

CE201NX - BUILDING MATERIALS AND CONSTRUCTION

Teaching Scheme: 03 L + 01 T; Total: 04 hours/week

Evaluation Scheme: 10 ISA + 30 MSE + 60 ESE

Duration of ESE: 03Hrs

Total Credit: 4

Total Marks: 100

Course Description

This course provides an over-view of the basics of building materials used for construction of building. Besides this, students also learn about construction of brick masonry, its requirements and methods of construction. Students will also learn different components of building.

Course Objectives

1. To make students to understand basic building materials used for construction of buildings.
2. To make students to understand different types of structures and components of buildings.

Course Outcomes

After successful completion of this course; student shall be able to

1. Identify relevant type of construction materials for the given type of building.
2. Use the relevant type of special purpose construction materials in the given situation.
3. Undertake the given type of building construction activity for the given component of building structure.
4. Design the relevant means of communication for the given building structure.

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2	2	2	3									2		
2	1	3	1	2								1	3	2	
3	2	2	2	3								1	1	2	
4		2	2	2									2		
5	2	2	3	2								1	2	2	

1-Weakly correlated

2 –Moderately correlated

3 –Strongly correlated

Course content

Building [3 Hrs.]

Definition and Function of building, Construction material- Scope of construction materials in various civil engineering sectors. Sources of materials, Natural, Artificial- special, finishing and recycled.

Classification of materials [4 Hrs.]

Natural Building construction Materials – Stone, Timber, Soil, Sand and Coarse Aggregates, Bitumen: Types and uses.

Artificial Building Construction Materials [3 Hrs.]

Cement, Clay Brick, Flooring Tiles, Concrete Blocks, Plywood, particle board, Veneers, laminated board and Glass: Types and uses.

Special Building Construction Materials [2 Hrs.]

Waterproofing, Termite proofing, and Thermal and sound insulating: Types and suitability.

Fibers [2 Hrs.]

Jute, Glass, and Plastic Asbestos Fibers: Types and uses

Geopolymer cement [2 Hrs.]

Geo-cement: properties and applications.

Construction of Building [2 Hrs.]

Components of building and their function, substructure and superstructure,

Formwork [2 Hrs.]

Definition, Requirements, Materials used, Types of Formwork.

Foundation [2 Hrs.]

Functions, Types: Shallow Foundation and Deep Foundation.

Stone Masonry [4 Hrs.]

Terms used in stone masonry- facing, backing, hearting, through stone, corner stone, cornice. Type of stone masonry: Rubble masonry, Ashlar Masonry and their types.

Brick masonry [4 Hrs.]

Terms used in brick masonry- header, stretcher, closer, quoins, course, face, back, hearting, bat bond, joints, lap, frog, line, level and plumb. Bonds in brick masonry header bond, stretcher bond, English bond and Flemish bond. Precautions to be observed in Brick Masonry Construction.

Building Communication [10 Hrs.]

Horizontal Communication- Doors –Components of Doors, Types of Doors: Fully Paneled Doors, Partly Paneled and Glazed Doors, Collapsible Doors, Rolling Shutters, Revolving Doors, Glazed Doors.

Windows - Component of windows, Types of Windows: Fully Paneled, Partly Paneled and Glazed, Wooden, Steel, Aluminum Windows, Sliding Windows.

Vertical Communication – Stair Case, Ramps, Lift, Elevator and Escalators. Terms used in staircase, Types of staircases- Straight, doglegged, open well, Circular, Quarter turn.

Text Books

1. Building Construction, S.P. Arora and S.P. Bindra, Dhanpat Rai Publications, 5th edition 2013
2. Ghose D. N Construction Materials Tata McGraw Hill, New Delhi, 2014 ISBN: 9780074516478
3. Building Construction, Sushil Kumar, Standard Publishers Distributors, 16th edition 2006

Reference books

1. Building Construction, Ashok K. Jain, B. C. Punmia, Arun Kr. Jain, Laxmi Publications, 11th edition 2015.
2. Rangwala, S.C., Engineering Materials, Character publisher, Ahemdabad, 2015, ISBN: 9789385039171
3. S. C. Rangawala Building Construction, Charotar Publication, Dist-Anand ISBN-10: 8185594856 ISBN-13: 978-8185594859

CE201 NX (Y) GEOGRAPHIC INFORMATION SYSTEM SCIENCE AND APPLICATION

Teaching Scheme: 03 L + 01 T; Total: 04 hours/week

Evaluation Scheme: 10 ISA + 30 MSE + 60 ESE

Duration of ESE: 03Hrs

Total Credit: 4

Total Marks: 100

COURSE DESCRIPTION

This course provides an introduction to Geographic Information Systems (GIS), a powerful technology for capturing, storing, analyzing, and managing spatial and geographic data.

COURSE OUTCOMES

Upon successful completion of this course the students will be able to:

1. Prepare geospatial layers
2. Analyze geospatial data for solving problems of natural and anthropogenic systems
3. Create GIS and cartographic outputs
4. Apply geospatial skills in civil engineering projects

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1		2		1					1	1			3		3
2	3												3		
3		1			3					3			2		2
4	3		3		3			3		3			2	2	3

1-Weakly correlated

2 – Moderately correlated

3– Strongly correlated

COURSE CONTENT

Introduction [02 Hrs.]

GIS definition, development, application areas

Map Concept [06 Hrs.]

Map-Definition, Elements of Maps, Types of maps, Advantages and disadvantages of analog/digital maps, Coordinate Systems- Geometric models of earth, Global/Local coordinate system, Projection Systems- Classification, Cylindrical projection, Conical projection, Selection of a particular projection

Fundamental concepts of GIS [06 Hrs.]

Modeling Real World Features- Raster data model, vector data model, Data Formats- Spatial and Non-Spatial data Database preparation and editing: Data collection and Input, Data conversion, Hardware & software Requirements, Topology – Editing and Error Rectification, Types of topology, Topological Relationships.

Spatial Analysis [06 Hrs.]

Buffer Analysis-Variations in Buffering, Applications of buffering, Overlay Analysis-Feature type and overlay, Vector Overlay methods, Network Analysis-Impedance, Shortest path analysis, closest facility, Concepts of Proximity analysis, Neighborhood operations, DEM and TIN.

GIS Project Planning [04 Hrs.]

Steps in GIS project, Problem Identification and Implementation of a GIS project. GIS Applications: Transportation, Water Resources, Environment, Geology, Emergency Management, Agriculture, Urban planning, climate change, Business.

Advances in GIS [02 Hrs.]

Concepts and application of open source Mobile and Web GIS.

Applications [04 Hrs.]

Integrated approach of RS & GIS application; Geotechnical investigations (soil studies, dam site studies), water resources management, environmental studies (EIA and Land Use Land cover studies), transportation planning, Urban Planning, E-Governance.

Text Books

1. Concepts and Techniques of Geographic Information Systems, C.P. Lo, Albert K. W. Yeung, Prentice Hall India Pvt. Ltd, New Delhi, 2009
2. Introduction to Geographic Information Systems, Kang-Tsung Chang, Tata McGraw Hill Publishing Company Ltd, New Delhi, 2015

Reference Books

1. M. Anji Reddy BS Publications Remote Sensing and Geographical Information Systems Third Edition.
2. C.P LO Albert KW Yeung, Concepts and techniques of Geographic Information Systems Printice Hall of India 2002.
3. John R Jensen Remote Sensing of the Environment: An Earth Resource Perspective, Pearson Education 2006.
4. Geographic Information System and Environment Modeling Keith C. Clerk, Bradely O Parks, Michel P Crane Printice Hall of India 2002.
5. Bhatta Remote Sensing and GIS Oxford University press First Edition.
6. Amy, L. M. (2019). Getting to Know ArcGIS Pro (second ed.). ESRI Press.
7. Andy, M. (2012). The ESRI guide to GIS analysis (First ed.). ESRI Press.
8. Kennedy M. (2009). The Global Positioning System & GIS: An Introduction (Second ed.). Taylor and Francis.

CE203N CONCRETE TECHNOLOGY

Teaching Scheme: 03L

Credit Total: 03

Evaluation Scheme: 30 MSE + 10 ISA + 60 ESE

Total Marks: 100

Duration of ESE: 03Hrs

COURSE DESCRIPTION

The course “Concrete Technology” focuses on concrete making material including supplementary cementations materials. Concrete production process also forms a part of the discussion. Going through the course one would develop first-hand knowledge on concrete production process and properties and uses of concrete as a modern material of construction. The course will enable one to make appropriate decision regarding ingredient selection, uses and types of concrete and designing concrete mix.

COURSE OUTCOMES:

After successful completion of this course; student shall be able to

1. understand concrete materials and their properties
2. Determine the properties of various ingredients of concrete.
3. understand the properties of fresh concrete fresh and hardened concrete
4. design mix proportion concrete mix for field applications as per IS and IRC codes

Relevance of Program Outcomes (Pos)and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2		1									2	3		
2	3		2			2							2		
3	2		2	2									3		
4	3				2	3		2						2	

1-Weakly correlated

2 -moderately correlated

3 -strongly correlated

COURSE CONTENT:

Cement [08 Hrs.]

Production, chemical composition, setting and hydration of cement, types of cement, introduction to Supplementary cementations materials, testing of cement, ARE Specifications.

Aggregates [04 Hrs.]

Classification, mineralogy, properties, grading, impurities in aggregates, bulking of sand, tests and standards, its effect on strength of concrete, production of artificial aggregates, water, its quality and recommendations.

Admixtures [04 Hrs.]

Types and classification, actions and interactions, usage, effects on properties of concrete.

Fly ash, ground granulated blast furnace slag, metakaolin, rice-husk ash and silica fume, chemical composition, physical characteristics, effects on properties of concrete, advantages and disadvantages.

Concrete [08 Hrs.]

Definition and its ingredients, grades of concrete, significance of water cement ratio, concreting process, quality control during concreting, properties of fresh concrete, properties of hardened concrete, time dependent behavior of concrete -creep, shrinkage and fatigue, factors affecting various properties, micro cracking, and stress - strain relation, testing of fresh and hardened concrete,

durability of concrete.

Concrete Mix Design [04 Hrs.]

Proportioning of concrete mixes, basic considerations, factors in the choice of mix proportion, introduction to different methods of mix design, mix design by I.S. method and IRC:44-2017 method.

Special Concretes [08 Hrs.]

Light weight concrete, polymer concrete, fiber reinforced concrete, ready mixed concrete, self compacting and high performance concrete, recycled aggregate concrete, shotcrete, vacuum concrete, special concrete -transparent concrete, cellular light weight concrete, under water concreting, concreting in extreme weather conditions.

Non-destructive Tests on Concrete [04 Hrs.]

Introduction to non-destructive testing of concrete, rebound hammer, ultrasonic pulse velocity, pull out test, impact echo test, chemical attack, carbonation of concrete, corrosion of reinforcement.

Text books

1. Concrete Technology Theory and Practice, M. S. Shetty, S. Chand Publication, Revised edition 2008
2. Concrete Technology, M. L. Gambhir, McGraw Hill Education (India) Private limited, 5th edition, 2013

Reference books

1. Concrete Technology, A.N. Neville and J.J. Brooks, Addison Wesley Longman, 2nd edition, 2010
2. Concrete: Microstructure, Properties, and Materials, P. Kumar Mehta, Paulo J.M Monteiro, McGraw Hill Professional, reprint 2013.
3. Advanced Concrete Technology, Zongjin Li, Wiley, 1st edition 2011.
4. Hand book of Advanced Concrete Technology, N. V. Nayak and A. K. Jain, Alpha Science International, 1st edition 2012

CE 204N BUILDING PLANNING AND CONSTRUCTION

Teaching Scheme: 03L Total: 03Hr

Credit: 3

Evaluation Scheme: 30 MSE + 10 ISA + 60 ESE

Total Marks: 100

Duration of ESE: 04Hrs

Course Description

This course provides an over-view of the basics of building planning. Besides this, students also learn about construction of brick masonry, its requirements and methods of construction. Students will also learn different components of building.

Course Outcomes

After successful completion of this course; student shall be able to

1. Plan buildings as per bye laws.
2. Gain knowledge of building components.
3. Draw plan, elevation and section of residential building as well as public buildings (framed structure)

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3												2		
2	2		2										3		
3		3	1											2	

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

Course content

Planning and Designing of Buildings [10 Hrs.]

Planning and designing of residential buildings (load bearing / frame Structure) working drawings, importance and use of all types of working drawings at site.

Planning and designing of apartment houses, educational buildings, hostel buildings, library buildings, restaurants, hotels/lodging-boarding buildings, and primary health centers / hospitals. Planning and designing of bus stand buildings, commercial complex buildings, bank buildings, post office buildings, community / marriage halls, factory buildings. (Frame structure only)

Types of Structures [08 Hrs.]

Load bearing, framed structure, steel structure, timber structure, composite structure, parts of building, sub structure and super structure, plinth, sill, floor, and roof level, plinth height, plinth protection, cornice, coping and their function.

Foundation [03 Hrs.]

Classification, advantages and disadvantages of each and circumstances under which each is used.

Brick Masonry [04 Hrs.]

Various types of bond in brick masonry, reinforced brick masonry, precautions to be taken in masonry construction, composite masonry, solid and hollow blocks used for masonry, cavity wall.

Formwork [03 Hrs.]

Function of form work, types, formwork erection, oiling and stripping of form, requirements of formwork, material used for formwork.

Lintel [03 Hrs.]

Types of lintel, detailing of R.C.C. lintel, precast lintel.

Doors and Windows [06 Hrs.]

Type of each and circumstances under which each is used, I.S. notations for doors and windows.

Circulation [03 Hrs.]

Type of circulation, horizontal and vertical, types of staircase, staircase planning and design.

Text Books

1. Building Construction, S. C. Rangwala, Charotar Publishing House , 27th edition 2009
2. Building Construction, Sushil Kumar, Standard Publishers Distributors, 16th edition 2006
3. Building Drawing with an integrated Approach to built environment, M.G. Shah, C.M. Kale, S.Y. Patki - Tata McGraw Hills Pvt. Ltd. New Delhi, 5th edition 2012.
4. Planning & Designing Building, Y.S. Sane-Allies Book Stall, 2010

Reference books

1. Building Construction, S.P. Arora and S.P. Bindra, Dhanpat Rai Publications, 5th edition 2010
2. Building Construction, Ashok K. Jain, B. C. Punmia, Arun Kr. Jain, Laxmi Publications, 11th edition 2015
3. Building Planning and Drawing, N. Kumara Swamy and. A. Kameswara Rao, Charotar Publications, 8th edition 2015.
4. Building Science and Planning, S.V. Deodhar, Khanna Publishers, New Delhi, 5th edition 2014
5. National building Code, 2016, New Delhi.
6. IS: 962: 1989- Code of practice for Architectural and building drawing

CE205N STRENGTH OF MATERIALS

Teaching Scheme: 02L; Total: 02Hr
Evaluation Scheme: 30 MSE + 10 ISA + 60 ESE
Duration of ESE: 03Hrs

Credit: 02
Total Marks: 100

COURSE DESCRIPTION

This course provides the basic infra structure for various activities. All the structural members are subjected to load. The role of an engineer is to provide the geometric section to sustain the load. For this, the engineer must know the behavior of the material under given load. This is studied and verified under this subject

COURSE OUTCOMES

After successful completion of this course; student shall be able to

1. Analyze the response of elastic body for external actions.
2. compare the different engineering properties and behavior of the materials
3. Determine the design forces.
4. analyze the stress, strain and deformation of elastic bodies under external actions
5. Evaluate variety of deformations in the determinate structural components.
6. Determine the deflection at any point on a beam subjected to a combination of loads, solve for stresses and deflections of beams under unsymmetrical loading.

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2	1	2	2							1		3		
2			2				1				2			2	
3	2	2		3					2				2	2	
4	2	3	2						2			1	3		
5		2		2							2		2		
6	2	2	3	2	1							1	2		

COURSE CONTENT

Simple stresses and Strains [08 Hrs.]

Concept of stress and strain, stress and strain diagram, elasticity and plasticity. Types of stresses and strains, Hooke's law stress-strain diagram for mild steel working stress, factor of safety, lateral strain, Poisson's ratio and volumetric strain, elastic moduli and the relationship between them, bars of varying section composite bars, temperature stresses. Strain energy resilience, gradual, sudden, impact and shock loadings simple applications.

Columns and Struts [04 Hrs.]

Introduction, short and long columns. Euler's theory; Assumptions, Derivation for Euler's Buckling load for different end conditions, Limitations of Euler's theory. Rankin-Gordon's formula for columns.

Bending Moment and Shear Force Diagrams [08 Hrs.]

Bending moment (BM) and shear force (SF) diagrams. BM and SF diagrams for cantilevers simply supported with or without overhangs. Calculation of maximum BM and SF and the point of contra flexure under concentrated loads, uniformly distributed loads over the whole span or part of span, combination of concentrated loads and uniformly distributed loads, uniformly varying loads, application of moments.

Flexural Stresses [04 Hrs.]

Theory of simple bending, assumptions, derivation of bending equation: $M/I = f/y = E/R$ Neutral axis, determination of bending stresses, section modulus of rectangular and circular sections (Solid

and Hollow), I,T, angle and channel sections, design of simple beam sections.

Shear Stresses [04 Hrs.]

Derivation of formula, shear stress distribution across various beam sections like rectangular, circular, triangular, I, T angle sections.

Torsion [04 Hrs.]

Derivation of torsion equation and its assumptions. Applications of the equation of the hollow and solid circular shafts, torsional rigidity, combined torsion and bending of circular shafts, principal stress and maximum shear stresses under combined loading of bending and torsion. Analysis of close- coiled helical springs.

Text Books

1. Strength of materials, S.S. Ratan, Tata McGraw Hill Delhi, 3rd edition, 2017
2. Strength of Material, S. Rammurthum, Dhanpat Rai & Sons. 2014

Reference Books

Strength of material, D. S.

1. Prakash Rao, University Press, reprint 2017
2. Elements of Strength of Materials, Timoshenko S. and Young D.H.,Tata McGraw Hill, 5th edition, 2013.
3. Strength of Materials, Pytel and Singer, Harper and Row publication, 4th edition, 1987
4. Strength of Materials, R.C. Hibbeler, Prentice Hall, 8th edition 2009

Useful Link

1. NPTEL, www.nptel.ac.in

CE206N CONCRETE TECHNOLOGY LAB

Teaching Scheme: 02P; Total: 02 Hr
Evaluation Scheme: 30 ICA + 20 ESE

Credit: 01
Total: 50 Marks

COURSE DESCRIPTION:

The students will learn how to perform various tests to be used at construction site. They will also learn to conduct various type of slump test on concrete and constituent of mortar to be used at site. At the end they will learn mix design to arrive at required strength of concrete with specific ratio of its ingredients.

COURSE OUTCOMES:

After successful completion of this course the student will be able to:

1. Perform different tests conducted on cement, aggregate and concrete.
2. Design the concrete mix as per the site conditions and specification of materials available there.
3. Understand the durability requirements of concrete.

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3			1	2	2	1								
2	3		2				2					1			
3	3				1	2									

1-Weakly correlated

2 -Moderately correlated

3 -Strongly correlated

Minimum ten experiments shall be performed to cover entire curriculum of course CE203U. Three from group A, four from group B and two from group C and group D compulsory. List given below is just a guideline.

List of Experiments

A) Test on cement

1. Determination of fineness and consistency/specific gravity of cement.
2. Determination of initial and final setting times of cement.
3. Determination of compressive strength of cement.
4. Soundness by LeChatelier's method

B) Test on Aggregates

1. Determination of fineness modulus of coarse and fine aggregates
2. Crushing value test
3. Impact value test
4. Moisture content
5. Bulking of sand
6. Abrasion test
7. Shape test
8. Specific gravity test

C) Test on concrete

1. Workability tests: slump cone test, compaction factor test
2. Determination of compressive and tensile strength of concrete
3. Splitting Tensile Test.

D) Mix Design of concrete by IRC:44-2017/IS Code method

One site visit to Civil Engineering project related to above topics/experiments (Compulsory).

- **ICA** Internal Continuous Assessment shall support for regular performance of practical and its regular assessment. In addition; it shall be based on knowledge/skill acquired and record submitted by student (journal) based on practical performed by him/her. The performance shall be assessed experiment wise using internal continuous assessment format
- **ESE** The End Semester Exam for this course shall be based on oral examination to judge the skills acquired by student. It shall be evaluated by two examiners out of which one examiner shall be out of institute.

CE207N BUILDING PLANNING AND CONSTRUCTION LAB

Teaching Scheme: 02P; Total: 02Hr
Evaluation Scheme: 30 ICA + 20 ESE

Credit : 01
Total Marks : 50

Course Description

By teach the subject students can produce more detailed drawing related to construction of single storied, double storied residential buildings, public buildings and other simple civil engineering structures and in this subject also consider the application of building regulation and by-laws as per local authorities.

Course Objectives

1. To enable students to plan and prepare drawings of building components.
2. To understanding planning and drawing of residential buildings.

Course Outcomes

After successful completion of this course; student shall be able to

1. Understand building bye laws.
2. Draw the plan, section and elevation of various components of buildings.
3. Prepare a detailed drawing for residential and public buildings.

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3												2		
2	2		2										3		
3		3	1											2	

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

List of Experiments

1. Planning of a small residential buildings/bungalow/duplex from given data (framed structure).

- a. Draw furniture arrangement
- b. Draw front elevation, sections (preferably through staircase or bath-wc)
- c. Site plan, built up area calculations
- d. Schedules of area & openings.

2. Project work

Project work shall consist of preparation of working drawings after planning and designing of any one building mentioned in curriculum. Every student shall select different type; individual work is expected from the students.

- a. Layout plan of project building
- b. Typical floor plans.
- c. Front and road side elevations
- d. Sections.
- e. Layout plan showing water supply and drainage arrangements

Note - Use AutoCAD for drawing along with manual drawing for sr no 1 and 2

3. Doors and Windows, Staircase - Plan, Elevation

4. Bonds in brick masonry with isometric view for one bond for one brick.

5. Site Visit -

The sites should be selected in such a way that during various visits, they should be able to observe / study most of the activities related to building construction like, concreting of footings and columns, bar bending, concreting of slab, flooring, plastering, plumbing, painting, false ceiling, and interpret the working drawings.

The entire class will be divided in to a group of 5-6 students .They will be assigned one ongoing project site. The group will visit the site alternate week & will do presentation alternate week on progress of work on site. In addition to this, two to three common site visits will be arranged amongst the following sites:

Residential Building

Public Building

ICA – Internal Continuous Assessment shall support for regular performance of practical and its regular assessment. In addition; it shall be based on knowledge/skill acquired and record submitted by student (journal) based on practical performed by him/her. The performance shall be assessed experiment wise using internal continuous assessment format

ESE – The End Semester Exam for this course shall be based on oral examination to judge the skills acquired by student. It shall be evaluated by two examiners out of which one examiner shall be out of institute.

CE 208N COMMUNITY ENGINEERING PROJECT / FIELD PROJECT

Teaching Scheme (Contact Hours): 1TH 02 P; Total: 03

Credits: 02

Evaluation Scheme : 30 ICA+20 ESE

Total Marks: 50

Course Description

Community Service Project is an experiential learning strategy that integrates meaningful community service with instruction, participation, learning and community development. Community Service Project involves students in community development and service activities and applies the experience to personal and academic development. Community Service Project is meant to link the community with the college for mutual benefit. The community will be benefited with the focused contribution of the college students for the village/ local development. The college finds an opportunity to develop social sensibility and responsibility among students and also emerge as a socially responsible institution.

Course Outcomes

On the successful completion of this course, students shall be able to -

1. sensitize the students to the living conditions of the people who are around them,
2. help students to realize the stark realities of the society.
3. bring about an attitudinal change in the students and help them to develop societal consciousness, sensibility, responsibility and accountability
4. make students aware of their inner strength and help them to find new /out of box solutions to the social problems.

MAPPING OF COURSE OUTCOMES (COs) AND PROGRAM OUTCOMES (POs) WITH STRENGTH OF CO-RELATION

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1		3				2									
2			3		2		2	2							
3								2	3						
4								2		3					

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

COURSE CONTENT

A group of students or even a single student could be assigned for a particular habitation or village or municipal ward, as far as possible, in the near vicinity of their place of stay, so as to enable them to commute from their residence and return back by evening or so.

Each faculty member is to be assigned with a group of 4 to 5 students depending upon availability of the faculty members. The faculty member will act as a faculty-mentor for the group and is in-charge for the learning activities of the students and also for the comprehensive and continuous assessment of the students.

A log book has to be maintained by each of the students, where the activities undertaken/involved will be recorded.

Assessment Methodology

At the end of the course, students should submit their project work along with report and presentation.

Assessment Components:	Marks
1) Project Log book	05
2) Project Implementation	10
3) Project Report	05
4) Project Presentation	10
Total:	50

SH209N: ENVIRONMENTAL SCIENCE

Teaching Scheme: L: 02 T: 00 P: 00
Evaluation Scheme: 20 ISA+30 MSE
MSE Duration: 1.5 Hrs.

Credits: 02
Totalmarks:50
ESE Duration: 3.0 Hrs.

COURSE DESCRIPTION:

This course provides basic scientific knowledge and understanding of how our world works from an environmental perspective. Topics covered include energy resources, basic principles of ecosystem function; biodiversity and its conservation; human population growth; water, air and noise pollution; climate change and green chemistry.

DESIRABLE AWARENESS/SKILLS:

Basic knowledge of environment and importance of its protection

COURSE OBJECTIVES:

The course in Environmental Science is designed to achieve a comprehensive understanding of key environmental issues and principles. It begins by exploring the nature of the environment, including its components and interactions. The course then focuses on natural resources, highlighting their significance, sustainable management, and conservation strategies. Additionally, it delves into the structure and function of ecosystems, emphasizing their resilience and importance in maintaining ecological balance. Furthermore, the course addresses biodiversity and its conservation, emphasizing the preservation of species and habitats. It also covers environmental pollution and the principles of green chemistry, aiming to mitigate pollution and promote sustainable practices. Moreover, it examines social issues related to the environment, such as environmental justice, sustainable development, and the impacts of human activities on natural systems. Overall, the course aims to equip students with the knowledge, critical thinking skills, and practical insights necessary to understand and address contemporary environmental challenges effectively. Through a multidisciplinary approach, students will develop a holistic understanding of environmental science and its implications for sustainable development and human well-being.

COURSE OUTCOMES:

On the successful completion of this course, student shall be able to–

1. Demonstrate the primarily environmental problems.
2. Remember the concept of ecology, their structure and types, different components and their functions.
3. Understand abiotic and biotic factors and their relation to each other.
4. Apply various types of ecosystem, function, components of ecosystem and their stability.
5. Analyze the social issues and apply environmental acts.

RELEVANCE OF PROGRAM OUTCOMES (POS) AND STRENGTH OF CORRELATION:

CO	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
1	-	-	-	-	-	2	2	-	-	-	-	-
2	-	-	-	-	-	2	2	-	-	-	-	-
3	-	-	-	-	-	2	2	-	-	-	-	-
4	-	-	-	-	-	2	2	-	-	-	-	-
5	-	-	-	-	-	2	2	-	-	-	-	-

1- Weakly Correlated; 2 – Moderately Correlated; 3 - Strongly Correlated

COURSECONTENT:

Nature of Environment: Definition, scope and importance, multidisciplinary nature, need of public awareness.

Natural Resources:

Renewable and non-renewable resources: Natural resources and associated problems.

Forest resources: Use and over-exploitation, deforestation, case studies, timber extraction, mining, demand and their effects on forest and tribal people

Water resources: use and overutilization of surface and groundwater, floods, drought, conflicts over water, dams-benefits and problems

Mineral resources: use and exploitation, environmental effects of extracting and using mineral resources

Food resources: world food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity

Energy resources: growing energy needs, renewable and non-renewable energy resources Land resources: land as a resource, land degradation, man induced landslides, soil erosion and desertification. Roll of individual in conservation of natural resources.

Ecosystem- Concept, structure and function of ecosystem, producers, consumers and decomposers, energy flow in ecosystem, ecological succession, food chain, food web and ecological pyramid, types of ecosystem-forest, grassland, desert and aquatic.

Biodiversity and Its Conservation- Introduction, definition, genetic, species and ecosystem diversity, biogeographical classification of India, India as mega diversity nation, hot spots of biodiversity, threats to biodiversity, habitat loss, poaching of wildlife, man wildlife conflicts, endangered and endemic species of India, conservation of biodiversity-In-situ and ex-situ conservation of biodiversity.

Environmental Pollution and Green Chemistry- Definition, causes, effects and control measures of –air pollution, water pollution, soil pollution, noise pollution, thermal pollution, nuclear hazards, role of individual in prevention of pollution, concept of green chemistry, principles of green chemistry.

Social Issues and the Environment-Water conservation, rain water harvesting, watershed management, climate change, global warming, acid rain, ozone layer depletion, nuclear accidents, environmental protection act, air (prevention and control of pollution) act, water (prevention and control of pollution) act, wildlife protection act, forest conservation act.

Text books-

1. A Textbook of Environmental Studies for Undergraduate Courses, Erach Bharucha, 4th edition, University Press, 2004.
2. A Textbook of Environmental Chemistry, O.D.TyagiandMMehta, 4th edition, Anmol publication, 2016.
3. A Text book of environmental studies for undergraduate courses, Dr.D.K. Asthana, Dr. Meera Asthana, 2ndedition, S. Chand publication, 2012.

References-

1. Green Chemistry Environmental Friendly Alternatives, Rashmi sanghi, M.M.Shrivastawa, 3rd edition, Narosa publication, New Delhi, 2008.
2. Green Chemistry-Theory and Practice, Paul T Anastas and John C. Warner, 1st Edition, Oxford University Press, 2000 V.K.
3. Environmental Chemistry A.K.De, 3rd Edition, NewAgeInternationalPublishersLtd, New Delhi, 2010.
4. New Trends in Green Chemistry, V.K. Ahluwalia, M.Kidwai, 1st Edition, Springer publisher, 2004.
5. Environmental Studies, Benny Joseph, 3rd Edition, TataMcGraw-Hill publication, 2017.

Evaluation Methodology:

MSE: Mid Semester Examination will be based on 50 % of the syllabus

ESE: End Semester Examination will be based on rest of the 75 % of rest of the syllabus (i.e. excluding syllabus of MSE) and 25% syllabus of MSE.

ISA: ISA will be based on any one or combination of following components-

1. Declaredtest
2. Surprisetest
3. MCQTest
4. Performance in Tutorial
5. Assignments/ Tutorial / Punctuality/ Attendance

However, apart from above components, the Course Coordinator can choose any other component and shall declare method of evaluation at beginning of course

SH207N: PROJECT AND FINANCE MANAGEMENT

Teaching Scheme: 02L

Evaluation Scheme: 10 ISA+30 MSE +60ESE

MSE Duration: 1.5 Hrs.

Credit: 02

Total marks: 100

ESE Duration: 3.0 Hrs.

COURSE DESCRIPTION:

The course is intended to provide basic understanding of project and financial management to engineering students with the basic and fundamental concept of project and finance. This course introduces the student to selection, appraisal, organization and planning of the project management as well as project scheduling and resource management. Students will study fundamental concept, budget and budgetary control as well as leverage analysis and Working capital management.

COURSE OBJECTIVES:

The course is designed to achieve comprehensive learning outcomes across several key areas. Firstly, it introduces participants to the fundamental principles of project management, emphasizing techniques for project selection and appraisal to ensure alignment with organizational goals. Secondly, it covers project organization and planning strategies, including project scheduling and resource management techniques essential for efficient project execution. Additionally, the course delves into financial management principles, providing insights into leverage analysis and effective working capital management strategies to optimize financial resources within project environments. By integrating these topics, the course aims to equip participants with the knowledge and skills necessary to successfully manage projects while maintaining financial sustainability and achieving strategic objectives.

COURSE OUTCOMES:

On the successful completion of this course student will be able to

1. Apply the basic concept of project management
2. Demonstrate the ability to prepare projects and risk management
3. selection, appraisal, organization and planning of the project
4. assess the budget and budgetary control
5. analyze and evaluate the leverage and working capital management

Course Outcomes (COs) and Program Outcomes (POs) mapping with strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	-	-	-	-	-	2	-	-	2	3	3	3			3
2	-	-	-	-	-	2	-	-	2	3	3	3			3
3	-	-	-	-	-	2	-	-	2	3	3	3			3
4	-	-	-	-	-	2	-	-	3	3	3	3			3
5						2	-	-	2	3	3	3			3

1- Weakly correlated

2- Moderately correlated

3- Strongly correlated

Contents:

Introduction to Project Management: What is a project? Evolution of project management, Importance of project management, Where is project management appropriate? Project Management Today—An Integrative Approach, Characteristics of projects, Characteristics of project management, Projects in contemporary organizations, Project lifecycle, Job conflict, Labour conflict, Material conflict.

Project Selection and Appraisal: Brain storming and concept evolution, The Strategic Management Process: An Overview, The Need for an Effective Project Portfolio Management System, A Portfolio Management System, Applying a Selection Model, Managing the Portfolio System, Types of appraisals, SWOT analysis, Cash flow analysis, Payback period, and Net present value.

Project Organization and Planning: Project manager, Cross-functional team, Dedicated project organization, Influence project organization, Matrix organization, Advantages and disadvantages of project organizations, Selection of project organization, Work Breakdown Structure (WBS), Integration of project organization and WBS, WBS and responsibility matrix, Risk Management Process, Contingency Planning

Project Scheduling and Resource Management: Gantt chart, Milestone chart, Network techniques: PERT and CPM, AON and AOA representation, Three time estimates, Using probability distributions for time computation, Probability of project completion, Time scale version of network, Early start and late start schedules, Resource allocation, Resource loading and leveling, Constrained resource scheduling, Multi-project scheduling and resource allocation, Crashing a project.

Introduction to Financial Management: Finance and other discipline, nature and scope of financial management, Functions of financial management; Objectives of the firm, Sources of finance, long term sources, short term sources; Introduction and analysis of financial statement; Introduction & definition of **budget** and budgetary control, objectives, essential requirements, advantages and disadvantages, types of budgets- cash and flexible.

Leverage Analysis and Working Capital Management: Concepts, Operating leverage, Financial leverage, Combined leverage, Working capital management: Operating cycle, Determinants of working capital, Types of working capital, Importance of working capital, Components of working capital, Measuring working capital requirements

Text books:

1. Project Planning and Management with CPM and PERT, Kundan Singh & Dr.M.L. Kansal, HP Hamilton Limited, 2021.
2. Project Management Planning and Control Techniques, Rory Burke, 4th Edition, Wiley India Pvt. Ltd, 2010.
3. Project Management, Planning and Control, Albert Lester, 5th edition, Butterworth-Heinemann, 2007
4. Fundamentals of Financial Management, D.Chandra Bose, 2nd edition, PHI, 2010
5. Project Management: The Managerial Process, Erik Larson, Clifford Gray, 6th edition, McGraw Hill Education, 2017
6. Project Management, Megha Jain, Sultan Chand & Sons, 2020

Reference Book:

1. Projects: Planning, Analysis, Selection, Financing, Implementation, and Review, Prasanna Chandra., 10th edition, McGraw Hill Education, 2022
2. Project Management—The Complete Process (with Case Studies from Renewable Energy Sector), Vishwanath Murthy, Sultan Chand & Sons 2018
3. Project Management, Harvey Maylor, 5th edition, Pearson, 2021
4. Financial Accounting for Management, Paresh Shah, 3rd edition, Oxford University Press, 2019.
5. Financial Management Text, Problems and Cases, Khan & Jain, 8th edition, Tata McGraw Hill, 2018
6. Financial Management, Dr. P. C. Tulsian, 5th edition, S.Chand and company, 2017.

Evaluation Methodology:

MSE: Mid Semester Examination will be based on 50 % of the syllabus

ESE: End Semester Examination will be based on rest of the 75 % of rest of the syllabus (i.e. excluding syllabus of MSE) and 25% syllabus of MSE.

ISA: ISA will be based on any one or combination of following components-

1. Declared test
2. Surprised test
3. MCQ Test
4. Performance in Tutorial
5. Assignments/ Tutorial / Punctuality/ Attendance

However, apart from above components, the Course Coordinator can choose any other component and shall declare method of evaluation at beginning of course

CE251 NX (X) Green Building

Teaching Scheme: 2L; Total: 2Hr

Credit: 2

Evaluation Scheme: 30MSE + 10ISA + 60ESE

Total Marks: 100

Duration of ESE: 3 Hrs

COURSE DESCRIPTION

This comprehensive course on green building delves into the art and science of sustainable architecture. It will explore innovative design strategies that prioritize environmental stewardship, energy efficiency, and resource conservation. The curriculum encompasses a broad range of topics, including the selection of eco-friendly materials, the integration of renewable energy systems, water-saving techniques, and the application of green building standards like LEED/IGBC. This course aims to cultivate the skills necessary to contribute to a greener, more sustainable built environment.

COURSE OUTCOMES

Upon successful completion of this course the students will be able to:

1. Demonstrate green concept skills and apply tools of green building assessment.
2. Select appropriate green building material and technique for construction.
3. Design sustainable and energy efficient civil engineering project.
4. Carry out Green Building rating using IGBC guidelines.
5. Use alternate source of energy and effective use of water.

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1		3	3		1	2		1	1	1	1	3		1	2
2						1	2					2	2		1
3	3			1	2		1		1				3	2	1
4	1		3		2			1			1	1	3	2	2
5		1	2				2					3	1		3

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

COURSE CONTENT

Green Building Concept [08 Hrs.]

Overview of green building movement; Concept of Green building and sustainable development; Issues and strategies of Green building and sustainable development; Objectives Principles and Benefits of Green building design; Introduction to High performance building; integrated design process of high performance building; Green project requirements and strategies; Overview of various green rating systems worldwide

Green Building Materials and Indoor Environment Quality [04 Hrs.]

Introduction; Low emitting materials; Building and material reuse; Construction waste management; Regional materials; Life cycle cost assessment of building materials and products; Factors affecting indoor environment quality; Ventilation and filtration; Building materials and finishes- Emittance level; Indoor Environment quality best practice.

Energy Efficient Designs [06 Hrs.]

Passive cooling and day lighting- Active solar and photovoltaic- Building energy analysis methods-Building energy simulation- Building energy efficiency standards- Lighting system design- Lighting economics and

aesthetics- Impacts of lighting efficiency- Energy audit and energy targeting Technological options for energy management. Thermal comfort

IGBC Guidelines [06 Hrs.]

Introduction; IGBC green new building Rating system – Overview and process – project checklist; Sustainable architecture and design; Site selection and planning; Water conservation and energy efficiency; Building materials and resources; Indoor Environment quality; Innovation and development

Utility of Solar Energy in Buildings [08 Hrs.]

Utility of Solar energy in buildings concepts of Solar Passive Cooling and Heating of Buildings. Low Energy Cooling. Case studies of Solar Passive Cooled and Heated Buildings. Green Composites for Buildings: Concepts of Green Composites. Water Utilization in Buildings, Low Energy Approaches to Water Management. Management of Solid Wastes. Management of Sullage Water and Sewage. Urban Environment and Green Buildings. Green Cover and Built Environment.

Textbooks

1. Handbook on Green Practices published by Indian Society of Heating Refrigerating and Air conditioning Engineers, 2009 (latest edition).
2. HarharaIyer G, Green Building Fundamentals, Notion Press, (latest edition)
3. Dr. Adv. HarshulSavla, Green Building: Principles & Practices (latest edition)
4. Green Building Hand Book by Tomwoolley and Samkimings, 2009(latest edition)

Reference Books

1. Sam Kubba, “Hand book of Green building Design and construction”, Elsevier Architecture Press.
 2. Abe Kruger and Carl Seville, “Green building: principals and practice in residential construction”, Cengage Learning.
 3. IGBC Green New building rating system (Version 3.0), March 2015.
 4. GRIHA Manual Volume-1: Introduction to National Rating System by Ministry of New and Renewable Energy, Government of India and the energy and resource institute, New Delhi.
- Kibert, C. “Sustainable Construction: Green Building Design and Delivery”, John Wiley & Sons,

CE251 NX (Y) HYDROLOGY

Teaching Scheme: 2L; Total: 2Hr
Evaluation Scheme: 30MSE + 10ISA + 60ESE
Duration of ESE: 3 Hrs

Credit: 2
Total Marks: 100

COURSE DESCRIPTION

This course introduces the elements of hydrology and describes the precipitation, infiltration evaporation, runoff and hydrograph. The course is focused on developing the skills of students for identification and assessment of available natural and artificial water resources. It deals with the study of Hydrology and water requirement of crops related to Civil Engineering. The part of the subject is focused on irrigation engineering and development of water resources.

COURSE OUTCOMES

Upon successful completion of this course the students will be able to:

1. Analyze hydrological parameters required for water resources management.
2. Analyze groundwater potential.
3. Understand different hydrograph and statistical methods.

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3	2		1									3		
2	2					1							1	2	
3	2	2		1										2	

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

COURSE CONTENT

Introduction [02 Hrs.]

Hydrologic cycle, water-budget equation, history of hydrology, world water balance, applications in engineering, sources of data.

Precipitation [04 Hrs.]

Forms of precipitation, characteristics of precipitation in India. Measurement of precipitation, rain gauge network, means precipitation over an area. Depth-area-duration relationships, maximum intensity/depth-duration-frequency relationship.

Abstractions from precipitation [06 Hrs.]

Evaporation process, analytical methods of evaporation estimation. Measurement of evapotranspiration, evapotranspiration equations, potential evapotranspiration over India. Actual evapotranspiration, interception, infiltration, infiltration capacity, measurement of infiltration, classification of infiltration capacities.

Runoff [03 Hrs.]

Runoff volume, SCS-CN method of estimating runoff volume, flow duration curve.

Floods [03 Hrs.]

Estimation of peak flow, rational method and introduction to other methods.

Hydrographs [06 Hrs.]

Definition, components, factors affecting the shape, base flow separation, flood hydrograph, unit hydrograph – definition, assumptions, applications and limitations.

Ground Water Hydrology [06 Hrs.]

Occurrences and distribution of ground water, specific yield of aquifers, movement of ground water, Darcy's law, permeability, safe yield of basins, hydraulics of wells under steady flow in confined and unconfined aquifers, specific capacity of well, well irrigation: introduction to tube wells and open wells.

Textbooks

1. Irrigation, Water Resources and Water Power Engineering, Modi P.N., Standard Book House, Delhi, 8th edition, 2012
2. Hydrology and Water Resources Engineering, Garg S.K., Khanna Publishers, Delhi, 23rd edition 1998.

Reference Books

1. Engineering Hydrology, Subramanya K, Tata McGraw-Hill Publishing Co.Ltd, New Delhi, 4rd edition, 2013.
2. Irrigation and Water Power Engineering, Punmia B.C., Pande B.B., .Lal, Ashok Kumar Jain, Laxmi Publications Pvt. Ltd., New Delhi, 2016.
3. Fundamentals of Irrigation Engineering, Bharat Singh, Nem Chand & Bros.,India; 7th Revised edition,1983
4. Irrigation and Water Resources Engineering, Asawa, G.L, New Age International publisher, 1st edition 2008

CE252N FLUID MECHANICS

Teaching Scheme: 3L; Total: 3Hr

Evaluation Scheme: 30MSE + 10 ISA + 60 ESE

Duration of ESE: 03 Hrs

Credit: 03

Total Marks: 100

Course Description

The objective of this course is to introduce the concepts of fluid mechanics useful in Civil Engineering applications. The course provides a first level exposure to the students to fluid statics, kinematics and dynamics. Measurement of pressure, computations of hydrostatic forces on structural components and the concepts of Buoyancy all find useful applications in many engineering problems. The topics included in this course are aimed to prepare a student to build a good fundamental background useful in the application hydraulics and hydrology.

Course Outcomes

After successful completion of this course; student shall be able to

1. Measure fluid pressure by various methods.
2. Compute hydrostatic and hydrodynamic forces
3. Analyze flow through various openings
4. Apply principles of dimensional analysis to design experiments

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3												2		
2	2		2										3		
3		3	1											2	
4	2	2											3		

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

Course content

Introduction [02 Hrs.]

Scope and applications of fluid mechanics, Newton's law of viscosity, classification of fluids, Newtonian and non-Newtonian fluids, ideal and real fluids.

Physical Properties of Fluids [04 Hrs.]

mass density, specific weight, specific volume, specific gravity, dynamic and kinematic viscosity, variation of viscosity with temperature, compressibility, surface tension, capillarity, vapor pressure, boiling point, cavitations.

Fluid Pressure Measurement [04 Hrs.]

Fluid pressure, pressure head, Pascal's law, pressure variation with temperature, measurement of pressure Simple and differential manometers, introduction to mechanical gauges.

Pressure on Surfaces [02 Hrs.]

Static fluid pressure forces on plane and curved surfaces and their simple Civil Engineering applications.

Buoyancy [02 Hrs.]

Archimedes's principle, buoyancy and flotation, met centric height, stability of floating and submersed bodies.

Kinematics of Fluid Flow [06 Hrs.]

Types of fluid flows steady and unsteady, uniform and non uniform laminar and turbulent, one, two and three dimensional, rotational and irrotational flows. Velocity and acceleration for one and three dimensional flows. Stream lines, equipotential lines and flow net, uses and limitations of flow net. Equations of continuity for one and three-dimensional flows.

Dynamics of Fluid Flow [06 Hrs.]

Forces acting on fluids in motion, forces exerted by fluid flow on pipe bend, vortex flow free & forced various equations of motion. Euler's equation of motion and Bernoulli's theorem for one and three dimensional flows, hydraulic gradient line and total energy line, kinetic energy correction factor. Simple applications of continuity and Bernoulli's equations such as Pitot tube and Venturimeter.

Dimensional Analysis and Hydraulic Similitude [02 Hrs.]

Dimensions of physical quantities, dimensional homogeneity, Buckingham pi-theorem.

Model Analysis [04 Hrs.]

Geometric, kinematics and dynamic similitudes, important dimensionless parameters and their significance. Model laws, Reynolds and Froude model laws and their applications to simple fluid flow problems.

Flow through Opening [04 Hrs.]

Orifices: types, coefficients of velocity, contraction and discharge, small and large orifices, completely submerged orifices, Mouthpieces: Types, external cylindrical mouthpiece.

Flows over Notches and Weirs [04 Hrs.]

Rectangular, triangular and trapezoidal notches and weirs, Cipolletti weir, empirical formulae for discharge over rectangular weirs, corrections for velocity of approach and end contractions.

Text Books

1. Hydraulics and Fluid Mechanics Including Hydraulic Machines , Modi S.M. and Seth S.M, PHI Learning Pvt. Ltd. 22nd edition 2019.
2. Textbook of Fluid Mechanics by R. K. Bansal, Laxmi Publications; Tenth edition (1 January 2019)
3. Fluid Mechanics and Machinery, C.S.P.Ojha, R. Berndtsson and P. N. Chadramouli, Oxford University Press, 1st 2010
4. Fluid Mechanics and Hydraulic Machines: Problems and Solutions by K subramanyam 1st edition 2010

Reference Books

1. Engineering Fluid Mechanics Garde R.J. and Mirajgaokar A.G., Scitech Publication 3rd edition 2011.
2. Fluid Mechanics with Engineering Applications, R.L. Daugherty, J.B. Franzini and E.J. Fennimore, International Student Edition, Mc Graw Hill
3. Introduction to Fluid Mechanics and Fluid Machines Som S.K., Gautam Biswas and Suman Chakraborty;, Mc Graw Hill Education, 3rd edition 2017.

CE253N SURVEYING

Teaching Scheme: 3L; Total: 3Hr

Credit: 3

Evaluation Scheme: 30MSE + 10ISA + 60ESE

Total Marks: 100

Duration of ESE: 3 Hrs

COURSE DESCRIPTION

This course provides the fundamental knowledge of surveying and leveling. Basic principles of surveying and certain general topics such as bench marks, reduced levels and important aspect of leveling. Measurements of angles, traverse computation, tachometric surveying, study of curves and remote sensing.

COURSE OUTCOMES

Upon successful completion of this course the students will be able to:

1. identify suitable equipment for linear and angular measurement
2. gain the knowledge of recording the field information and necessary plot
3. use different types of surveying and leveling equipment's
4. apply the knowledge of surveying and leveling on field

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2						2						2		
2	3	2				1			1			3	3		
3	2		1	1									2	3	
4	2	2	2			3								2	

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

COURSE CONTENT

Surveying [02 Hrs.]

Object, definition, principle of surveying, various types of surveying.

Linear Measurements [04 Hrs.]

Methods of distance measurements, instruments for measurement of distance, chaining a line, chaining along slope, offsets, instruments for laying offsets, triangulation, chain and cross staff survey, errors.

Angular Measurements [04 Hrs.]

Types of compass, bearings, local attraction and correction to bearings, chain and compass traversing, graphical method of adjustment, errors. Study and use of Abney level, Box sextant, Digital planimeter.

Leveling and Contouring [06 Hrs.]

Instruments used in leveling, dumpy level, automatic level, types of levelling staff. Principal axes of dumpy level, reciprocal leveling, profile leveling, curvature and refraction correction, distance to the visible horizon. Bench mark and its types, reduced level, rise and fall method, height of instrument method. Contours, characteristics of contours, methods of contouring and contour gradient.

Theodolite [06 Hrs.]

Principal axes and temporary adjustments of transit theodolite. Measurement of horizontal angles, vertical angles, magnetic bearings, measuring deflection angles. Computation of consecutive and independent co-ordinates, adjustments of closed traverse, Gale's traverse by co-ordinate method.

Plane Table Survey [04 Hrs.]

Objective and equipment required for plane table survey. Methods of plane table - radiation, intersection, traversing and resection. Advantages, disadvantages, limitations and errors of plane table surveying.

Geodetic Surveying [06 Hrs.]

Objects, methods in geodetic surveying, triangulation figure, strength of figure, classification of triangulation system, selection of stations, inter visibility of height of station towers, signal and their classification, measurement of angles, method of observation of angles, laws of weights, determination of most probable values of quantities, phase of signals, satellite station and reduction to centre eccentricity of signals, base line measurement, apparatus used, base net equipment used for base line measurement, extension of a base line.

Tachometry [04 Hrs.]

Principle of stadia method, fixed hair method with vertical staff to determine horizontal distances and elevations of the points. Use of tacheometry in surveying, contour characteristics and uses, methods of interpolation, tachometric contour survey.

Curves [04 Hrs.]

Horizontal and vertical curves and their purposes. Simple circular curves, elements and setting out by linear and angular methods. Compound curves, elements and setting out of compound curves, reverse curves. Transition curves - types and uses, length of transition curves, types of vertical curves, setting out vertical curves.

Photogrammetry [02 Hrs.]

Scale, flying height

Text Books

1. Surveying and Leveling (Vol-I & II) , T.P. Kanetkar & S.V. Kulkarni, Pune Vidyarthi Griha Prakashan, Pune 23rd edition,1990
2. Surveying Vol. I and Vol .II, B. C. Punmia, Laxmi Publication (P) New Delhi,17th edition, 2008

Reference Books

1. Plane Surveying, A. M. Chandra, , New Age International Publishers New Delhi, 2ndedition, 2012
2. Surveying and Leveling, R. Subramanian Oxford University Press, New Delhi, 1stedition, 2014
3. Advance Surveying, Vol I & II, Handbook, P.B. Shahani, New Delhi Oxford and IBH Publication, 2012
4. A handbook of accurate surveying methods, S. P. Collins, PITMAN, 1972

CE254N THEORY OF STRUCTURES I

Teaching Scheme: 02L Total: 2Hr,
Evaluation Scheme: 30 MSE + 10 ISA + 60 ESE
Duration of ESE: 03Hrs

Credit: 02
Total Marks: 100

COURSE DESCRIPTION:

Basic theory of structures is an important aspect of Civil Engineering covers the statically indeterminate structures, which emphasis on the analysis of statically indeterminate beams and rigid frames. Methods included are moment area method to calculate slope and deflection, and matrix analysis. The course also includes Influence Line Diagram and three hinged arches.

COURSE OUTCOME

After successful completion of this course; student shall be able to

1. formulate equilibrium and compatibility equations for structural members
2. analyze one dimensional and two dimensional problems using classical methods
3. analyze indeterminate structures
4. analyze structures for dead /gravity loads, moving loads and lateral loads
5. Draw influence line diagrams to understand behavior of structural elements and to find out response of structure and deformations.

Relevance of Program Outcomes (Pos)and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	2	2	2	3									2		
2	1	3	1	2								1	3	2	
3	2	2	2	3								1	1	2	
4		2	2	2									2		
5	2	2	3	2								1	2	2	

2- Weakly correlated 2 Moderately correlated 3 Strongly correlated

Course content:

Deflection of Beams [06 Hrs.]

Relation between bending moment, slope and deflection, introduction to double integration method, concept of moment area method, Mohr's theorems, use of moment area method to calculate slope and deflections of beams such as simply supported, over hanging and of uniform cross sections and different cross sections. Conjugate beam method, application of conjugate beam method to simply supported, overhanging and compound beams.

Deflection of Trusses [04 Hrs.]

Deflection of statically determinate plane trusses by Castigliano's first theorem, Analysis of redundant trusses by Castigliano's second theorem, lack of fit and temperature changes in members, sinking of supports (degree of indeterminacy maximum upto 2 only).

Fixed Beams [04 Hrs.]

Concept, advantages and disadvantages, nature of bending moment diagrams, fixed end moment due to various types of loads such as point, uniformly distributed, uniformly varying, couples for beams, effect of sinking of support, plotting of bending moment and shear force diagrams.

Continuous Beams [04 Hrs.]

Analysis of continuous beam by three moments (Clayperon's theorem) up to three unknowns, effect of sinking of supports, plotting of bending moment and shear force.

Three Hinged Arch [04 Hrs.]

Concept of three hinged arch as a hunched beam, support reactions, B.M., S.F. and axial thrust diagrams for circular and parabolic three hinged arches.

Two Hinged Arches [02 Hrs.]

Horizontal thrust at supports, shear, normal thrust and BM at a point, BM diagrams for parabolic arch due to concentrated load and uniformly distributed load.

Influence Lines [06 Hrs.]

Influence line diagrams for reactions, bending moment and shear force for determinate beams. Rolling loads on simply supported beams concentrated and uniformly distributed loads, maximum shear force and bending moment, absolute maximum shear force and bending moment.

Text Books

1. Basic Structural Analysis, C.S. Reddy. Tata McGraw-Hill Pub. Co. Ltd., New Delhi, 3rd edition, 2011.
2. Theory of Structures, S. Ramamrutham and R. Narayanan, Dhanpat Rai and Sons Publication. 9th edition, 2019

Reference Books

1. Mechanics of Structures Vol. – II, S. B. Junnarkar and Dr. H.J. Shah, Charotar Publishing House, 34th edition, 2014.
2. Indeterminate Structures, C. K. Wang. Tata McGraw-Hill Pub. Co. Ltd., New Delhi, 2014.
3. Theory of Structures, Timoshenko S. P. & Young D.H., McGraw Hill, International edition, 2nd edition, 1965.

Useful Link

NPTEL, www.nptel.ac.in

SH211N: मराठी लेखन कौशल्य (Marathi Writing Skills)

एकूण तासिका : ०२ तास प्रति आठवडे

शैक्षणिक जमा गुणसंख्या (Credits) : ०२

मध्य सत्र परीक्षा : ३० गुण; अंतर्गत मुल्यांकन : २० गुण; सत्र परीक्षा : ०० एकूण : ५० गुण

मध्यसत्र परीक्षा कालावधी : १.५तास

उद्दिष्टे:

- प्रभावी लेखनकौशल्य विकसित करणे.
- व्यावसायिक व शैक्षणिक उद्देशांसाठी विविध लेखनतंत्रांची समज व उपयोग करणे.
- मराठी साहित्याची महत्ता व तांत्रिक शिक्षणातील त्याचे महत्त्व समजून घेणे.
- स्पष्ट आणि संक्षिप्त लेखनशैली विकसितकरणे.
- तांत्रिक व व्यावसायिक संवाद कौशल्य विकसित करणे.
- विविध प्रकारच्या तांत्रिक दस्तऐवजीकरणासाठी मानके आणि प्रारूप शिकविणे.

घटक विश्लेषण:

मराठी भाषाआणि लेखनाची ओळख

(०२ तास)

तांत्रिक शिक्षणात मराठीचे महत्त्व, मराठी व्याकरण (वाक्यरचना) संक्षिप्त परिचय, मूलभूत वाक्यरचना आणि वापर.

लेखन कौशल्य विकास

(०४ तास)

लेखनाचे प्रकार: वर्णनात्मक, कथात्मक, विवरणात्मक, आणि पटवून देणारे लेखन, प्रभावी लेखनतंत्रे, स्पष्ट आणि संक्षिप्त लेखनशैली विकसित करणे.

व्यावसायिक आणि तांत्रिक लेखन

(०४ तास)

अधिकृतपत्रे, ईमेल्स आणि अहवालांचे लेखन, तांत्रिक दस्तऐवज आणि मार्गदर्शक तयार करणे, प्रकल्प प्रस्ताव आणि संक्षिप्त सारांशलेखन.

सृजनशील लेखन

(०२ तास)

कथालेखन आणि निबंधलेखन, कविता आणि तिचे प्रकार, माध्यमांसाठी लेखन: लेख, ब्लॉग्स, आणि स्तंभलेखन.

प्रस्तुतीकरण, संवाद आणि सारांशलेखन कौशल्य:

(०६ तास)

मराठीत प्रस्तुतीकरण तयार करणे, सार्वजनिक बोलणे आणि मौखिक संवाद कौशल्य, मराठीत सेमिनार आणि गटचर्चा आयोजित करणे. वाचनाच्या प्रमुख अंगांचे संक्षेपीकरण, पाठ्यपुस्तकांचे संक्षेपीकरण आणि सारांश.

पत्रलेखनाचे नियम, तत्त्व, प्रकार:

(०४ तास)

पत्रलेखनात अनुसरण करण्याचे सर्वोत्तम नियम, अभिप्राय व्यक्त करण्याचे तंत्र. पत्रलेखनाचे बाबीचे मूलसिद्धांत, पत्रलेखनाचे प्रकार: अनौपचारिक, औपचारिक, व्यावसायिक. व्यक्तिगतपत्र (आधिकारिक, अआधिकारिक), व्यावसायिकपत्र (निवेदन, विवादपत्र, मागणीपत्र, तक्रारपत्र),

अनौपचारिक पत्र (आभारपत्र, निमंत्रणपत्र)

निबंध लेखनाचे मूलसिद्धांत, प्रकार, उपयोगी तंत्रे: (०४ तास)

निबंध लेखन बाबीचे मूलसिद्धांत आणि नियम, सामाजिक, राजकीय, वैज्ञानिक, सांस्कृतिक, कल्याणकारी विषयांवर निबंधलेखन, निबंधाच्या लेखनात संप्रेषण करण्याचे तंत्र.

अभ्यासक्रमाचे परिणाम:

- तांत्रिक संकल्पनांचे स्पष्ट आणि प्रभावी लेखन क्षमता विकसित करणे.

- व्यावसायिक संदर्भात सुसंवाद आणि प्रभावी प्रस्तुती करणाची क्षमता विकसित करणे.
- विविध प्रकारच्या तांत्रिक दस्तऐवज स्वतंत्रपणे तयार करणे.
- सर्जनशील विचारांच्या माध्यमातून आकर्षक आणि मनोरंजक साहित्य निर्मिती करणे.
- मराठीत प्रभावी सार्वजनिक बोलणे आणि प्रस्तुतीकरण कौशल्य विकसित करणे.

RELEVANCE OF COURSE OUTCOMES [Cos] WITH Pos AND PSOs [With STRENGTH OF CO-RELATION]:

CO	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
1							2					
2						3						
3						3						
4							2					

1-Weakly correlated 2 –Moderately correlated 3–Strongly correlated

संदर्भपुस्तके:

1. "सारांश आणि संक्षेपणकला" – मीना देशपांडे
2. "मराठी सारांशलेखन कौशल्य" – विजय देशमुख
3. "सर्जनशील लेखनाचे मार्ग" – शिवाजीसावंत
4. "लेखनप्रेरणा आणि तंत्र" – अनुपमानिरंजन
5. "व्यावसायिक आणि तांत्रिकलेखनाची कला" – कृष्णास्वामी
6. उत्कृष्ट मराठी निबंध" - संकलन, लोकवाङ्मयगृह
7. "मराठी निबंधलेखन कौशल्य" - प्रो. सुधाकर पाटील
8. "मराठी विचारमंच" – विश्वास प्रकाशन

वर्गातील कमीत कमी उपस्थिती ७५% असणे अनिवार्य असेल अन्यथा गुणांकन केले जाणार नाही.

मध्य सत्र परीक्षेचा अभ्यासक्रम हा एकुण अभ्यासक्रमाच्या ५० टक्के असेल.

तांत्रिक संकल्पनांची स्पष्ट आणि प्रभावी लेखन क्षमता	व्यावसायिक संदर्भात सुसंवाद आणि प्रभावी प्रस्तुती करणाची क्षमता	विविध प्रकारच्या तांत्रिक दस्तऐवज स्वतंत्रपणे तयार करण्याची क्षमता.	सर्जनशील विचारांच्या माध्यमातून आकर्षक आणि मनोरंजक साहित्य निर्मिती करण्याची क्षमता	मराठीत प्रभावी सार्वजनिक बोलणे आणि प्रस्तुतीकरण कौशल्य विकसित करण्याची क्षमता
०४	०४	०४	०४	०४

CE256N SURVEYING LAB

Teaching Scheme: 02P, Total: 02Hr
Evaluation Scheme: 30 ICA + 20 ESE

Credit: 01
Total Marks: 50

COURSE DESCRIPTION

This course is set keeping in mind the requirements of undergraduate students of engineering. This course provides the fundamental knowledge of surveying and levelling which includes basic principles of surveying and important aspect of levelling, engineering surveys such as profile levelling and cross sectioning, measurement of horizontal and vertical angle, magnetic bearings, deflection angle by using theodolite and total station.

COURSE OUTCOMES:

After successful completion of this course; student shall be able to

1. understand the importance and scope of surveying in any engineering project.
2. apply the principles of surveying.
3. use the traditional and advanced instruments of surveying.
4. execute a survey project.

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3												3		
2	2												2	1	
3				2									2	2	
4.	2													3	

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

Minimum six experiments shall be performed to cover entire curriculum of course CE202U. The list given below is just a guideline. All surveying equipment's should be introduced and used before experiments.

Group A (Practical exercise)

1. Use and Study of Chain, Cross staff and Compass
2. Use and Study of Dumpy level for finding the levels by various methods.
3. Measurements of horizontal and vertical angles by transit Theodolite
4. Measurements of horizontal angles of a triangle by repetition method.
5. Computation of horizontal distances and elevations by Tachometry for horizontal and inclined sights.
6. Radiation and intersection method in plane Table survey..

Group B (Any Two projects from following list)

Project-1:- Theodolite Traverse survey project of a closed traverse with at least four sides.

Project-2:- Tachometric contouring project with at least two instrument stations at 60 m apart.

Project-3:- Road project for minimum length of 200m, including fixing of alignment, Profile levelling, and cross sectioning.

Project-4:- Plane table survey project of a closed traverse of minimum four sides

Note:

- **ICA** – Internal Continuous Assessment shall support for regular performance of practical and its regular assessment. In addition; it shall be based on knowledge/skill acquired and record submitted by student (journal) based on practical performed by him/her. The performance shall be assessed experiment wise using internal continuous assessment format
 - **ESE** – The End Semester Examination (ESE) for this laboratory course shall be based on performance in one of the experiments performed by student in the semester followed by sample questions to judge the depth of understanding/knowledge or skill acquired by the student. It shall be evaluated by two examiners out of which one examiner shall be out of institute.
-

CE257U FLUID MECHANICS LAB

Teaching Scheme: 02P; Total: 02Hr
Evaluation Scheme: 30 ISE + 20 ESE

Credit: 01
Total Marks: 50

Course Description

The course illustrates the practical usefulness of fluid mechanics in hydraulics, hydrology and water resources engineering. The course covers the measurement of flow pressure, calibration of measuring devices; identify the flow and flow net. It will make students to apply the knowledge in flow through pipes, channel or dams.

Course Outcomes

After successful completion of this course; student shall be able to

1. Determine flow pressure
2. Calibrate flow measuring devices used in pipes, channels and tanks
3. Determine fluid and flow properties.
4. Characterize laminar and turbulent flows
5. Determine seepage through dam

Relevance of Program Outcomes (Pos) and strength of co-relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	3												2		
2	2		2										3		
3		3	1											2	
4	2	2											3		

1-Weakly correlated

2 – Moderately correlated

3 – Strongly correlated

Lab Experiments

Minimum eight experiments shall be performed to cover entire curriculum of course CE256R. The list given below is just a guideline.

List:

1. Measurement and study of variation of viscosity of oil with temperature.
2. Study of simple and differential manometers.
3. Buoyancy and Meta-centric height of ship model.
4. Verification of Bernoulli's theorem.
5. Calibration of Venturimeter.
6. Flow net by graphical method /Electrical analogy method.
7. Study of laminar/turbulent flow in Reynolds apparatus.
8. Determination of coefficients of Orifice / Mouthpiece.
9. Calibration of notch.
10. Report based on visit to any such relevant place.

ICA – Internal Continuous Assessment shall support for regular performance of practical and its regular assessment. In addition; it shall be based on knowledge/skill acquired and record submitted by

student (journal) based on practical performed by him/her. The performance shall be assessed experiment wise using internal continuous assessment format

ESE – The End Semester Exam for this course shall be based on oral examination to judge the skills acquired by student. It shall be evaluated by two examiners out of which one examiner shall be out of institute.

CE258U TESTING OF MATERIALS LAB

Teaching Scheme: 01TH and 02P; Total: 03

Credit: 02

Evaluation Scheme: 30ICA+ 20ESE

Total Marks: 50

Concrete Mix Design by IS and IRC/Road Note No.4 Method, Concept and use of non destructive testing such as Ultrasonic pulse velocity, rebound hammer, half cell potential, carbonation depth, and core test etc. Study of Precast and Pre stressed Concrete Precast concrete and its uses, introduction to Pre stressed concrete, types of pre stressing methods. Fiber Reinforced Concrete- Introduction, classification, mechanism, role of fiber size, and its application

Minimum Six experiments shall be performed

- 1) Concrete Mix Design (M15/M20/M25) by IS Method and compressive strength at 7days and 28 days.
- 2) Concrete Mix Design (M15/M20/M25) by IRC Method and compressive strength at 7days and 28 days.
- 3) Rebound hammer test on concrete.
- 4) Ultrasonic Pulse velocity test.
- 5) Determination of Modulus of Elasticity of Concrete by extensometer.
- 6) Effect of admixtures on concrete strength
- 7) Experimental investigation of effect of aggregate gradation and fineness on concrete properties.
- 8) Compressive strength of Paver blocks
- 9) Compressive strength of Solid/ Hollow blocks
- 10) Test on mild, tor steel
- 11) Water absorption of bricks, tiles and concrete block.

One site visit to Civil Engineering project related to above topics/experiments (Compulsory). .

- ICA Internal Continuous Assessment shall support for regular performance of practical and its regular assessment. In addition; it shall be based on knowledge/skill acquired and record submitted by student (journal) based on practical performed by him/her. The performance shall be assessed experiment wise using internal continuous assessment format
- ESE The End Semester Exam for this course shall be based on oral examination to judge the skills acquired by student. It shall be evaluated by two examiners out of which one examiner shall be out of institute.

Reference Books:

1. Building and construction materials lab manual ,M L Gambhir, Neha Jamwal ,McGraw Hill Education (India) Pvt. Ltd,2013.
 2. Civil Engineering Materials, Parbin Singh, , S. K.Kataria and Sos New Delhi.
 4. Building Materials, S.K. Duggal, , New Age International Publishers.
 5. Concrete Technology, M. S. Shetty, S Chand Publication,2013
- Concrete Technology, M. L. Gambhir, McGraw Hill Education (India) Private Limited,2013.

SH210N: UNIVERSAL HUMAN VALUES- II

Teaching Scheme: 02 L per week

Credits: 02

Evaluation Scheme: 70 ISA+30 MSE

Total Marks: 100

MSE Duration: 1.5 Hours

ESE Duration: 3:00 Hrs.

COURSE DESCRIPTION:

The course is intended to provide universally adaptable, systematic and rational study of the human being vis-à-vis the rest of existence. It is free from any dogma or value prescriptions. This process of self-exploration takes the form of a dialogue between the teacher and the students to begin with and within the student himself/herself finally.

Desirable awareness/skills:

Fundamental knowledge of universal human values and ethics.

COURSE OUTCOMES:

On the successful completion of this course students shall be able to

1. Create awareness on Engineering Ethics and Human Values.
2. Understand social responsibility of an engineer.
3. Appreciate ethical dilemma while discharging duties in professional life.
4. Develop Faculty-student or mentor-mentee programs throughout their time with the institution

RELEVANCE OF COURSE OUTCOMES [Cos] WITH Pos AND PSOs [With STRENGTH OF CO-RELATION]:

CO	PO											
	1	2	3	4	5	6	7	8	9	10	11	12
1						3	2					
2						3	2					
3						3	2					
4						3	2					

1-Weakly correlated

2 –Moderately correlated

3–Strongly correlated

COURSE CONTENT

Exploring aspirations and concerns (basic human aspirations): (05 Hrs.)

Value Education, Definition, Concept and Need for Value Education, The Content and Process of Value Education, Basic Guidelines for Value Education, Self exploration as a means of Value Education, Happiness and Prosperity as parts of Value Education.

Harmony in the Human Being (05 Hrs.)

Human Being is more than just the Body, Harmony of the Self ('I') with the Body, Understanding Myself as Co-existence of the Self and the Body

Understanding Needs of the Self and the needs of the Body, Understanding the activities in the Self and the activities in the Body.

Harmony in the Family and Society and Harmony in the Nature (05 Hrs.)

Family as a basic unit of Human Interaction and Values in Relationships, The Basics for Respect and today's Crisis: Affection, Guidance, Reverence, Glory, Gratitude and Love, Comprehensive Human Goal: The Five Dimensions of Human Endeavour, Harmony in Nature: The Four Orders in Nature, The Holistic Perception of Harmony in Existence.

Social Ethics (05 Hrs.)

The Basics for Ethical Human Conduct, Defects in Ethical Human Conduct, Holistic Alternative and Universal Order, Universal Human Order and Ethical Conduct, Human Rights violation and Social Disparities

Professional Ethics (5 Hrs.)

Value based Life and Profession, Professional Ethics and Right Understanding, Competence in Professional Ethics, Issues in Professional Ethics -The Current Scenario, Vision for Holistic Technologies, Production System and Management Models

Text Books:

1. Human Values and Professional Ethics by R R Gaur, R Sangal, G P Bagaria, Excel Books, New Delhi, 2010. A.N Tripathy, New Age International Publishers, 2003.
2. A.N Tripathy, New Age International Publishers, 2003.
3. Bajpai. B. L. New Royal Book Co, Lucknow, Reprinted, 2004
4. Bertrand Russell Human Society in Ethics & Politics

Reference Books:

1. Corliss Lamont, Philosophy of Humanism
2. Gaur. R.R., Sangal. R, Bagaria. G. PA Foundation Course in Value Education,
3. I.C. Sharma Ethical Philosophy of India Nagin & co Julundhar
4. Mortimer. J. Adler, – Whatman has made of man

5. William Lilly Introduction to Ethic Allied Publisher

Evaluation Methodology:

MSE: Mid Semester Examination will be based on 50 % of the syllabus

ESE: End Semester Examination will be based on rest of the 75 % of rest of the syllabus (i.e. excluding syllabus of MSE) and 25% syllabus of MSE.

ISA: ISA will be based on any one or combination of following components-

1. Declaredtest
2. Surprisetest
3. MCQTest
4. Performance in Tutorial
5. Assignments/ Tutorial / Punctuality/ Attendance

However, apart from above components, the Course Coordinator can choose any other component and shall declare method of evaluation at beginning of course

SH208N: ENTREPRENEURSHIP DEVELOPMENT

Teaching Scheme:02 L

Evaluation Scheme:10ISA +30 MSE +60ESE

MSE Duration: 1.5 Hrs

Credit:02

Total marks:100

ESE Duration: 3.0 Hrs.

Course Description

Entrepreneurship Development is a dynamic course designed to equip students with the knowledge, skills, and mindset essential for success in entrepreneurial endeavors. The course focuses on awareness of entrepreneurs and its different aspects. This course will cover details about design thinking, Entrepreneurial Behavior and Innovation Function, small-scale enterprises, family business and rural entrepreneurship as well as recent trends. It gives an overview of entrepreneurship.

Course Objectives

The course "Entrepreneurship Development" aims to achieve comprehensive learning outcomes across various critical areas of entrepreneurial studies. Firstly, it explores the concept of entrepreneurship and the role of entrepreneurs in driving innovation and economic development. Secondly, it delves into entrepreneurial behavior, emphasizing traits such as creativity, risk-taking, and opportunity recognition essential for entrepreneurial success. The course also introduces design thinking methodologies and Entrepreneurship Development Programs (EDP), focusing on practical project implementation and management skills. Furthermore, it addresses the dynamics of small business enterprises, including the causes and management of business sickness, to prepare entrepreneurs for operational challenges. Lastly, it examines the unique aspects of family businesses and rural entrepreneurship, providing insights into their challenges and opportunities. By covering these diverse topics, the course aims to equip participants with the knowledge, skills, and mindset necessary to initiate, sustain, and grow successful entrepreneurial ventures in various contexts.

Course Outcomes

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

1. Apply the concept and knowledge of entrepreneurship
2. Utilize the concept of entrepreneurial behavior as well as innovation
3. Prepare project report to start own enterprise
4. Develop the ability to start small scale business
5. Run and enhance their own family business, develop rural entrepreneurship and Utilize recent trends in entrepreneurship

Course Outcomes (COS) and Program Outcomes (POS) Mapping With Strength of Co-Relation

CO	PO												PSO		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
1	-	-	-	-	-	3	2	2	2	2	2	3			3
2	-	-	-	-	-	3	2	2	2	2	2	3			3
3	-	-	-	-	-	3	2	2	2	2	2	3			3
4	-	-	-	-	-	3	2	2	2	2	2	3			3
5	-	-	-	-	-	3	2	2	2	2	2	3			3

1-Weaklycorrelated

2-Moderatelycorrelated

3 -Stronglycorrelated

Contents:

Entrepreneur and Entrepreneurship:

Entrepreneur, entrepreneur and enterprise, entrepreneurs and managers, traits of a true entrepreneur, characteristics of a successful entrepreneur, classification and functions of an entrepreneur, problems faced by entrepreneurs, Concepts of entrepreneurship, importance, myths, barriers, stages in the entrepreneurial process, socio-economic origins of entrepreneurship, environmental factors affecting entrepreneurship, entrepreneurship in economic growth:-definition, relationship between entrepreneur and entrepreneurship, Nature and characteristics of entrepreneurship, role of entrepreneurship in economic growth, Concepts- Sociopreneur, Edupreneur, Ecopreneur, Netpreneur, Intrapreneur (Only concept and Characteristics)

Entrepreneurial Behavior and Innovation Function: Innovation and Entrepreneur, Schumpeter's and Ducker's theories, Entrepreneurial Behavior and Psychological Theories:Maslow's need hierarchy theory, McClelland's Need Achievement Theory, Knight's Risk Taking theory, Social Responsibility, **Innovation Function:** Concept, Characteristics, Sources, Types, Levels, and Evolution of innovation management, Effective innovation management, Performance evaluation.

Design Thinking, EDP and Projects:

Design Thinking – Basics, Principles, Process, Personality Profile of Design Thinker,Design Thinking Cultures, Ten Tools for Design Thinking, Creating Ideal conditions for design thinking.

EDP - Concept, Phases, Importance, Objectives,Success of EDP, Shortcomings of EDP, Project - Identification, Classification,internal and external constraints,project objectives

Small Business Enterprise and sickness in small business enterprises:

Business idea- Sources, selection, concepts and Business opportunities in various sectors, Identifying the business opportunity,Steps for starting of business, Definitions of SSI, Formalities for setting up of a small business enterprise, Environment pollution related clearances, Project report guidelines, Procedures and formalities for registration, Problems for small-scale industries. Definition of sickness and status of sickness of SSI in India, Criteria to identify sickness/incipient sickness, Causes for sickness/incipient sickness in SSI, Symptoms of sickness, Cures for SSI sickness, Institutions supporting small business enterprises: introduction, Central level institutions, State level institutions, Other agencies, Industry associations.

Family Business and Rural Entrepreneurship:

Family business - Importance, Types, Succession, Management development plan and precautions
Meaning and Needs of Rural Entrepreneurs, Rural Industrialization in Retrospect, Problems of Rural Entrepreneurship and Step to Develop Rural Entrepreneurship, Advantages and Major Challenges to Develop Rural Entrepreneurship, Recommendations to Boost up Rural Entrepreneurship, Recent Trends- Start up, Stand up, Skill India, Make in India, Incubation Centre-Concept and Importance.

Text Books:

1. Entrepreneurship Development Small Business Enterprises, Poornima M Charantimath, Pearson, 1st edition Reprint, 2005.
2. Entrepreneurial Development, C.B.Gupta, Srinivasan N.P., Sultan Chand and Sons Publications, 5th edition, 2008.
3. Dynamics of Entrepreneurship Development and Management, Vasant Desai, Himalaya, 1st edition, 2009.
4. Entrepreneurship Development, Dr. S. Senthil, Suchitra Publications
5. Entrepreneurship Development - Lall & Sahai: Excel Books
6. Entrepreneurial Development by Dr. S.S Khanka, S Chand & Company, 2011 edition

Reference Books:

1. Entrepreneurship, Robert D. Hisrich, Michal P. Peters, Tata McGraw-Hill, 7th Edition, Jan 1, 2007.
2. Patterns of Entrepreneurship, Jack M. Kaplan, Willey Publications, 4th edition, 2013.
3. Entrepreneurship Development and Project Management, Neeta Baporikar, Himalaya, 2nd edition, 2011.
4. Entrepreneurship Development, Cynthia L. Greene, Cengage Learning, 4th edition, 2008.

Evaluation Methodology:

MSE: Mid Semester Examination will be based on 50 % of the syllabus

ESE: End Semester Examination will be based on rest of the 75 % of rest of the syllabus (i.e. Excluding syllabus of MSE) and 25% syllabus of MSE.

ISA: ISA will be based on any one or combination of following components-

1. Declared test
2. Surprise test
3. MCQ Test
4. Performance in Tutorial
5. Assignments/ Tutorial / Punctuality/ Attendance

However, apart from above components, the Course Coordinator can choose any other component and shall declare method of evaluation at beginning of course

