SYLLABUS: SEMESTER I

SEMESTER 1

19LA01001: LANDSCAPE DESIGN - 1

Course Code	Course	Hrs Per Week			Credits	Marks					Total
						CA			UE		
		T	W /L	S		Asg mt.	CT	Sub total	Jury	Writ ten	
19LA01001	Landscape Design -I	0	0	10	10	150	0	150	150		300

COURSE OVERVIEW

* To understand the process of landscape design and to analyze landscape design elements at micro and macro level, in terms of their form, function and aesthetics, by undertaking studio projects dealing with design of outdoor spaces.

COURSE OUTCOMES

Upon completion of the course,

* Site planning process and its significance; establishing relationship between site characteristics and design requirements.
* Successful tackling of a design problem and bringing it to a schematic level of completion.

COURSE CONTENTS

1. **Major Project**

   The major project/design exercise shall be of neighbourhood level, various typologies; urban and rural experiments; children's' play areas, etc for sites up-to 2 acres. The course work shall include

- Introduction to Landscape Design Process
- Site analysis and site planning (sites up to 2 hectares)
- Landscape design proposal
- Studying elements of landscape design and its use in the design of outdoor spaces

2. **Minor Project**

   The studio work may include minor projects like introductory exercises in Art, Architecture & Landscape, design of outdoor furniture, courtyards, water- elements etc.

REFERENCES

1. Harris.C.W and Dine.N.T ; Time Saver Standards For Landscape Architecture, Mcgraw –Hill International Edition, Arch. Series
2. Reid G. W: (1987) Landscape Graphics.
3. Reid G. W: (1993) From Concept to Form: In Landscape Design. John Wiley & Sons
4. Kevin Lynch & Gary Hack: (1984) Site Planning, The MIT Press
5. Starke .B and Simonds. J. O. (2013) Landscape Architecture: A Manual of Site Planning and Design. 5 editions. McGraw-Hill Professional
6. Simonds. J. O. (1961). Landscape Architecture, the Shaping of Man's Natural Environment. London: F.W. Dodge Cooperation.
7. Baker.B.H (1987) A Dictionary of Landscape Architecture, Albu : University Of New MexicoPress
8. All publications by AVA

SEMESTER I

19LA01002: LANDSCAPE ENGINEERING-I

Course Code	Course	Hrs Per Week			Credits	Marks					Total
						CA			UE		
		T	W /L	S		Asg mt.	CT	Sub total	Jury	Writ ten	
19LA01002	Landscape Engineering- I	0	0	5	5	100	0	100	100		200

COURSE OVERVIEW

* Understanding the technical requirements of several aspects of the landscape architect's work, tools and techniques to shape the existing land in the form of intended design etc.

COURSE OUTCOMES

Upon completion of the course,

* Site planning process and its significance; establishing relationship between site characteristics and design requirements.
* Successfully tackling of a design problem and bringing it to a schematic level of completion.

COURSE CONTENTS

- Site Survey and Appraisal; topographic surveys and their methodology, visualising landforms, Understanding contours and their characteristics, graphical representation, deriving contours by interpolation.
- Earth form Grading; symbols and annotations, existing and modified contour mapping, basic grading principles, Earthworks cut and fill processes, volume computations, grading terraces, grading of roads across/along contours, Basics of road alignment (horizontal and vertical)
- Understanding Land/environmental modifications and engineering interventions for soil conservation, erosion control, slope stabilization etc
- Surface Drainage: Site planning for efficient drainage; understanding drainage pattern and watershed area, calculation of surface runoff, determination of catchments area and discharge rate; types of drainage systems, design of drainage elements: swales and culverts etc, sub-surface drainage planning.
- Planning, grading and drainage of sports fields.

REFERENCES

1. Harris.C.W and Dine.N.T ; (1997) Time Saver Standards For Landscape Architecture, Mcgraw – Hill International Edition, Arch. Series

2. Storm.S and Kurt Nathan P.E;(1985) Site Engineering for Landscape Architects, AVI Publishing Company

3. Landphair H C; (1984) Landscape architecture construction. Elsevier

4. Christensen A J; (2005) Dictionary of Landscape Architecture And Construction .McGraw-Hill

5. Thomas J. R. Hughes;Site Engineering for Landscape Architects

6. Untermann, R. (1973) Grade Easy: an introductory course in the principles and practices of grading and drainage, Landscape Architecture Foundation7. Littlewood Michael: Tree Detailing. London. Butterworth Architecture, 1988.

8. Littlewood Michael: Landscape Detailing Vol.1 Enclosure

9. Hazlett Thomas C: Land Form Designs. P D A Publication

SEMESTER I

19LA01003: THEORY OF LANDSCAPE ARCHITECTURE-I

Course Code	Course	Hrs Per Week			Credits	Marks					Total
						CA			UE		
		T	W /L	S		Asg mt.	CT	Sub total	Jury	Writ ten	
19LA01003	Theory of Landscape Architecture-I	2	0	0	2	25	25	50		100	150

COURSE OVERVIEW

* To equip the students with the knowledge base regarding history of landscape Architecture with the various theories that has guided the landscape design through the ages.

COURSE OUTCOMES

Upon completion of the course,

* Development of an analytical approach to the study of theory; developing an attitude towards critique and evaluation of choices for design decisions in varied contexts of space and time.
* Appreciation of scale in terms of garden, landscape and nature

COURSE CONTENTS

Module I: Perceptions of landscape

- Man and nature, and the process of transforming landscapes; Changing perceptions of man's relationship with nature in various phases of history; responses and attitudes to nature and landscape resources as a function of this perception;Landscapes of Power, Faith and Place
- An introduction to social and cultural dimensions of landscape; Theories and Landscape design: Habitat theory, Personal space, Prospect –refuge theory. Perception, Behavior, etc.

Module II: Landscape design and gardens till the early 19th century

Chronology of landscape development, Comparative analysis of examples of landscape separated in time and space: siting, relationship to surroundings, use of landscape elements, function, scale, symbolism, etc. Illustrative range of examples from various geographic locations and periods,

highlighting aspects of Form, Space and Order, Examples from Ancient Gardens – Mesopotamia, Egypt, Greece, Rome & Western Civilsation- Europe; Italy, France, England

- Ancient Gardens and its characteristics: Mesopotamia- Hanging Gardens of Mesopotamia, Egypt- Temple of Karnak, Greece- Acropolis, Rome- Tivoli gardens
- Western Civilisation: Italian Renaissance Gardens- Villa lante, Villa Medici, Tivoli Grdens; Italian Baroque Gardens- City of Versailles, Piazza of St. Peters Basilica, French Gardens- Vaux- Le- Vicomte, Palce of Versailles
- Western Civilisation: English Picturesque Gardens-William Kent(Phase 1), Rousham House; Capability Brown(Phase 2),Stowe house, Hyde Park Gardens; Humphrey Repton(Phase 3)- Sheringham Park, Norfolk

Module III: Landscape development in the East and Cross cultural Influences

- Early traditions and beliefs about landscape and environment in east and in India; Chronology of Indian Landscape development; Aryan period; Dravidian landscape (Harappa); Ancient Indian traditions – Vedic, Jainism, Buddhism(Lumbini and Sanchi)and later **Hindu movements;** Symbolic meanings and sacred value of natural landscapes; Ancient Indian traditions; siting of structures, complexes and cities; symbolic meanings and sacred value attributed to natural landscapes; traditional landscapes such as ghats, gardens, kunds, sacred groves etc. Landscape in myth and poetry.
- Transfer of concepts through Buddhism to China; Chinese landscape development, gardens of China- Imperial, Private, Monastic and Designed landscapes of public areas; Pre Buddhist Japanese landscapes, impact of China on Japanese gardens; Japanese gardens and its types- Dry/Zen/Rock Garden, Hill and Pond Garden, Tea Garden, Stroll Garden, Paradise garden, Courtyard Garden etc with typical examples; Art of Bonsai
- Nomadic culture of central Asia, advent of Islam; Middle-east: Persian traditions(Persepolis) and its far reaching influence; concept of Paradise as a garden; influence of Persian traditions towards the West and Western expression of Islam –Moorish Gardens- Spain Alhambra and General life, Granada.
- Eastern expression of Islam, Samarkhand and Mughul Gardens in India; Mughal concepts of site planning,Tomb Garden and pleasure garden; Shalimar Gardens of Srinagar and Lahore, Gardens of Nishant Bagh, Pinjore etc, Mughal Gardens at Taj Mahal, Sikandra, Humayuns Tomb and Red Fort; Rajput Landscapes (Mandor Gardens in Jodhpur and Chittor)
- Influences and linkages across cultures and traditions, e.g Chinese tradition and the English Landscape style; Thai Gardens, Colonial landscape development in India, Mughal and

English style at Rashtrapati Bhavan, New Delhi; Development of Botanical Gardens in India like Bryant Park, Kodaikanal, Botanical Gardens, Ooty etc

REFERENCES

1. Jellicoe G. and Jellicoe S;(1995).The Landscape of Man: Shaping the Environment from Prehistory to the Present Day: Thames and Hudson
2. Bill Risebero(1996), The Story of Western Architecture :
3. Pregill,Phillipandvolkman,Nancy,Van Nostrand Reinhold, Landscapes in History Design and planning in the western tradition
4. Tobey, George, Elsevier and Co, History of Landscape Architecture: The relation of people to Environment
5. Turner .T (2010), Asian Gardens: History, Beliefs and Design. London and New York: Routledge
6. Turner .T (2011),European Gardens: History, Philosophy and Design. London and NewYork: Routledge
7. Rogers.E.B;(2001)Landscape Design: A Cultural and Architectural History: Harry N.Abrams
8. Waymark J,Georges T. (2000) History Of Garden Design; Thames & Hudson
9. Moore C W / Mitchell W J;(1993) Poetics of Garden; London: MIT Press

SEMESTER I

19LA01004: PLANT SYSTEMATICS, PROCESSES, AND HORTICULTURAL PRACTICES

Course Code	Course	Hrs Per Week			Credits	Marks					Total
						CA			UE		
		T	W /L	S		Asg mt.	CT	Sub total	Jury	Writ ten	
19LA01004	Plant systematics, processes, and horticultural practices	2	0	0	2	25	25	50		100	150

COURSE OVERVIEW

* Introduction to the characteristics of Plant materials which are an important part of soft landscape, international nomenclature used for plants and their associations in nature.
* To promote understanding of the factors that regulates the growth and characteristics of the plant material.

COURSE OUTCOMES

Upon completion of the course,

- Understanding and identification of native flora , its functions and appropriate horticultural practices

COURSE CONTENTS

Module I: Plant Systematics and Processes

- Classification of plant kingdom, Taxonomy: rules of nomenclature and identification, General study of plant morphology and anatomy to understand plant functions. Plant identification criteria: growth habits, habitat, origin, growth duration, leaf arrangement, leaf type, main flower colour, flowering period, family, genus etc ; Structural characteristics of plants, trees, shrubs and ground covers; Identification of native flora and its identification
- Plant processes, water relation, photosynthesis and respiration. Stem, root and leaf relationship, , Growth Regulators; Response to stimuli and modification; Application of Plant

Physiography to sustainable landscape design such as use of CAM (Crassulacean acid metabolism) plants in Green roofs etc.

- Mineral nutrition and nutrients; Nitrogen, Phosphorus, Potassium, Calcium, Magnesium, Sulphur –Significance, Sources and Deficiency; enzymes and metabolism; growth and flowering.

Module II: Horticultural Practices

- Introduction to horticulture; classification of horticultural plants and its characteristics; Soil: formation, composition, types, texture, pH and conductivity; Garden tools and implements; Preparation of bed;Potting mixture
- Plant nutrition and supplements. Fertilizers and Manures- types, methods of applications,. Common plant pests, diseases and their control, insecticides and their application, weed control; Biofertilizers & Biopesticides ; Biological Control ; Sustainable practices in pest management and weed control.
- Advantages of organic manures and fertilizers. Composition of fertilizers – NPK content of various fertilizers. Common organic manures – bone meal, cow dung, poultry waste, oil cakes, organic mixtures and compost. Preparation of compost - aerobic and anaerobic - advantages of both; vermicompost - preparation, vermiwash.
- Irrigation methods - surface, sub, drip, spray irrigations, mist chambers . - advantages and disadvantages - periodicity of irrigation, Water budgeting .

Module III- Plant Propagation

- Methods of plant propagation; Seeds - advantages and disadvantages; Vegetative propagation - advantages and disadvantages; Natural methods of vegetative propagation; Artificial methods - cutting, grafting,budding and layering; Micro-propagation; Use of growth regulators for rooting.
- Establishment and maintenance of grass, Lawn preparation by seeds, seedling and turfing, shrubs and trees with respect to ground preparation, planting and transplanting, protection of plants during and after planting.
- Physical control of plant growth: training and pruning. Bonsai - selection of plant - bonsai containers and method of bonsai formation.Maintenance methodology, maintenance economics and maintenance details for all soft landscape; Plant growing structures: green house, orchidarium, conservatory.

Note: A **Plant & Ecology Laboratory** for studies in ecology, growth characteristics, design applications, plant material and their groupings, techniques and methods of plant manipulation may be done. This lab shall be in the form of a greenhouse and a nursery.

REFERENCES:

1. Raunkier.C., the Life forms of Plants and statistical plant geography, 1934.

2. Venkateswaralu.V.A., Text book of Botany, Vol III, Guntur.

3. Lawrence.H.M., Taxonomy of vascular plants, Oxford, IBH, 1964.

4. Rao.K.N.R. and Krishnamurthy.K.N., Angiosperms, S.Viswanathan Printers andpublishers.

5. Adams C R, Early M P, 2004. Principles of Horticulture. Elsevier, N. Delhi.

6. Barton West R, 1999. Practical Gardening in India. Discovery Pub. House, New Delhi.

7. Edmond J B, Senn T L, Andrews F S, Halfacre P G, 1975. Fundamentals of Horticulture (IV Edn).

TMH, New Delhi.

8. Sadhu M K, 1996. Plant Propagation. New age International publishers, N. Delhi
9. Mohammed Shaheer, Geeta Wahi Dua, Adit Pal,2013. Landscape Architecture in India: A Reader,LA, Journal of Landscape Architecture

SEMESTER I

19LA01005: GEOLOGY, SOILS AND GEOMORPHOLGY

Course Code	Course	Hrs Per Week			Credits	Marks					Total
						CA			UE		
		T	W /L	S		Asg mt.	CT	Sub total	Jury	Writ ten	
19LA01005	Geology, Soils and Geomorpholgy	2	0	0	2	25	25	50		100	150

COURSEOBJECTIVE

* To introduce the basic concepts and theories related to Geology, Soil, geomorphology, etc and how it affects landscape design.

COURSE OUTCOMES

Upon completion of course,

* Characteristics of landforms and soils, and its effect on landscape design

COURSE CONTENTS

Module I: Geology and Geomorphology

- Geology: History of earth, earth's structure, tectonic plates, lithosphere, asthenosphere, rocks – igneous, metamorphic & sedimentary, rock cycle, minerals
- Indian geology, geologic time scale of India, Deccan Basalt volcanism, Plate tectonics, mountain building, earthquakes, volcanoes & tsunamis, glaciers of India, geothermal fields of India.
- Application of geologic principles to environmental problems e.g.: Stream restoration, hydrogeology, geotourism
- Geologic maps, Surveying: Reading Soil, topographic construction, Geodesy, hydrographic, photogrammetry & GIS maps.

- Geomorphology and Surface processes, landforms – Glacial, Aeolian, Fluvial, deformations in landforms; Types of Weathering, Landforms made by Weathering and Erosion, Landforms made by tectonic activity, Coastal Processes, Control of Geology on landforms

Module II: Soils

- Introduction to geology of the state and of India , Soil types, Soil Formation ,Classification of soils and their properties, Soil- water or soil moisture types, soil –water relationship
- Soil modifications, Problems of soils, Acid, Alkaline, Saline soils, Sulphide soils, Essential mineral nutrients of soils, Manure and Fertilizers.

MODULE III: SOIL CONSERVATION AND MANAGEMENT

- Soil conservation, type, factors, methods of conservation, prevention of soil erosion,Soil conditioning and amendment, soil mixtures and alternative to soils.
- Soil Management: Angle of repose, Soil evaluation and land-use planning, Soil conservation and erosion control, Slope stabilization, Soil fertility and plant nutrition
- Soil degradation and control due to mining, quarrying etc, remedial actions and reclamation techniques, managing difficult soils.

REFERENCES

1. Shaheer .M, Dua G.W and Pal.A .(2012) Landscape Architecture in India: a reader .India: La, Journal of Landscape Architecture
2. Harris.C.W and Dine.N.T ; (1997) Time Saver Standards For Landscape Architecture, Mcgraw –Hill International Edition, Arch. Series
3. Storm.S and Kurt Nathan P.E;(1985) Site Engineering for Landscape Architects, AVI Publishing Company
4. Arbogast A; (2011) Discovering Physical Geography 2nd Edition :Wiley
5. Bateman G : Ed;(2008) Encyclopedia Of World Geography: Book Sales
6. Craul T A; (2006) Soil Design Protocols For Landscape Architects And Contractors: Wiley
7. M S Krishnan ; (2006) Geology Of India And Burma;6th Edition : CBS Publishers & Distributors
8. Dr. J. A. Daji, revised by Dr. J. R. Kadam&Dr. N. D. Patil ; A text book of Soil Science; Mumbai : Media Promoters & Publishers Pvt. Ltd.,

SEMESTER I

19LA01006: HYDROLOGY AND WATER MANAGEMENT

Course Code	Course	Hrs Per Week			Credits	Marks					Total
						CA			UE		
		T	W /L	S		Asg mt.	CT	Sub total	Jury	Writ ten	
19LA01006	Hydrology and Water Management	2	0	0	2	25	25	50		100	150

COURSE OBJECTIVE

* To introduce the basic concepts and theories related to hydrology and how it affects landscape design.

COURSE OUTCOMES

Upon completion of course,

* Hydrology, water conservation methods &watershed management

COURSE CONTENTS

Module I- Introduction to Hydrology

- Hydrological cycle, Water resources, Precipitation- Forms and types of precipiatation; Infiltration- Factors affecting infiltration; Evaporation, evapo-transpiration - Factors affecting Evaporation; Runoff- Factors affecting Runoff; Groundwater, occurrence of groundwater; Aquifers – Confines and unconfined; geologic formations as aquifers, aquifer properties, Artesian aquifer
- Precipitation, weather systems for precipitation; Characteristics of Precipitation in India and Kerala; relationship to vegetation; Runoff: hydrograph, runoff characteristics of streams, field, flow duration curve, Flew mass curve, Natural Drainage Pattern , Characteristics and management of drainage basins; Types of flow channels
- Soil water or soil moisture, Measurement of soil moisture content , Water requirement of plants, Methods of application of water to plants/crops
- Ground water management, sources of ground water pollution and its control; Floods, Development of Karst topography, Arid and semi-arid regions, Coastal Hydrogeology, Saltwater intrusions, leaching; use of saline brackish water for development. Impacts of hydrology on environment and landscape development

Module II- Water Management

- Sewage water treatment and reuse in landscape, decentralised waste water treatment systems and its incorporation into landscape
- Rain water harvesting types- storage and recharge; traditional water harvesting systems in different regions of India; conventional systems with case studies
- Storm water management practices- Detention and Retention ponds, infiltration basins, permeable paving, constructed wetlands, roof gardens, rain gardens etc.

Module III- Watershed Management

- Concept of Watershed, Watershed Management and its importance, characteristics of watershed, application of remote sensing in watershed management; Land capability classification, production systems in arable and non-arable land
- Mangament of arable land; Mechancial measures- Bunding, Contour bunds, Graded bunds, Diversion drain, Grasses waterways, Bench terraces, Contour ditching etc; Biological measures- Contour farming, Strip cropping, Vegetative barriers, Crop residue, Mulching, Mixed cropping, Hedge Rows barrier, Alley cropping etc
- Management of non arable land; Mechanical measures- Contour trenching, Orchard terraces,Diversion drain, Stone walls; Biological measures-Half moon terraces, Geojute, Protected terraces, Retaining walls, Wattling, Crib structures, Gunny bag structures

REFERENCES:

1. Shaheer .M, Dua G.W and Pal.A; Landscape Architecture in India: a reader .India: La, Journal of Landscape Architecture, 2012
2. Harris.C.W and Dine.N.T ; Time Saver Standards For Landscape Architecture, Mcgraw – Hill International Edition, Arch. Series, 1997
3. Storm.S and Kurt Nathan P.E; Site Engineering for Landscape Architects, AVI Publishing Company, 1985
4. Bansil P.C, Water Management in India, Concept Publishing Company, 2004, pg 1- 48
5. Madan Mohan Das & Mimi Das Saikia, Watershed Management, PHI Learning Private India, 2003

SEMESTER I

19LA01007: REMOTE SENSING, LAND INFORMATION SYSTEMS AND GIS

Course Code	Course	Hrs Per Week			Credits	Marks					Total
						CA			UE		
		T	W /L	S		Asg mt.	CT	Sub total	Jury	Writ ten	
19LA01007	Remote Sensing, Land Information Systems and GIS	1	3	0	2	50	0	50	50	0	100

COURSE OVERVIEW

* To introduce the basic concepts of remote sensing and GIS software for spatial analysis.

COURSE OUTCOMES

Upon completion of the course,

* Techniques of Map preparation and analysis using maps.
* Application of GIS in Landscape Architecture..

COURSE CONTENTS

Module I: Classification of Spatial and Non-Spatial Data

- Spatial relationships among elements / activities , fundamentals of topological relationship, spatial data and their representation in maps, raster and vector based system to representing spatial objects-
- Geographical Information System – GIS software in general - over view of GIS map components.

Module II- Map Preparation and Displaying

- Basics of GIS maps preparation, digitization of spatial data, concept of point, line and polygon features
- Fundamental of coordinate system, map layers and geo-referencing, displaying spatial features, adding attribute values to the features, preparing and displaying thematic layers

and maps, selecting and editing spatial features and attribute data , preparing Grid surfaces form point, line and polygon features.

- Spatial Analysis using GIS spatial joining, concept of geo processing – union, intersect, clip and merge, features to raster, preparing surfaces, creating TIN surfaces and contours, surface analysis, spatial joining of geographic features.

Module III: Applications of GIS in Landscape Architecture & Planning

- Overlaying features and analyzing using overlay function, feature selection, buffering, table joining and analysis, manipulating attribute data, classification and reclassifications, GIS modelling, 3D display.
- Introduction to landscape GIS model, Case problem on landscape analysis, suitability analysis using GIS, preparing land-use maps, landscape impact analysis using GIS, landscape suitability analysis, application of GIS in assessing Landscape Ecological risks.

REFERENCES:

1. Introductory Digital Image Processing: A Remote Sensing Perspective, John R. Jensen
2. Land use Planning And Remote Sensing, David T. Lindgren
3. Remote Sensing And Interpretation By Thomas M Lillesand And Kiefer