

CO 1ST SEMESTER

G-101; COMMUNICATION SKILL – I

CO1: Understand and apply knowledge of human communication and language processes as they occur across various contexts (e.g. Interpersonal, intrapersonal, organizational and intercultural) from multiple perspectives and also enable to communicate effectively orally and in writing.

CO2: Read with comprehension and evaluate information to determine what is credible and relevant.

CO3: Develop a habit of careful listening and demonstrate the ability to effectively deliver formal presentation to a variety of audience.

CO4: Manage non-verbal communication to avoid sending inappropriate messages.

CO5: Demonstrate proficiency in the use of written English including proper spelling grammar and punctuation.

Course title- Mathematics -I

CO1: Explain sequence and series, A.P and G.P, Properties and concept of A.P and G.P, its nth terms, sum of 1st n terms, solve various problems on A.P and G.P. Identify complex numbers, definition of complex no., polar form of complex no.s, solve various problems on complex numbers, cube roots of unity, 4th root and nth root of unity. Quadratic equations and its solutions.

CO2: Concept of factorials, Permutations and Combinations, solve problems on Permutation and Combination. Concept of Binomial Theorem, expansion of $(x + y)^n$ by using binomial theorem, finding the general term, middle term, calculation of approximate value.

CO3: Sets and Relation, various operations on sets, product of sets, concepts of relation, domain and range, types of relations. Concepts of Trigonometric functions, Trigonometric ratios, allied angles, defining periodic functions and period of trigonometric functions. Simply trigonometric expressions and solve various problems on Trigonometry.

CO4: Know about frequency distribution, tabulation and representation, concept of measures of central tendencies mean, mode median and their relationship, range, deviations and solve problems on measure of central tendencies, Concept of Probability, events and different mathematical formulae, problems on probability.

CO5: Identify matrices, its definition and notations, types of matrices, concept of determinants, various operations on matrices, concept of Adjoint, Inverse of a matrix, to find the solutions of linear equations by using matrices.

COURSE CODE: G-107

COURSE TITLE: CHEMISTRY-I

CO1: explain atoms and its various properties properties of solution and its practical application, classify acid, base and salt and explain pH-its calculations and applications, discuss different types of bondings.

CO2: study chemistry of water-impurities, action of soap, hardness, its classification, effect and remedial measures, discuss various water treatment process.

CO3: Explain catalyst, classifications, characteristics and industrial applications, describe radioactivity, characteristics, nuclear fission, fusion and applications

CO4: Describe organic chemistry, tetravalency, functional group, various compounds, homologous series and preparation method of methane, ethane, ethylene and benzene

CO5: Discuss refractories-classification and properties, elaborate Portland cement-composition, properties and types

Semester II

COURSE CODE: G-108

COURSE TITLE: CHEMISTRY-II

CO1: define conductor, insulator, semiconductor, electrolytes, non-electrolytes, conductance, specific conductance, molar conductance and electrochemical cell, discuss Arrhenius theory and phenomenon of electrolysis, Faraday's laws of electrolysis and solve related problems.

CO2: study Fuel- its importance, classification, calorific value, merits and demerits of various fuels; discuss coal-its origin, classification, pulverization; Explain proximate and ultimate analysis of coal. Discuss petroleum, its different products, properties of liquid fuels, state composition, preparation and industrial application of coal, water gas, producer gas, LPG, natural gas and gobar gas.

CO3: Explain lubricants- its functions, classifications and applications.

CO4: Describe corrosion, causes, types, methods of corrosion control (rusting of iron); State protective coating – its necessities, classification; Explain paints and varnishes- its component and functions.

CO5: study polymers and plastics – classification, properties and uses.

CO6: Explain general metallurgical processes- metallurgy of iron by blast furnace; steel- its classification and properties; alloy-its preparation, composition, properties and engineering uses.

Course title- Mathematics –II

CO1: Concept of co-ordinate system , cartesian and polar coordinates, straight lines , intersection of lines and angle between them, concept of geometric figures , circles, parabola ellipse and hyperbola.

CO2: Concepts of limits and evaluation of various form of limits, understand the concepts derivatives of various functions, higher order derivatives , partial derivatives and application of derivatives .

CO3: Integral calculus , definition of integrals various methods to find the integration of functions, application of integration.

CO4: Concept of vector and scalar quantities, geometric representation of vectors , operations on vectors and its application on various engineering problems.

G-102; COMMUNICATION SKILL – II

CO1: Demonstrate a mastery of the kinds of formal and informal communication most often use in the business correspondence (e.g. emails, reports, meetings, presentations, etc.)

CO2: Use email appropriately demonstrating an understanding of what information should be included and what not.

CO3: Lead an effective and productive group discussion. CO4: Demonstrate an understanding of interview process and collecting interview instrument such as an interview questionnaire.

CO4: Demonstrate proficiency in the preparation of resume for application either in a job related position or for further educational experience.

CO5: Demonstrate proficiency in preparing agenda and minutes of a meeting and also demonstrate proficiency in different types of business letters.

CO IIIIRD SEMESTER

COURSE CODE: G 301

ENVIRONMENTAL EDUCATION-C202

SEMESTER III

COURSE OUTCOME:

Co1. Explain the environmental education and importance of environment.

Co2. Explain the global environmental problem.

Co3. Explain about the preventive measures for global environmental problem.

Co4. Explain the clean technology.

Co5. Explain the environmental legislation.

Co6. Explain the environmental impact assessment.

CE DRAWING-1 :- CE403[C204] SEM- III

COURSE OUTCOME[co]

1. explain various parts of staircase, dimensions, the number of treads and riser and location of staircase of different buildings
2. identify the different types of doors and windows.
3. differentiate the basic difference in king post truss and queen post truss based on joints.
4. determine the span or dimension of truss, doors , windows and staircase.
5. create perspective view of plan , elevation and sections of one storeyed building and two or more storeyed building.
6. Students can inculcate in themselves, own required scale ratio for drawing of different structures and conventional signs of stone and brick masonry , concrete etc.

COURSE CODE: G 302 (C 207) ENTREPRENEURSHIP DEVELOPMENT

COURSE OUTCOME:

CO1: Explain functions of entrepreneurs, entrepreneurship quality and need for entrepreneurship with social responsibilities of entrepreneurs.

CO2: Explain forms of business organization and identify the scope of small scale and ancillary industries with special reference to self- employment

CO3. Explain system of distribution and sales organization comprising of market survey, marketing trends, knowledge of competitors, product selection and its basis.

CO4. Explain the importance of important export business for self- employment and for economic development of the country, with procedures for technical collaboration international trade.

CO5. Explain government policy support and environment legislation like air pollution, water pollution act, along with oppurtunities and the facilities available for entrepreneurship development.

G-207, FUNDAMENTAL OF EEE SEM- III

COURSE OUTCOME[co]

1. understand the concept of D.C and A.C circuits.
2. Gain basic knowledge on magnetic circuits, electromagnetic induction
3. understand semi-conductor physics and diode circuits.
4. understand various transit circuits and its applications.
5. understand the concept of FET & MOSFET.

COURSE CODE: G-107

COURSE TITLE: CHEMISTRY-I

6.CE407 : GEOTECHNICAL ENGINEERING - I

Course Outcomes: At the end of the course, the student will be able to:

CO1 Characterize and classify soils

CO2 Determine index and engineering properties of soils

CO3 Compute and analyze the consolidation settlements

CO4 Understand the principles of compaction and its control

CO5 Identify shear strength parameters

CO6 Interpret the results and basic concept of feedback amplifier and oscillator

CO IVTH SEMESTER

COURSE CODE: CE 404

CE DRAWING II -C209

SEMISTER IV

COURSE OUTCOME:

co1. Draw plan, sectional elevation of sanitary latrine with septic tanks, inspection chambers etc.

co2. Design and draw section of bridge and culvert.

Co3. Layout cross-section of national highway, state highway and other major roads.

Co4. Draw the cross section of railways for broad gauge, narrow gauge, metre gauge.

Co5. Edit/modify existing drawing using Auto-CAD.

Co6. Draw various section lines of the objects using computer aided drafting.

COURSE CODE: CE 405

SURVEYING I-C210

SEMESTER IV

COURSE OUTCOME:

Co1. Handle and use various types of chain, tape for distance measurement.

Co2. Range and measure lines by chain surveying and triangulation.

Co3. Layout offsets by various methods such as 3-4-5 method, perpendicular offset method etc.

Co4. Read the values of staff- leveling and its least count and perform plane table survey.

Co5. Read fore-bearing and back-bearing using prismatic compass and correction due to local attraction.

Co6. Set up leveling instrument and to perform profile leveling and cross sectional leveling.

CE-402 [C208] ,HYDRAULICS

COURSE OUTCOME[co]

1. Explain briefly about the properties of fluids.
2. Explain briefly about the pressure and conduct experiment to its measurements.

3. Conduct the experiment to determine the coefficient of discharge from different types of notches and weir.
4. Conduct the experiment to determine the different type of losses of head of a liquid through pipes.
5. Explain the type of flow through open channels.
6. Explain the different types of pumps and its components.

CE -401[C203], BUILDING MATERIALS SEM- IV

COURSE OUTCOME[co]

1. explain the various types of engineering materials and its uses as well as classification and to conduct test on timber
2. explain different classes of bricks, compositions of bricks and conduct compressive strength of brick by compressive testing machine.
3. use of lime with historical constructions and modern day manufacturing process.
4. explain grades of cement [by sieve analysis] and different types of cement and concrete mixes.
5. perform test on water absorption and bulking capacity of sand
6. determine specific gravity of aggregate.

BUILDING CONSTRUCTION –CE410[C206] SEM-IV

COURSE OUTCOME[co]

1. Select suitable type of flooring , plastering and roofing.
2. Explain and Identify various components of buildings and their functions
3. Prepare checklist of operations for supervision of various basics construction activities.
4. Demonstrate and explain different types of bond of bricks
5. Identify the need of suitable types of foundation.

CE406: STRUCTURAL MECHANICS

Course Outcomes: At the end of the course, the student will be able to:

CO1 Determine the stresses and strains in the members subjected to axial, bending and torsional loads

CO2 Evaluate the slope and deflection of beams subjected to loads

CO3 Determine the principal stresses and strains in structural members

CO4 Determine slope and deflection of beams

CO5 Analyze columns and struts

CO6 Analyze plane trusses

CE406: THEORY OF STRUCTURES –

CO1 Analyze the bending and shear stresses in beam

CO2 Analyze the framed structures

CO3 Evaluate the slope and deflection of beams subjected to loads

CO4 Determine the principal stresses and strains in structural members

CO5 Formulate Equilibrium and compatibility equations for structural members

CO6 Analyze the statically determinate and indeterminate problems

CO VTH SEMESTER

COURSE CODE: CE 506

SURVEYING II-304

SEMESTER V

COURSE OUTCOME:

Co1. Practically conduct the repetition and reiteration method by using theodolite.

Co2. Measure horizontal and vertical angle by theodolite traverse.

Co3. Create coordinates for latitude and departure by traverse computation and practically conduct the method of triangulation.

Co4. Determine correction of baseline distance and extension of base and compute volume from contour maps by plane table.

Co5. Set out simple curves, compound curves and reverse curves using linear method and by deflection method.

Co6. Measure horizontal and inclined line of sight by tacheometric measurement and explain the principles of EDM: total stations.

COURSE CODE: CE 510 EARTHQUAKE RESISTANT

SEMESTER V

DESIGN AND CONSTRUCTION-307

COURSE OUTCOME:

Co1. Explain the details about the earthquake and its causes.

Co2. Explain the use of concrete band, ties and reinforcement in masonry construction.

Co3. Explain the use of timber construction in earthquake resistant design.

Co4. Explain the principles of earthquake resistant design.

Co5. Explain the ductile detailing of RC structures.

COURSE CODE: CE 507

DESIGN AND DETAILING OF STRUCTURE I-305

SEMESTER V

COURSE OUTCOME:

Co1. Design the structure by limit state method (LSM).

Co2. Explain the advantages of reinforced concrete.

Co3 Explain different types of loads acting on structures.

Co4. Design singly reinforced rectangular beams by limit state of collapse.

Co5. Design the shear for rectangular beam by limit state of collapse.

Co6. Explain the equivalent development length of bonds, IS code provision for anchorage, splicing of bars, laps and importance of laps and anchorage length.

Co7. Perform design of simply supported rectangular two-way slabs as per IS456-2000.

Co8. Design of axially loaded short columns using IS 456 and SP-16.

CONCRETE TECHNOLOGY:- CE 508[C306] SEM-V

COURSE OUTCOME[co]

1. Design concrete mixes as per IS Code.
2. Explain types of determination of reinforcement, its effect and prevention.
3. Conduct quality control test on concrete making materials.
4. Conduct quality control test on fresh concrete.
5. Identify the need for different cement and admixtures.

CE409 : WATER AND WASTE WATER ENGINEERING

CO1 Analyze the characteristics of water and wastewater

CO2 Estimate the quantity of drinking water and domestic wastewater generated

CO3 Explain the water and sewage treatment process

CO4 Design components of water supply systems

CO5 Design sewerage system.

CO6 Explain the water supply and drainage in buildings

CE504: ESTIMATING – I

CO1 Prepare a quantity estimate and costing of masonry work

CO2 Prepare a quantity estimate and costing of RCC work

CO3 Prepare a quantity estimate and costing of RB work

CO4 Prepare a quantity estimate and costing of Flooring and finishing work

CO5 Prepare a quantity estimate and costing of Sanitary and plumbing work

CO6 Prepare a quantity estimate and costing of Sanitary and plumbing work

COURSE CODE: CE 501 (C 302) HIGHWAY AND TRANSPORTATION ENGINEERING SEMESTER V

COURSE OUTCOME:

- Co1. Design geometric design of highway
- Co2. Explain the basic knowledge and rigid pavement
- Co3. Differentiate flexible and rigid pavement

Co4. Perform testing on aggregates and bitumen

Co5. Identify needs of surface and sub-surface drainage

CO WITH SEMESTER

COURSE CODE: CE 509 DESIGNS AND DETAILING OF STRUCTURE II-310 SEMESTER VI

COURSE OUTCOME:

Co1. Explain mechanical properties and chemical composition of structural steel.

Co2. Draw stress-strain curve for mild steel and identify different types of rolled sections.

Co3. Design and compute connections such as riveted, bolted and pinned connections.

Co4. Design various types of welds in truss members.

Co5. Determine strength, bolt value and number of bolts to be added in a member.

Co6. Design lug angles, tension members, compression members, tension splices, beams and columns.

COURSE CODE: CE 602A ADVANCE SURVEYING (ELECTIVE)-315 SEMESTER VI

COURSE OUTCOME:

Co1. Determine azimuth of a line and find solution of braced quadrilateral, centered and double centered quadrilateral network.

Co2. Plot a detailed topographic survey and Prepare a contour map by using radial method, graphical and spot leveling method.

Co3. Find out the area and volume of catchment area of a reservoir.

Co4. Conduct profile leveling of an area.

Co5. To set out curves such as simple compound, reverse and transition curve

Co6. To measure distance and height by tacheometric survey.

COURSE CODE: CE 512 PROJECT -312 SEMESTER VI

COURSE OUTCOME:

- Co1. Demonstrate a sound technical knowledge of their selected project topic.
- Co2. Undertake problem identification, formulation and solution.
- Co3. Design engineering solutions to complex problems utilizing a system approach.
- Co4. Conduct an engineering project.
- Co5. Communicate with engineers and the community at large in written and oral forms.
- Co6. Demonstrate the knowledge, skills and attitudes of a professional engineer.

COURSE CODE: CE 511

TECHNICAL SEMINAR – 311

SEMESTER VI

COURSE OUTCOME:

- Co1. Develop good communication skills.
- Co2. Study and share the trending technologies in the field of civil engineering.
- Co3. Develop self- confidence through preparation and deliberation of seminar.
- Co4. Judge when to speak and speak clearly and audibly in a manner appropriate to the subject.
- Co5. Develop listening skills.

CE504: ESTIMATING – II

- CO1 Prepare a quantity estimate of Earth work
- CO2 Prepare a quantity estimate of Road work.
- CO3 Identify the rate analysis.
- CO4 Evaluate the specification of various work.
- CO5 Explain the departmental procedure of work.
- CO6 Explain the estimate of canal work

INDUSTRIAL TRAINING

- CO1 Understand an industry and their work culture
- CO2 Ability to analyse a given engineering problem, identify an appropriate problem solving methodology, implement the methodology and propose a meaningful solution.
- CO3 Ability to work in a team.
- CO4 Prepare and present a technical report

CO5 Ability to manage a project within a given time frame.

CO6 Ability to take initiatives.

CE355 GEOTECHNICAL ENGINEERING - II

Course Outcomes: At the end of the course, the student will be able to:

CO1 Determine the earth pressures on foundations and soil retaining structures

CO2 Analyze shallow and deep foundations

CO3 Calculate the bearing capacity of soils

CO4 determine the foundation settlements

CO5 Understand soil exploration methods

CO6 Interpret the result obtained

COURSE CODE: CE 601C (C 314)

TUNNELS AND BRIDGES

SEMESTER VI

COURSE OUTCOME:

Co1. Explain basic concepts of tunnels and bridges

Co2. Describe tunnel surveying, size and shape of tunnel and tunnel lining

Co3. Explain different methods of construction of tunnels, ventilation and drainage and their necessities

Co4. Describe components of bridges and their classification

Co5. Explain various classification of bridges

Co6. Explain culverts and causeway and their types