Maulana Abul Kalam Azad University of Technology, West Bengal

(Formerly West Bengal University of Technology)

B. Voc. in Interior Design (UGC)

(Effective for Academic Session 2024-2025)

Year - 2 - Advanced Diploma (SEMESTER - III)

Paper Title: UIDV - 301: INTERIOR MATERIALS & PRODUCT - II

Job Role: Assistant Interior Designer

Course Objectives:

- To introduce students to various types of artificial and semi-precious stones, along with paints and polishes used in finishing.
- To explain the properties, types, and uses of ferrous and non-ferrous metals in different applications.
- To provide knowledge about plastics and polycarbonates, their characteristics, and applications in materials science.
- To familiarize students with different types of floor coverings and furnishings, focusing on selection and maintenance.

Course Outcomes:

CO 1: Identify and describe artificial stones, semi-precious stones, paints, and polishes and their roles in material finishing.

CO 2: Distinguish between ferrous and non-ferrous metals, understanding their properties and industrial uses.

CO 3: Understand the characteristics and applications of plastics and polycarbonates in various fields.

CO 4: Select appropriate floor coverings and furnishings based on material properties and maintenance requirements.

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(Effective for Academic Session 2024-2025)

Course Code:	**UIDV - 301**	
Course:	**INTERIOR MATERIALS & PRODUCT - II**	**Credits: 3L+1T**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	**Artificial stones, semi - precious stones, Paints, polishes:** **Artificial Stones:** Definition, types (cultured marble, engineered quartz, terrazzo), manufacturing process, properties, advantages, and interior applications (countertops, wall cladding, flooring). **Semi-Precious Stones:** Types (agate, jasper, onyx, lapis lazuli), sourcing, aesthetic and decorative use in luxury interiors, cost considerations. **Paints:** Types (emulsion, enamel, distemper, textured), composition, finishes (matte, gloss, satin), application techniques, durability, and color theory in interiors. **Polishes:** Types (French polish, melamine, PU polish), surface preparation, application methods, usage on wood and metal surfaces, maintenance.	**13**
Unit-II	**Ferrous and non - ferrous metals:** **Ferrous Metals:** Steel, cast iron, wrought iron – properties, fabrication techniques, finishes, corrosion resistance, and structural as well as decorative applications in interiors (railings, frames, furniture). **Non-Ferrous Metals:** Aluminium, copper, brass, bronze, zinc – properties, advantages over ferrous metals, use in light fixtures, wall panels, accessories. **Metal Finishes:** Powder coating, anodizing, electroplating, brushing, and their aesthetic and functional benefits. **Maintenance and Sustainability:** Rust prevention, recyclability, eco-friendly metal treatments.	**17**
Unit-III	**Plastics and Polycarbonates:** **Plastics:** Types (thermoplastics and thermosets), common materials (PVC, acrylic, polyethylene, polypropylene), properties, molding techniques, and interior uses (laminates, decorative panels, furniture). **Polycarbonates:** Characteristics (lightweight, high impact resistance, transparency), comparison with glass and acrylic, uses in partitions, skylights, and innovative design elements. **Recycled and Eco-Friendly Plastics:** Applications in sustainable design, environmental impact. **Performance Considerations:** Durability, fire resistance, UV stability, maintenance	**16**
Unit-IV	**Floor coverings and furnishings:** **Floor Coverings:** Hard flooring (tiles, stone, wood, vinyl), soft flooring (carpets, rugs), and resilient flooring (rubber, cork) – material properties, installation techniques, and suitability for various spaces. **Furnishings:** Window treatments (curtains, blinds), upholstery materials, cushions, bed linens – fabric types (cotton, linen, silk, synthetic blends), texture, color coordination, and functional considerations. **Acoustic and Thermal Considerations:** How floor and soft furnishings contribute to room acoustics and insulation. **Care and Maintenance:** Cleaning methods, durability, and lifespan of different materials.	**14**
	Total:	**60**

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Books Recommended:

- YouTube videos on construction operation using various building materials
- Latest construction technologies such as precast modular building and home construction
- Arora S P &Bindra S P, Building Construction, Dhanpat Rai& Sons, New Delhi, 1990.
- Deshpande R S, Build Your Own Home, Poona Book Corporation, Pune. 1985
- Deshpande R S, Engineering Materials for Diploma Students, Poona Book Corporation, Poona, 1985
- Deshpande R. S, Modern Ideal Homes for India, Poona Book Corporation, Poona, 1976
- Mehra. P, Interior Decoration, Hind Pocket Books Ltd. , Delhi, 1981

Paper Title: UIDV – 391 INTERIOR MATERIALS & PRODUCT LAB – II

Credit: 2P (Allotted Hours: 60)

List of Experiments: (Based on UIDV – 301)

- Knowledge on artificial stone, semi-precious stones by seeing and touching them for identification.
- Use of paints and polishes for home looks.
- Use of floor coverings and furnishings by manual use.
- PPT
- Paper presentation.
- Artificial stone, Quartz
- Natural stone
- Texture on different stones
- Difference between precious and Semi-precious stones
- Types of paints
- Wax paint and utilization
- Process of painting
- Materials used in painting
- Wooden and veneer polishing work
- Materials use of furniture polishing
- Different types of furniture paint
- Stones, Tiles, Marbel, Granite
- Floormat
- Different types of floors covering
- Furnishing materials and application

Paper Title: UIDV - 302: PARTITION, ILLUMINATION, AIR - CONDITIONING, PLUMBING & SANITATION

Job Role: Assistant Interior Designer

Course Objectives:

- To understand advanced partition systems, false ceilings, and raised flooring techniques used in commercial and IT environments.
- To learn illumination standards, lighting design principles, and explore artificial and daylight integrated lighting systems including automation.
- To introduce the basics of HVAC systems, thermal comfort, ventilation, air conditioning, and acoustics applied to interior spaces.
- To gain knowledge of plumbing tools, materials, pipe systems, water supply, drainage systems, and associated fittings and valves.

Course Outcomes:

CO 1: Describe and apply advanced partition systems, false ceiling types, and raised flooring for functional and aesthetic interior environments.

CO 2: Analyze lighting requirements, design artificial and daylight lighting solutions, and incorporate energy-efficient and automated lighting controls.

CO 3: Explain HVAC principles, perform heat load calculations, and design ventilation and air conditioning layouts suitable for interiors.

CO 4: Identify plumbing components, select appropriate materials and tools, and understand water supply and drainage system designs for building interiors.

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Course Code:	**UIDV - 302**	
Course:	**PARTITION, ILLUMINATION, AIR - CONDITIONING, PLUMBING & SANITATION** **Credits: 3L+1T**	
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	Advance Partition Sliding folding partition in metal and glass, Thermal/Acoustical partition and Systems: paneling in metal frame finished in various materials, movable partitions, False Ceiling: Concepts Systems: Gypsum board ceiling, modular ceiling systems in various materials, Raised flooring, Systems: Raised floor for commercial spaces and I. T. rooms.	**15**
Unit-II	Illumination standards and artificial lighting design and lighting power density, Day light integrated lighting systems, timers and sensors, Different types of illuminations, Study of lighting fixtures and fittings used in interior spaces, special lighting systems for malls or displays, Provisions of standards and energy codes related to interior electrical services, Automation in lighting industry	**13**
Unit-III	Introduction to HVAC, Principles of thermal comfort parameters for humans, Principles of natural ventilation, Heat load calculations, Introduction to air conditioning systems, methods of air conditioning, equipment and components used in air conditioning, Selection criteria for air conditioning systems, Ducting principles, layout schemes and placement of air conditioner outlets in central air conditioning systems, Mechanical ventilation and its application, Introduction to Acoustics and its application to interior.	**15**
Unit-IV	Dies and Taps, Description of pipe dies Taps, their uses, care &precaution. selection of Dies and Taps, Descriptions of the plumber's tools and equipments, Types of traps, Describe gully trap , man holes, Description of Plumbing, Materials (Pipes and other accessories), Description of various pipe joints, Type of joints used for Different materials, Description of Plumber's Materials (PVC Pipes and accessories for joining), Bending machine and method of bending, Description & types of water supply system, sources of water, composition of water Inspection and testing of water supply system, Description of cocks &Valves -their types, purpose materials, specification, Domestic drainage System, Describe - types -material application -specification of wash basin, bathtubs, sinks, and traps	**17**
	Total:	**60**

Books Recommended:

- Agan Tessi, The House - Its Plan and Use, JB Lippincott &Co. , 1976
- Alexander NJ Designing Interior Environment, Harcourt Brace, Johanovich, New York
- Allen Edward, How Buildings Work, Oxford University Press
- Conran T, New House Book, Guild Publishing, London
- De Chiara Joseph & Callender John, Time Saver Standards for Building Types for Architectural Types,
- Interior Design, McGrawHill Book Co.
- Deshpande, R S, Modern Ideal Homes for India, United Book Corporation, 1974
- Faulkner S. Planning a House, Holt, Richard &Winson
- Grandjean E, Fitting the Task to the Man; Taylor & Francis, London, 1988
- Leniham J & Fletchar W W, The Build Environment, Environment & Man, Vol. 8, Blackie
- Revi Aromar, Shelter in India, Vikas Publishing House, New Delhi

Paper Title: UIDV – 392 PARTITION, ILLUMINATION, AIR - CONDITIONING, PLUMBING & SANITATION LAB

Credit: 2P (Allotted Hours: 60)

List of Experiments: (Based on UIDV – 302)

- Concepts of partition, false ceiling, flooring and commercial spaces through manual application.
- Concepts of different lighting, respective designs and devices.
- Concepts of installing air conditioning system, functions .
- Knowledge based applications in plumbing tools and equipments.
- Knowledge based application in values, cocks and water supply
- PPT.
- Wooden partition
- Glass celling
- Hill area and sea area flooring
- Studio apartment space
- Different chandelier light
- Kids rooms light
- How to design commercial area with light according to the needs
- Different celling lights
- History of lighting
- Principal of illumination
- Hospitality & restaurant lighting
- Stormwater drainage
- Septic tanks and sewer connection
- SPA & wellness plumbing
- Advance plumbing and technology
- Design & layout integration
- Energy efficiency & sustainability

Paper Title: UIDV - 303: APPLICATION OF DESIGN CONCEPT

Job Role: Assistant Interior Designer

Course Objectives:

- To introduce fundamental design parameters, anthropometrics, ergonomics, and their role in shaping interior spaces and furniture.
- To develop design skills for medium-sized residential and small retail spaces applying anthropometric and ergonomic principles.
- To study various partition systems, wall cladding, paneling techniques, and modular furniture concepts for functional interiors.
- To design diverse residential spaces ranging from studio apartments to large multi-level luxury residences considering spatial and functional requirements.

Course Outcomes:

CO 1: Understand and apply anthropometric data and ergonomic principles in the analysis and creation of interior environments and furniture designs.

CO 2: Create functional and aesthetically pleasing designs for medium-sized residential and retail spaces by integrating design principles and human factors.

CO 3: Identify and specify appropriate partition systems, wall cladding materials, paneling techniques, and modular furniture based on interior requirements.

CO 4: Design efficient and comfortable living spaces for studio apartments and large luxury residences by applying spatial planning and user-centric design concepts.

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Course Code:	**UIDV - 303**	
Course:	**APPLICATION OF DESIGN CONCEPT**	**Credits: 3L+1T**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	Introduction to parameters of design, anthropometrics and ergonomics, human activity and use of interior spaces and furniture, Analysis of design to perceive elements which define the character of the environment, Analysis of design process, Concept formation for design.	**13**
Unit-II	Designing a medium size residential spaces (Master Bedroom not less than 18. 00 sq. mts with Attached Toilet not less than 5. 00 sq. mts & Childrens Bedroom not less than 18. 00 sq. mts), Study and application of anthropometry, ergonomics, design principles and components related to retail spaces. The design exercise may include small retail spaces such as Garment Boutique, mobile stores, Accessories store, small Café etc. (not exceeding 30. 00 sq. mts.)	**15**
Unit-III	Partition Systems: Wooden framed fixed partition with single/double skin, Aluminium framed Partition, Dry wall partition systems, Full glass partition with architectural hardware, Wall Cladding and Paneling: Wet and Dry wall cladding in different materials, Wall paneling in different materials, Modular furnitures: Introduction to modular furniture, analyzing the need and criteria for selection, materials used and constructional details.	**17**
Unit-IV	Design of Studio Apartment of Small or medium size not exceeding 50. 00 sq. mts. (Carpet Area), Large multilevel luxury residence such as a Penthouse, Bungalow etc. (Carpet Area between 200. 00 to 300. 00 sq. mts)	**15**
	Total:	**60**

Books Recommended:

- Agan Tessi, The House - Its Plan and Use, JB Lippincott &Co. , 1976
- Alexander NJ Designing Interior Environment, Harcourt Brace, Johanovich, New York
- Allen Edward, How Buildings Work, Oxford University Press
- Conran T, New House Book, Guild Publishing, London
- De Chiara Joseph & Callender John, Time Saver Standards for Building Types for Architectural Types, Interior Design, McGrawHili Book Co.
- Deshpande, R S, Modern Ideal Homes for India, United Book Corporation, 1974
- Faulkner S. Planning a House, Holt, Richard &Winson
- Grandjean E, Fitting the Task to the Man; Taylor & Francis, London, 1988
- Leniham J & Fletchar W W, The Build Environment, Environment & Man, Vol. 8, Blackie
- Revi Aromar, Shelter in India, Vikas Publishing House, New Delhi

Paper Title: UIDV – 393 APPLICATION OF DESIGN CONCEPT LAB

Credit: 4P (Allotted Hours: 120)

List of Experiments: (Based on UIDV – 303)

- Design and formation- concept and application.
- Designing a residential, Commercial retail spaces.
- Concepts and applications for various kinds of partitions and paneling used in recent home designs.
- Ways to learn and apply the skill of studio design of different measurements and levels.
- PPT
- Paper presentation.
- Design Process
- Research and development
- Concept design
- Application of drawing manual, software
- Residential design work
    - Bed room
    - Living room
    - Modular kitchen
    - Living room
    - Bathroom work
- Commercial design work
    - Showrooms
    - Office
    - Godown
- Interior partition work
- Different material used for partition work
- Paneling used for interior work
- Different types of paneling
- Materials used in paneling

Paper Title: UGEN – 381: VALUE EDUCATION & HUMAN RIGHTS

Course Objectives:

- To understand the concept of human values and the role of value education in personal and societal development.
- To analyze the impact of global development on ethics, values, and the challenges posed by cross-cultural influences.
- To learn therapeutic measures such as meditation, yoga, and physical exercises for mental and emotional well-being.
- To study the concepts, evolution, and legal framework of human rights, including protection mechanisms for vulnerable groups.

Course Outcomes:

CO 1: Gain knowledge about different types of human values and apply value education for personal growth and positive character formation.

CO 2: Evaluate the effects of globalization on ethical behavior and adolescent emotional challenges in a multicultural context.

CO 3: Practice and promote therapeutic techniques like meditation and yoga to improve mental health and emotional balance.

CO 4: Understand human rights concepts, relevant laws, and institutions for protecting rights and addressing violations effectively.

Course Code:	**UGEN – 381**	
Course:	**VALUE EDUCATION & HUMAN RIGHTS**	**Credits: 4P**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	**Concept of Value Education** • Meaning, definition, objectives, and importance of value education. • Philosophical foundations of values – moral, ethical, spiritual, social, cultural, political, and economic values. • Role of values in personal and professional life. • Sources of values: family, society, religion, culture, and education. • Value crisis in the modern world – materialism, consumerism, and loss of human touch. • Role of education in value formation. • Case studies of value-based living (e.g., Mahatma Gandhi, Swami Vivekananda, Mother Teresa).	**15**
Unit-II	**Human Rights: Foundations & Evolution** • Definition, nature, and scope of human rights. • Historical development of human rights: Magna Carta, American Bill of Rights, French Revolution, UN Charter. • Universal Declaration of Human Rights (UDHR), 1948 – significance and key provisions. • International Covenants on Civil, Political, Economic, Social, and Cultural Rights. • Generations of Human Rights (Civil-Political, Economic-Social-Cultural, Collective-Solidarity Rights). • Role of UNESCO, UNHRC, and other international organizations.	**25**
Unit-III	**Indian Perspective on Human Rights** • Human rights in the Indian Constitution – Preamble, Fundamental Rights, and Directive Principles of State Policy. • Fundamental Duties and their significance. • Constitutional safeguards for minorities, women, SC/ST, and other vulnerable groups. • Role of National Human Rights Commission (NHRC), State Human Rights Commissions (SHRCs). • Human Rights and Social Justice in India – issues and challenges. • Landmark Supreme Court cases on human rights in India.	**25**
Unit-IV	**Values in Personal and Social Life** • Values in individual life: honesty, integrity, empathy, non-violence, tolerance, cooperation, and compassion. • Interpersonal values – respect, trust, forgiveness, gratitude. • Social values – equity, justice, freedom, secularism, pluralism, democracy. • Gender equity and dignity of labor. • Role of media and education in promoting social values. • Civic responsibility, environmental ethics, and sustainable development.	**15**
	Human Rights Issues & Challenges • Human rights violations – child labor, bonded labor, custodial violence, trafficking, discrimination, refugees. • Human rights of marginalized groups – women, children, elderly,	

Unit-V	differently-abled, tribals, LGBTQ+. • Global issues: poverty, illiteracy, terrorism, displacement, communal violence, migration. • Environmental rights – right to clean water, air, and sustainable environment. • Human rights in the era of globalization and technology (digital rights, privacy, AI ethics). • Case studies of human rights violations and movements.	**15**
Unit-VI	**Education for Values & Human Rights** • Role of teachers, educational institutions, and curriculum in value inculcation. • Pedagogical approaches for value education – storytelling, group discussion, role play, debates, moral dilemmas. • Human rights education – objectives, strategies, and methodologies. • Value-based leadership and good governance. • Role of NGOs, civil society, and social movements in human rights protection. • Building a culture of peace and non-violence through education. • Project work, field visits, and community engagement.	**25**
	Total	**120**

Books Recommended:

- Value education and human rights, By R. P. Shukla, Sarup & Sons
- Value Education And Education For Human Rights, By V.C. Pandey, Gyan Publishing House.
- Education for Values, Environment and Human Rights, By Y. K. Sharma, Published by Deep and Deep Publications.
- Human Rights: Twenty First Century Challenges, edited by V.N. Viswanathan (ed. By), Gyan Publishing House.
- Education for Values, Environment and Human Rights, By J. C. Aggarwal, Shipra Publications, 2005
- Human Rights Education: A Global Perspective, edited by Hemlata Talesra, Nalini Pancholy, Mangi Lal Nagda, Published by Daya Books.
- Professional Ethics and Human Values, Premvir Kapoor, Khanna Publishing House (AICTE Recommended Textbook -2018)

Paper Title: UGEN – 382: BASIC ACCOUNTING

Course Objectives:

- To understand the fundamental accounting process, concepts, principles, and the use of the accounting equation to analyze financial transactions.
- To develop skills in preparing and posting journal entries, ledger accounts, bank reconciliations, and adjusting entries, and to prepare worksheets and financial statements.
- To gain knowledge of merchandising business transactions including purchases, sales, subsidiary ledgers, and the preparation of related journal entries.
- To learn payroll accounting, inventory and expense adjustments, and preparation of advanced financial statements such as multiple-step income statements and classified balance sheets.

Course Outcomes:

CO 1: Explain the accounting process, use accounting concepts, and analyze transactions using the accounting equation, T-accounts, and journal entries.

CO 2: Prepare charts of accounts, post journal entries to ledgers, reconcile bank statements, adjust entries, and prepare financial worksheets.

CO 3: Journalize and post adjusting and closing entries, understand merchandising transactions, and manage subsidiary ledgers for accounts payable and receivable.

CO 4: Prepare payroll records, calculate earnings and taxes, adjust inventory and expenses, and prepare multiple-step income statements and classified balance sheets.

Course Code:	**UGEN – 382**	
Course:	**BASIC ACCOUNTING**	**Credits: 4P**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	**Introduction to Accounting** • Meaning, objectives, and importance of accounting. • Users of accounting information – internal & external. • Bookkeeping vs. Accounting. • Basic accounting terms: assets, liabilities, capital, revenue, expenses, drawings, profit, loss, stock, etc. • Accounting principles: concepts (business entity, going concern, money measurement, accrual, conservatism, dual aspect, matching). • Accounting standards – overview.	**20**
Unit-II	**Double Entry System & Accounting Process** • Double entry principle and accounting equation. • Journal – meaning, features, format, rules of debit and credit. • Ledger – posting from journal to ledger, balancing of accounts. • Subsidiary books – cash book, purchase book, sales book, purchase return, sales return, petty cash book. • Trial Balance – objectives, preparation, errors and their rectification.	**25**
Unit-III	**Bank Transactions & Reconciliation** • Cash Book vs. Pass Book. • Causes of differences between Cash Book and Pass Book. • Bank Reconciliation Statement (BRS) – meaning, importance, preparation. • Adjusted Cash Book method.	**15**
Unit-IV	**Final Accounts of Sole Proprietors** • Meaning and preparation of Trading Account. • Profit & Loss Account – preparation and adjustments (outstanding expenses, prepaid expenses, accrued income, depreciation, bad debts, provisions). • Balance Sheet – preparation and classification of assets & liabilities. • Adjustment entries and their effect on final accounts.	**20**
Unit-V	**Depreciation, Reserves & Provisions** • Meaning, causes, and need for depreciation. • Methods of depreciation – straight line, written down value, annuity, depletion. • Accounting treatment of depreciation. • Provisions and reserves – differences and importance.	**25**
Unit-VI	**Introduction to Partnership & Company Accounts** • Partnership Accounts – features, partnership deed, capital accounts, interest on capital/drawings, profit-sharing ratio. • Admission of a partner – goodwill, revaluation of assets and liabilities. • Retirement & death of a partner – adjustments. • Introduction to Company Accounts – shares, debentures, issue and forfeiture of shares (basic concepts).	**15**
	Total:	**120**

Books Recommended:

- Basic Accounting: The step-by-step course in elementary accountancy, By Nishat Azmat, Andy Lymer, Hachette UK.
- Basic Accounting, By Rajni Sofat, PHI Learning Pvt. Ltd.
- BASIC ACCOUNTING, By SOFAT, RAJNI , HIRO, PREETI, PHI Learning Pvt. Ltd.
- Accounting for Beginners, By Kokab Rahman, Createspace Independent Pub, 2013

Year - 2 - Advanced Diploma (SEMESTER - IV)

Paper Title: UIDV - 401: QUANTITY SURVEYING & ESTIMATION

Job Role: Assistant Interior Designer

Course Objectives:

- To understand basic structural systems, types of loads, support, spans, and structural behavior including compression and tension, with consideration of seismic, wind, and time factors.
- To comprehend the importance of estimation and costing in interior design projects, including cost estimation for walls, flooring, ceilings, woodwork, furniture, plumbing, electrical fittings, and other special features.
- To learn the rules and methods of measurement, including the metric system, international units, degree of accuracy, and calculation procedures used in estimation.
- To develop the ability to analyze rates, including overhead costs, labor and material rates, and to prepare detailed specifications for various construction and finishing materials.

Course Outcomes:

CO 1: Explain structural systems, load types, and their behavior under various influences such as seismic and wind forces.

CO 2: Estimate costs for various interior components including walls, flooring, ceilings, woodwork, plumbing, and electrical fittings.

CO 3: Apply correct rules and methods of measurement and perform calculations with appropriate units and accuracy.

CO 4: Analyze and prepare rate analysis including overhead costs, material, and labor rates, and write detailed specifications for construction materials and finishes.

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Course Code:	**UIDV - 401**	
Course:	**QUANTITY SURVEYING & ESTIMATION**	**Credits: 3L+1T**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	Structural Systems, Load, Support, Span, Structural Behaviour, Compression, Tension, Influencing Factors - Seismic, Wind, Time.	**13**
Unit-II	Importance of Estimation & Costing In Interiors: Individual item, A room, A full apartment, A house. Main areas of Cost Estimation: Walls (plastering, white washing, painting, textured finish, panelling etc.), Flooring: material, laying, Ceiling: false ceiling, painting etc, Wood work (material, polishing, varnishing & other applied finishes), Furniture & furnishing, Plumbing, Drainage, Electrical fittings & layout, Other special features.	**17**
Unit-III	Rules & Methods of Measurement. Procedure of Estimating: Metric system and primary units, International system of units, Degree of accuracy, Calculations.	**13**
Unit-IV	Analysis of Rates: Overhead costs, Task or out turn work, Rates of material and labour (quantity take off schedule of item, schedule of rates, schedule of quantities), Preparing analysis of rates. Specifications: General specifications, Detailed specification of cement, concrete, R. C. C, brickwork, plastering, painting, whitewashing, colour washing snowcem, decorative cement colour washing, woodwork, varnishing etc.	**17**
	Total:	**60**

Books Recommended:

- Agnew, J. C. 'A House of Fiction: Domestic Interiors and the Commodity Aesthetic", in Bronner, S. (ed.)Consuming Visions: Accumulation and Display of Goods in America 1880 - 1920. New York: Norton, 1989.
- Ayres, James. Domestic Interiors: The British Tradition, 1500 - 1850. New Haven and London: Yale University Press, 2003.
- Baker, Malcolm. „Public Images for Private Spaces? The Place of Sculpture in the Georgian Domestic Interior", Journal of Design History, 20: 4 (2007), 309 - 23.
- Beard, Geoffrey. Craftsmen and Interior Decoration in England, 1660 - 1820. London: Bloomsbury Books, 1986.
- Bryant, Julius. „Curating the Georgian Interior: From Period Rooms to Marketplace?", Journal of Design History, 20: 4 (2007), 345 - 50.
- Arora B D, Electrical Wiring, Estimation & Costing, New Heights, Karol Bagh, New Delhi.
- Basu, Economical Building designs, Basu Publications, Kolkata.
- Hungtington & Whitney Clark, Building Construction John Wiley & Sons Pvt. Ltd.
- S.K. Sharma, Civil Engineering Construction Materials, Khanna Publishing House, New Delhi (AICTE Recommended Textbook – 2018)

Paper Title: UIDV – 491 QUNANTITY SURVEYING & ESTIMATION LAB

Credit: 2P (Allotted Hours: 60)

List of Experiments: (Based on UIDV – 401)

- Estimation of rates and respective costs w.r.t plasters, paints and furnishings. Individual item, a room, a full apartment, various ceilings, flooring and wood work.
- Concept to develop and apply the ideas of rates and cost estimation pertaining to plumbing drainage and electrical fittings.
- Learn to analyse and evaluate the rates and costs of items of interior design.
- A general survey (through paper presentation)
- Demonstration on various structural systems, behaviors and their factors.
- Learn and apply the procedure of estimating various systems and units viz metric system, primary units and so on.
- Learn, analyse and apply the rate analysis of overhead costs, material, task or out turn work
- Demonstration on the detailed specification of cement, concrete, white washing, colour washing snowcem and so on.

Paper Title: UIDV - 402: SECONDARY SERVICES

Job Role: Assistant Interior Designer

Course Objectives:

- To understand the functioning, types, and applications of lifts, escalators, travelators, and associated service systems.
- To gain knowledge of Public Health Engineering (PHE), electrical systems, illumination, and HVAC (Heating, Ventilation, and Air Conditioning) in buildings.
- To explore IT and networking infrastructure, landscape design considerations, and fire safety systems in building environments.
- To learn about CCTV systems, and integrated building, home, and office management systems for security and automation.

Course Outcomes:

CO 1: Describe the working and applications of lifts, escalators, travelators, and related service systems.

CO 2: Explain the components and functions of PHE, electrical, illumination, and HVAC systems.

CO 3: Understand the basics of IT networking, landscape planning, and fire safety systems within buildings.

CO 4: Demonstrate knowledge of CCTV and management systems for building security, automation, and monitoring.

Course Code:	**UIDV - 402**	
Course:	**SECONDARY SERVICES**	**Credits: 3L+1T**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	**Lifts and Escalators / Travelators, Service Systems:** **Lifts (Elevators):** Types (passenger, service, freight, stretcher), components (shaft, cab, motor, control panel), safety features, capacity planning, placement considerations in building design. **Escalators / Travelators:** Function, types, mechanics, placement and planning in commercial/public buildings, integration with architectural design. **Service Systems:** Garbage chutes, laundry chutes, dumbwaiters, and building utility corridors—purpose, design considerations, maintenance.	**14**
Unit-II	**PHE, Electrical /Illumination, HVAC:** **PHE (Plumbing and Sanitary Systems):** Water supply systems, drainage, sewage disposal, rainwater harvesting, plumbing fixtures and fittings. **Electrical / Illumination Systems:** Basics of electrical layout, types of wiring, circuit breakers, light sources (LED, CFL, halogen), lighting design for interiors (ambient, task, accent). **HVAC (Heating, Ventilation, and Air Conditioning):** Principles of thermal comfort, types of HVAC systems (centralized, split, VRF), ductwork design, air quality, energy efficiency.	**16**
Unit-III	**IT/ Networking, Landscape, Fire:** **IT and Networking:** Structured cabling systems, data and communication networks, server rooms, Wi-Fi integration, smart device compatibility in interiors. **Landscape Systems:** Hardscape and softscape elements in interior-connected landscapes (courtyards, green walls, terraces), irrigation systems, lighting, and sustainable practices. **Fire Detection and Protection:** Fire alarm systems, smoke detectors, sprinklers, fire extinguishers, emergency lighting, building codes related to fire safety.	**15**
Unit-IV	**CCTV, Building / Home / Office Management System:** **CCTV and Surveillance Systems:** Camera types, placement strategies, control rooms, integration with IT systems, data privacy. **Building Management Systems (BMS):** Centralized control for lighting, HVAC, security, access control, energy management. **Home and Office Automation:** Smart homes/offices—IoT-based controls for lighting, appliances, security, climate, and entertainment; voice and app-based systems. **Sustainability and Energy Monitoring:** Integration of green tech with BMS for energy efficiency and environmental monitoring.	**15**
	Total:	**60**

Books Recommended:

- Bryden, I. and Floyd, J. (eds). Domestic Space: Reading the Nineteenth - Century Interior. Manchester and New York: Manchester University Press, 1999.
- Busch, A. Geography of Home: Writings on Where We Live. Princeton, NJ: Princeton
- Architectural Press, 1999.
- Calloway, Stephen. Twentieth - Century Decoration: The Domestic Interior from 1900 to the Present Day. London: Weidenfeld & Nicolson, 1998.
- Cieerad, I. (ed.)An Anthropology of Domestic Space. Syracuse, NY: Syracuse University Press, 1999.

Paper Title: UIDV – 492 SECONDARY SERVICES LAB

Credit: 2P (Allotted Hours: 60)

List of Experiments: (Based on UIDV – 402)

- Learn the use of lift escalators and other service systems.
- Develop the concept and application of networking, landscape , fire and HVAC.
- Learn the basics of CCTV installation and office management system.
- PPT
- Paper Presentation.
- Introduction to vertical transportation
- Standards and codes (NBC, IS, EN, ASME)
- Interior considerations: (Cab finishes, flooring, lighting, mirrors, handrails)
- Escalator and moving walk system
- Introduction to networking in interior
- Structured cabling and layout planning
- Networking in commercial interior
- Fire protection safety
- Fire detection & alarm systems (smoke detectors / heat detectors)
- E-grass & interior landscape
- Case studies & applications
- Element of interior landscape
- Design integration of landscape
- Drafting & representation
- Case studies & project
- CCTV in different interior spaces
- Advanced technologies

Paper Title: UIDV - 403: LANDSCAPING & INTERIOR SCAPE

Job Role: Assistant Interior Designer

Course Objectives:

- To introduce the types of natural elements used in landscape architecture and the elements of interior landscape design.
- To understand the biology, care, and requirements of indoor plants, with a focus on their use in Indian interiors.
- To explore the physical attributes of plants and their role in landscape design, including integration with sculptures, lighting, and furniture.
- To study landscaping design parameters, indoor-outdoor spatial linkages, and maintenance techniques including irrigation systems.

Course Outcomes:

CO 1: Identify various natural elements used in landscape architecture and interior landscape design.

CO 2: Explain the biological needs and maintenance of different indoor plants suited to Indian environments.

CO 3: Apply design concepts involving plants, sculptures, lighting, and architectural features to create functional and aesthetic compositions.

CO 4: Demonstrate knowledge of landscaping parameters, plant maintenance, flower arrangement, and micro irrigation systems in built environments.

Course Code:	**UIDV - 403**	
Course:	**LANDSCAPING & INTERIOR SCAPE**	**Credits: 3L+1T**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	Landscape Architecture - Types of natural elements - stones, rocks, pebbles, water forms, plants and vegetation. Elements of interior landscape.	**15**
Unit-II	Plants & Landscape Design and Interiors - Types of indoor plants; plant characteristics - biology, soil, moisture, light nutrients, atmospheric conditions, growing medium, pests & diseases. Indoor plants in Indian context.	**14**
Unit-III	Design with Plants -The physical attribute of plants in relation to design. Appearance, functional, visual effects, selection and management of plant material of plants in landscape design and built environment. Design concepts related to use of sculpture, lightings, garden furniture, architectural features and grouping them into meaningful compositions for visual and functional effects.	**16**
Unit-IV	Landscaping Design Parameters & Different Types of Built Forms - Indoor and outdoor linkage to spaces. Landscaping of courtyards - residential and commercial forms. Indoor plants and their visual characteristics - colour, texture, foliage. Science ofmaintaining and growing greenery. Flowers in relation to visual perception in various indoor spaces and science of flower arrangement. Automatic irrigation costing and installation of micro irrigation systems**.**	**15**
	Total:	**60**

Books Recommended:

- Gerald Robert Vizenor - A Guide to Interior Landscapes, Univ of Minnesota Press, 1990.
- Hacheat, Blan - Plant Design.
- Laurie, Michael - An Introduction to Landscape. 2nd edition, Prentice Hall, New Jersey, 1986.
- Nelson Hammer and Mel Green - Interior Landscape Design, McGraw Hill, 1991.
- Trivedi. P. Prathiba - Beautiful Shrubs. Indian council of Agricultural Research. New Delhi, 1990.

Paper Title: UIDV – 493 LANDSCAPING & INTERIOR SCAPE LAB

Credit: 2P (Allotted Hours: 60)

List of Experiments: (Based on UIDV – 403)

- Knowing and identifying the various types of natural elements.
- Use and application of plants and landscape design interiors like (sculpture, garden furniture, growing greenery and so On).
- Micro irrigation system for flower arrangement – concept and application.
- Learn and apply the design with the use of plants.
- Learn and apply the visual effects of the plant materials on the landscape design and environmental set up.
- Develop the concept of indoor and outdoor linkage via spaces, use of spaces for both residential and commercial purposes.
- Learn the importance and application of indoor plants and their visual features fitted for interior design.
- PPT
- Paper Presentation.

Paper Title: UGEN – 481: ENVIRONMENTAL STUDIES

Course Objectives:

- To introduce the interdisciplinary scope and importance of environmental studies and promote awareness about natural resource conservation and ecosystem functioning.
- To understand biodiversity at global and national levels, its value, threats, and methods for conservation.
- To examine various types of environmental pollution, their causes, effects, and preventive strategies, along with disaster management and sustainable development practices.
- To analyze environmental ethics, major environmental issues, related legislation, human population impact, and the role of technology in promoting environmental and human health.

Course Outcomes:

CO 1: Explain the significance of environmental studies and the role of individuals in the sustainable use and conservation of natural resources and ecosystems.

CO 2: Identify the importance of biodiversity, its classification, threats, and methods of conservation in both in-situ and ex-situ contexts.

CO 3: Assess major environmental pollution types, disaster impacts, and suggest practical solutions for pollution control and sustainable living.

CO 4: Analyze environmental issues, legal frameworks, and demographic influences, and describe the use of information technology in addressing environmental and human health challenges.

Course Code:	**UGEN – 481**	
Course:	**ENVIRONMENTAL STUDIES**	**Credits: 4P**
Contents		
Chapter	**Name of the Topic**	**Hours**

Unit-I	**Introduction to Environment & Natural Resources**
	• Definition, scope, importance of Environmental Studies.
	• Components of environment – lithosphere, hydrosphere, atmosphere, biosphere.
	• Renewable & Non-renewable resources:
	  o Forest resources – uses, deforestation, afforestation, forest conservation.
	  o Water resources – uses, overexploitation, floods, droughts, conflicts over water, dams & their impacts.
	  o Mineral resources – exploitation, environmental effects of mining.
	  o Energy resources – renewable (solar, wind, hydro, biomass, geothermal) & non-renewable (coal, petroleum, natural gas, nuclear).
	  o Food resources – world food problems, sustainable agriculture.
	• Role of an individual in conservation of natural resources.
		20

Unit-II	**Ecosystems**
	• Concept, structure & function of an ecosystem.
	• Energy flow in an ecosystem – food chains, food webs, ecological pyramids.
	• Types of ecosystems:
	  o Forest ecosystem
	  o Grassland ecosystem
	  o Desert ecosystem
	  o Aquatic ecosystem (ponds, rivers, oceans, wetlands).
	• Biodiversity and its conservation:
	  o Levels of biodiversity – genetic, species, ecosystem.
	  o Value of biodiversity – consumptive, productive, social, ethical, aesthetic.
	  o Threats to biodiversity – habitat loss, poaching, pollution, invasive species.
	  o Conservation methods – in-situ & ex-situ.
		25

Unit-III	**Environmental Pollution**
	• Definition, causes, effects, and control measures of:
	  o Air pollution
	  o Water pollution
	  o Soil pollution
	  o Marine pollution
	  o Noise pollution
	  o Thermal pollution
	  o Nuclear hazards
	• Solid waste management – causes, impacts, control measures.
	• Role of individuals and communities in pollution prevention.
		15

Unit-IV	**Social Issues and Environment** • Sustainable development – concept and strategies. • Urban problems related to energy and environment.	**25**

	• Climate change, global warming, acid rain, ozone layer depletion. • Environmental ethics – issues and possible solutions. • Environmental impact of resettlement and rehabilitation projects. • Consumerism and waste products. • Environmental movements in India – Chipko, Silent Valley, Narmada Bachao Andolan. • Disaster management – floods, earthquakes, cyclones, landslides.	
Unit-V	**Environmental Policies, Acts & Human Rights** • Environment Protection Act, 1986. • Air (Prevention and Control of Pollution) Act, 1981. • Water (Prevention and Control of Pollution) Act, 1974. • Wildlife Protection Act, 1972. • Forest Conservation Act, 1980. • Issues involved in enforcement of environmental legislation. • Role of judiciary, public awareness, NGOs, and media. • Environmental rights as human rights.	**15**
Unit-VI	**Human Population and Environment** • Population growth, population explosion, and impact on environment. • Human health & environment – communicable and lifestyle diseases. • Family welfare programmes – role in controlling population. • Environment & human rights – equity and social justice. • Role of information technology in environment and human health (GIS, remote sensing, environmental monitoring). • Case studies: population & resource consumption, health epidemics, sustainable urban development.	**20**
	Total:	**120**

Books Recommended:

- M.P. Poonia & S.C. Sharma, Environmental Studies, Khanna Publishing House
- Mike Hulme, Climates and Cultures.
- Mark Garrett, Encyclopaedia of Transportation Social Science and Policy.
- Steel, Science An A - to - Z Guide to Issues and Controversies.
- John A Matthews, Encyclopaedia of Environmental Change.
- O.P. Gupta, Elements of Environmental Pollution Control, Khanna Publishing House

Paper Title: UGEN – 482: QUALITY MANAGEMENT

Course Objectives:

- To introduce the principles and evolution of quality management and key philosophies related to product and service quality.
- To develop understanding of process quality improvement using graphical and statistical tools, including the 7 QC tools.
- To impart knowledge on statistical methods, quality control techniques, and international standards for quality management and auditing.
- To explore modern quality improvement methodologies such as Six Sigma, QFD, Taguchi methods, and product reliability analysis for development processes.

Course Outcomes:

CO 1: Explain the historical development of quality management and compare different quality philosophies and concepts of quality costs.

CO 2: Apply basic graphical and statistical tools for analyzing and improving process quality.

CO 3: Utilize statistical techniques like hypothesis testing, control charts, and DOE for quality assurance and apply global standards and practices such as ISO and Six Sigma.

CO 4: Design and implement quality improvement strategies including QFD, FMEA, and Taguchi methods for product and process enhancement.

Course Code:	**UGEN – 482**	
Course:	**QUALITY MANAGEMENT**	**Credits: 4P**
Contents		
Chapter	**Name of the Topic**	**Hours**
Unit-I	**Introduction to Quality Concepts** • Definition of Quality – product-based, user-based, manufacturing-based, and value-based perspectives. • Evolution of Quality – from inspection to Quality Control, Quality Assurance, and Total Quality Management (TQM). • Importance of quality in business competitiveness. • Dimensions of product and service quality. • Quality gurus and their contributions – Deming, Juran, Crosby, Ishikawa, Taguchi, Feigenbaum. • Cost of quality – prevention, appraisal, internal and external failure costs.	**25**
Unit-II	**Quality Planning & Quality Standards** • Quality planning process – customer focus, requirement analysis, benchmarking. • Quality function deployment (QFD) – House of Quality. • ISO standards – ISO 9000 family, ISO 14000, ISO 22000, ISO 27000. • Six Sigma – principles, DMAIC methodology, belt levels (Green, Black, Master Black Belt). • Role of quality certification and auditing. • National and International Quality Awards – Deming Prize, Malcolm Baldrige National Quality Award, Rajiv Gandhi National Quality Award.	**15**

Unit-III	**Statistical Quality Control**
	• Role of statistics in quality management.
	• Process variation – common causes vs. special causes.
	• Control charts –
	  o Variables (X-bar & R charts, X-bar & S charts).
	  o Attributes (p-chart, np-chart, c-chart, u-chart).
	• Acceptance sampling – single, double, and multiple sampling plans.
	• Operating Characteristic (OC) curves.
	• Process capability analysis (Cp, Cpk, Cpm).
		25

Unit-IV	**Total Quality Management** • Principles of TQM – customer focus, continuous improvement, employee involvement. • Kaizen, 5S, and Poka-Yoke. • Benchmarking – process, types, and benefits. • Business Process Reengineering (BPR) and its relationship with TQM. • Quality Circles – structure, role, and benefits. • Role of leadership in quality improvement.	**15**
Unit-V	**Tools & Techniques for Quality Improvement** • Basic quality tools – cause & effect diagram, check sheet, control chart, histogram, Pareto chart, scatter diagram, flow chart. • Advanced tools – affinity diagram, tree diagram, matrix diagram, arrow diagram, PDPC. • Failure Mode and Effect Analysis (FMEA).	**20**

	• Root Cause Analysis (RCA). • Just-In-Time (JIT) and Lean Manufacturing. • Taguchi method for robust design.	
Unit-VI	**Quality in Services & Future Trends (20 Hours)** • Service quality vs. manufacturing quality. • SERVQUAL model – dimensions of service quality (tangibles, reliability, responsiveness, assurance, empathy). • Customer relationship management (CRM) & customer satisfaction measurement. • Quality in education, healthcare, and IT services. • Role of technology in quality – Industry 4.0, Artificial Intelligence, and IoT in quality management. • Future trends – sustainable quality management, green quality, and ethical quality practices.	**20**
	Total:	**120**

Books Recommended:

- D. C. Montgomery, Introduction to Statistical Quality Control, John Wiley & Sons, 3rd Edition.
- M.P. Poonia & S.C. Sharma, Total Quality Management, Khanna Publishing House (AICTE Recommended Textbook)
- Mitra A. , Fundamentals of Quality Control and Improvement, PHI, 2nd Ed. , 1998.
- J Evans and W Linsay, The Management and Control of Quality, 6'th Edition, Thomson, 2005
- Besterfield, D H et al. , Total Quality Management, 3rd Edition, Pearson Education, 2008.
- D. C. Montgomery, Design and Analysis of Experiments, John Wiley & Sons, 6th Edition, 2004
- D. C. Montgomery and G C Runger, Applied Statistics and Probability for Engineers, John Wiley & Sons, 4th Edition.