Final

DIPLOMA CURRICULUM OF ARCHITECTURAL ASSISTANTSHIP (THIRD YEAR) (5th Semester)

(To be implemented from 2026-27)

Prepared by;

National Institute of Technical Teachers' Training & Research Kolkata
Block – FC, Sector – III, Salt Lake City, Kolkata – 700106

Vetted by:
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State Council for Technical Education & Vocational Training
Near Raj Bhawan, Unit-VIII, Bhubaneswar, Odisha

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PROGRAMME TITLE: ARCHITECTURAL ASSISTANTSHIP

SEMESTER - V

SL. No	Category of Course	Code No	Course Title	Teaching Scheme				Evaluation Scheme				Total Marks	Credits
				Pre-requisite	Contact Hours/ week			Theory		Practical			
					L	T	P	End Exam	Progressive Assessment	End Exam	Progressive Assessment		
1	Programme Core	ARPC301 TH:1	Professional Practice		5	0	0	70	30	-	-	100	3
2		ARPC302 TH:2	Human Settlement Planning		5	0	0	70	30	-	-	100	3
3		ARPC303 TH:3	Vernacular Architecture		5	0	0	70	30	-	-	100	3
4		ARPC304 PR:1	Professional Training		0	0	0	-	-	30	70	100	4
5		ARPC305 PR:2	Landscape Architecture		0	0	6			15	35	50	2
6		ARPC306 PR:3	Interior Design		0	0	6	-	-	15	35	50	2
7	Programme Elective II	ARPE301 TH:4	(A)Design of R.C.C. Structure (B)Remote Sensing & GIS		5	0	0	70	30	-	-	100	3
8	Open Elective	Open Elective – I OE301 (Any one) TH:5	(A)Universal Human Values (B)Leadership and Management Skills (C)Professional Skills		5	0	0	70	30	-	-	100	3
9	Summer Internship	SI301	Summer Internship II		0	0	0	-	-	15	35	50	2
TOTAL					**25**	**0**	**12**	**350**	**150**	**75**	**175**	**750**	**25**

4 weeks Internship programme after 4th Semester

***The best of 2 IA conducted in a subject out of 20 marks to be considered. Assignment/ quiz etc. of 10 marks to be treated as part of IA. Besides this, Monthly Test to be conducted for each subject. Sessional Marks shall be total of the performance of individual different jobs/ experiments in a subject throughout the semester. Club/Innovation/ Idea Tinkering Activities etc. shall be encouraged to be performed by students beyond the above stipulated hours.**

NB- Professional training will be conducted in same organizations/firm for 6 weeks in continuation to summer internship program for better exposer of the students and the other curricular will be conducted for remaining 9 weeks.

SEMESTER - V COURSES

TH:1- PROFESSIONAL PRACTICE

L	T	P		Course Code: ARPC301	
5	0	0			
Total Contact Hours					
Practical		: 45Hrs	**Total Marks: 100**	End Term Exam	70
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**3**		Category of Course	: PC

RATIONALE:

To enable the students to understand the logistics of state & central govt. in enhancing better living conditions to all without losing the interest of self. It lays down the criteria for constructing built up spaces in cities & sub-urban; good pH & sanitation; safety & security, etc. and familiarize the students about current professional practice guidelines, codes, ethics as well as norms of professional fees & charges. It will expose them to skills and techniques for organizing a particular project, its preparation and execution etc. The same course will also contribute in getting acquainted with project management, contractual implication as well as legal formalities.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Discuss about the sanitation, safety and security
2. Understand the contractual implication & legal formalities.

DETAILED COURSE CONTENTS:

Unit No.	Topic/Sub-Topic	Allotted HRS.
1	**PRACTICING ARCHITECTURE** Introduction to Architects duties and liabilities, salient features of Understanding office management and project awarding; organization structure, responsibility towards employees, consultants & associates; maintenance of accounts; filing of records; balance sheet, Income tax; Service tax; Professional tax. Various architectural services, additional services and scale of professional fees. Building regulations related to submission of approval drawings to concerned public bodies.	12
2	**ARCHITECTURAL COMPETITIONS & LEGISLATIONS** Regulations governing the conduct of competitions, open & closed competitions Role of development authorities & urban arts commissions, Environmental acts & laws, special rules governing hill	13

	area development & coastal area management, heritage act of India etc. Pre-requisite for Indians to work in other countries & vice versa, emerging trends in architectural collaborations.	
3	**TENDER & CONTRACT** Types of tenders, invitation of tender and conditions of tender documents, submission, scrutiny, recommendations & award of contract. Definitions and general principles of Indian Contract Act and building, contract documents, conditions of contract, Execution of contract, various certifications, defects liability.	**10**
4	**ARBITRATION** Need for Arbitration, Principles of Indian Arbitration Act-1974, role of arbitrators, umpire etc, excepted matters, arbitral award. Municipal Acts, Fire prevention, safety and security measures in buildings.	**10**

References

1. COA. (1989). Architects (Professional conduct) Regulations, Architectural Competition guidelines. Council of Architecture Publications.
2. COA. (2005). Handbook of Professional Documents. Council of Architecture.
3. R H..Namavati, Professional practice, 7th ed,lakshmi book depot, mumbai,1997.
4. Environmental Acts of the Ministry of Environment & forests, Govt. of India
5. Architects Practice, J.J.Scott.
6. Handbook of Professional Practice, Madhav Deobhakta.

TH:2- HUMAN SETTLEMENT PLANNING

L	T	P		Course Code: ARPC302	
5	0	0			
Total Contact Hours				**Theory Assessment**	
Theory		: 45Hrs	**Total Marks: 100**	End Term Exam	70
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**3**		Category of Course: PC	

RATIONALE:

This course is designed to give basic inputs on Human settlement planning which are essential and prerequisite for architects.

LEARNING OUTCOMES:

Students will gather requisite knowledge about the built environment in the city, town and village level in a macro-scale. Types of human settlement, its characteristics and the planning process will be the domain knowledge. Students will be able to develop understanding of the basic principles of town planning and urban- rural interdependency.

DETAILED COURSE CONTENTS

Unit No.	Topic/Sub-Topic	Allotted Time (Hours)
I	**1.0 Introduction to Urban and Rural Planning** 1.1 Scopes and Objectives of Urban and Rural Planning 1.2 Physical Characteristics 1.3 Urban and Rural Inter relationship **2.0 City Master Plan** 2.1 State and explain the Master Plan 2.2 Need of a Comprehensive Development Plan 2.3 Objective, Process and Method of developing City Master Plan	15
II	**3.0 Survey** 3.1 Purpose of surveying 3.2 Surveying methods **4.0 Zoning** 4.1 Zoning regulation	15
III	**5.0 Housing** 5.1 Housing and Neighborhood units 5.2 Commercial centers **6.0 Traffic and transport system in towns and cities** **7.0 Appraisal of Master Plan of Bhubaneswar**	15

REFERENCES:

1	Town Planning, S.C.Rangawalla ,Khanna Publishing House
2	Urban Pattern City and Design, B.Gallion ,CBS

TH:3- VERNACULAR ARCHITECTURE

L	T	P		Course Code: ARPC303	
5	0	0			
Total Contact Hours			**Total Marks: 50**		
Practical		: 45Hrs		End Term Exam	70
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**3**		Category of Course	: PC

RATIONALE:

The course introduces grass root principles of indigenous architecture that has evolved over time in response to environment, climate, culture, economy and basic human needs. The course covers variations in built forms and their environmental performance across different climatic and geographical regions of India with more emphasis to Odisha. Cases studies of adaptations of vernacular architecture in contemporary buildings are also covered in the syllabus.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

1. Apply the principles of indigenous architecture.
2. Describe the environmental performance across different climatic and geographic regions in India.
3. Discuss about the case studies of adaptations of vernacular architecture.

DETAILED COURSE CONTENTS:

Unit No.	Topic/Sub-Topic	Allotted HRS.
I	INTRODUCTION TO VERNACULAR ARCHITECTURE Definitions and theories, Categories, Contextual responsiveness: Climatic, Geographical, Anthropological and Cultural influences	9
2	ENVIRONMENT AND MATERIALS Typical building materials, Built form and elements, Construction technique and Environmental performance	9
3	REGIONAL VARIATIONS IN BUILT FORM: TRIBAL ARCHITECTURE Settlement Pattern, Dwelling Typology, Symbolism, Typical features, Construction materials and techniques Andhra Pradesh, Madhya Pradesh, Odisha (Kondha and Santals)	9
4	REGIONAL VARIATIONS IN BUILT FORM: RURAL ARCHITECTURE	9

	Settlement Pattern, Dwelling Typology, Symbolism, Typical features, Construction materials and techniques Eastern Region Odisha Rural houses of the coastal and inland areas; Bengal Rural house form- Aat Chala houses, Thakur Bari (Mansions in North Kolkata). Western Region Rajasthan- Rural Jat houses for farming caste and Bhungas(Circular Huts) and Havelis; Gujarat- Deserts of Kutch, Pol houses of Ahmedabad, Wooden Havelis; Southern Region Kerala Nalukettu, Houses of Nair & Namboothri community, Koothambalam; TamilNadu Toda Huts, Chettinad Houses (Chettiars); Andhra Pradesh Rural Kaccha house Northern Region Kashmir Typical Kutcha houses, Dhoongas(Boathouses), Ladakhi houses, bridges ; Himachal Pradesh Kinnaur houses	
5	EXMPLES OF ADAPTATIONS IN CONTEMPORARY ARCHITECTURE (To be decided by subject teacher) Examples - Works of Laurie Baker, Hasan Fathy, Anil Laul, Gerard Da Cunha, Building Centres- Auroville, Anangpur, Nizamuddin Building Centre Basics of Architectural Heritage Conservation	9

REFERENCE BOOKS:

1. Paul Oliver. Encyclopedia of Vernacular Architecture of the World, Cambridge University Press, 1997.
2. Amos Rapoport. House, Form & Culture, Prentice Hall Inc. 1969.
3. R W Brunskill: Illustrated Handbook on Vernacular Architecture. 1987.
4. Ilay Cooper and Barry Dawson. Traditional buildings of India, Thames and Hudson Ltd., London. 1998.
5. Frampton, Kenneth. Towards a Critical Regionalism: Six points for an architecture of resistance, In The Anti-Aesthetic: Essays on Postmodern Culture. Edited by Hal Foster. Seattle, WA: Bay Press. 1983.
6. V.S. Pramar. Haveli- Wooden Houses and Mansions of Gujarat, Mapin Publishing Pvt. Ltd., Ahmedabad. 1989.
7. Kulbushanshan Jain and Minakshi Jain. Mud Architecture of the Indian Desert, Aadi Centre, Ahmedabad. 1992.
8. G.H.R. Tillotsum The tradition of Indian Architecture Continuity, Controversy Change since 1850, Oxford University Press, Delhi. 1989.

PR:1- PROFESSIONAL TRAINING

L	T	P		Course Code: ARPC302	
0	0	0			
Total Contact Hours			**Total Marks: 100**	**Practical Assessment**	
Training: 6 weeks				End Exam	30
				Progressive Assessment	70
Pre-Requisite : Nil					
Credit 5				Category of Course: PC	

RATIONALE:

This course is designed to give basic inputs through real life exposure in architectural farms which are essential and prerequisite for studying architecture.

LEARNING OUTCOMES:

Exposure to the professional field is required for the student to mentally and technically prepare them to handle architectural consulting work, and gain practical experience.

After completion of the training students will attach importance to the subject which is being applied in the work situations.

DETAILED COURSE CONTENTS

Unit No.	Topic/Sub-Topic	Allotted Time (Hours)
I	Students will be sent for **one and half month** to different architectural consulting firms and related industry and office (arrangement has to be made by HOD/training superintendent of the institute). Students will collect data and study about an ongoing live project of the office, will visit the construction site and will take photographs. They also required collecting data, site plan and conducting case study for their final project. At the end of the training they will face a jury for the final grand Viva-voice.	

PR:2- LANDSCAPE ARCHITECTURE

L	T	P		
0	0	6		**Course Code: ARPC305**
Total Contact Hours				**Practical Assessment**
Practical periods		: 60Hrs	**Total Marks: 50**	End Term Exam 15
				Progressive Assessment 35
Pre-Requisite		**: Nil**		
Credit		**2**		Category of Course: PC

RATIONALE:

This course is designed to give basic guidelines for landscaping of residential areas, commercial areas, parks & play areas and plaza & squares.

LEARNING OUTCOMES:

(i) Understand the role of landscaping in architecture;
(ii) Understand the basic principles of landscape architecture;
(iii) Have a comprehensive idea regarding the historical and modern garden patterns;
(iv) Be in a position to understand the guidelines for landscaping of residential areas, commercial areas, parks & play areas and plaza & squares.

DETAILED COURSE CONTENTS

Unit No.	Topic/Sub-Topic	Allotted Time (Hours)
I	**Module 1 INTRODUCTION** 1.1 DEFINITION of Landscaping 1.2 ROLE of landscaping in architecture **Module 2 PRINCIPLES OF LANDSCAPING** 2.1 EVOLUTION of Landscaping: Oriental and Occidental 2.2 RELATIONSHIP of man, building and landscaping 2.3 ELEMENTS of landscaping	20
II	**Module 3 HISTORICAL GARDEN PATTERNS** 3.1 ORIENTAL: Mughal & Japanese 3.2 OCCIDENTAL: French & Renaissance **Module 4 MODERN GARDEN PATTERNS** Rock Garden – Indoor Garden – Terrace Garden	20
III	**Module 5 GUIDELINES FOR LANDSCAPING** 5.1 RESIDENTIAL: Individual and group of buildings 5.2 COMMERCIAL: shopping mall 5.3 RECREATIONAL: Parks and Play Areas 5.4 PUBLIC SPACES: Plaza and Squares	20

REFERENCES:

1 Thompson, I.H, Ecology, community and delight: sources of values in landscape architecture, E&FN Spon London,2000.

2 Swaffield, Simon, Theory in landscape architecture, University of Pennsylvania Pres, 2001.

3 Waldheim, C, The landscape urbanism reader,1997.

PR:3- INTERIOR DESIGN

L	T	P		Course Code: ARPC313	
0	0	6			
Total Contact Hours			**Total Marks: 50**	**Practical Assessment**	
Theory		: 60Hrs		End Term Exam	15
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**2**		Category of Course: PC	

RATIONALE:
This course is designed to diploma holders in interior design and decoration have to assist designers and execute interior design projects.

LEARNING OUTCOMES:

After completing the course, the students will

- Able to know the design principles and design elements.
- Understanding the elements of design like form function, balance, light and shadow, shape, plane, volume, line, rhythm, proportions, textures, and other such related elements.

DETAILED COURSE CONTENTS

Unit No.	Topic/Sub-Topic	Allotted Time (Hours)
I	DESIGN: 1.1 Definition, attributes, composition of design, factors influencing design. Functional and aesthetic components of design, Principles of spatial order in design of interior spaces. 1.2. Disposition of functions vis-a-vis available space circulation pattern and anthropometric study, space requirements for various activities. Drawing line plans, elevations and section of interior spaces showing location and placement of various elements. The proportions of the different components of the human body; Examples from Le Corbusier's Modular Man, Marcus Vitruvius Pollio, Vastu Pursha Mandala 2. INTERIOR ELEMENTS : Role of walls, roofs, floors, staircase, doors and windows, light, colour and texture along with furniture in making interior schemes and spaces.	20

II	3. DESIGN STANDARDISATION: Standardization of various interior elements i.e. windows and doors- sizes, standards and locations. Counters (kitchen, reception, banks etc.), lighting fixtures and air-conditioning gadgets, Toilet fixtures, office automation system. Furniture standards (sizes of domestic and public furniture); Toilet and Kitchen equipment - sizes and standards; Vehicles in motion: parking along with turning radii for two-wheelers and cars (various segments; as per their sizes) 4. INTERIOR SCHEMES: Requirement of space (2-D,3-D) for various human activities, Preparing interior schemes for single room of generalized nature, Emphasis will be on lay out and circulation, Three dimensional views and rendering. 5. Prepare on scale, as-made measurement drawing of residence and its all living spaces with furniture layout.	20
III	6. Designing of residential interiors i.e. (Drawing rooms, Bed room, Lobby, Living room, Kitchen, toilet) with specific application of various building materials and interior finishes. 7. Plans, elevations and sections, with presentation in ink , colour and other mediums. With Graphic Representation of plant material (ground cover, foliage, shrubs, trees) human figures and vehicles.	20

INSTRUCTIONAL STRATEGY While imparting instruction, special visits may be arranged to demonstrate and explain important Architectural and Interior features of different types of residential, commercial and public buildings. Practicing architects and Interior Designers may be invited from time to time to present case studies and to deliver expert lectures on important elements like form, function, balance, light and shadow, shape, plane, volume, line, rhythm, proportions, textures and other such element appropriate to various designs. Teacher may present some of the already completed design works of practicing Designers to the students and explain the important features and elements. Audio-visual material available in this field may be procured and presented to the students from time to time. Students should be encouraged to visit relevant web- sites and teachers should develop the design problems/ assignments which can be taken up by the students using relevant and appropriate software. Students should be given group and independent design/ drawing assignments and they should also maintain sketch book/ portfolio of all the assignments given to them throughout the session. Teachers may conduct viva-voce on completion of each assignment. Students may present seminars towards the end of the session.

REFERENCES:

1.	Time Saver Standards for Building Types by Joseph De Chiara and John Callendera
2.	Time Saver Standards for Interior Design and Space planning by Joseph De Chiara, J. Panero and M. Jelnik
3.	Architects Data by Neufert
4.	Space, Form and Order by DK Ching
5.	Architectural Aesthetics by Sangeet Sharma, Abhishek Publication, Chandigarh

TH:4(A)- DESIGN RCC STRUCTURE

L	T	P	Total Marks: 100	Course Code: ARPC 303(A)
5	0	0		
Total Contact Hours				**Theory Assessment**
Theory		: 45Hrs		End Term Exam 70
				Progressive Assessment : 30
Pre-Requisite		**: Nil**		
Credit		**3**		Category of Course: PC

RATIONALE

A structure's safety and durability are dependent on its proper design, accurate detailing, and construction in accordance with specifications. Design of steel and RCC structures is therefore a crucial subject for a civil engineering diploma holder. The majority of the time to serve in a supervisory capacity on building projects. Diploma holders are also required to help designers, provide suggestions for design basic structural parts. The topic tries to address the aforementioned civil engineering aspects.

LEARNING OUTCOMES

After competing this course, student will be able to:

- Determine the development length in tension and compression members
- Apply the codal provision
- Design of singly and doubly reinforced RCC beam.
- Design of RCC beam for shear and development length.
- Design of short and long RCC columns.

COURSE CONTENT DETAILS

UNIT NO & TITLE	CONTENT	LECTURE HOURS
UNIT –I	**Shear, Bond and Development length in Design of RCC member** • Nominal shear stress in RCC section, Design shear strength of concrete, Design of shear reinforcement, • Minimum Shear Reinforcement, Provisions of IS 456 2000, forms of shear reinforcement • Types of bond, Bond stress, check for bond stress • Determination of Development length in tension and compression members and check as per codal provisions, Anchorage value of 90^{o} hook, Lapping of bars. • Simple numerical on: Shear reinforcement, Adequacy of section for shear. • Introduction to serviceability limit state check	**8**

UNIT –II	Design of axially loaded RCC Column • Definition and classification of column, Limit state of compression members, Effective length of column. • Provisions of IS 456 2000 for minimum steel, cover, maximum steel, spacing of ties etc.	**8**
	• Design of axially loaded short column - Square, Rectangular, and Circular only.	
UNIT –III	**Design of RC flanged beam** • General features of T and L beams, Advantages, Effective width as per BIS 456 2000 • Design of singly reinforcement T beam, Stress and Strain diagram, Depth of neutral axis, Moment of resistance, T and L beams with neutral axis in flange only. • Simple numerical on location of neutral axis, Effective width of flange.	**11**
UNIT –IV	**Design of slab** • Design of simply supported one-way slab for flexure, shear and deflection and checks, as per the provisions of BIS 456 • Design of one-way cantilever slab, Chajjas, Flexure including checks for Development length and Shear stress. • Design of two-way simply supported slab, • Introduction to design of dog-legged staircases	**9**
UNIT –V	**Design of Footing** • Design of Footing for uni-axial bending, column with uni-axial moment as per IS 456 provisions. • Effective length calculations, Minimum Eccentricity • Design of footing for axially loaded column only.	**9**
	Total	**45**

REFERENCE BOOKS:

1. Shah, V. L., and Gore, V., Limit State Design of Steel Structures, Structures Publications, Pune.
2. Dayarathnam P., Design of Steel Structures, S. Chand and Company, Delhi.
3. Subramanian N., Design of Steel Structures, Oxford University Press.
4. Sairam, K.S., Design of Steel Structures, Pearson Publication, Chennai, Delhi.
5. Shah, V. L., and Karve, S.R., Limit State Theory and Design of Reinforced Concrete Structures, Structures Publications, Pune,2014.
6. Sinha N.C., and Roy S.K., Fundamentals of Reinforced Concrete, S. Chand & Co., New Delhi.
7. Krishna Raju, and N. Pranesh, R.N., Reinforced Concrete Design Principles and Practice, New Age International, Mumbai.
8. Pillai, S.U., and Menon, Devdas, Reinforced concrete Design, McGraw Hill Publications, New Delhi.
9. Varghese, P. C., Limit State Design of Reinforced Concrete, Prentice Hall India Learning Private Limited, Delhi.

TH:4(B)- REMOTE SENSING AND GIS

L	T	P		Course Code: ARPE301(B)	
5	0	0			
Total Contact Hours				**Theory Assessment**	
Theory		: 45Hrs	**Total Marks: 100**	End Term Exam	70
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**3**		Category of Course: PE	

RATIONALE:
This course is designed to give basic inputs about usages of RS and GIS which are essential and prerequisite for students of architecture.

LEARNING OUTCOMES:
The course is designed to develop surveying ability using RS and GIS.

DETAILED COURSE CONTENTS

Unit No.	Topic/Sub-Topic	Allotted Time (Hours)
I	**1.0 Remote Sensing** 1.1 Definition & Concept of Remote sensing 1.2 Physics of remote sensing------- Electromagnetic radiation, Radiation Law, Electromagnetic spectrum, Relation between wave length & frequency, Visible spectrum, Infrared micro waves, Interaction of earth features with EMR. 1.3 Aerial photography – scale of aerial photographs Height measurements, concept of stereo photography, concept of photogrammetric 1.4 Different platform used in remote sensing. 1.5 Different Sensors used in satellite remote sensing and working concept of sensor. 1.6 Details of Remote sensing satellites---IRS series land sat, Spot, Envisat, Quick Bird, IKONS, ORBVIEW, Geoeye, etc. 1.7 Digital characteristics of satellite image, concepts of spectral, spatial, Radio metric & Temporal Resolution 1.8 Digital Image Processing (D I P) Geometric correction of satellite image. 1.9 D I P—Enhancement technique of satellite image. 1.10 D I P –Unsupervised & supervised classification. 1.11 Fundamental concept of land features mapping from satellite image of different Resolution.	15

II	**2.0 Geographic Information System** 2.1 Definition and concept of GIS. 2.2 Concept of Database Management System, example of spatial and Attribute. 2.3 Concept & comparison between vector and raster data, raster/ vector conversion. 2.4 Basic features in spatial database generation—point, arc, (line) node & polygon, topology. 2.5 Concept of coverage, shape files and eco files. 2.6 Digitization method, weed tolerance, node snap, arc snap fuzzy tolerance, tic matching. 2.7 Identification of errors – under shoot, over shoot, intersection errors, missing or multiple label points in polygons etc. 2.8 Joining of spatial and attribute data. 2.9 Spatial analysis—Boolean operation, clipping, intersection, buffer analysis. 2.10 Surface modeling—contour/lattice generation, T I N formation, slop/ aspect determination, cross section / profile generation etc. 2.11 Attribute Editing ---1 lecture. 2.12 Use of GIS in surface features and real world database linking & modeling with respect to survey & mapping.	15
III	**3.0 Global Positioning System (G P S)** 3.1 Need of GPS based surveys and introduction to GPS 3.2 Earth Coordinate System: concept of latitude and longitude, fundamental of projection system, definition of datum 3.3 Concept and working of GIS 3.4 Sources of errors in GPS observation 3.5 Current & Future satellite-based Navigation system 3.6 Concept and working of differential GPS	15

PRACTICAL

2.0 Scale determination of Aerial photography using (i) ground distance (ii) maps (iii) focal length / height formula.
3.0 Height measurement technique for A P.
4.0 Loading and display, changing of band combination & contrast of multispectral satellite image.
5.0 Image rectification with respect to existing Ground Control Points and existing maps.
6.0 Enhancement of satellite image and features (like road, river, bridge, etc) extraction from satellite image.
7.0 Creation of new shape files of any project area/ Digitization of features using points, lines, and polygons.
8.0 Attribute Database generation in D B F/ M S Access format.
9.0 Linking of spatial and Attribute database.
10.0 Contour map digitization and DEM /slope generation.
11.0 Map composition & statistics generation.

REFERENCES:

1	Remote Sensing and GIS
2	Remote Sensing and GISImage Interpretation, Lillesand
3	Basic of Remote Sensing and GIS, S. Kumar

TH:5(A)- UNIVERSAL HUMAN VALUES

L	T	P		Course Code: OE 301(A)	
5	0	0			
Total Contact Hours				**Theory Assessment**	
Theory		: 45Hrs	**Total Marks: 100**	End Term Exam	70
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**3**		Category of Course: OE	

RATIONALE:

The Universal Human Values (UHV) course aims to help diploma students develop a strong ethical foundation, nurturing responsible individuals who contribute positively to society. In an era driven by rapid technological advancements, it is crucial for students not only to gain technical expertise but also to cultivate values that promote harmony, respect, and sustainability.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

- Identify fundamental human aspirations such as happiness and prosperity.
- Differentiate between the self and the body and understand their respective needs.
- Practice self-reflection to improve decision-making, emotional balance, and personal growth.
- Develop respectful and trustworthy relationships within family, friends, and society.
- Explain the role of values like trust, respect, and love in building strong social bonds.
- Promote cooperation and harmony within communities through ethical practices.

DETAILED COURSE CONTENT:

Unit No.	Topic/Sub-Topic	Allotted Time (Hours)
I	**Introduction to Value Education and Human Values -** Concept and Need for Value Education - Understanding the importance of value education in personal and professional life, Differentiating between values and skills. Basic Human Aspirations - Exploring fundamental human aspirations: happiness and prosperity, Methods to achieve these aspirations through right understanding and relationships.	8
II	**Harmony in the Human Being -** Understanding the Self - Differentiating between the 'Self' (I) and the Body, Understanding the needs of the Self and the Body, Harmony of the Self with the Body - Ensuring the harmony of 'I' with the Body, Practices for mental and physical well-being.	8
III	**Harmony in the Family and Society -** Family as the Basic Unit of Society - Understanding values in human relationships, Trust and respect as the foundational values in relationships, Harmony in Society - The concept of an undivided society, Universal human order and world family.	8

IV	**Harmony in Nature and Existence -** Interconnectedness in Nature -Understanding the four orders of nature: material, plant, animal, and human, Mutual fulfillment among these orders, Co-existence in Existence - Holistic perception of harmony in existence, Role of human beings in maintaining environmental balance.	8
V	**Professional Ethics -** Ethical Human Conduct - Integrating values into professional life, Concept of professional ethics and accountability, Case Studies in Professional Ethics - Analyzing real-life scenarios to understand ethical dilemmas, Developing solutions based on universal human values.	8
VI	**Personal Development and Social Responsibility -** Self-Reflection and Self-Exploration - Techniques for self-assessment and personal growth, Setting personal goals aligned with universal values, Social Responsibility - Understanding one's role in society, Participating in community service and social initiatives.	5

REFERENCES:

1.	R. R. Gaur, R. Asthana, G. P. Bagaria, A Foundation Course in Human Values and Professional Ethics, 2nd Revised Edition, Excel Books, New Delhi, 2019.
2.	R. R. Gaur, R. Asthana, G. P. Bagaria, Teachers' Manual for A Foundation Course in Human Values and Professional Ethics, 2nd Revised Edition, Excel Books, New Delhi, 2019.
3.	A. Nagraj, JeevanVidya: EkParichaya, Amarkantak, 1999.
4.	A. N. Tripathi, Human Values, New Age Intl. Publishers, New Delhi, 2004.
5.	Moral Thinking: An Introduction To Values And Ethics, Vineet Sahu, IIT Kanpur: https://onlinecourses.nptel.ac.in/noc23_hs89/preview

TH:5(B)- LEADERSHIP AND MANAGEMENT SKILLS

L	T	P		Course Code: OE301(B)	
5	0	0			
Total Contact Hours				**Theory Assessment**	
Theory		: 45Hrs	**Total Marks: 100**	End Term Exam	70
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**3**		Category of Course: OE	

RATIONALE:

This course/subject on Leadership and Management Skills for students undergoing Diploma programmes is an exploration in leading and managing people, majorly in education based on sound and acceptable principles and theories for effective leadership. The leadership skills will enable them to take initiative, guide team efforts, motivate peers, and ensure effective collaboration. They'll learn how to delegate tasks, resolve conflicts, and foster a positive team environment. The management skills will help them in organizing tasks, setting timelines, and ensuring efficient workflow within a team.

It is expected that the students will be able to handle projects with better project outcomes and a earn a more productive learning experience. This will benefit their academic journey, future careers, and overall professional development:

LEARNING OUTCOMES:

After completion of the course, the students will be able to

- Explain the principles of management
- Collaborate across cultures for effective team work
- Communicate with people for a positive work culture
- Demonstrate personal dispositions, skills & abilities of a leader
- Undertake the process of change management
- Design training for staff development
- Adapt suitable leadership style for improved work efficiency.

DETAILED COURSE CONTENT:

Unit No.	Topic/Sub-Topic	Allotted Time (Hours)

I	**Leadership & Management, concept, principles.** • Definition of leadership, management • Leadership theories • Leadership characteristics • Principles of management • Managerial functions • Leader v/s Manager, Leader/Manager traits and character • Leadership Styles	10
II	**Human Resource Management in Organizations** • Human Resource Management: Meaning, Nature, Objectives, Scope • Job & Job analysis. • Staff Development: Need and Objectives of Staff Development, Approaches • Training & development • Organizational Development: Components of OD process. • Learning organization	10
III	**Personal disposition, skills & abilities of leaders** • Self-awareness • Leadership characteristics, traits • Leadership skills & abilities • Emotional intelligence & its components, importance in leadership • Communication skills for effective leadership, barriers to effective communication, Active Listening, Mindful listening. • Leading & Mentorship – Influencing & mentoring	09
IV	**Leader's role in Motivating, Inspiring and Transformative leadership, nurturing team-work** • Goal setting & leadership • Transformative Leadership, vision & envisioning • Motivational role of leader in people management • Group & team • Team dynamics • Conflict management, strategies in managing conflicts	08
V	**Change Management & Leadership** • Models of change • Forces driving change • Change Management – process, goal, importance • The process of change happening in an organization • Key aspects of leadership in change management – responsibilities of a change leader.	08

SUGGESTED ACTIVITIES:

- Group/individual presentation on the basic principles of leadership and management, Discussi2o0n on

readings - Individual or group presentation of assigned topics in class on leadership and management principles and theories.

- Activities on Envisioning, Goal setting
- ACTION PLAN to be prepared

REFERENCES:

1.	Theories of Educational Leadership and Management (3rd ed.), by Bush, Tony (2003). SAGE Publications, Ltd.
2.	The inspiring leader: unlocking the secrets of how extraordinary leaders motivate. By Zenger, John, Joseph Folkman, and Scott Edinger (2009). New York: McGraw Hill Press.
3.	Knowing yourself. On becoming a leader: the leadership classic. By Bennis, Warren (2009). New York: Basic Books.
4.	Leading Change. By P. Kotter, Harvard Business, 2012.
5.	The Fifth Discipline. By Peter M. Senge, Crwon Currency, 2006.
6.	The Leadership Sutra: An Indian Approach to Power. By Devdutt Pattanaik, – Penguin Random House, 2017.
7.	Leadership and Management. By Dr. A. Chandra Mohan. Himalaya Publishing House, 2010.

TH:5(C)- PROFESSIONAL SKILLS

L	T	P		Course Code: OE301(C)	
5	0	0			
Total Contact Hours			**Total Marks: 100**	**Theory Assessment**	
Theory		: 45Hrs		End Term Exam	70
				Progressive Assessment	30
Pre-Requisite		**: Nil**			
Credit		**3**		Category of Course: OE	

RATIONALE:

The term, "Professional skills" carries significant weight in the job market and career development. This open elective course explores various types of professional skills, their significance, and how they can be cultivated and harnessed for career progression. By understanding the landscape of professional skills, student can better position himself or herself for success in the competitive job market. It is crucial to continuously update and adapt the professional skills to stay ahead in a rapidly changing work environment. By investing in professional development, one can enhance employability and open doors to new opportunities.

LEARNING OUTCOMES:

After completion of the course, the students will be able to

- Demonstrate Self-competency and Confidence
- Practice Emotional Competency
- Work in a team work or in collaboration
- Demonstrate problem solving and decision-making skills
- Apply time management strategies and techniques effectively
- Apply professional ethics and integrity in professional and personal life

UNIT NO.	CONTENT	ALLOTTED TIME (HOURS)
I Communication Skills:	• Active listening • Verbal and non-verbal communication • Written communication • Presentation skills • Conflict resolution	08
II Teamwork and Collaboration:	• Building trust within a team • Effective collaboration strategies • Role delegation and responsibility sharing • Conflict resolution within a team	08
III Problem-Solving:	• Identifying root causes of issues • Generating solutions and evaluating options	08

	• Decision-making under pressure • Critical thinking skills • Triple constraint issues	
IV Time Management:	• Prioritization and task management • Setting realistic deadlines • Effective time planning and organization	06
V Emotional Intelligence:	• Self-awareness and emotional regulation • Empathy and understanding others' emotions • Managing interpersonal relationships • Motivation • Social skills • Emotional Intelligence (EQ) • Stress management	08
VI Professional Ethics and Integrity:	• Workplace ethics and code of conduct • Confidentiality and data privacy • Professional accountability- • Important Considerations:	07

REFERENCES:

1. Dr. Vitthal Gore: Professional Skills for 21st Century: A Key to Success: Blue Rose- ACADEMIC
2. The ACE of Soft Skills: Attitude, Communication and Etiquette for Success: PEARSON

3. The essence of Leadership: S. Manikutty: Bloomsbury

SUMMER INTERNSHIP - II

L	T	P		Course Code: SI 301	
0	0	0			
Total Contact Hours			**Total Marks: 50**	**Internship Assessment**	
Internship: 3-4 weeks				End Exam	15
				Progressive Assessment	35
Pre-Requisite : Nil					
Credit 2				Category of Course	: SI

Duration: 3-4 weeks after 4th Semester.

RATIONALE:

Summer Internship - I is to offer a structured and practical learning experience that prepares individuals for their future careers, helps them make informed career choices, and equips them with the skills and knowledge necessary to succeed in their chosen field. This course provides opportunities to students for hands-on industry experience.

LEARNING OUTCOMES:

After completion of the course, the students will be able to:

4. Apply theoretical knowledge gained in their academic coursework to real-world
5. situations.
6. Develop and refine specific skills relevant to the field.
7. Gains hands-on experience in a professional network by interacting with mentors
8. and industry professionals.
9. Learn to manage their time effectively.
10. Clarify career goals.

DETAILED COURSE CONTENTS:

Unit No.	Topic/Sub-Topic
I	**Orientation:** • Introduction to the organization's mission, values, and culture. • Familiarization with workplace policies, procedures, and safety guidelines. • Orientation to the team and organizational structure.
II	**Project-Based Learning:** • Description of the main project or tasks the intern will be working on during the internship. • Detailed project goals and objectives. • Training and guidance on project-specific tools, technologies, or • methodologies.

III	**Technical and Skill Development:** • Training sessions or workshops to enhance technical skills relevant to the internship role (e.g., programming languages, software tools, laboratory techniques). • Soft skills development, including communication, teamwork, problem solving, and time management
IV	**Mentorship and Supervision:** • Regular meetings with a designated mentor or supervisor for guidance, feedback, and support. • Mentorship objectives and expectations.
V	**Professional Development:** • Sessions on professional etiquette, networking, and building a personal brand • Resume writing and interview preparation workshops.
VI	**Industry and Field-Specific Knowledge:** • Lectures, seminars, or presentations on industry trends, best practices, and emerging technologies. • Guest speakers from the field to share insights and experiences.
VII	**Reporting and Documentation:** • Training on how to document project progress, results, and findings. • Practice in creating reports, presentations, or other deliverables.
VIII	**Ethics and Professionalism:** • Discussions on ethical considerations within the field. • Scenarios and case studies related to ethical decision-making
IX	**Feedback and Evaluation:** • Regular performance evaluations and feedback sessions. • Self-assessment and goal-setting exercises.
X	**Networking and Industry Exposure:** • Opportunities to attend industry conferences, webinars, or networking events. • Encouragement to connect with professionals in the field.

NOTE

As per AICTE guidelines, in Summer Internship-I, students are required to be involved in Inter/ Intra Institutional Activities viz;

- Training with higher Institutions;
- Soft skill training organized by Training and Placement Cell of the respective institutions;
- contribution at incubation/ innovation /entrepreneurship cell of the institute;
- participation in conferences/ workshops/ competitions etc.;
- Learning at Departmental Lab/ Tinkering Lab/ Institutional workshop;
- Working for consultancy/ research project within the institutes and
- Participation in all the activities of Institute's Innovation Council for eg: IPR workshop/Leadership Talks/ Idea/ Design/ Innovation/ Business Completion/ Technical Expos etc.