing and Damp Proofing Material

BLOCK 4 Construction Practice - II

Unit 1: Doors, Windows and ventilators

Unit 2: Hollow Block and Ferro Cement Constructions

Unit 3: Stairs

Unit 4: Floors and flooring

Unit 5: Roof

BLOCK 5 Construction Practice - III

Unit 1: Pointing

Unit 2: Plastering

Unit 3: External & Internal finishes

Unit 4: White washing, Colour washing & distempering

Unit 5: Form work

Books :

1. Building Materials by P.C.Varghese, Prentice-Hall of India (P) Ltd
2. Building Materials by S.K.Duggal, New Age International (P) Ltd
3. Building Materials by S.C.Rangwala, Charotar Publishing House
4. Engineering Materials by R.K.Rajput, S.Chand &Company Ltd
5. Building Construction by Dr. B.C. Punmia, Laxmi publications (p)Ltd New Delhi
6. Building Construction by Gurucharan singh, Standard book house
7. Building Construction by S.P. Arora & S. P. Bindra, Dhanpat rai publications
8. Building Construction by S.C.Rangwala,,Charotar Publishing House
9. Civil Engineering Materials by TTTI Chandigarh, TMH
10. Corrosion Engineering by Fontana, TMH

Subject Code : CE303

Subject Title : SURVEYING

Structure of the Course Content

BLOCK 1 Principle of surveying

Unit 1: Definition, Object and Division of Surveying

Unit 2: Chain Surveying

Unit 3: Compass Surveying

Unit 4: Levelling

BLOCK 2 Theodolite & Trigonometrical Levelling

Unit 1: Technical terms used in Theodolite survey

Unit 2: Computation of Area of closed traverse problems

Unit 3: Finding elevation of objects and Base accessible

Unit 4: Single plane & Double plane methods

BLOCK 3 Tacheometry and Total Station

Unit 1: System of Tacheometry

Unit 2: Distomats

Unit 3: Features of total station

Unit 4: characteristics of total station

BLOCK 4 Contour Surveying and Curves

Unit 1: Computation of areas and Volumes with simple problem

Unit 2: Definition and Characteristics of Contours

Unit 3: Methods and Uses of Contouring

Unit 4: Types of Curves & Designation of curves

BLOCK 5 MODERN SURVEYING

Unit 1: Global position system (GPS)

Unit 2: Observation and data processing application

Unit 3: MAP – Types of Maps

Unit 4: Components of GIS

Unit 5 : Comparison of GIS with CAD and other system

Books :

1. Surveying & Field work part I & II by Punmia.B.C., Laxmi Publications(p)Ltd.
2. A Text Book of Surveying Levelling by Agor, Khanna publishers
3. Surveying and levelling part I & II by Kanetkar.T.P. & S.V.Kulkarni, Puna vidyarthi girha, Prakashan
4. Surveying Volume-1 & Volume-2 by Punmia.B.C, Laxmi Publications(p)Ltd
5. Surveying volume I & II by Duggal .S.K, Tata Mc Graw hill New Delhi
6. Surveying & Levelling by Rangwala.S.C, Charotar Publishing House
7. Advanced Surveying by Sathesh Gopi, R.Sathikumar & N.Madhu, Pearson Education
8. Principles of GIS for Land Resources Assessment by Burrough P A, Oxford Publication
9. Fundamentals of Geographical Information Systems by Michael N Demers, John Wiley Publications
10. Geographical Information Systems by Paul A Longley, Michael F Goodchild etal, John Wiley Publications

Subject Code : CE304
Subject Title : CIVIL ENGINEERING DRAWING

Structure of the Course Content

BLOCK 1 Terms used in drawing as per NBC

- Unit 1: Open space, Building requirements and Minimum dimensions
- Unit 2: FAR and Floor space Index
- Unit 3: List of documents to be submitted for building plan approval
- Unit 4: Drawing instruments and their uses

BLOCK 2 PLANNING

- Unit 1: Principle of Planning
- Unit 2: Planning of residential building
- Unit 3: Standard sizes of Door, Windows and ventilators
- Unit 4: Planning of rooms
- Unit 5: Preparation of line sketch for a single & Double bed room residential Building

BLOCK 3 DRAFTING AND DETAILING

- Unit 1: Standard symbols used in Civil Engineering Drawing
- Unit 2: Elevation of Flush Door & Steel Roof Truss
- Unit 3: Prepare the Plan
- Unit 4: Rain Water Harvesting Methods

BLOCK 4 BUILDING DRAWINGS - I

- Unit 1: A Residential building with single bed room and attached bathroom
- Unit 2: A residential building with two bed rooms
- Unit 3: A single roomed house with fully tiled roof with gable ends
- Unit 4: Single storied Residential Building

BLOCK 5 BUILDING DRAWINGS - II

- Unit 1: A Restaurant building in R.C.C. flat roof
- Unit 2: Single storied school building with R.C.C.
- Unit 3: Small workshop with north light steel roof truss up to 10m span over R.C.C.
- Unit 4: Hospital Building of 300 m² Plinth area.
- Unit 5: A Prayer/Meditation Hall with tubular Truss and Metal Sheet Roofing.

Books :

1. Civil Engineering Drawing and house planning by B.P. Verma ,
2. Building Planning and Drawing by Dr. N. Kumaraswamy and A. Kameswara Rao
3. National Building Code
4. TamilNadu District Municipal building rules and by-laws
5. Building Planning and Construction Companion by G. Vaidhyanathan, I. Kulasekaran, G. sathish Kumar
6. Civil Engineering Drawing by S.C.Rangwala
7. A Guide to Civil Engg Drawing by V.R.Thothathri

Subject Code : CE305
Subject Title : SURVEYING PRACTICE - I

Structure of the Course Content

1. Chain Survey

- 1.1 Chaining and ranging a line.
- 1.2 Chaining and taking offsets
- 1.3 Determination of area of a plot. (One chain line and at least two offsets on either side of chain line)

2. Compass Survey

- 2.1 Setting up Prismatic compass over a station and observing bearing of a line
- 2.2 Closed traverse and finding the included angles – Minimum 5 Points

3. Levelling

- 3.1 Temporary adjustment of Dumpy level taking readings and booking
- 3.2 Fly levelling – Reduction by Height of Collimation – Minimum 6 Points with two change points (Minimum Four Exercises)
- 3.3 Fly levelling – Reduction by Rise and fall – Minimum 6 Points with two change points.
- 3.4 Check levelling and reduction of levels a. By Height of Collimation Method b. By Rise and fall Method.

4. GPS

- 4.1 Reading of various map like a. District Map b. Taluk Map
- 4.2 Study of handled GPS
- 4.3 Measurement of latitude and longitude using handled GPS
- 4.4 Selection of routing (Points) using handled GPS

Subject Code : CE306
Subject Title : Engineering Mechanics Lab

Structure of the Course Content

Laboratory Experiments :

1. Test on Ductile Materials
2. Hardness Test
3. Torsion test
4. Bending and deflection tests
5. Impact test
6. Tests on springs of circular section
7. Shear test
8. Verifying the Bernoulli's Theorem
9. Determination of Coefficient of discharge of a Venturimeter
10. Determination of Coefficient of discharge of a Orificemeter
11. Performance test on a reciprocating pump
12. Performance test on a centrifugal pump
13. Performance test on an impulse turbine
14. Performance test on a reaction turbine

Subject Code : CE401
Subject Title : Theory of Structures

Structure of the Course Content

BLOCK 1 Slope and Deflection of beams

- Unit 1: Analysis of supports
- Unit 2: Derivation of differential equation of flexure, Area Moment method and Slope
- Unit 3: Beam action and Beam analysis
- Unit 4: cantilever and Simple support
- Unit 5: SF & BM diagrams by area moment method

BLOCK 2 Fixed beams and Arches

- Unit 1: Determination of fixing moments by area moment method
- Unit 2: Fixed beams subjected to symmetrical & unsymmetrical concentrated loads and UDL
- Unit 3: slope and deflection of fixed beams
- Unit 4: Comparison of Arch and Beam Action
- Unit 5: Actual & theoretical arches – Different types of arches

BLOCK 3 Continuous beams

- Unit 1: Definition and General methods of analysis of Indeterminate structures
- Unit 2: Clapeyron's theorem of three moments
- Unit 3: Problems on two span – simply supported ends
- Unit 4: sign conventions – stiffness factor – carry over factor – Distribution factor
- Unit 5: Application to continuous beams up to three spans & propped cantilever

BLOCK 4 Columns and struts

- Unit 1: Definition – short and long columns
- Unit 2: Euler's theory of long columns
- Unit 3: Eccentric loading
- Unit 4: combined direct and bending stresses
- Unit 5: Limit of eccentricity

BLOCK 5 Masonry dams, Earth pressure and retaining walls

- Unit 1: derivation for maximum and minimum stresses
- Unit 2: factor of safety problems on stability
- Unit 3: Elementary profile of a dam
- Unit 4: Angle of repose – state of equilibrium of soil
- Unit 5: maximum and minimum stresses – stress distribution diagrams

Books :

- 1.Theory of structures by S. Ramamrutham
- 2.Elementary Theory of Structures by R.L. Jindal
- 3.Strength of materials by FV. Warnock
- 4.Theory of structures by B.C. Punmia, Ashok Jain & Arun Jain, Laxmi Publications
- 5.Mechanics of structures (Vol.I) by S.B. Junnarkar, Charator Publishing
- 6.Analysis of structures by V.N. Vazirani & M.M. Ratwani
- 7.Structural Analysis : A Matrix Approach by Pandit, TMH

Subject Code : CE402
Subject Title : TRANSPORTATION ENGINEERING

Structure of the Course Content

BLOCK 1 Principles of Highway Engineering

- Unit 1: Role of Road Transportation
- Unit 2: classification of Roads and Requirements of an ideal road
- Unit 3: Traffic Engineering
- Unit 4: Highway Pavements
- Unit 5: Sub grade Soil

BLOCK 2 Highway Construction

- Unit 1: Highway Alignment and Survey
- Unit 2: Road Machineries
- Unit 3: Low cost Roads
- Unit 4: Water bound Macadam Road
- Unit 5: Bituminous Roads & Concrete Roads

BLOCK 3 Principle of Railway Engineering

- Unit 1: Definition – Classification of Indian Railways
- Unit 2: Rails
- Unit 3: Sleepers and ballast
- Unit 4: Track fixtures, fastenings and plate laying
- Unit 5: Maintenance of track

BLOCK 4 Railway Constructions

- Unit 1: Points and Crossings
- Unit 2: Stations and yards
- Unit 3: Station equipments
- Unit 4: Signaling & Interlocking

BLOCK 5 BRIDGES

- Unit 1: Bridge definition – Components and Classification of a bridge
- Unit 2: Site selection and alignment
- Unit 3: Foundation
- Unit 4: Substructure & Superstructure

Books :

1. Principles and Practice of Highway Engineering by Kadiyali L R , Khanna Technical Publications, Delhi
2. Highway Engineering by Khanna K and Justo C E G, Khanna Publishers, Roorkee,
3. Introduction to Transportation Engineering by Banks, TMH
4. IRC Standards (IRC 37 - 2001 & IRC 58 -1998)
5. Highway Materials by Bureau of Indian Standards (BIS) Publications
6. A Course in Railway Engineering by Saxena Subhash C and Satyapal Arora, Dhanpat Rai and Sons, New Delhi
7. Highways Engg by P.A. Krishnamoorthy
8. Railway Engineering by Rangwala, Charotar Publishing House
9. A course in Railway Track Engineering by J.S. Mundrey
10. Roads, Railways & Bridges by T.D. Ahuja & G.S. Birdi

Subject Code : CE403
Subject Title : Interior Design

Structure of the Course Content

BLOCK 1 Introduction to interior design

- Unit 1: Definition of interior design & Elements and Principles
- Unit 2: Interior design typologies
- Unit 3: Themes and Concepts
- Unit 4: Colors

BLOCK 2 Elements of interior design

- Unit 1: Ceiling – Walls, flooring – Fenestrations
- Unit 2: character aesthetic and psychological.
- Unit 3: method of treatment in terms of material
- Unit 4: construction to express functional aesthetics

BLOCK 3 Lighting

- Unit 1: Artificial and natural lighting
- Unit 2: Different types of lighting and their effects
- Unit 3: Requirement of light for specific purpose
- Unit 4: Locating lighting points in interiors and planning electrical layouts

BLOCK 4 Finishes and decorative accessories

- Unit 1: Carpets & Rugs
- Unit 2: Wall papers, Valances & Painting
- Unit 3: Murals & Sculpture
- Unit 4: Plants, Fountains & Wall hanging

BLOCK 5 Furniture

- Unit 1: Furniture design as related to human comfort, functions
- Unit 2: Methods of construction
- Unit 3: Materials
- Unit 4: Innovations and design ideas

Books :

1. Designing and decorating interiors by David Van Dommalan
2. National Building code of India - B.I.S
3. Time-saver standard building types – Callendar
4. Architectural graphic standards by Ramsey & Sleeper
5. Human Dimension & Interior space by Julius Panero
6. Interior Design Illustrated by Frank D.K. Ching

Subject Code : CE404
Subject Title : Water resource management

Structure of the Course Content

BLOCK 1 Water resources

- Unit 1: Importance of water resources
- Unit 2: purpose water budget
- Unit 3: India's water resources
- Unit 4: factors involved in water resources management
- Unit 5: Hydraulogy

BLOCK 2 Ground water

- Unit 1: Ground water resources- Factor affecting resources
- Unit 2: Darcy's law
- Unit 3: Evaluating ground water resources
- Unit 4: Flood risk zone mapping - identification of ground water potential zones
- Unit 5: Applications of gis

BLOCK 3 River

- Unit 1: River basin management
- Unit 2: River training works
- Unit 3: Storages works
- Unit 4: gates

BLOCK 4 Irrigation water management

- Unit 1: components of water management
- Unit 2: cropping pattern
- Unit 3: types of canals - distribution system of canals
- Unit 4: Necessity -types of lining

BLOCK 5 Water shed management

- Unit 1: Soil and water conservation
- Unit 2: conservation technology
- Unit 3: definition-purpose control of gullies.
- Unit 4: Water harvesting and recycling

Books :

1. Hydrology and water resources engineering by Santhosh Kumar, Garg
2. Irrigation Engineering by R.K.Sharma, T.K.Sharma
3. Water Resources Engineering by Ralph A.Warbs, Wesley P.James
4. Ground water Hydrology by Raghunath H.M
5. Irrigation water management by Dilip Kumar Majumdar, Prentice hall of India
6. Water shed Management by V.Vdhruva Narayana, C.Sastry, V.S.Patnaik
7. Principles of GIS for land resources assessment by P.A.Burrougu, Oxford publications
8. Remote sensing method and applications by Michael Hord R,John Wey and sons

Subject Code : CE405
Subject Title : CAD IN CIVIL ENGINEERING DRAWING LAB - I

Structure of the Course Content

Preparation of drawing using available Software Packages (AUTOCAD, Pro.E etc.)

1. Introduction of Software Packages available for Preparation of Drawings Definition of

various commands used in Software package. Simple Exercises for familiarizing the drawing commands in software Package (AUTOCAD, Pro-E etc.)

2. Draw the Given drawings in Computer and take print out of all drawings in A4 sheet using INKJET/LASER PRINTER or PLOTTER and produced in file forms as regard.

2.1 Section of semicircular Arch

2.2 Elevation of door partly paneled and partly glazed

2.3 Preparation of Plan showing arrangement of furnishers/fixtures and other futures with standard sizes for the followings (Each room to be drawn separately-futures and furniture's may be pasted from the Blocks available in the packages)

(i) Living (ii) Bed Room (iii) Kitchen (iv) Toilet

2.4 Steel Structures : Cross section of, I , Channel, T , Angle and Tubular section, Compound Beam and Plate Girder

2.5 Section of Load bearing wall from parapet to foundation Partly showing all the details across the section.(Single storey)

2.6 Plan, Section and Elevation of single bed roomed building (R.C.C. Roof)

2.7 Plan, Section and Elevation of Double bed roomed building (R.C.C. Roof)

2.7 Plan, Section and Elevation of a Primary School Building

2.8 Plan, Section and Elevation of a Hospital Building

2.9 Small Workshop with steel column, Steel roof truss and Metal sheet Roofing

2.10 Preparation of approval drawing to be submitted to Corporation or Municipality

Subject Code : CE406

Subject Title : SURVEY Lab II

Structure of the Course Content

1. Theodolite

1.1 Setting up of Theodolite – Temporary Adjustment – Reading horizontal angles

1.2 Measurement of horizontal angle:

a. By reiteration method (not for Exam) b. By repetition method (not for Exam)

1.3 Determination of distance between two points when their base accessible using Theodolite by measuring Horizontal angles by repetition method and distances from a Theodolite Station.

1.4 Determination of distance between two points when their base inaccessible using Theodolite by measuring Horizontal angles by reiteration from a baseline.

1.5 Closed Theodolite Traverse measuring included angles.

1.6 Measurements of vertical angles Height of the object when the base is accessible

1.7 Reduced Level of Top of an object when the base is inaccessible

a) Single plane method b) Double plane method

2. Tacheometry

2.1 Determination of constants of a tacheometer

2.2 Determination of distance and elevation of a point by Tacheometric observations

2.3 Determination of gradient between two points of different elevations by stadia tacheometry

2.4 Tangential tacheometric observation

3. Total Station

3.1 Study of Total Station

3.2 Measurement of distance and co-ordinates of given points minimum 6 points

3.3 Measurement of altitude of given elevated points

3.4 Traverse and plotting using Total Station (Local Points)

Subject Code : CE501
Subject Title : STRUCTURAL ENGINEERING

Structure of the Course Content

BLOCK 1 REINFORCED CONCRETE

- Unit 1: Concept of Composite material
- Unit 2: Introduction to working stress method
- Unit 3: Introduction to limit state method
- Unit 4: Design of beams for flexure by l.s.m

BLOCK 2 Designs of Beams

- Unit 1: Design of t-beams
- Unit 2: Continuous Beams by L.S.M
- Unit 3: Design of beams for shear by L.S.M
- Unit 4: simple problems- use of design aids

BLOCK 3 Design of Slab

- Unit 1: Design of one way slabs by L.S.M
- Unit 2: Design of two way slabs by l.s.m
- Unit 3: Design of staircases by l.s.m
- Unit 4: Problems

BLOCK 4 Columns

- Unit 1: Design of columns by l.s.m
- Unit 2: Design of axially loaded short columns with lateral ties / helical reinforcement
- Unit 3: Design of column footings.
- Unit 4: Problems on Design of Size of Footing and area of steel only

BLOCK 5 STEEL STRUCTURES

- Unit 1: Design of Simple Beams
- Unit 2: Design of Tension Members
- Unit 3: Design of Compression Members
- Unit 4: Design of Welded Connections

Books :

1. Limit state Theory and Design of Reinforced Concrete by S.R.Karve and V.L.Shah, Pune Vidya Griha Prakashan
2. Limit state Design of Reinforced Concrete by P C Varghese, Prentice-Hall of India Pvt Ltd
3. Limit State Design of Concrete Structures by Dr.S.Ramachandra, Scientific publishers
4. Railway Track Engineering by Mundrey, Tata McGraw Hill
5. Structural Analysis: A Matrix Approach by Pandit, TMH
6. Basic Structural Engineering by Ponnusamy, Tata McGraw Hill
7. Earth Quake Analysis & Design of Structure by Rajasekaran, TMH
8. Basic Structural Analysis by Reddy, Tata McGraw Hill

Subject Code : CE502
Subject Title : QUANTITY SURVEYING

Structure of the Course Content

BLOCK 1 Estimate

- Unit 1: Terms & Definition
- Unit 2: Approximate Estimates
- Unit 3: Measurements & Material Requirement
- Unit 4: Specification & Report Writing

BLOCK 2 Data Preparation & Analysis

- Unit 1: Main & Sub data – Observed data
- Unit 2: Preparation of data using standard data and schedule of rates
- Unit 3: Rate Analysis Brick, stone masonry and Lime concrete
- Unit 4: Plumbing and sanitary works in buildings.

BLOCK 3 Estimation

- Unit 1: Stages Of Detailed Estimate
- Unit 2: Group System
- Unit 3: Process Of Writing
- Unit 4: Abstracting And Billing
- Unit 5: Taking Off Quantities

BLOCK 4 Preparation of Estimation

- Unit 1: A small residential building with two / three rooms with RCC roof.
- Unit 2: Two Storied building (framed structure) with RCC roof
- Unit 3: Industrial buildings with AC/GI sheet roof with steel trusses.
- Unit 4: Septic tanks with dispersion trench / soak pit
- Unit 5: R.C.C slab culvert

BLOCK 5 Valuation & Rate Calculation

- Unit 1: Types and Purpose of Valuation
- Unit 2: Problems on valuation
- Unit 3: Fixation of Rent
- Unit 4: Problem of rent calculation

Books :

1. Civil Estimating, Casting and Valuation by Kalson Publication Ludhiyana.
2. Estimating & Casting by Rangawala, Charotor Publishing
3. Quantity surveying & Valuation by N.A.Shaw, Khana Publishers
4. IS Code of Practice – IS 1200
5. Quantity Surveying by PL Bhasin, S. Chand & Co
6. Estimating and Costing by L.N.Dutta, Dhanpat Rai & sons
7. Estimating and Costing by Bridie
8. Estimating and Costing by Vazirani & Chandolu
9. Surveying and Levelling by Basak, TMH

Subject Code : CE503

Subject Title : CONCRETE TECHNOLOGY & CONSTRUCTION

Structure of the Course Content

BLOCK 1 Concrete Material

Unit 1: Composition and properties of cement

Unit 2: Fresh Concrete

Unit 3: Admixtures

Unit 4: Special concrete

BLOCK 2 Design of Concrete

Unit 1: concept of Mix design

Unit 2: procedure I.S.Code method

Unit 3: principle of pre stressing

Unit 4: system of pre stressing

BLOCK 3 Building Safety

Unit 1: Causes of fire in buildings

Unit 2: Safety regulations

Unit 3: Fire Safety Installation

Unit 4: Earth Quake

Unit 5: Proof Construction

BLOCK 4 Piles Foundation

Unit 1: Definition-Problems encountered in deep excavations

Unit 2: Pumping, Provision of sumps

Unit 3: types of piles

Unit 4: load bearing piles

Unit 5: causes of failure of piles

BLOCK 5 Defects and Rehabilitation in Buildings

Unit 1: Major causes of defects in buildings

Unit 2: Weathering course

Unit 3: Cracks in Buildings

Unit 4: Repair techniques

Books :

1. Concrete Technology by M.S. Shetty , S.Chand & Co,New Delhi
2. Fire Resistant Construction by S.P.Arora and S.P.Bindra, Dhanpat Rai & sons
3. Concrete by Gambhir, TMH
4. Prestressed Concrete by Krishna Raju, Tata McGraw Hill
5. Reinforced Concrete Design by Pillai, TMH
6. Construction Project Management Plan by Chitkara, Tata McGraw Hill
7. National Building Code of India, Part-IV and VII
8. Advances in Building Materials and Construction by Rai Mohan and Jai Singh.M.P, CBRI Roorkee
9. Hand Book on concrete Mixes based on Indian standards
10. Earth quake Proof Building Construction by Dr.Janardhanjha and Prof.Suresh kunar Sinha

Subject Code : CE504
Subject Title : Environmental Engineering

Structure of the Course Content

BLOCK 1 Water

- Unit 1: Water Supply
- Unit 2: Quantity of water
- Unit 3: Collections and conveyance of water
- Unit 4: Quality of water

BLOCK 2 Water Treatments

- Unit 1: Layout of treatment plants
- Unit 2: Filtration
- Unit 3: Treatment processes
- Unit 4: Distribution system

BLOCK 3 Collections and conveyance of sewage

- Unit 1: Definition of terms
- Unit 2: physical and chemical bacteriological BOD, COD
- Unit 3: Estimation of quantity of sewage – problems
- Unit 4: Laying of sewers lines & Sewage pumps

BLOCK 4 Treatments and disposal

- Unit 1: Treatment of sewage
- Unit 2: sedimentation
- Unit 3: Septic tanks
- Unit 4: Disposal of Septic Tank effluent

BLOCK 5 Environmental pollution and control

- Unit 1: Industrial waste
- Unit 2: Treatment Processes
- Unit 3: Water pollution
- Unit 4: Land Pollution
- Unit 5: Control of Air Pollution

Books:

1. Water supply and Sanitary Engineering by S.K. Garg, Kanna publishers, Delhi
2. Water supply and Sanitary Engineering by K.S. Rangwala
3. Water supply and Sanitary Engineering by G.S. Birdie and JS. Birdie, Dhanpat rai Publishers
4. Environmental Studies by Suresh K.Dhamija, S.K.Katarial Sons Delhi
5. Industrial waste water treatment by Rao & Dutta
6. Air pollution by M.N. Rao & H.V. Rao, Tata Mcgrawhill Publishing Company
7. Environmental Engineering by Basak, TMH
8. Principle of Environmental Science by Cunningham, Tata Mcgrawhill Publishing Company
9. Introduction to Environmental Engineering by Davis, TMH
10. Environmental Engineering –I: Water supply Engineering by Dr.B.C.Punmia, Ashok Kumar Jain & Arun Kumar Jain

Subject Code : CE505
Subject Title : CAD IN CIVIL ENGINEERING DRAWING LAB –II

Structure of the Course Content

Preparation of drawing using available Software Packages (AUTOCAD, Pro.E etc.)

Group 'A' (Ph Engineering Drawing)

1. Infiltration gallery (with one infiltration well, one straight gallery pipe, one inspection well and one jack well). {Practice Only}
2. Rapid Sand Filter.
3. Septic Tank with dispersion Trench/ Soak pit.
- 4 Bio gas plant. (Floating type)
- 5 R.C.C square overhead tank supported by four columns.

Group 'B' (Bridge Drawing)

1. R.C.C Slab Culvert with splayed wing walls.
2. Two span Pipe Culvert.
3. Two span Tee Beam Bridge with square returns.(Practice Only)
4. Road Over Bridge(Pile foundation, Pile Gap ,Column,
5. Pre cast Beams & Deck slab) – {Practice Only}

Group 'C' (Structural Engineering Drawings With Bar Bending Schedule)

- Standards as per IS 456 – 2000 – Reinforcement requirement – Curtailment – Anchorage-
Cover - Development length – Minimum depth required – Joints – Slab to Beam – Beam to Column.
- 1 Simply supported one-way slab.
 - 2 Simply supported two-way slab.
 - 3 Restrained two-way slab.
 - 4 Singly reinforced beam./ Doubly reinforced beam.
 - 5 Tee Beams supporting continuous slab (practice only).
 - 6 Dog-legged staircase.
 - 7 Lintel and Sunshade (practice only)\

Subject Code : CE506
Subject Title : CONSTRUCTION LAB

Structure of the Course Content

1. Prepare and developing a centre line plan and foundation plan for a given line plan of a building.
2. Setting out spread footing foundation in the field for a given line plan of a building.
3. Setting out column and footing foundation in the field for a given line plan of a building (Framed structure)
4. Arrangement of bricks using English bond in one brick thick wall and one and half brick thick for right angled corner junction.
5. Arrangement of bricks using English bond in one brick thick wall and one and half brick thick wall for Tee-junction
6. Arrangement bricks using English bond in one brick thick, one and half and two brick thick square pillars.
7. Practice on measuring every day temperature in the Laboratory by setting standard Temperature measuring Devices in the Laboratory and separate register to be maintained in the Laboratory for temperature records for future reference. (For Demonstration purpose but it is Compulsory).
8. Setting of seismograph in the Laboratory and demo on measuring methods of Earthquake. (For Demonstration purpose but it is Compulsory)
9. Demonstration and practice in painting, varnishing and polishing.
10. Determination of workability of concrete by Slump cone test.
11. Determination of workability of concrete by Compaction factor test.
12. Casting of concrete cube and compression test on concrete cube.
13. Determination of Fineness Modulus of fine aggregate sample and plot a particle size distribution curve and also find the effective size and uniformity co-efficient
14. Determination of Fineness Modulus of coarse aggregate sample and plot a particle size distribution curve and also find the effective size and uniformity co-efficient
15. Determination of bulking characteristics of the given sand sample.
16. Cutting, Hooking, cranking and arrangement of reinforcement
 - a) Beam
 - b) Lintel and Sunshade
 - c) Column and footing.
17. Calculation of areas centering of the following: (Given sketch)
 - a) Roof slab with Beam
 - b) Column
18. Measurement Book – Procedure for entering in measurement book
19. Entering measurement for building works All the students should enter directly on measurement book and they should keep the entry for the following works independently in the measurement book including schedule rates for the respective work for the current year. Exercise from existing buildings inside the campus and only single room for each student.
 - a) Measurement and abstract for flooring work
 - b) Measurement and abstract for Brick work
 - c) Measurement and abstract for colour washing

Subject Code : CE601
Subject Title : CONSTRUCTION MANAGEMENT

Structure of the Course Content

BLOCK 1 Construction sector

- Unit 1: Construction sector in India
- Unit 2: Project feasibility report
- Unit 3: Planning for civil engineering project
- Unit 4: Contract management

BLOCK 2 Construction Organisations

- Unit 1: construction supervision and superintendence
- Unit 2: insurance
- Unit 3: Human factors in construction
- Unit 4: Departmental procedure and accounting

BLOCK 3 Scheduling & Resource management

- Unit 1: Scheduling
- Unit 2: time management
- Unit 3: Resource management
- Unit 4: Simple problem

BLOCK 4 Quality management and safety

- Unit 1: quality assurance techniques
- Unit 2: Construction distibutes and thier settlement
- Unit 3: Construction labour and legistation
- Unit 4: Entrepreneurship

BLOCK 5 Information and Financial management

- Unit 1: MIS
- Unit 2: Project management
- Unit 3: Elements of cash flow
- Unit 4: Global banking culture - types of banks

Books :

1. Construction Management and Planning by Sengupta.B, & H.Guha, Tata McGraw Hill Publishing Company Ltd., New Delhi.
2. Construction Engineering & Management by Seetharaman. S, Umesh Publications, Nai Sarak, New Delhi.
3. Computer Applications in Construction by Boyd.C. & Paulson Jr, Tata McGraw Hill Publishing Company Ltd., New Delhi
4. Construction Management by Sanga Reddy. S, Kumaran Publications, Coimbatore
5. Construction of Structures and Management of Works by Rangwala.S.C, Charotar Publishing House,Anand-388001
- 6.Construction Planning, Equipment and Methods by Peurifoy, TMH
7. Management Concepts for Civil Engineers by K.Anbuvelan, Lakshmi Publication Pvt Ltd
8. Project Planning and Control with PERT & CPM by Dr.B.C.Punmia and K.K.Khandelvel, Lakshmi Publication Pvt Ltd

Subject Code : CE602
Subject Title : HYDRAULICS

Structure of the Course Content

BLOCK 1 Property of Fluids

- Unit 1: Introduction
- Unit 2: Measurement of Pressure
- Unit 3: Hydrostatic Pressure on Surfaces
- Unit 4: Simple problems

BLOCK 2 Flow of Fluids

- Unit 1: Types of flow
- Unit 2: Flow through orifices and mouthpieces
- Unit 3: Flow through pipes
- Unit 4: Simple problems

BLOCK 3 Flow through Notches & Weirs

- Unit 1: Types of Notches
- Unit 2: Comparison of V-Notch and Rectangular Notch
- Unit 3: Classifications of weirs
- Unit 4: Franci's and Bazin's formula – Cippoletti weir

BLOCK 4 Flow through open channels

- Unit 1: Definition - Classification
- Unit 2: Chezy's formula, Bazin's formula and Manning's formula
- Unit 3: Flow in a venturiflume
- Unit 4: channels & Canals

BLOCK 5 Water Pump

- Unit 1: availability of ground water
- Unit 2: Classification of pumps
- Unit 3: Reciprocating pump & Centrifugal pump
- Unit 4: Priming of centrifugal pump , Jet pump & Deep well pump

Books :

1. Hydraulics, Fluid Mechanics and Hydraulic Machines by Dr. Jagadish Lal, Metropolitan Book Company, New Delhi
2. Hydraulics , Fluid Mechanics and Hydraulics Machines by P.N. Modi & S.M. Sethi , Standard Publishers , New Delhi
3. Hydraulics, Fluid Mechanics and Hydraulics Machines by S. Ramamirtham, Dhanpat Rai & Sons, New Delhi
4. Hydraulics & Hydraulic Machines by P. Sankaran
5. Hydraulics, Fluid Mechanics and Hydraulics Machines by R.S. Khurmi, S. Chand & Co, New Delhi
6. Fluid Mechanics by K.L.Kumar, Eurasa Publishing House , New Delhi
7. Fluid Mechanics by R.K. Bansal, Lakshmi Publications
8. Fluid Mechanics by Prof. S. Nagarathinam, Khanna Publishers, New Delhi
9. Hydraulics, Fluid Mechanics and Hydraulics Machines by K.R. Arora, Standard Publishers & Distributors , New Delhi
10. Hydraulics Vol. I & II by V.B. Priyani, Charotar Publishers, New Delhi

Subject Code : CE603
Subject Title : TOWN PLANNING

Structure of the Course Content

BLOCK 1 Town planning principles

- Unit 1: Introduction
- Unit 2: objects of town planning
- Unit 3: Surveys
- Unit 4: Zoning

BLOCK 2 Housing & Slums

- Unit 1: Importance of housing-Demand for houses
- Unit 2: Classification of residential buildings
- Unit 3: Characteristics & Effects of slums
- Unit 4: Resources for slum clearance programmes

BLOCK 3 Public buildings

- Unit 1: Classification of public Buildings
- Unit 2: Parks and play grounds
- Unit 3: Master plan
- Unit 4: Re-planning existing towns

BLOCK 4 Road & Traffic Management

- Unit 1: Urban roads
- Unit 2: Types of street systems
- Unit 3: Traffic survey
- Unit 4: Traffic control & Signal

BLOCK 5 Building bye-laws

- Unit 1: Basic laws and its Functions -importance of bye-laws
- Unit 2: laws for residential area of a typical town planning scheme
- Unit 3: Airports
- Unit 4: Remote sensing application

Books :

1. Town Planning by K.S.Rangwala and P.S.Rangwala, Charotar Publishing House
2. Remote sensing methods and application by Michael Hord, R., John Wiley and Sons, New York
3. National Building Code of India- Part-III
4. Municipal and Panchayat bye-laws, CMDA Rules and Corporation bye-laws
5. Urban and regional planning by KA. Ramegowda, University of Mysore
6. The urban pattern, city planning and design by M/s DVan
7. Time saver standards for site planning, Mc Graw Hill Book company
8. An Introduction to town and country planning by John Rate life, London
9. The art of home landscaping , Mc Graw Hill Book company
10. A Guide to site and Environmental planning by Harvey M. Rubenstein, Newyork

Subject Code : CE604
Subject Title : COMPUTER APPLICATION IN CIVIL ENGINEERING LAB

Structure of the Course Content

1. Using MS Excel carryout typical problems involving estimation, analysis and design problems.
 - a. Prepare the Estimate sheet with Given data (provide all the measurement details) and calculate the Quantity using formula bar.
 - b. Prepare the Abstract Sheet for the given data and Calculate Amount and Total Amount using Formula bar.(use separate column for rates and units)
 - c. Design and Analysis problems in Excel
 - d. For Given Dimension of Masonry/R.C.C Dam ie. top width, bottom width, height of Dam , height of water, Sp.wt of masonry/R.C.C. , Sp.wt of Water etc,. Find the Base pressure and check the stability of the Dam.

2. Detailed drawing generation for given specification and Bar Bending Schedule using available R.C.C Detailing Package Only,for the following works.

Students should not draw drawings directly using AutoCad package they should use only available R.C.C Detailing packages.(Example: CADS RC: Reinforced Concrete Detailing Software with AutoCAD Environment, etc.,)

- a. Cross section of a Lintel cum Sun Shade.
- b. Plan and section of a column and Footing (square footing)
- c. Plan and sectional view of One-Way slab.
- d. Longitudinal Section and cross section of Singly Reinforced Beam.

3. Carry out the analysis and design of RCC structures (single storey buildings, school etc) using available Software Packages.(Struds on Windows, STADD PRO, CADS A3D.,etc)

- 4 Develop the CPM/PERT Network for the Proposed simple Building Project using MSProject.

Subject Code : CE605
Subject Title : Project