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Yet to be release from MSBTE

SEMESTER I

Maharashtra State Board of Technical Education, Mumbai										
Learning and Assessment Scheme for Post S.S.C D. Architecture										
Programme Name:		Diploma In Architecture			Academic Year:		2024-25			
Programme Code:		AT			Duration:		16 weeks			
Semester:		Semester I			Scheme		K			
Sr No.	Course Title		Course Code	Credits	Theory		Practical		SLA	Total
					FA -TH	SA-TH	FA-PR	SA-PR		
1	Basic Mathematics		311302	4	30	70			25	125
2	Basic Science	Physics	311305	5	30	70	25	25	25	250
		Chemistry					25	25	25	
3	Communication Skills		311303	3	30	70	25	-	25	150
4	Engineering Graphics		311006	3	-	-	50	50	-	100
5	Fundamental of ICT		311001	2	-	-	25	25	25	75
6	Yoga and Meditation		311003	1	-	-	25	-	25	50
7	Civil Engineering Workshop		311010	2	-	-	50	50	-	100
Total				20	90	210	225	175	150	850

COURSE: BASIC MATHMATICS

SEM- I

COURSE CODE: 311302

TEACHING HOURS:

- CLASS ROOM LEARNING: 4 HRS /WEEKS
- TUTORIAL LEARNING: 2 HRS /WEEKS

TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

SLA – 25 MARKS

TOTAL: 125 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Apply the concepts of algebra to solve architecture (discipline) related problems.
- Utilize trigonometry to solve branch specific architecture problems.
- Solve area specific architecture problems under given conditions of straight lines.
- Apply differential calculus to solve discipline specific problems.
- Use techniques and methods of statistics to crack discipline specific problems.

COURSE OBJECTIVES

- Fosters critical thinking skills, quantitative literacy, problem-solving abilities, logical and abstract thinking, and mathematical literacy.
- Calculus, a branch of Mathematics, calculates the movement of matter, particles, and heavenly bodies.
- Derivatives are used to find maxima and minima of functions, velocity, and acceleration.
- Statistics is a type of mathematical analysis that involves collecting and analyzing data and summarizing it into numerical form.
- Mathematics provides a foundation for further studies in various disciplines and prepares students to tackle complex challenges.
- Studying Mathematics helps students appreciate the historical and cultural significance of Mathematics and its applications in diverse fields.
- The course provides insight to analyze engineering problems scientifically using logarithms, matrices, trigonometry, straight line, differential calculus, and statistics.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Algebra

Logarithm, matrices, matrix algebra, transpose, determinant, adjoint, inverse, matrix inversion, partial fractions, and algebra in the Indian Knowledge System. It also discusses solving simultaneous equations and factors in the Indian Mathematics system.

Unit - II Trigonometry

Trigonometric ratios, factorization, de factorization formulae, inverse trigonometric ratios, principle values, and the evolution of sine function in Indian trigonometry. It also discusses basic Indian trigonometry, terminology, and Pythagorean triples in Sulabasutras, as well as the evolution of sine function in India.

Unit - III Straight Line

The concepts of straight lines, their slope, angle between lines, and the conditions of parallel and perpendicular lines. It also covers various forms of straight lines, including slope point form, two-point form, double intercept form, and general form. It also discusses geometry in Sulabasutras in Indian Mathematics.

Unit - IV Differential Calculus

The concepts of functions, limits, derivatives, composite functions, inverse, logarithmic, and exponential functions. It also discusses the rules of derivatives, applications of derivatives, and the discovery of calculus by Indian astronomers. The text also discusses the role of calculus in the Indian Knowledge System.

Unit - V Statistics

This unit provides information on the range, mean deviation, standard deviation, variance, and coefficient of variance of discrete and grouped data, as well as comparison of two observation sets.

READING LIST

Higher Engineering Mathematics by Grewal B. S. Published in New Delhi, 2013

A text book of Engineering Mathematics by Dutta. D Published in New Delhi, 2006

Advance Engineering Mathematics by Kreysizg, Ervin Published in New Delhi 2016

Calculus and Its Applications by Marvin L. Bittinger David J. Ellenbogen Scott A. Surgent

COURSE: BASIC SCIENCE

SEM- I

COURSE CODE: 311305

TEACHING HOURS:

- CLASS ROOM LEARNING: 4 HRS /WEEKS
- LABORATORY LEARNING: 4 HRS /WEEKS

TOTAL: 8 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (ONLINE EXAMINATION SA/TH)

PRACTICAL – 50 MARKS (INTERNAL FA/PR) & 50 MARKS (EXTERNAL SA /PR)

SLA – 50 MARKS

TOTAL: 250 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Use basic instruments to measure the physical quantities in various architecture situations.
- Apply the basic principles of electromagnetics to solve given architecture problems.
- Apply basic principles of thermometry and fiber optics to solve architecture problems.
- Predict the structure, properties and behavior of molecules and compounds based on the types of chemical bond.
- Apply the concepts of electrochemistry and corrosion preventive measures in industry.
- Use the appropriate architecture material and catalyst appropriately.

COURSE OBJECTIVE

- Helps diploma architectures apply basic physics and chemistry concepts to architecture problems.
- Covers heat, electricity, magnetism, optics, semiconductors, and architecture materials.
- Emphasizes application of these concepts in various technology domains.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Units and Measurements

Units, physical quantities, dimensional formulas, errors, and ancient astronomical instruments. It covers systems of units like CGS, MKS, and SI, scalar and vector physical quantities, dimensional analysis, and conversion factors. It also discusses errors, types, and estimation methods. The text also discusses the applications of Vernier calipers and screw gauges in various systems of units.

Unit - II Electricity, Magnetism and Semiconductors

Concepts of charge, electric field, magnetic field, electric current, Ohm's law, conductors, insulators, semiconductors, energy bands, intrinsic and extrinsic semiconductors, minority and majority charge carriers, and p-n junction diode. It also discusses the heating effect of electric current, the conversion of galvanometers into ammeters and voltmeters, and the applications of p-n junction diodes, such as half wave rectifiers.

Unit - III Thermometry and Fiber Optics

Heat, temperature scales, heat transfer modes, Boyle's, Charles's, Gay Lussac's, perfect gas statements, thermal conductivity, Newton's law of cooling, and refraction laws. It also discusses optical fibers, their principles, construction, and working types, and their applications in daily life. It also covers the laws of thermal conductivity, Newton's law of cooling, and total internal reflection.

Unit - IV Chemical bonding

Acharya Kanad's atom philosophy is discussed in Indian Chemistry, along with the electronic theory of valency and chemical bonds. The text also covers molecule arrangement in solid, liquid, and gas states, solid structure, properties of metallic solids, unit cell types, and the properties of crystalline and amorphous solids.

Unit - V Electro chemistry and Metal Corrosion, its prevention

Electrolyte types, ionization and dissociation, cathode and anode, electrolysis mechanisms, Faraday's laws, applications, and differences between primary and secondary cells. It also discusses corrosion, its types, and factors affecting its rate. Corrosion control methods include environmental modification, protective coatings, anodic and cathodic protection, and material choice.

Unit - VI Architectural Materials and Catalysis

This unit covers various aspects of paints, varnishes, insulations, polymers, monomers, adhesives, lubricants, catalysis, and catalysts. It covers their purposes, characteristics, ingredients, functions, and applications. It also discusses the classification and properties of polyethylene, polyvinyl chloride, Teflon, polystyrene, phenol formaldehyde, and epoxy resin.

READING LIST

Physics Textbook Part I - Class XI by Narlikar J. V.; Joshi, A. W.; Mathur, Anuradha; et al Published New Delhi, 2010

Physics Textbook Part II - Class XI by Narlikar, J.V.; Joshi, A. W.; Mathur, Anuradha; et al Published New Delhi, 2015

Fundamentals of Physics by Haliday, David; Resnik, Robert and Walker, Jearl Published, USA

COURSE: COMMUNICATION SKILLS

SEM- I

COURSE CODE: 311303

TEACHING HOURS:

- CLASS ROOM LEARNING: 3 HRS /WEEKS
- LABORATORY LEARNING: 2 HRS /WEEKS

TOTAL: 5 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR)

SLA – 25 MARKS

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Construct grammatically correct sentences in English.
- Compose paragraphs and dialogues on given situations
- Comprehend passages correctly.
- Use contextual words in English appropriately.
- Deliver effective presentations in English using appropriate body language.

COURSE OBJECTIVE

- English is a global language used in personal, professional, and social spheres.
- Proficiency in English includes reading, writing, speaking, listening, grammar, vocabulary, comprehension, and description skills.
- Professional English aims to equip students for public speaking, presentations, and negotiation.
- Academic English includes academic writing and critical thinking for architecture communication.

THEORY LEVEL LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Vocabulary

Phonetics, prefixes and suffixes, synonyms and antonyms, homophones, and collocations. It covers vowels (12), consonants (24), diphthongs (8), synonyms and antonyms, homophones (identifying), meanings, context, and usage, and collocations (definition and identification).

Unit - II Paragraph and Dialogue Writing

Types of paragraphs include technical, descriptive, and narrative. Dialogue writing involves greetings, development, and closing sentences.

Unit - III Comprehension (Seen and Unseen Passages)

Passages from MSBTE workbook, Dr. APJ Abdul Kalam's interview, maximum achievements, remarkable achievements, Arunima Sinha's biography, Gratitude's roses, comprehension importance, unseen passages, and interpretation of written and spoken forms.

Unit - IV Communicative Language

The process of translating a paragraph from English to Marathi/Hindi, with a focus on the translation of the writer's name and the date of the translation, which is not a part of the theory examination.

Unit - V Presentation Skills

This unit covers various aspects of speech writing, including attire, grooming, situation, salutations, introduction, description, body, and conclusion, as well as layout, font size, color combination, and kinesics, including facial expressions, eye contact, postures, and gestures.

READING LIST

Spectrum, G Scheme and I- Scheme by MSBTE

Effective English with CD by Kumar, E. Suresh, Sreehari, P Savitri Effective English with CD

English Grammar at a Glance by Gnanamurli Published by S. Chand

English Communicative (class X) by CBSE

Communication Skills in English by Dr. Anjana Tiwari Published by Khanna Publishers, New Delhi

COURSE: ENGINEERING GRAPHICS

SEM- I

COURSE CODE: 311006

TEACHING HOURS:

- CLASS ROOM LEARNING: 2 HRS /WEEKS
- LABORATORY LEARNING: 4 HRS /WEEKS

TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 50 MARKS (INTERNAL FA/TH) & 50 MARKS (EXTERNAL SA/TH)

TOTAL: 100 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Draw geometrical figures and architecture curves.
- Apply principles of orthographic projections for drawing given pictorial views.
- Draw isometric views of given component or from orthographic projections.
- Use various drawing codes, conventions and symbols as per IS SP-46 in architecture drawing.
- Draw free hand sketches of given architecture elements.

COURSE OBJECTIVE

- Emphasizes the use of architecture graphics for expressing ideas and conveying instructions.
- Develops drafting and sketching skills in students.
- Covers knowledge and application of drawing instruments.
- Familiarizes learners with Bureau of Indian Standards related to architecture drawing.
- Aims to develop ability to draw and read various architecture curves, projections, and dimensioning styles.
- Focuses on using drawing instruments, developing imagination, and translating ideas into sketches.
- Develops idea of visualizing objects or parts based on drawings and blue prints.
- Aims to build a foundation for further architecture drawing and related courses.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Basic Elements of Drawing

The use of drawing instruments, standard sizes of drawing sheets, I.S. codes for planning and layout, letters and numbers, convention of lines, scale (reduced, enlarged, full size), dimensioning techniques as per SP-46 (Latest edition), and geometrical constructions. It also covers letter, number, line convention, scale, and dimensional techniques.

Unit - II Architecture curves & Loci of Points

Concepts of focus, directrix, vertex, eccentricity, conic sections, ellipses, parabolas, hyperbolas, involutes, cycloidal curves, helixes, and archimedean spirals. It also covers drawing ellipses, parabolas, hyperbolas, involutes, cycloids, helixes, and archimedean spirals, and determining points on a single slider crank mechanism.

Unit - III Orthographic Projections

Introduces projections, including orthographic, perspective, isometric, and oblique, and their concepts and applications. It covers orthographic projection, First and Third angle methods, and their symbols, and their conversion into pictorial views.

Unit - IV Isometric Projections

Introduces isometric projection, scale, natural scale, view, and problem-solving for simple objects with plain, slanting, cylindrical, and slots surfaces. It also covers converting orthographic views into isometric views for other branches.

Unit - V Free Hand Sketches of architecture Elements

The teacher should select branch-specific elements for free hand sketches of machine elements such as thread profiles, nuts, bolts, studs, set screws, washers, and locking arrangements.

READING LIST

Engineering Drawing Practice for Schools and Colleges IS: SP-46 by Bureau of Indian Standards. Published in Third Reprint, October 1998

Engineering Drawing by Bhatt, N.D. Published in Charotar Publishing House, 2010

Machine Drawing by Bhatt, N.D.; Panchal, V. M Published in Charotar Publishing House

COURSE: FUNDAMENTAL OF ICT

SEM- I

COURSE CODE: 311001

TEACHING HOURS:

- CLASS ROOM LEARNING: 1 HRS /WEEKS
- LABORATORY LEARNING: 2 HRS /WEEKS

TOTAL: 3 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 25 MARKS (INTERNAL FA/TH) & 25 MARKS (EXTERNAL SA/TH)

SLA – 25 MARKS

TOTAL: 75 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Use computer system and its peripherals for given purpose
- Prepare Business document using Word Processing Tool
- Analyze Data and represent it graphically using Spreadsheet
- Prepare professional Slide Show presentations
- Use different types of Web Browsers and Apps
- Explain concept and applications of Emerging Technologies.

COURSE OBJECTIVE

- Develops basic competency in using office automation tools.
- Includes learning word processing applications, spreadsheets, and presentation tools.
- Essential for creating business documents, data analysis, and electronic slide show presentations.
- Provides overview of emerging technologies for students to appraise their applications in their respective domains.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Introduction to Computer System

The computer system consists of hardware and software components, including a CPU, control unit, and memory unit. It includes internal components like processors, motherboards, and RAM. External devices include monitors, keyboards, printers, and storage devices. Application software includes word processing, spreadsheets, database management systems, and more. Network environments include interface cards, routers, and modems. Operating systems involve managing files and folders.

Unit - II Word Processing

Word processing involves basic features such as font type, size, color, effects, previewing, saving, closing, and exiting the application. It allows users to edit documents, change layouts, insert elements, work with tables, and work with columned layouts and section breaks. Key features include navigating through text, selecting text, undoing commands, and using the clipboard. Word processor also allows users to preview, save, and close documents.

Unit - III Spreadsheets

working with spreadsheets, including creating, editing, formatting cells, formulating, and working with charts. It covers creating and editing worksheets, formulating common functions, and using charts like bar, pie, and line charts. Advanced operations include conditional formatting, data filtering, data sorting, ranges, data validation, and adding graphics. The text also covers printing worksheets and discussing page setup options.

Unit - IV Presentation Tool

outlines the process of creating a presentation, inserting media elements, working with tables, and working with charts. It covers creating an effective presentation, identifying user interface elements, starting new presentations, working with textboxes, applying character formats, formatting paragraphs, and viewing a preses. It also covers inserting images, audio clips, video/animation, shapes, and visual styles.

Unit - V Basics of Internet and Emerging Technologies

World Wide Web, web services, emerging technologies like IoT, AI, ML, drone technologies, and tools like Docs, Drive, forms, quiz, and translate. It also discusses basic settings of web browsers, using search engines effectively, and e-mail, chat, videoconferencing, and e-learning.

READING LIST

Computer Fundamentals by Goel, Anita Published in New Delhi, 2014

Computer Basics Absolute Beginner's Guide, Windows 10 by Miller, Michael Published in August 2015

Linux: Easy Linux for Beginners by Alvaro, Felix Published in 2016

COURSE: YOGA AND MEDITATION

SEM- I

COURSE CODE: 311003

TEACHING HOURS:

- LABORATORY LEARNING: 1 HRS /WEEKS

TOTAL: 1 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 25 MARKS (INTERNAL FA/PR)

SLA – 25 MARKS

TOTAL: 50 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Practice basic Yoga and Pranayama in daily life to maintain physical and mental fitness.
- Practice meditation regularly for improving concentration and better handling of stress and anxiety.
- Follow healthy diet and hygienic practices for maintaining good health

COURSE OBJECTIVE

- Yoga and meditation are beneficial for diploma graduates to maintain a healthy body and mind for their career.
- These practices provide balance and discipline, aiding in both academic and professional life.
- Pranayama practice improves stamina and resilience through regulation of breathing.
- Meditation enhances focus and calmness, promoting peace of mind.
- The World Health Organization (WHO) and National Education Policy -2020 emphasize the importance of yoga and meditation.
- The course aims to empower students to adopt and practice "Yoga" in daily life.

READING LIST

Patanjali's Yoga Sutras by Swami Vivekananda Published in New Delhi 2023

The Relaxation and Stress Reduction Workbook by Martha Davis, Elizabeth Robbins, Matthew McKay, Eshelman MSW Published in A New Harbinger Self-Help Workbook (2019)

Mudras for Modern Living: 49 inspiring cards to boost your health, enhance your yoga and deepen you by Swami Saradananda Watkins Publishing (2019)

COURSE: CIVIL ENGINEERING WORKSHOP
COURSE CODE: 312301

SEM- I

TEACHING HOURS:

- LABORATORY LEARNING – 4 HRS/ WEEKS

TOTAL: 4 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 50 MARKS (INTERNAL FA/PR) & 50 MARKS (EXTERNAL SA/PR)

TOTAL: 100 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Use the relevant type of firefighting equipment in the given situation.
- Undertake the various construction activities at site.
- Perform the masonry work for the given situation.
- Carry out the specified Plumbing work in the given situation
- Prepare the simple job using relevant sheet metal tools.
- Use the relevant tools for the specified carpentry work.

COURSE OBJECTIVE

- Basic engineering course focusing on basic construction activities expected of Diploma holders.
- Includes supervision of construction activities like brick masonry, woodwork, concreting, welding, etc.
- Emphasizes quality control and maintenance of safety to self, coworkers, and building components.
- Essential knowledge of civil engineering operations like line out, excavation, masonry, mixing, concreting, plumbing, and finishing works.
- Develops basic skills and safety aspects for industry roles.
- Develops teamwork and safety awareness through field work experience.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Safety Practices & Precautions

Safety practices, accidents, general safety rules, signs, precautions, first aid boxes, fire causes, extinguishing methods, firefighting equipment, and fire extinguishers. It also discusses the workshop layout, including the issue and return system of tools, equipment, and consumables.

Unit - II Construction Activities

The interdependence of construction activities like layout, excavation, brick masonry, concreting, plumbing, and electrification, as well as the causes of accidents and safety practices.

Unit - III Masonary & Finishing works

Brick and stone masonry work, bonding, string work, plastering, pointing work, formwork, false ceiling, Plaster of Paris (POP), aluminum glass works, cladding, different flooring types, dado, whitewash and painting, and the required tools for surface preparation for timber and steel members.

Unit - IV Plumbing Fixtures

This unit covers various types of pipes, joints, taps, fixtures, and accessories in plumbing, including components like pipes and valves, pipe fittings, and their specifications. It also discusses various operations in plumbing shops and their maintenance.

Unit - V Sheet Metal

Sheet metal hand tools, including snips, shears, punches, pliers, stakes, and groovers, are essential for operations in sheet metal shops. They also guide the basic process of marking, bending, folding, edging, seaming, staking, and riveting.

Unit - VI Carpentry Work

Types of engineered woods like plywood, block board, hardboard, laminatedboards, Veneer, and fiber boards, their applications, hand tools, operation of wood working machines, basic processes like marking, sawing, planning, chiseling, turning, grooving, and boring, and components like hinges, tower bolts, and brackets.

READING LIST

PWD- Standard Data Book for Building Work Published with PWD, Government of Maharashtra. Mumbai.

CPWD Specifications (Vol.-1 and IT) Published with CPWD, Govt. of India, New Delhi.

A To Z Of Practical Building Construction & its Management by Mantri Sandeep Published in New Delhi: 2015.

SEMESTER II

Maharashtra State Board Of Technical Education, Mumbai									
Learning and Assessment Scheme for Post S.S.C D. Architecture									
Programme Name :		Diploma In Architecture			Academic Year:			2024-25	
Programme Code :		AT			Duration:			16 weeks	
Semester :		Semester II			Scheme			K	
Sr No.	Course Title	Course Code	Credits	Theory		Practical		SLA	Total
				FA - TH	SA- TH	FA- PR	SA- PR		
1	Applied Mathematics	312301	2	30	70	-	-	-	100
2	Construction Material	322328	5	30	70	25	-	25	150
3	History of Architecture & Culture	322329	3	30	70	25	25	-	150
4	Applied Physics	322327	3	30	70	25	-	25	150
5	Basic Design	322010	5	-	-	50	50	50	150
6	Professional Communication	312002	1	-	-	25	25	-	50
7	Social and Life Skills	321003	1	-	-	-	-	50	50
Total			20	120	280	150	100	150	800

COURSE: APPLIED MATHEMATICS

SEM- II

COURSE CODE: 312301

TEACHING HOURS:

- CLASS ROOM LEARNING: 3 HRS /WEEKS
- TUTORIAL LEARNING: 1 HRS /WEEKS

TOTAL: 4 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

TOTAL: 100 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Solve the broad-based architecture problems of integration using suitable methods.
- Use definite integration to solve given architecture related problems.
- Apply the concept of differential equation to find the solutions of given architecture problems.
- Employ numerical methods to solve programme specific problems.
- Use probability distributions to solve elementary architecture problems.

COURSE OBJECTIVE

- Covers integration, definite integration, differential equations, numerical methods, probability distribution.
- Equips engineering students with problem-solving tools.
- Enables modeling, analysis, informed decision-making, and real-world engineering challenges.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Indefinite Integration

The rules for simple integration, including substitution, parts, and partial fractions, which involve linear non-repeated factors at the denominator of the proper fraction.

Unit - II Definite Integration

A definition, rules, and examples of definite integration, as well as properties of definite integral without proof.

Unit - III Differential Equation

The concept of differential equations, their order, degree, and formation, and the methods for solving them, including variable separable form, exact differential equation, and linear differential equation.

Unit - IV Numerical Methods

The solutions of algebraic equations using methods like Bisection, Regula falsi, Newton-Raphson, Gauss Seidal and Jacobi's methods, and Bakhshali iterative method for finding approximate square root.

Unit - V Probability Distribution

The binomial distribution, Poisson's distribution, and normal distribution are three statistical models used to study the distribution of random variables.

READING LIST

Advance Engineering Mathematics by Kreyszig, Ervin Published in New Delhi 2016

Introductory Methods of Numerical Analysis by S. S. Sastry Published in New Delhi

Studies in the History of Indian Mathematics by C. S. Seshadri Published in Hindustan Book Agency (India) P 19 Green Park Extension New Delhi

COURSE: CONSTRUCTION MATERIALS

SEM- II

COURSE CODE: 322328

TEACHING HOURS:

- CLASS ROOM LEARNING: 4 HRS /WEEKS
- LABORATORY LEARNING: 5 HRS /WEEKS

TOTAL: 9 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR)

SLA – 25 MARKS

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Use the construction materials on given construction projects/site.
- Understand the variety of Material and their prices
- Undertake the relevant masonry construction in the given building /project
- Apply appropriate opening for given construction project.
- Apply proper hardware and fittings in building as per latest trends.

COURSE OBJECTIVE

- Exposes students to traditional and contemporary construction materials.
- Focuses on sustainability concepts in eco-friendly materials and practices.
- Discusses material properties and effective construction systems.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Overview of Construction Materials

The construction industry involves identifying and selecting suitable materials, assessing their feasibility, and justifying their selection for specific situations.

Unit - II Natural Construction and Sustainable Constructional Materials

The properties and structure of natural construction materials, identifies defects in these materials, outlines the preservation procedure for timber, justifies the use of natural construction materials in specific situations, and discusses integrated materials.

Unit - III Construction techniques of building components Masonry & Installations

Masonry materials include brick, stone, and mud blocks. Types include random rubble, polygonal, and dry rubble works. Special bricks like King closer, Queen closer, and Bull Nose are available. Bonds in ½ brick and 1 brick are explained.

Unit - IV Openings. Lintels, Projections and Arches

This unit covers various aspects of building construction, including openings like doors, windows, ventilators, arches, and projections. It also discusses different types of weather sheds, awnings, and lofts in rooms, without addressing theory questions.

Unit - V Doors, Windows & Ventilators with Jambs, Frames, Casings and Joinery

This unit explores door and window types, joinery in furniture, and residential building operations. It also discusses shutters, including framed, panelled, flush, glazed, and composite, and materials used in residential furniture.

READING LIST

Building Construction Illustrated by F D K CHING

Engineering materials by Rangwala Charoter Publication

Barry Construction of Buildings Volume - 1 by R. Berry

Furniture Design and Construction for Interior Designer by Christopher Natale

COURSE: HISTORY OF ARCHITECTURE & CULTURE

SEM- II

COURSE CODE: 322329

TEACHING HOURS:

- CLASS ROOM LEARNING: 4 HRS /WEEKS
- LABORATORY LEARNING: 2 HRS /WEEKS

TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Students will be able to prepare drawing of given Heritage Structure with proper documentation.
- Students will be able to co-relate impact of relevant Civilizations. and work on conservation site with all relevant course base learning.
- Students will be able to Conservation to given structure with professional Ethics. and understand the construction technics, methodology, specification of building materials as conservation technics and practice.
- Students will be able to Use relevant tools for mapping, measuring, documenting and restoring of heritage sites.
- Students will be able to design / Retrofit/ Conserve furniture for given Heritage site

COURSE OBJECTIVE

- Studying history helps understand architectural construction in context of climate, geography, and traditions.
- Understanding how political, physical, social, economic, and technological factors affect architecture materials and techniques.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Pre-Historical Architecture and Introduction to History of Architecture

History is crucial for understanding architecture, with examples like early shelters and Stone Age structures. Determinants of built form include geophysical, societal, and technological factors. Understanding people and culture of India is also important.

Unit - II River Valley Civilizations

Egyptian, Mesopotamian, Indus Valley, Greek, and Roman civilizations, discussing their architectural styles, location, and public buildings. It also highlights significant Greek and Roman architectural features, such as the Royal Necropolis, Ziggurats, and the Roman Basilica.

Unit - III Temple Architecture in India

Temple evolution, Dravidian style, Indo Aryan, Lingaraja, Kandariya Mahadeo, Sun Temples, and Mughal architecture in Indian contexts, including shore, Madurai, Lingaraja, Kandariya Mahadeo, and Sun Temples.

Unit - IV Western Architecture

Early Christian architecture developed church plans, followed by Byzantine, Gothic, Renaissance, and Late Renaissance architecture. Early Christian architecture featured Basilica, Byzantine domes, Gothic Arches, Florence cathedrals, and late Renaissance architecture with Michael Angelo and Palladio.

Unit - V History of Furniture- timeline and Evolution

This unit provides an introduction to furniture history, including its evolution influenced by climate, social factors, and design movements. It covers various joinery techniques, western furniture styles, Indian interiors from the Mughal period, and oriental furniture styles like Chinese and Japanese.

READING LIST

Interior Design by John Pile Publish with Harry N, Adry Publishers

History of Architecture by Sir Banister Fletcher Published in September 1996

History of furniture's by Federick Litchfield

An outline of World Architecture by Michael Raeburn published with Littlehampton Book Services Ltd

COURSE: APPLIED PHYSICS

SEM- II

COURSE CODE: 322327

TEACHING HOURS:

- CLASS ROOM LEARNING: 3 HRS /WEEKS
 - LABORATORY LEARNING: 2 HRS /WEEKS
- TOTAL: 5 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (ONLINE EXAMINATIONS/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR)

SLA – 25 MARKS

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Analyses given architecture structure using the concept of vector and scalar.
- Apply principles of Newtonian physics for the given architectural design projects.
- Select relevant material in industries by analyzing its physical properties.
- Apply the concept of rotational dynamics in architectural design.
- Apply the concepts of modern physics (X-rays, LASER, photo sensors and nanotechnology) in architectural field.

COURSE OBJECTIVE

- Dealing with diverse processes, materials, and machines.
- Understanding applied physics concepts: vectors, motion, solids, fluids, gravitation, sound, photo electricity, laser, X-rays, nanomaterials.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Mathematical Methods

scalar and vector quantities, types of product, vector addition and subtraction, calculus methods for displacement, velocity, and acceleration, and integral calculus for work measurement. It also covers the triangle law of vector addition.

Unit - II Motion and Gravitation

Different types of motion, linear, circular, and projectile motion, linear velocity, acceleration, angular velocity, universal gravitational constant, critical velocity, escape velocity, Kepler's laws in planetary motion, and ancient planetary symbols and meanings.

Unit - III Properties of matter

This unit covers various topics such as deforming force, elasticity, plasticity, rigidity, stress, strain, elasticity, viscosity, free fall, molecular theory, surface tension, surface energy, capillary, and angles of contact. It also discusses factors affecting elasticity, viscosity, free fall, and surface tension. It also discusses the applications of capillary.

Unit - IV Acoustics

This unit covers wave properties, transverse and longitudinal waves, sound loudness, acoustics, echo, reverberation, focusing, Echelon effect, external noise, and Sabine's formula, as well as the relationship between these factors.

Unit - V Modern Physics (Photo electricity, X rays, LASER and nanotechnology)

Planck's hypothesis, photoelectric effect, photoelectric cell principles, X-ray production, laser properties, population inversion, He-Ne laser, and nanotechnology. It also discusses the applications of nanomaterials and Metallic Bhasma, as well as the properties of photons.

READING LIST

Concept of Physics Part - I by H.C Verma, Bharati Bhawan (Publishers & Distributors)

The Surya Siddhant by Aryabhata Published with New Bhartiya Book Corporation

Applied Physics-I (with Lab Manual) by Prof Vinod Kumar Yadav and Dr Mina Talati, Khanna Publishers

Applied Physics II (with Lab Manual) by Dr. Hussain Jeeva khan, Khanna Book Publishing

Fundamental of Physics by David Halliday & Robert Resnick published with John Wiley & Sons

COURSE: BASIC DESIGN

SEM- II

COURSE CODE: 322010

TEACHING HOURS:

- CLASS ROOM LEARNING: 2 HRS /WEEKS
- LABORATORY LEARNING: 6 HRS /WEEKS

TOTAL: 8 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 50 MARKS (INTERNAL FA/PR) & 50 MARKS (EXTERNAL SA/PR)

SLA – 50 MARKS

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Use of the principles of Elements of Architecture /interior design as a basic design vocabulary.
- Use of the Principles of Architecture /interior design as a basic design vocabulary.
- Use of the principles of the Colour Theory and its components to achieve various compositions.
- Apply the principles of Ergonomic to achieve design efficiency in Architecture / Interior Design.
- Apply all of the above learnings, to achieve simple individual activity-based rooms for Architecture / Interior Design.

COURSE OBJECTIVE

- Provides comprehensive understanding of basic design concepts.
- Enables learning of planning processes.
- Develops intellectual and creative skills for the profession.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Elements of Architectural/Interior design

Elements of design are essential elements in creating a well-designed product or service. They are crucial for achieving aesthetic appeal and functionality.

Unit - II Principles of Architectural / Interior Design

The study of principles of design involves understanding their definition, application, and application within the context of IKS.

Unit - III Colour Theory

The study of color theory components, understanding the colour wheel with Primary, Secondary, and Tertiary Colour Schemes, and applying these schemes in Architectural/Interior Design.

Unit - IV Ergonomic

The study of human body movements, the importance of ergonomics in architecture and interior design, its application in residential, commercial, and institutional spaces, and the use of the IKS system for ergonomic examples.

Unit - V Design of Single Use Space

This unit provides an overview of the design process for various spaces, including living, kitchen, bedroom, and toilet rooms, using furniture and interior elements.

READING LIST

Poetics in Architecture: Theory of Design by Anthony Antoniadis published with Wiley

Time Saver Standards for Architectural Design Data by Donald Watson, Michael J Crosbie, John Hancock Callendar

Architecture: Form Space and Order by Francis D K Ching

Elements of Space Making by Yatin Pandya published with Vastu Shilpa Foundation

COURSE: PROFESSIONAL COMMUNICATION

SEM- II

COURSE CODE: 312002

TEACHING HOURS:

- LABORATORY LEARNING: 2 HRS /WEEKS

TOTAL: 2 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 50 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Communicate effectively (oral / spoken and written) in various formal and informal situations minimizing the barriers.
- Develop listening skills through active listening and note taking.
- Write circulars, notices and minutes of the meeting.
- Draft inquiry letter, complaint letter, Job application with resume / CV, Compose effective E – mails.

COURSE OBJECTIVE

- Importance of professional communication for smooth industry functioning.
- Importance of maintaining ethics, quality, and standards in organizations.
- Importance of business communication skills for engineering professionals.
- Value of strong communication skills in professional world.
- Course designed to enhance professional communication skills for effective workplace presentations.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Professional Communication: An Overview

Professional communication is crucial for understanding and addressing various types of communication, including verbal, formal, informal, and vertical, and can be influenced by linguistic, psychological, and technological barriers

Unit - II Listening & Note Taking

The differences between listening and hearing, types of active, passive, and selective listening, and note-taking techniques like outline notes, mind mapping, and flowcharts.

Unit - III Office Drafting

The process includes creating notices and circulars, drafting agendas, and preparing meeting minutes.

Unit - IV Writing Skills for Professional Communication

This involves creating job applications, email etiquettes, writing official emails, and drafting inquiry and complaint letters.

Unit - V Report Writing

This unit covers the basics of report writing, including accident reports, investigation reports, and daily reports.

READING LIST

Effective Communication Skills by M Ashraf Rizvi, Tata McGraw-Hill Publication

Communication Skills by Sanjay Kumar and Pushpalata published with Oxford University Press

English for Technical Communication by N P Sudharshana, C Savitha published with Cambridge

Business Communication by K. K. Sinha published with Galgotiya Publishing company, New Delhi

Essentials of Business Communication by Rajendra Pal, J.S. Korlahalli published with Sultan Chand & Sons, New Delhi

COURSE: SOCIAL AND LIFE SKILLS

SEM- II

COURSE CODE: 312003

TEACHING-LEARNING & ASSESSMENT SCHEME

SLA – 50 MARKS

TOTAL: 50 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Enhance the ability to be fully self-aware and take challenges by overcoming all fears and insecurities and grow fully.
- Increase self-knowledge and awareness of emotional skills and emotional intelligence at the place of study/work.
- Provide the opportunity to realizing self-potential through practical experience while working individually or in group.
- Develop interpersonal skills and adopt good leadership behavior for self-empowerment and empowerment of others.
- Set appropriate life goals with managing stress and time effectively.

COURSE OBJECTIVE

- Life skills are abilities to handle life's demands and challenges effectively.
- Social skills are crucial for successful, healthy relationships and adaptability.
- Developing life skills leads to happiness and healthier relationships.
- Teaching social and life skills equips students with attitudes, values, morals, and social skills.
- These skills help handle stress, build self-efficacy, self-esteem, and self-confidence.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

MODULE I: Activities Under Unnat Maharashtra Abhiyan (UMA)

This module introduces the importance of engineering intervention in addressing regional societal issues. It uses a multidisciplinary approach, linking academia, society, and technology.

Stakeholders are involved in the process, and secondary data sets like census, district economic surveys, and cropping patterns are used. The problem outline emphasizes the importance of mapping system components and stakeholders. Key attributes of measurement are discussed, and various instruments are used for data collection. Fieldwork is conducted to measure and quantify local systems. The report includes an introduction, data formats, and observations.

MODULE II: National Service Scheme (NSS)

Contacting village leaders, conducting a primary socio-economic survey of nearby villages, selecting suitable villages for adoption, conducting a comprehensive survey, identifying problems, and disseminating information about latest developments in agriculture, watershed management, wastelands, non-conventional energy, low-cost housing, sanitation, nutrition, personal hygiene, skill development, income generation, government schemes, legal aid, and consumer protection. The process also involves liaising between government and other development agencies for the implementation of various development schemes in selected villages.

MODULE III: Universal Human Values

The module covers various aspects of Buddhism, including Love and Compassion, Truth, Non-Violence, Righteousness, Peace, Service, Renunciation (Sacrifice) Tyaga, and Gender Equality and Sensitivity. It covers the practices of these concepts, including implementing them in daily life, promoting non-violence, practicing righteousness, fostering peace, and promoting service. The text also emphasizes the importance of promoting gender equality and sensitivity.

MODULE IV: Value Education (Unnati Foundation)

The module covers various skills and concepts related to the Unnati philosophy and brand. These skills include punctuality, cleanliness, hygiene, responsibility, gratitude, determination, persistence, respect, team spirit, adaptability, honesty, and communication. The focus is on developing positive attitudes, introducing oneself, and managing emotions. The text also emphasizes the importance of cleanliness, hygiene, and order in life. It also covers responsibility, goal setting, time management, and money management. The text also emphasizes the importance of gratitude, stress management, and critical thinking. The text also emphasizes the importance of self-learning and upskilling, as well as the importance of adaptability and flexibility in the workplace. The text concludes with a focus on forgiveness and forgiveness, as well as the importance of communication and support.

MODULE V: Financial Literacy

Financial planning, including life goals, savings and investments, retirement planning, cashless transactions, income, expenditure, budgeting, inflation, loans, insurance, and dos and don'ts. It covers popular asset classes, government schemes, mutual funds, securities markets, gold, real estate, retirement planning, and cashless transactions. It also discusses the impact of inflation on financial planning and provides guidance on loan management and insurance selection.

SEMESTER III

Maharashtra State Board of Technical Education, Mumbai									
Learning and Assessment Scheme for Post S.S.C D. Architecture									
Programme Name:		Diploma In Architecture			Academic Year:		2024-25		
Programme Code		AT			Duration:		16 weeks		
Semester:		Semester III			Scheme		K		
Sr No.	Course Title	Course Code	Credits	Theory		Practical		SLA	Total
				FA - TH	SA- TH	FA- PR	SA- PR		
1	Building Services	323323	3	30	70	25	25	-	150
2	Theory of Structure	323324	3	30	70	25	-	25	150
3	Basic Surveying (Architecture)	323321	4	30	70	25	25	-	150
4	Building Construction	323322	4	30	70	25	25	-	150
5	Architectural Design- I	323015	4	-	-	50	50	50	150
6	Essence on Indian Constitution	313001	1	-	-	-	-	50	50
7	Computer Aided Drawing-I	323016	1	-	-	25	25	-	50
Total			20	120	280	175	150	125	850

COURSE: BUILDING SERVICES

SEM- III

COURSE CODE: 323323

TEACHING HOURS:

- CLASSROOM LEARNING: 3 HRS/WEEK
 - LABORATORY LEARNING: 3 HRS /WEEKS
- TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Plan kitchen & toilet blocks in various types of buildings as per UDCPR and NBC provisions.
- Design water supply system for a given building project.
- Design sanitary system for a given building project.
- Design electrical wiring and lighting system for a given building project.
- Explain the importance of BMS, HVAC, Acoustics, Firefighting systems for a given building project.

COURSE OBJECTIVE

- Systems installed in buildings for comfort, functionality, efficiency, and safety.
- Systems include lighting, sanitary & water supply, fire safety, HVAC, ICT.
- Course aims to develop skills in these areas for interns, enhancing employability in construction industry.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Overview of building services and classification of buildings as per National Building Code.

An architect and interior designer's role involve completing building services, understanding functional requirements, and planning kitchen and toilets for residential, commercial, public, and institutional buildings using NBC and UDCPR.

Unit - II Building Water Supply and Rainwater Harvesting Systems.

Importance of water supply systems, Indian standards, bylaws, and approval from local authorities. It covers terminology, water sources, pumping, transportation, treatment, domestic water

distribution, cold and hot water distribution, and rainwater harvesting systems. It also covers the use of pipes, fittings, fixtures, and water sources.

Unit - III Building Sanitation Services.

Importance of building and sanitation services, including collection and disposal of refuse from different buildings. It covers drainage system terminology, sanitary wares, external drainage systems, traps, inspection chambers, manholes, disconnecting chambers, and municipal sewer disposal. It also covers septic tank details and capacity calculation.

Unit - IV Electricity and Lighting

The sources of electricity, distribution systems, wiring standards, types of cables, sheathing, shielding, cross section area, and color coding. It also discusses single and three phase wiring, circuit wiring, and safety devices. It also covers lighting concepts and factors influencing brightness.

Unit - V Advanced Building Services

The basics of natural and mechanical ventilation, HVAC, fire safety, firefighting systems, vertical transportation, acoustics, and building management systems.

READING LIST

Plumbing Design and Practice by Deolalikar. S.G. Mc-Grew Hill New Delhi

Fire Services in India: History, Detection, Protection, Management by Bag.S.P published with Mittal Publications New Delhi

Principle of fire safety engineering: understanding Fire and fire protection by Anil Kumar Das published with PHI learning pvt. Ltd. New Delhi

National Building Code Part: 1,4,8,9 by BIS published with Bureau of Indian Standards – New Delhi

COURSE: THEORY OF STRUCTURE

SEM- III

COURSE CODE: 323324

TEACHING HOURS:

- CLASSROOM LEARNING – 3 HRS/WEEK
- TUTORIAL LEARNING – 2 HRS/WEEEEK

TOTAL: 5 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNA FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR)

SLA – 25 MARKS

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Determine unknown forces of different system by applying the basics of mechanics.
- Check the stability of various force system.
- Find Center of Gravity and Moment of Inertia of various components in system.
- Determine the forces in truss and frame member.
- Draw S.F.D. & B.M.D. of a given beam section
- Identify the column and loading on column.

COURSE OBJECTIVE

- Emphasizes on stress analysis during design phase.
- Provides comprehensive understanding of forces acting on structures.
- Offers in-depth exploration of fundamental concepts in mechanic's laws.
- Discusses practical application of these laws to various structural problems.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Mechanics and Forces

The concept of force, its unit, characteristics, and effects, the principle of transmissibility, force system classification, force resolution, and force composition, using laws of triangle, parallelogram, and polygon.

Unit - II Equilibrium of Force System

Equilibrium and equilibrium, free body diagrams, force systems equilibrium, Lami's Theorem, beam types, support types, and loads acting on beams, beam reaction, and beam reaction with or without overhang.

Unit - III Centre of Gravity and Moment of Inertia

Concepts of C.G and M.I, their formulas for rectangular, triangular, circular, and semi-circular shapes, and the Parallel Axis Theorem and Radius of Gyration.

Unit - IV Frame and Truss

Introduction to plane lattice construction, frames, and trusses, discussing building construction terminology, geometry, perfect, imperfect, redundant, and deficient frames, and their effects on horizontal and vertical forces.

Unit - V Shear Force and Bending Moment

Definitions of Shear Force, Bending Moment, Point of Zero Shear, S.F max and B.M max, and the relationship between S.F.D and B.M.D for Simple Supported Beams with full U.D.L.

Unit - VI Analysis of Column

Compression members, Middle Third Rule, column core/kernel concept, Euler's Theory, Euler's Formula, Rankine's Theory, and various end conditions and effective lengths of columns for different materials.

READING LIST

Applied Mechanics by Khurmi R. S published with S. Chand & Co. New Delhi 2014

Engineering Mechanics by Ramamrutham S. published with S. Chand & Co. New Delhi 2008

Foundations and Application of Applied Mechanics by Ram H. D., Chauhan A. K. published with Cambridge University Press, Thomson Press India Ltd., New Delhi, 2015

Engineering Mechanics, Vol. I by Meriam J. L., Kraige L. G. published with Wiley Publication, New Delhi

COURSE: BASIC SURVEYING (ARCHITECTURE)

SEM- III

COURSE CODE: 323321

TEACHING HOURS:

- CLASSROOM LEARNING: 2 HRS/WEEK
 - LABORATORY LEARNING: 6 HRS /WEEKS
- TOTAL: 8 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Identify the type of survey required for a given situation.
- Apply conventional methods of surveying & levelling for architectural & planning projects.
- Create contour map / plan for architectural & planning projects.
- Apply modern methods of surveying and levelling for architectural & planning projects.
- Apply remote sensing and GIS tools in a given architectural & planning project.

COURSE OBJECTIVE

- Equips students with topographic features study principles and theories.
- Develops skills in landform analysis through map and field observation.
- Focuses on survey drawing preparation and interpretation.
- Discusses survey procedures, methods, tools, and equipment.
- Highlights recent advancements in landform survey and measurements.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Overview and classification of survey

Survey involves reading maps, understanding ground purpose, principles, units, scales, symbols, instruments, common errors, primary and secondary classifications, and scales like Engineers, RF, and diagonal. It includes studying landforms, topography, contours, slope analysis, and grading processes.

Unit - II Conventional Methods of Surveying

Introduction to linear measurements, distance measurement, angular measurements, and theodolite, which are used in setting out buildings and land surveying, and their application in plotting and surveying.

Unit - III Levelling

Terminologies, types of levels, leveling staff, leveling methods, and contour planning for sloping terrain. It also discusses the use of datum, benchmark, and GTS, and the importance of level back sight and intermediate sight in leveling.

Unit - IV Modern Methods of Surveying

The use of Electronic Distance Measurement Devices, Total Stations, Traversing, Contouring, Data Analysis, Building Construction, and Differential Global Positioning Systems in surveying, land surveying, and architectural projects.

Unit - V Remote Sensing and GIS

Use of remote sensing systems, GIS, drone surveying, and official websites for land maps in architecture, including BhuNaksha, Bhuvan, Google Earth, and Google Earth Pro. Open-source GIS programs are also discussed.

READING LIST

Surveying and Levelling by Basak N. N published with McGraw Hill Education, New Delhi

Surveying by Saikia, M.D., Das.B.M. , Das.M.M. published with PHI learning pvt. Ltd. New Delhi 20014

Advanced Surveying - Theory and Practice by Dr. Ramakant Agrawal, Parshottam Sarathe. published with AICTE, New Delhi

COURSE: BUILDING CONSTRUCTION

SEM- III

COURSE CODE: 323322

TEACHING HOURS:

- CLASSROOM LEARNING: 2 HRS/WEEK
 - LABORATORY LEARNING: 6 HRS /WEEKS
- TOTAL: 8 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Identify components of a given building structure.
- Select suitable type of foundation for a given building structure.
- Select suitable type of stone masonry for a given building structure.
- Illustrate brick masonry work for a given building structure.
- Undertake the scaffolding activity for a given building structure.

- Identify suitable type of doors, windows, roof, wall and floor finishing items for a given building structure

COURSE OBJECTIVE

- Core subject in Architecture.
- Covers construction activities of substructure, superstructure, building finishes, and building maintenance.
- Provides knowledge on building components and activities.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Overview of Building components

The National Building Code 2016 classifies buildings into load bearing, framed, and composite structures. Building components include substructure (foundation, plinth filling) and superstructure (walls, partition walls, cavity walls, sills, windows, floors, mezzanine floors, roofs).

Unit - II Construction of Substructure

Building layout involves site clearance, preparation, load bearing structure, and framed structure. Earthwork involves excavation, timbering, and strutting, with tools and plants used. Foundation

functions include shallow, stepped, wall, column, and deep foundations, as well as pumping methods.

Unit - III Construction of Superstructure

Stone masonry involves facing, backing heating, and joints, while brick masonry uses headers, stretchers, closers, and quoins. Comparisons are made between the two. Scaffolding is necessary for multi-storied buildings, and roofing materials include RCC, mangalore tiles, and more.

Unit - IV Building Communication and Ventilation

Horizontal communication involves doors, windows, fixtures, and fastenings, recommended by BIS. Vertical communication includes stair cases, ramps, lifts, and elevators, shaped and made of various materials.

Unit - V Building Finishes

Wall finishes such as plastering, pointing, and painting, as well as floor finishes like Shahabad, Kota, marble, granite, and more. It also covers the process of laying, construction, finishing, and polishing of these surfaces, as well as the importance of proper precautions.

READING LIST

Building Construction by S.P. Arora and Bindra published with Dhanpat Rai Publication, Delhi Edition 2013

Building construction illustrated by Francis D.K. Ching published with Wiley India, USA, 2014

Building Construction by S.K.Sma published with S. Chand and Co. Pvt. Ltd., New Delhi

A to Z Building Construction by Sandip Mantri published with Satya Prakashan; New Delhi (2015)

COURSE: ARCHITECTURAL DESIGN- I

SEM- III

COURSE CODE: 323015

TEACHING HOURS:

- CLASSROOM LEARNING: 2 HRS/WEEK
 - LABORATORY LEARNING: 4 HRS /WEEKS
- TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 50 MARKS (INTERNAL FA/PR) & 50 MARKS (EXTERNAL SA/PR)

SLA – 50 MARKS

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Apply basic concepts of Architectural Design for the given project.
- Prepare Architectural Drawings for the given project.
- Present reports on Case Study and Site Visit undertaken during the course.
- Prepare drawings for the given project using CAD Software.

COURSE OBJECTIVE

- Understanding various architectural profession layers.
- Acquiring basic skills for architectural design course.
- Developing graphical skills for design expression.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Basics of Architectural Design

Principles of design, elements like line, volume, form, texture, color, value, space, and light, scale for architectural design, reading and interpretation of architectural drawings, and human scale and proportion's relationship with space.

Unit - II Sketching, Drafting and Rendering Techniques

Free hand and 2D drafted architectural drawings, the required mediums and techniques, and the use of horizontal-vertical and intersecting planes to quantify space.

Unit - III Case Study and Site Visit

The importance of site visits and case projects in education lies in live sketching, preparing reports, and preparing measured drawings, as well as conducting case studies and conducting site visits.

Unit - IV Architectural Drawings by using CAD Software.

The basics of using CAD software for creating drawings, including initial settings, basic commands like line, fillet, trim, offset, copy, paste, layer usage, and incorporating text and dimensions in CAD drawings.

READLING LIST

Design Fundamentals in Architecture by V. S. Parmar published with Somaiyya Publication Mumbai.

Rendering with pen & INK by Robert Gill published with Thames & Hudson, London.

What Architecture Means: Connecting Ideas and Design by Denise Costanzo published with Taylor & Francis

COURSE: ESSENCE OF INDIAN CONSTITUTION

SEM- III

COURSE CODE: 313001

TEACHING HOURS:

- CLASSROOM LEARNING: 1 HRS/WEEK
TOTAL: 1 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

SLA – 50 MARKS

TOTAL: 50 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- List salient features and characteristics of the constitution of India.
- Follow fundamental rights and duties as responsible citizen and architecture of the country.
- Analyze major constitutional amendments in the constitution.
- Follow procedure to cast vote using voter-id.

COURSE OBJECTIVE

- Explores the basic structure and operational dimensions of the Indian Constitution.
- Highlights historical events leading to the creation of the Constitution.
- Defines the fundamental political code, structure, procedures, powers, and fundamental rights.
- Highlights the role of the Constituent Assembly in the Constitution's drafting.
- Discusses the preamble of the Constitution, defining its destination.
- Highlights the guarantee of fundamental rights through the Great Rights Revolution.
- Discusses the relationship between fundamental rights and duties.
- Discusses the futurist goals of the Constitution as incorporated in directive principles.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Constitution and Preamble

The Constitution of India, a historical document, is a fundamental document defining the country's legal system and guiding its citizens' rights and governance.

Unit - II Fundamental Rights and Directive Principles

The fundamental rights, duties, and relevance of Directive Principles of State Policy under Part-III, Part-IV-A, and Part-IV A.

Unit - III Governance and Amendments

The constitutional amendment procedures, their types, the principle of Federalism, and the establishment of special committees, and the major constitutional amendment procedures.

Unit - IV Electoral Literacy and Voter's Education

Electoral rights, registration processes, ethical participation, voter motivation, voter guides, prospective empowered voters, voting procedures, voter awareness, and online registration.

READING LIST

The Constitution of India by P.M.Bakshi published with Universal Law Publishing, New Delhi 15th edition, 2018

Introduction to Indian Constitution by D.D.Basu published with Lexis Nexis Publisher, New Delhi, 2015

Introduction to Constitution of India by B. K. Sharma published with PHI, New Delhi, 6th edition, 2011

The Constitution of India by B.L. Fadia published with Sahitya Bhawan, Agra, 2017

COURSE: COMPUTER AIDED DRAWING- I

SEM- III

COURSE CODE: 323016

TEACHING HOURS:

- LABORATORY LEARNING: 2 HRS /WEEKS
TOTAL: 2 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 50 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Explain basics of computer aided drawing software.
- Perform various commands of computer aided drawing software.
- Draw objects using computer aided drawing software.
- Create architectural drawings using computer aided drawing software.

COURSE OBJECTIVE

- Essential for drawing, reading, and interpreting architectural drawings.
- Enables editing and creation of new 2D drawings.
- Facilitates speed, accuracy, and repetitive use of drawings.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Introduction to Computer Aided Drawing software & commands.

The concept of drawing toolbar, command modification, tools, layers, text and rectangle commands, erase commands, and object selection.

Unit - II Use of Designed Plans for drafting

Use of computer-aided drawing software for designing plans, the properties of CAD commands, and their application in various applications.

Unit - III Architectural 2D drawing using computer aided drawing software.

Computer-aided drawing software to draft plans, apply line weight and hatching in architectural drawings, and prepare door, window, and opening schedules.

READING LIST

Auto CAD-2000 by Frey, David published with BPB Publication, New Delhi

Introduction to Auto CAD 2012 for Architectural Assistantship Applications by Yasmin, Nighat published with SDC Publication, 2011

Auto CAD 2016: A Problem-Solving Approach, Basic and Intermediate by Tickoo, Shyam published with CADCIM Technologies, 22nd Edition, August 2015

Auto CAD 2010 Instructor by Leach, James published with Tama Mc Graw Hill, New Delhi 2007

SEMESTER IV

Maharashtra State Board of Technical Education, Mumbai									
Learning and Assessment Scheme for Post S.S.C D. Architecture									
Programme Name:			Diploma In Architecture			Academic Year:		2024-25	
Programme Code:			AT			Duration:		16 weeks	
Semester:			Semester IV			Scheme		K	
Sr No.	Course Title	Course Code	Credits	Theory		Practical		SLA	Total
				FA - TH	SA- TH	FA- PR	SA- PR		
1	Environmental Education and Sustainability	314303	2	30	70		-	25	125
2	Estimating & Costing	324314	3	30	70	25	-	-	125
3	Building Construction & Technology	324313	3	30	70	25	25	-	150
4	Architectural Design-II	324011	4	-	-	50	50	25	125
5	Computer Aided Drawing-II	324012	2	-	-	25	25	-	50
6	Working Drawing	324013	3	-	-	50	50	25	125
Elective I (Any Three)									
7	Disaster management	324315	3	30	70	25	25	25	175
8	Housing	324316	3	30	70	25	25	25	175
9	Landscape Design	324317	3	30	70	25	25	25	175
Total			20	120	280	200	175	100	875

COURSE: ENVIRONMENTAL EDUCATION AND SUSTAINABILITY COURSE

COURSE CODE: 314303

SEM- IV

TEACHING HOURS:

- CLASSROOM LEARNING: 3 HRS/WEEK

TOTAL: 3 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

SLA – 25 MARKS

TOTAL: 125 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Identify the relevant Environmental issues in specified locality.
- Provide the green solution to the relevant environmental problems.
- Conduct SWOT analysis of biodiversity hotspot
- Apply the relevant measures to mitigate the environmental pollution.
- Implement the environmental policies under the relevant legal framework.

COURSE OBJECTIVE

- Human survival depends on nature, and threats to it impact human health and existence.
- Industrial development, population growth, and production demand accelerate resource depletion and ecosystem degradation.
- Awareness and societal participation are crucial to address environmental issues.
- Environmental education and sustainability offer an integrated, interdisciplinary approach for diploma engineers studying environmental systems and sustainability.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Environment and climate change

The importance of environmental studies, climate change, global warming, acid rain, ozone depletion, nuclear accidents, population growth, industrialization, 5R policy, climate change impact, sustainable development, SDGs, and zero carbon footprint for sustainable development in India.

Unit - II Sustainability and Renewable Resources

Natural resources, including forests, water, energy, land, and minerals, and the impact of overexploitation on the environment. It also discusses renewable and non-renewable energy sources, as well as green solutions like hydrogen, ocean, and tidal energy.

Unit - III Ecosystem and Biodiversity

Ecosystems, biodiversity, biodiversity assessment initiatives in India, SWOT analysis of biodiversity hot spots, and conservation of biodiversity, outlining its definitions, functions, and conservation laws.

Unit - IV Environmental Pollution

This unit provides a comprehensive overview of pollution, including its types, causes, effects, prevention measures, soil conservation, water pollution, air pollution, and noise pollution, as well as the roles and responsibilities of pollution control boards at both the central and state government levels.

Unit - V Environmental legislation and sustainable practices

The Indian Constitution mandates environmental protection and prevention, promoting public awareness, NGOs' role, and green technologies like solar desalination and electric vehicles. Information technology also plays a crucial role.

READING LIST

Environmental Studies by Erach Bharucha published with University Grants Commission, New Delhi.

Environmental Studies: From Crisis to Cure by Rajagopalan R. published with Oxford University Press, USA

A text book of Environmental Science by Shashi Chawla published with Tata Mc Graw-Hill New Delhi

A Text Book of Environmental science by Arvind Kumar published with APH Publishing New Delhi

COURSE: ESTIMATING & COSTING

SEM- IV

COURSE CODE: 324314

TEACHING HOURS:

- CLASSROOM LEARNING: 3 HRS/WEEK
- TUTORIAL LEARNING – 1 HRS/WEEK
- LABORATORY LEARNING – 2 HRS/WEEK

TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR)

TOTAL: 125 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Apply the principles of estimating & costing for different specifications relevant to the Architectural / Interior Design Project.
- Calculate quantities and cost for items of works relevant to the Architectural / Interior Design Project.
- Calculate rates for an item of work using the rate analysis process relevant to the Architectural / Interior Design Project.
- Select appropriate type of tenders, contracts relevant to the Architectural / Interior Design Project.
- Use relevant software for estimating the quantities and cost of items of works relevant to the Architectural / Interior Design Project.

COURSE OBJECTIVE

- Equips students with knowledge and skills for calculating quantities, cost of materials, labour, and tools.
- Acknowledges the need for local materials with varying rates.
- Uses rate analysis to justify final rates based on local market survey.
- Incorporates use of software tools for precise quantity determination.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Estimating, Costing and Specification

Introduction to estimation, costing, and measurement methods for architectural/interior design projects, using IS 1200 guidelines, State Scheduled of Rates (SSR), and preparing necessary drawings/information.

Unit - II Estimation of Civil / Interior Work

This unit covers the specific items of works for an Architectural/Interior design project, the introduction to measurement sheets, methods for quantity calculations, and estimation of quantities.

Unit - III Rate Analysis

This unit provides an in-depth analysis of rates, including terminologies, purpose, factors affecting rates, procedure, labour types, task work, and wages, specifically for Architectural/Interior Design Projects.

Unit - IV Tenders and Contracts

The terminology, purpose, and process of tendering, the types of tenders, the content of tender documents, the e-tendering process, and the types of contracts.

Unit - V Estimation using E-Tools

Using computer software or programmers for detailed work estimate preparation.

READING LIST

Estimating and Costing by Datta B. N. published with UBS Publishers Distributors Pvt. Ltd. New Delhi

Estimating and Construction Cost (Fifth Edition) by Peurifoy, Rebert I., Oberlender, Garold published with McGraw Hill Education, New Delhi

Estimating and Costing by Birdie G. S. published with Dhanpat Rai Publishing Company Ltd. New Delhi

Civil Engineering Contracts and Estimates by Patil B. S. published with Orient Longman Mumbai

COURSE: BUILDING CONSTRUCTION & TECHNOLOGY

SEM- IV

COURSE CODE: 324313

TEACHING HOURS:

- CLASSROOM LEARNING: 2 HRS/WEEK
 - LABORATORY LEARNING: 4 HRS /WEEKS
- TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 150 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Identify different components of retaining wall, types of foundation different waterproofing treatments and finishes for single basement structure.
- Explain building assembly with Stanchion, Beams, and Metal Deck Flooring and various structural steel members and connections for multi-Storey buildings.
- Identify components of different types of steel trusses for a given building structure.
- Explain different types of wall cladding and glazing for a given building structure.
- Use different types Plants, advanced tools and machineries in building construction Industry.
- Apply different steps involved in maintenance and demolition work of a building.

COURSE OBJECTIVE

- Understanding material properties and behaviors.
- Exploring construction techniques and testing methods.
- Mastering advanced technologies and construction methods.
- Overseeing field construction, maintenance, and repair work.
- Overseeing construction projects to meet high-quality standards.
- Focusing on operation and effectiveness of cutting-edge construction equipment.
- Selecting appropriate tools and methods for efficient construction processes.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Single basement structure

Engineering principles for underground structures, soil mechanics, and load distribution. It also discusses construction materials, their long-term performance, and latest methods for basements and retaining walls. Regular maintenance and safety protocols are also discussed, with workshops on inspection techniques and preventive measures.

Unit - II Steel Structures

This unit covers various structural steel components, bolted and welded connections, trusses, and their components. It also discusses principles, procedures, and code requirements for designing these components and the latest developments in steel structures.

Unit - III Building Cladding and Glazing

Cladding materials' properties, energy efficiency, thermal performance, sustainability, compatibility with architectural design, maintenance requirements, stick systems, installation techniques, and their impact on building aesthetics and comfort.

Unit - IV Advanced Machinery, Plants and Equipments.

The selection of equipment for excavation, earth moving, conveying, pumping, and concrete consolidation involves factors such as excavation equipment, earth moving equipment, conveyors, pumps, and vibrators. These factors influence the selection of equipment for various plants and processes.

Unit - V Building Maintenance

Cracks, settlement, demolition, and water proofing are crucial aspects of foundation construction. They include identifying and repairing cracks, settling foundations, and implementing demolition methods. Non-conventional methods like crystalline water proofing and cement base polymer coatings are also discussed.

READING LIST

Building Construction by S.P. Arora and Bindra published with Dhanpat Rai Publication, Delhi Edition 2013

Building construction illustrated published with Francis D.K. Ching. Published with Wiley India, USA, 2014

Building Construction by S.C. Rangawala published with Chariotar Publication, Dist-Anand

Building Construction by B. C. Punmia and A.K Jain published with Frewall Media, 2005

COURSE: ARCHITECTURAL DESIGN - II

SEM- IV

COURSE CODE: 324011

TEACHING HOURS:

- CLASSROOM LEARNING: 2 HRS/WEEK
 - LABORATORY LEARNING: 4 HRS /WEEKS
- TOTAL: 6 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 50 MARKS (INTERNAL FA/PR) & 50 MARKS (EXTERNAL SA/PR)

SLA- 25 MARKS

TOTAL: 125 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Explain the importance of typologies for commercial / institutional spaces.
- Apply all theoretical learning about the predesign concepts in the final design conventional methods of architectural design / Interior spaces project.
- Prepare design for space envelope architecture / interior design space.
- Design technical and sustainable approach towards the designed project.
- Demonstrate skills to represent the ideas in 3D model.

COURSE OBJECTIVE

- Emphasizes ergonomic and anthropometric approaches.
- Focuses on small commercial institutional building design up to 2000 sqm. to 5000 sqm. plot size.
- Covers maximum G+3 building structure.
- Interior Design course includes designing commercial retail stores, spas, restaurants, offices, banks, and experience centers.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Pre-design concept in context with anthropometry and ergonomics.

Assembling human scale data for commercial/institutional architecture/interior spaces, predesign concepts, check lists, space requirements, case studies, and concept discussions for project correctness.

Unit - II Zoning, planning and area statements

Predesigning area statements for zoning and planning, documenting the site, planning alternatives, and creating schematic layouts and working models using a material board.

Unit - III Planning & designing & 3D modelling.

The unit involves a scalable layout, structural indications, 3D sketches, and discussions with mentors to review and correct the design, ensuring a comprehensive understanding and demonstration of the project.

Unit - IV Structural design development / Service Layouts & Technical drawings

The process of studying a model, addressing structural issues, identifying important services, creating structural and service drawings for various layouts, and providing overlay drawings for coordination.

Unit - V Project development - Computerskill based.

This unit involves converting manual drawings into software-driven outcomes, printing and presenting them, printing prefinal portfolios, preparing final drawings and suggestions, and submitting the final portfolio.

READING LIST

Neufert Architects' Data by Ernst Neufert, Peter Neufert published with Oxford Brooks University

Theorizing a New Agenda for Architecture: An Anthology of Architectural Theory 1965 – 1995 by Kate Nesbitt (org) published with Princeton Architectural Press, 1996

Architecture: Form, Space and Order by Francis D. K. Ching Published by Van Nostrand Reinhold, 1979

The Future of Architecture by Frank Lloyd Wright Published by Random House Value Publishing, 1988

Space planning Basics by Karlen Mark published with Van Nostrand Reinhold, New York, 1992

Time Saver standards for Interior Design & space planning by Joseph D Chiara, Julius Panero, & Martin Zelnick, published with 2nd edition, Mc-Graw Hill professional, 2001

COURSE: COMPUTER AIDED DRAWING-II

SEM- IV

COURSE CODE: 324012

TEACHING HOURS:

- CLASSROOM LEARNING: 2 HRS/WEEK
 - LABORATORY LEARNING: 2 HRS /WEEKS
- TOTAL: 4 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

TOTAL: 50 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Explain the basics of 3D modelling software.
- Execute the diverse commands within 3D modeling software.
- Draw 3-dimensional objects & models using 3D modelling software.
- Produce the photorealistic rendered images, walkthrough & presentations.

COURSE OBJECTIVE

- Understanding 3D Modelling in Education
- Highlights its role in creating realistic perspectives.
- Reduces model rework and enhances productivity.
- Fosters proficient presentation skills through various software.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Basics of 3D modelling software.

Overview of 3D modeling computer-aided software, its types, and file formats for 2D drawings.

Unit - II Setting-up 3D Interface, modelling & drafting techniques.

Introduction to setting up a template, understanding the layout, using 3D modelling software interface, describing tools, creating basic shapes, objects, and models, and creating 3-D models using the software.

Unit - III Surfaces, materials, 3D Warehouse & Plugins.

Concepts of surfaces and surface modelling techniques, their application to objects and models in 3D modelling software, the integration of 3D Warehouses with 3D models, and the use of plugins.

Unit - IV Computer aided rendering, presentation & walkthrough.

Introduction to rendering principles, an overview of rendering setup and optimization techniques in software like V-Ray and Lumion, real-time rendering technologies and plugins, and presentation and walkthrough creation in computer-aided 3D modelling.

RADING LIST

Introduction to Google SketchUp, 2nd edition by Aidan Chopra, Laura Town, Chris Pichereau
Publisher: Wiley

Google SketchUp 8 For Dummies by Aidan Chopra Publisher: For Dummies

Google SketchUp: The Missing Manual by Chris Grover Publisher: O'Reilly Media

Real-Time Graphics Rendering Engine by Hujun Bao and Wei Hua Publisher: Springer
Publishing Company, Incorporated

Engineering Drawing by Bhatt, N.D published with Charotar Publications, Anand, 2016

COURSE: DISASTER MANAGEMENT

SEM- IV

COURSE CODE: 324315

TEACHING HOURS:

- CLASSROOM LEARNING: 3 HRS/WEEK
- LABORATORY LEARNING: 2 HRS /WEEKS
- TOTAL: 5 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

SLA – 25 MARKS

TOTAL: 175 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Explain various types of disasters.
- Apply the principal of disaster risk reduction (DRR)
- Explain the hierarchy of disaster mitigation and management.
- Explain disaster risk management in India.
- Prepare a case study report on disaster related topics.

COURSE OBJECTIVE

- Coordinates resources and responsibilities for community safety.
- Includes preventing, preparing for, responding to, and recovering from emergencies.
- Aims to educate students on disaster types, mitigation, rescue, and relief operations.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I TYPES OF DISASTERS

Disasters, including earthquakes, floods, and fires, are hazards with various causes and impacts. They can be classified by social, economic, political, environmental, health, and psychosocial factors. Global trends include urban disasters, pandemics, and climate change.

Unit - II DISASTER RISK REDUCTION (DRR)

The interrelated stages of disasters and the preparation for disaster reduction before, during, and after.

Unit - III HIERARCHY OF DISASTER MITIGATION AND MANAGEMENT

Importance of understanding the roles of various authorities, community and NGO contributions to disaster mitigation, and the early warning system, including stakeholder engagement, institutional processes, and advisory agencies.

Unit - IV DISASTER RISK MANAGEMENT IN INDIA

Disaster risk management readiness, collection of response and rescue data, and policy for rehabilitation by authorities are crucial aspects of disaster preparedness.

Unit - V APPLICATIONS AND FIELD WORK /CASE STUDIES

The roles and responsibilities of authorities during disasters, emphasizing the importance of effective rehabilitation and interaction with beneficiaries.

READING LIST

Disaster Management, Laxmi Publications, 2010 by Singhal J.P.

Disaster Science and Management, McGraw Hill India Education Pvt. Ltd., 2012. by Tushar Bhattacharya

Earthquake tips IIT Kanpur by IIT Kanpur

Earthquake Resistance Design of Structures by Dr. Manish Shrikhande

Proceedings of 17th Symposium on Earthquake Engineering by Dr. Manish Shrikhande

COURSE: HOUSING

SEM- IV

COURSE CODE: 324316

TEACHING HOURS:

- CLASSROOM LEARNING: 3 HRS/WEEK
 - LABORATORY LEARNING: 2 HRS /WEEKS
- TOTAL: 5 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

SLA – 25 MARKS

TOTAL: 175 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Identify different characteristics of housing areas.
- Apply principles & elements for housing design.
- Implement relevant policies for a housing typology.
- Plan various aspects of neighborhood.
- Select different construction materials & techniques of housing construction.

COURSE OBJECTIVE

- Covers urban housing challenges.
- Explores housing policy and affordability issues.
- Discusses sustainable housing solutions.
- Explores socio-economic factors' impact on housing.
- Provides understanding of building byelaws and housing guidelines.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Introduction of Housing.

Overview of housing, its definition and scope, and the significance and characteristics of housing design.

Unit - II Principles and Elements of housing.

Principles of construction include aspects like prospect, privacy, grouping, roominess, furniture, sanitation, flexibility, and practical considerations. Key elements include accessibility, orientation, contours, setbacks, wind flow, drainage, soil condition, and existing flora fauna.

Unit - III Typologies and Policies of housing.

Explores housing types, organization schemes, settlement planning, Vedic villages, towns, shelters, and civic buildings from ancient civilizations, including Indus Valley, Aryan/Vedic Civilization, Buddhist Architecture, and Indo Aryan & Dravidian Architecture.

Unit - IV Neighborhood.

Modern town planning concepts and neighborhood models from Clarence Stein, Clarence A Perry, N.L. Engelhard, and Jose Sert.

Unit - V Low-cost construction materials and techniques of housing.

Introduction and overview of the history, design, materials, construction techniques, and trends in affordable housing, specifically focusing on urban poor housing.

READING LIST

Town Planning by C.S. Rangwala published with Charotar Publishing House Pvt

Site Planning: Environment, Process and development. Michigan by Brooks. R. G

Town Planning by Abir Bandyopadhyay

Fundamentals of Town Planning by G.K Hiraskar Publisher. Dhanpat Rai Publication

COURSE: LANDSCAPE DESIGN

SEM- IV

COURSE CODE: 324317

TEACHING HOURS:

- CLASSROOM LEARNING: 3 HRS/WEEK
 - LABORATORY LEARNING: 2 HRS /WEEKS
- TOTAL: 5 HRS /WEEKS

TEACHING-LEARNING & ASSESSMENT SCHEME

THEORY – 30 MARKS (INTERNAL FA/TH) & 70 MARKS (EXTERNAL SA/TH)

PRACTICAL – 25 MARKS (INTERNAL FA/PR) & 25 MARKS (EXTERNAL SA/PR)

SLA – 25 MARKS

TOTAL: 175 MARKS

COURSE LEVEL LEARNING OUTCOMES (COS)

- Explain the scope and need of landscaping using elements and principles in the given situation.
- Suggest various landscape styles for indoor and outdoor spaces.
- Identify various types of softscape.
- Suggest various types of hardscapes.
- Select the appropriate tools and equipment required for landscaping.

COURSE OBJECTIVE

- Art of creating, designing, and planning indoor and outdoor spaces.
- Equips students with landscaping concepts and principles.
- Explores different landscape styles and plant study.
- Promotes manicured, predictable landscape design.
- Promotes environmental improvement.

THEORY LEARNING OUTCOMES AND ALIGNED COURSE CONTENT

Unit - I Introduction to Landscape Design

Introduction to landscape design, focusing on its scope, needs, aesthetics, and environment. It discusses landscape principles like balance, harmony, rhythm, scale, proportion, emphasis, and elements like color, texture, line of sight, and form.

Unit - II Landscape Styles

Introduction to English, Mughal, Spanish, Japanese, and Chinese gardens, covering their characteristics, elements, and case studies, as well as their respective case studies. It also includes case studies.

Unit - III Introduction to Softscape

This unit includes annual, biennial, and herbaceous perennials, shrubs like evergreen, deciduous, and fruit-bearing varieties, trees like flowering and fast-growing, climbers and creepers, cacti and succulents, indoor and outdoor plants, and ornamental plants.

Unit - IV Introduction to Hardscape

Hard elements of landscape include paths, driveways, fencing, decking, patios, steps, walls, sculptures, and gates, while hardscape materials include brick, gravel, rock, concrete, asphalt, timber, metals, and glass.

Unit - V Landscape Tools and Equipment's

Hand tools like shovels, rakes, and pruning shears are used in landscaping. Equipment like excavators, backhoe loaders, scrapers, and crawler loaders are used in landscaping. Planting tools include digging, watering, cutting, and planting tools.

READING LIST

The Landscape of Man: Shaping the Environment from Prehistory to the Present Day. By Geoffrey Jellicoe (Author), Susan Jellicoe (Author). Published with Thames & Hudson

Landscape Graphics. by Grant W Reid. Published with Watson-Guptill Publications

T. K. Bose (Author), B. Chowdhury. By Tropical Garden Plants in Colour. Publisher South Asia Books

Landscape Architecture in India. Mohammad Shaheer Geeta Wahi Dua, Adi Pal.

The Book of Indian Trees. By K C Sahni

Semester V & VI

Yet to be release from MSBTE and it will be update soon