

SCHEME AND SYLLABUS
MASTER OF LANDSCAPE ARCHITECTURE
MLA



DEPARTMENT OF ARCHITECTURE



School of Planning and Architecture, Bhopal
(An Autonomous Institution of MHRD, Government of India)
Present Campus: Sports Complex, MANIT Bhopal (M.P.)-462051 (INDIA),
Phone : 0755 2670910, 2670108, 2670046 Fax : 2670908, Website :www.spabhupal.ac.in



MASTER OF LANDSCAPE ARCHITECTURE MLA

DURATION: TWO YEARS (Four Semesters), Intake: 15-20 students

INTRODUCTION

The demand for specialization in Landscape Architecture is ever rising in both the urban and the rural sectors. In India there are only 2 premier institutes that are offering post graduate degrees in Landscape Architecture, the Centre for Environmental Planning and Technology, Ahmedabad and the School of Planning and Architecture, New Delhi.

There is a great thrust towards this specialization. Bhopal, with a great history of integration of landscape design into urban fabric, is an ideal place for starting the above Post graduate program. This course will be the only one in Central India, therefore shall draw in a great number of interested students.

This program shall offer students an interdisciplinary setting to learn and think critically and creatively in addressing environmental issues so that the future landscape architects shall certainly be versatile in the various aspects of practice typifying the profession, including an environmental ethic, design development, project management at multiple scales, communication, emerging technologies, ethical conduct, as well as relevant areas of research.

Employment of landscape architects will grow because the expertise of landscape architects will be highly sought after in the planning and development of new residential, commercial, and other types of development, to meet the needs of a growing population, at the same time protecting the forests from the negative impacts of the urban development and spread. With land costs rising and the public desiring livable cities and more beautiful spaces, the importance of good site planning and landscape design is growing. In addition, new demands to manage storm water run-off in both existing and new landscapes, combined with the growing need to manage water resources, should cause increased demand for this occupation's services.

New construction is increasingly contingent upon compliance with environmental regulations, zoning laws, and water restrictions, which will spur demand for landscape architects to help plan sites that meet these requirements and integrate new structures with the natural environment in the least disruptive way. Landscape architects will be increasingly involved in preserving and restoring wetlands and other environmentally sensitive sites.

In the transportation sector too, landscape architects are required for surface transportation and transit programs, such as interstate highway construction and maintenance, and environment-friendly pedestrian and bicycle trails, along with dealing with issues of forest fragmentation due to the vehicular movement corridors.

Landscape architects are also expected to be involved in historic preservation, land reclamation, and refurbishment of existing sites, eg. Industrial and mining sites.



Objectives:

The mission of the Master of Landscape Architecture is to educate for ultimate leadership in the landscape architecture profession. This mission requires the development and exercise of both intellect and sensibility.

The Program has the dual objectives of providing students with a core of design and technical skills in combination with experiences in pure and applied research. This duality prepares students for problem solving in the profession through design and research, and it is a program focus. The Program prepares the students to enter practice in private, public, academic, and research organizations.

Student preparation is enhanced by specialized coursework taken inside and outside of landscape architecture and by the topic of one's thesis. Students are directed to select thesis committee members early-on and to select specialized courses which reinforce students' areas of primary interest in landscape architecture.

Admissions Requirements

Applicants having 55% marks in aggregate, holding a Bachelor of Architecture (B.Arch) degree, or Bachelor of Planning (B.Plan) with minimum one year of experience, are eligible for applying to the course. They are further required to appear for an interview and submit portfolios reflecting the applicants' professional and/or academic experiences and interests. Portfolios are assessed according to proficiency in design, presentation and layout, technical skills, and content, similar to criteria used in design studios. Three letters of recommendation are required, and it is suggested that at least two of the letters come from former educators or academic contact.

Course Structure:

The course has been designed in four semesters of equal durations and credits, spread in a total of two years.

Theory:

The core subjects like Landscape Technology, History and Theory of Landscape Architecture, Water Management run through two to three semesters, with increasing rate of complexities, are designed to assist the Landscape Studio through building up a strong scientific, technological, theoretical and historical base. The first semester has a subject devoted to climatology and the Third Semester has subjects to develop understanding of land economics and research methods. This semester is also designed to form the prelude to the independent Thesis. The fourth semester equips the student for the profession with the subject Professional Practice.

Training:

Professional Training under a Landscape Architect or as a Research Associate with a Landscape faculty is a necessary component of the course, which equips the student with the practical aspects/ research base, offering the required exposure to the realm of the profession and research, before he takes up the Thesis.

Flexibility (through Electives):



The course is designed with flexibility for the student to pursue the area of his/ her interest. The second semester offers an array of specialized landscapes to choose from, the third semester offers a common pool elective wherein the student can opt for an elective outside the department, promoting the interdisciplinary approach. The fourth semester offers electives with focus on conservation of energy and historicity.

Studios:

Environment & Management studios: These studios focus on Plants, Ecology, Site planning, Development processes, Water resource as the most valuable and vulnerable asset, Planting design, Environmental Impact Assessment and a Seminar in landscape Appreciation.

Landscape Studios: These are designed as the Core studios of Landscape design, which run through the entire program with increasing complexities, wherein the student makes an application of all the above modules, culminating in an independent Thesis.

ASSESSMENT:

The objective of the evaluation system is to ensure that the student develops a thorough understanding of issues related with Landscape Architecture and therefore has something positive and definitive to offer to the society when he/ she actually starts functioning as a landscape Architect.

The system of evaluation of the student's work has two major components: the continuous evaluation throughout the semesters with a weightage of 60 % and the end term examination with a weight age of 40 %. The continuous evaluation comprises of the attendance, Minor-1 & 2 examinations and the assignments. The conferment of the Degree requires 60 credits and a satisfactory completion of the Thesis.

The assessment of Studios is through periodic reviews conducted for the various stages of the work assigned to the students. The studio deliverables shall be in the form of the specified drawings, reports and models, in accordance to the Studio briefs distributed at the beginning of the semester. All theory subjects shall be assessed through written examinations and as well as through assignments.

The students shall undertake case-studies in order to understand the methodology and processes in the realization of a project and the maintenance strategies adopted for the long life of the project. End semester examination shall comprise of written examination or a Viva-voce or a combination of both, depending on the requirements of the subject.



Evaluation Pattern

- The performance of the student shall be evaluated through continuous assessment and it shall be based on minor examinations, class tests, intermediate reviews, assignments/ tutorials, quizzes/ viva voce, studio works, field works, home works, jury etc. and attendance. The end semester examination shall be conducted by means of written papers, practicals, jury and/or viva voce, design reports or a combination of these methods, as specified in the scheme of examination.
- For each subject the distribution of marks for assessment at different stages will be:

Stage 1 (5 weeks from the commencement of classes)	Stage 2 (10 weeks from the commencement of classes)	Attendance	Internal assessment	End semester exam
15%	15%	5%	25%	40%

Note:

- 1) In the subjects having written exam & viva- voce in the end semester exam percentage will be considered as 20% for written exam & 20% for viva-voce exam.
 - 2) The stages of marking adopted above will not be applicable for the subjects of professional training, and only one time evaluation at the end of the training period will be done. 50% of subject marks will be awarded by the employer in accordance to the institute format and 50% by the institute.
- All subjects carry number of credits as indicated in the scheme.
 - To earn the credits a student has to obtain a minimum of 45% marks in that respective subject.
 - It is compulsory for a candidate to appear in the end term examination.



MASTER OF LANDSCAPE ARCHITECTURE
Scheme of Examination

SCHEME OF EXAMINATION- MLA FIRST Semester					
Course No.	SUBJECT	WCH	ESE FORMAT		CREDITS
MLAR 0101	LANDSCAPE TECHNOLOGY –I	8	WR	VV	8
MLAR 0102	PLANT IDENTIFICATION AND ECOLOGY	3	-	VV	3
MLAR 0103	SITE PLANNING AND DEVELOPMENT PROCESSES	3	-	VV	3
MLAR 0104	CLIMATOLOGY	2	WR	-	2
MLAR 0105	HISTORY AND THEORY OF LANDSCAPE ARCHITECTURE-I	2	WR	-	2
MLAR 0106	LANDSCAPE STUDIO -I	12	-	VV	12
		30			30
SCHEME OF EXAMINATION- MLA SECOND Semester					
MLAR 0201	LANDSCAPE TECHNOLOGY –II	5	WR	VV	5
MLAR 0202	HISTORY AND THEORY OF LANDSCAPE ARCHITECTURE- II	2	WR	VV	2
MLAR 0203	WATER MANAGEMENT-I	2	-	VV	2
MLAR 0204	PLANTING DESIGN	3	-	VV	3
MLAR 0205	ELECTIVE A. Landscapes for healing B. Industrial landscapes C. Commercial landscapes D. Landscapes for sports E. Institutional landscapes F. Landscape conservation G. Visual landscapes	4	-	VV	4
MLAR 0206	SEMINAR IN LANDSCAPE APPRECIATION	2	-	VV	2
MLAR 0207	LANDSCAPE STUDIO- II	12	-	VV	12
		30			30
WCH= WEEKLY CONTACT HOURS, ESE= END SEMESTER EXAMINATION WR= WRITTEN EXAM(3HRS), VV= VIVA VOCE					



SCHEME OF EXAMINATION- MLA THIRD Semester					
MLAR 0301	LANDSCAPE TECHNOLOGY -III	5	WR	VV	5
MLAR 0302	COMMON POOL ELECTIVE A. Landscape and City design B. The future cities C. Movement corridors D. Energy Efficient Landscapes F. Mining landscapes	3	WR	-	3
MLAR 0303	LAND ECONOMICS	2	WR	-	2
MLAR 0304	WATER MANAGEMENT- II	2	-	VV	2
MLAR 0305	RESEARCH METHODS & THESIS PROGRAMMING	2	WR	VV	2
MLAR 0306	LANDSCAPE STUDIO- III	12	-	VV	12
MLAR 0307	PROFESSIONAL TRAINING *	4	-	VV	4
		30			30
*MALA 0307 has an inbuilt system of contact hours					
SCHEME OF EXAMINATION- MLA FOURTH Semester					
MLAR 0401	PROFESSIONAL PRACTICE	3	WR	-	3
MLAR 0402	ENVIRONMENTAL IMPACT ASSESSMENT	2	-	VV	2
MLAR 0403	THESIS	25	-	VV	25
		30			30

WCH= WEEKLY CONTACT HOURS, ESE= END SEMESTER EXAMINATION
WR= WRITTEN EXAM (3HRS), VV= VIVA VOCE



Course Objective: To develop an understanding of the land and its designed modifications, with an integration of Earth sciences

Course Contents:

1. Geology: History of earth, earth's structure, tectonic plates, lithosphere, asthenosphere, rocks – igneous, metamorphic & sedimentary, minerals, natural hazards viz. volcano, earthquakes.
Geologic maps, geologic time scale, geomorphology, landforms – Glacial, Aeolian, Fluvial, deformations in landforms.
Indian geology, life through the geologic ages, Deccan Basalt volcanism, Plate tectonics, earthquakes & tsunamis, glaciers of India, geothermal fields of India.
Application of geologic principles to environmental problems e.g.: Stream restoration, hydrogeology, geotourism.
2. Hydrology: Hydrological cycle, water resources; Ground water, forms of subsurface water, aquifer properties, geologic formations as aquifers, Infiltration, Soil moisture, Surface water flow. Precipitation, weather system's for precipitation. Evaporation, evapo-transpiration; remote sensing & GIS applications. Runoff: hydrograph, runoff characteristics of streams, field, flow duration curve, Flow mass curve. Characteristics of Precipitation on India; relationship to vegetation, drainage basins, natural drainage patterns
3. Surveying: Reading Soil, topographic construction, Geodesy, hydrographic, photogrammetry & GIS maps.
4. Land surface modification: Visualizing land forms, land excavations, land- fills, angle of repose, existing and modified contour mapping, cut & fill calculations, grading and drainage drawings; practices of erosion control, slope stabilization, safe disposal of run-off water and drainage, grade stabilization structures, retaining walls, surface and sub-surface drains, cut and fill slopes, timing and phasing; maintenance; characteristics and management of water sheds; slope protection; grading plans, design and specifications. Presence or vicinity of vegetation, streams, lakes, soft compressible soils, wetland; Impact of land surface modification on drainage.
5. Study of construction documentation process employed by landscape architects. Landscape drawings, symbols and sheet layouts.

Note: The subject shall include a number of demonstrative exercises and visits.

Landscape Technology Laboratory (partly field based): for studies in Geology, Hydrology, Surveying, site grading, materials and construction techniques, scale models, utilities and services, construction and detailing.

Suggested Readings:

1. Time Saver Standards for Landscape Architecture, Charles W Harris And Nicholas T Dine McGraw – Hill, International Edition, Arch. Series
2. Environmental Geology, International Journal of GeoSciences, Springer
3. International Journal of Earth Sciences, Springer
4. A History of Geology by Gabriel Gohau
5. Thinking about the Earth: A History of Ideas in Geology by David Oldroyd
6. The Geoscience Handbook AGI Data Sheets Fourth Edition by J Douglas Walker
7. Morphology and Landscape by Harry Robinson
8. The Age of the Earth by Brent Dalrymple

MLAR 0102 PLANT IDENTIFICATION AND ECOLOGY	3 credits
3 weekly contact hours	
End Semester Examination: One viva voce	

Course Objectives: To develop an understanding of the plant material and their role in ecology. Examines the ecology, growth characteristics, and design applications of plant materials. Field trips with experts are required. The students are required to prepare a herbarium.

Course Contents:

1. Fundamentals of Ecology: definition, scope, ecosystems and their functioning: nature and characteristics, Components: biotic and abiotic, major types, the biosphere and its functioning.
2. Ecological Processes: energy flow-energy source, food chains and trophic structure, ecological pyramids.
3. Biogeochemical cycles; hydrologic cycle nutrient cycles -carbon, nitrogen, sulphur, phosphorous, evolution - variation and selection, speciation.
4. Ecology of growth, regulation, limits to growth, carrying capacity, Ecological communities: spatial structure, ecological niche and species diversity, succession. Ecological conditions of India, Eco systems and forest types of India. Phytogeographical regions of India. ecosystem functioning, analysis and types of habitat and behavior. Aquatic ecology.
5. Classification of Plant Kingdom. Taxonomy: Principles 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
6. Structural characteristics of plants, trees, shrubs and ground covers. Plant formations in Eco zones. Vegetation and land forms, vegetation and animals

Plant & Ecology Laboratory: for studies in ecology, growth characteristics, design applications, plant material and their groupings, techniques and methods of plant manipulation.

This lab shall be in the form of a greenhouse and a nursery.



Suggested Readings:

1. Fundamentals of ecology by Odum
2. Man, nature and ecology by Keith Reid and Co.
3. Concepts of ecology by Kormondy
4. Ecology of Plants- Modern Trends in Applied Terrestrial Ecology
5. Plant Ecology, Kluwer Academic Publishers
6. Landscape ecology, Kluwer Academic Publishers
7. Journal of tropical Ecology: Bimonthly, Cambridge
8. Flowering Trees by *Randhawa M S, Santapau H.*
9. Tropical Garden Plants by Bose and Chawudhury in the suggested readings

MLAR 0103 SITE PLANNING AND DEVELOPMENT PROCESSES	3 credits
3 weekly contact hours	
End Semester Examination: One viva voce	

Course Objectives: To develop a complete understanding of the site and the surrounds, with a whole to part approach.

Course Contents:

Presents the processes and practices of site planning and development, including site inventory, analysis, and assessment of potential building sites. Students examine the natural, cultural, and social systems that affect design decisions, as well as the language and literature of landscape architecture. Studies in land development planning to instruct students in environmental, economic, legal, and visual issues associated with the land planning process.

1. Site planning processes; Landscape assessment techniques; Basic quantitative methods of collecting, analyzing projecting and presenting data for Landscape planning.
2. Preparation of site inventory and analysis; Defining the problem. Use of relevant software and advanced mapping technology for analysis.
3. Program development; statement of goals to be achieved, project objectives to accomplish the goals, project elements and their interrelationships.
4. Synthesis- conceptual design, Implementation: layout plans, grading plans, construction details and specifications

Laboratory: Computer applications, GIS and Landscape Technology lab

Suggested Readings:

1. Turner Tom: City As Landscape. E&Pn Spon AnImprint Of Chapman & H
2. A Good City Form By Kevin Lynch
3. Site Planning by Kevin Lynch and Gary Hack
4. Shirvani Hamid: Urban Design Process.
6. Landscape architecture-a manual of site planning and design, J.O. Simonds
7. Land use and landscape planning, Derek Lovejoy



Course Objective: To become well versed with the climatic zones of the world and their salient features. To form a knowledge base to enable landscape designing with climate as the major generator of design.

Course Contents:

Course Objective: To form a knowledge base to enable landscape designing with climate as the major generator of design. To become well versed with the climatic zones of the world and their salient features.

1. Weather and Climate, Earth's Climatic zones , Weather, seasons and climate, global equilibrium, atmospheric dynamics, factors that influence climate, Global air circulation and ocean currents: distribution of heat and precipitation, prevailing winds, transfer of energy in the atmosphere, greenhouse gases, effect of topography on local climates, rain shadow effect. Solar radiation, Solar charts. Indian seasonal classification, Seasons and their interpretation, the growing season and conditions for plant growth., seasons, impact of seasons on vegetations, evapo-transpiration, Vegetation and Microclimate: Plants and their impact on microclimate.
2. Climate versus location and nature of biomass; the earth's major biomass; major types of deserts, grasslands and forests. Tropical rain forest ecosystem, ecological role of mountains. Human induced modifications in the world's terrestrial ecosystems, types of aquatic systems; Natural Capital degradation.
3. Major Ocean zones and human induced changes in them, oceans as major ecological and economic resources, coastal zones and wetlands, estuaries, marine ecosystems, mangroves, tides, coral reefs.
4. Major freshwater systems and human induced changes in them, major freshwater systems and how human activities have affected them; standing and flowing water bodies; nutrients, wetlands, human activities, winds and sustainability.
5. Environmental problems' their causes and sustainability, environmental science, natural capital, environmentally sustainable society; pollution: sources and prevention; reasons for environmental problems, role of poverty and affluence, four scientific principles of sustainability, exponential growth and sustainability, ecological footprints; cultural changes. Air pollution, climate change and Ozone depletion: major air pollution problems, detection and prevention, future global temperature changes, possible effects of warmer atmosphere, global warming, ozone layer depletion in the stratosphere: causes and solutions. Urban heat island effects.

Laboratory: Computer applications lab, Building Science Lab.

Suggested readings:

1. Manual Of Tropical Housing & Building, Otto H Koenigsberger, O. H., Ingersoll, T. G., Mayhew



2. Climate Responsive Architecture: A Design Handbook For Energy Efficient Buildings By Arvind Krishan, Nick Baker, Simos Yannas, Steve Szokolay
3. Environmental science Demystified, LINDA D. WILLIAMS
4. Weather and Climate, Britannica illustrated Science Library
5. Gordon Bonan, Ecological Climatology, Concepts and Applications, Cambridge Publishers

MLAR 0105 HISTORY AND THEORY OF LANDSCAPE ARCHITECTURE-I **2 credits**
2 weekly contact hours
 End Semester Examination: One written exam of 3 hours duration

Course Objective: To equip the students with the knowledge base regarding history of landscape Architecture with the various theories that have guided the landscape design through the ages.

Course Contents: Traces landscape planning and design from pre-history through Eastern, Egyptian, Roman, Islamic, and Medieval gardens to Renaissance, Italian, French, and English landscape approaches, culminating in the mid-19th century. Relates landscape design to the societal, cultural, technological, and belief systems of the period. Study of works of renowned Architects.

1. Man and nature, and the process of transforming landscapes; landscapes of Power, Faith and Place.
2. Development of landscape design and gardens till the early 19th century: detailed study of selected examples from eastern, central and western traditions;
 - a. Ancient: Mesopotamia, Egypt, Greece, Rome
 - b. Western: Europe, Italy, France, England
 - c. Middle-east: Persian traditions
 - d. Eastern: China and Japan; ancient and medieval period in India; Mughal and Rajput landscapes.
3. Cultural landscapes: identity, collective memory; landscape as text.
4. The theoretical terrain of landscape architecture; The nature of theory in landscape architecture, design process, form, meaning and experience.
5. Society, language, representation of landscape; ecological design, aesthetics of sustainability.

Suggested readings:

1. Mastaedi Arain: Landscape Design Today. Spain. Carles Broto & Josey Maria,
2. Building And Landscape ,Andersson, Sven Ingvar, Kobenhavn K , Danish Academy
3. Schaal Hans Dieter: New Landscape Architecture. Ernst & Sohn
4. Design on the Land: The Development of Landscape Architecture by *Norman T. Newton*.

MLAR 0106 LANDSCAPE STUDIO -I **12 credits**
12 weekly contact hours
 End Semester Examination: One viva voce

Course Objective: To enable the students to integrate the knowledge gained from all the above subjects in the landscape design studio exercise. An exploration into the realm of design through an application of own mind, coupled with an intense interaction with faculty and practicing landscape architects.



Course Contents: Outlines the site planning and site design decision-making process. Focuses on providing students with the verbal, intellectual, and graphic tools necessary to successfully tackle a design problem and bring it to a schematic level of completion. The design exercises shall be of neighborhood level, various typologies; urban and rural experiments; courtyards, children's' play areas, etc.

MLA- SECOND Semester

MLAR 0201 LANDSCAPE TECHNOLOGY –II	5 credits
5 weekly contact hours	
End Semester Examination: One written exam of 3 hours duration, One viva voce	

Course Objective: To develop an understanding of materials and techniques in landscape construction with due importance to construction drawings.

Course Contents:

1. Site mobilization and sequence of activities; site protection measures; Introduction to various materials used in landscapes constructions. Mud, clay, stone, bricks, timber, glass, metals, gravel, pebbles, Lime, sand, cement, concrete, RCC, Vitrified tiles, terracotta. Market surveys for materials and products.
2. Landscape construction-1: Paving & pavements, walks, drives, roads, parking, paths & plazas; Plant beds, edgings, plant boxes, steps, ramps, stepping stones. Finishes in different types of stones and concrete;
3. Landscape construction-2: Ground water re-charge system-construction techniques and drawings, septic tanks, inspection chambers, catch basins, swales, drainage channels etc. Systems for use of grey water and relevant construction details
4. Landscape construction-3: Construction of retaining walls, edgings of natural and manmade water bodies; culverts; Techniques for prevention of soil erosion; Construction details of small landscape structures and street furniture
5. Landscape construction-4: Construction of land forms, mounds, angle of repose, depressions, podiums, earth berms, levels, earthen tiers & terraces.

Landscape Technology Laboratory (partly field based) for studies in materials, techniques, utilities, services, construction and detailing. Study trips to actual landscape project sites.

Suggested readings:

1. Perkins Philip H: Concrete Floors Finishes
2. Text By David Stevens: Ultimate Water Garden Book
3. Littlewood Michael: Tree Detailing. London. Butterworth Architecture, 1988.
4. Littlewood Michael: Landscape Detailing Vol.1 Enclosure
5. Hazlett Thomas C: Land Form Designs. P D A Publication

MLAR 0202 HISTORY AND THEORY OF LANDSCAPE ARCHITECTURE- II	2 credits
2 weekly contact hours	
End Semester Examination: One written exam of 3 hours duration, One viva voce	

Course Objective: This subject deals with contemporary landscapes and how environmental issues and ecological issues have been resolved in them. Understanding Regional scale of landscape architecture and its allied aspects

Course Contents:



1. Modern garden design and innovations in landscape architecture; The contemporary history of the profession with study of theory and works of Andrew Jackson Downing, Frederick Law Olmsted, Ian McHarg, Thomas Church, Lawrence Halprin. Burle Marx to present day significant designers.
2. The growth and development of Landscape as a profession. Professional education, the environmental movement, large scale regional planning, significant landscape architectural projects of the past century.
3. Landscapes and cities: rural settlements and civic transformations; landscape fragmentation, sensitivity and change.
4. Multifunctional landscapes, Continuous Productive Urban Landscapes- urban agriculture for sustainable cities; Market gardens
5. Landscapes- as historic preservation resource; Green pilgrimage network, Sacred landscapes. Historic Urban Landscapes.

Reference books:

1. Poetics of Garden by Charles Moore
2. Modern landscape Architecture: a Critical Review published by the MIT press
1. Preserving Modern Landscape Architecture, Papers From The Wave Hill, National Park Service Conference
2. Landscape Transformed, Academy Editins, 1996
3. Design with Nature, Ian Mc Harg

MLAR 0203 WATER MANAGEMENT-I 2 weekly contact hours End Semester Examination: One viva voce	2 credits
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Course Objective: To develop an understanding of water efficient planting, landscape design and techniques. The structural and technical aspects of irrigation design and application, including effective use and care of native plant materials and designing for native environments.

Course Contents:

1. Water management in ancient / historic cities- Greek, Roman, Indian, etc. Traditional Knowledge systems.
2. Water efficient landscape designs, recycling of water. Waste water treatment.
3. Irrigation, types of landscape irrigation systems, terminology of landscape irrigation systems, sprinkler irrigation, sizing irrigation pipe, matching water flow and pressure with pipe size, calculating working water pressure, selecting and locating sprinklers, drip irrigation, the future.
4. Flood plains and lake management.
5. Study trips to actual working sites to study the water management systems.

Landscape Technology Laboratory (partly field based): Scale models of irrigation techniques, water harvesting, waste water treatment. Basic equipments and tests for water quality and designed flows. Actual working sites of landscape construction and design implementation.

Suggested readings:

1. Viessman Warren, Water Management-Technology and Institutions, Harper & Row, 1985



2. 2) Bansil P.C, Water Management in India, Concept Publishing Company, 2004, pg 1- 48
3. 3) Vaidhyathan, Managing Water Scarcity, Lordson Publisher Pvt Ltd, 2004
4. 4) Walesh, Stuart G, Urban surface water management, John Wiley New York, 1989
5. Steps to Water: The Ancient Stepwells of India, by *Morna Livingston, Milo Beach*
6. CSE publications viz. Making Water Everybody's Business: Policy and Practice of Water Harvesting, by Anil Agarwal, Sunita Narain and Indira Khurana and Dying Wisdom: Rise, fall and potential of India's water harvesting systems, by Anil Agarwal and Sunita Narain.

MLAR 0204	PLANTING DESIGN	3 credits
3 weekly contact hours		
End Semester Examination: One viva voce		

Course Objective: To develop an understanding of the factors affecting planting design and what can be achieved through design with plants. To make the students understand the planting design professional/technical drawing, design placement aspects and specification standards of plant materials.

Course Contents: Design applications of plant material. Students apply the design problem-solving approach to the detailed aspects of planting design and complete a progressively-more-difficult series of problems to practice techniques and methods of plant manipulation that encompass both the aesthetic and functional purposes of planting design.

1. Planting design theory, a historical perspective, People and plants; co-evolution; ethnobotany; ecology, culture and Human intentions. Discussion, recognition of varying cultural contexts, perceptions.
2. Planting design as an element of structuring the landscape, to make a design statement. Appreciation and understanding plant use and selection, ecologically sustainable plant use. Visual Aesthetics and functional considerations in planting design. Edible, medicinal, water, hydroponic gardens. Dynamism in landscape design-planting for texture, leaf and flowers.
3. Planting design for environmental improvement: eg. Soil conservation, modification of microclimate. Planting design for disturbed sites, eg abandoned quarries and mines. Planting design for highways, roads, parking, industries, terraces, roofs, indoors, etc. Xeriscaping benefits, principles, applications in design. Plants for sustainability, LEEDS and GRIHA ratings
4. Elements of horticultural practices- nursery establishment and plant propagation, soil preparation, planting, establishment and maintenance of trees and shrubs, ground covers, climbers, grasses, palms, aquatic plants, bonsai. To find, group and space plants. Transplantations. Plant injuries and their causes, insects and diseases: spread, symptoms of injury, weeds, principles of control, pesticides, integrated pest management
5. Professional/technical drawing, design placement aspect and specification standards of plant materials, their rationale (according to growth characteristics) and artistic treatment. Post development maintenance; preparation of planting, specifications and Bill of quantities

Note: frequent site visits to gardens and landscapes.

Suggested readings:

1. Elements of Planting Design, Richard Austin, John Wiley & Sons, Inc., New York, 2002
2. Randhawa M S: Flowering Trees. National Book Trust, New Delhi,



3. Santapau H: Common Trees. India The Land And The People
4. Mukherjee Pippa: Nature Guides, Common Trees Of India. Worldwide Fund For Nature, India
5. Chapter-12 of DSR 2012

MLAR 0205

ELECTIVE

- A. Landscapes for healing
- B. Industrial landscapes
- C. Commercial landscapes
- D. Landscapes for sports
- E. Institutional landscapes
- F. Landscape Conservation
- G. Visual landscapes

4 credits

4 weekly contact hours

End Semester Examination: One viva voce

Course Objective: To develop an understanding of the landscapes with a special purpose and identity while offering an array of options for the students to take up a specialized landscape as per his/ her choice.

Course Contents: Specialized landscapes studies viz. for hospitals, resorts, hotels, institutes, sports, golf courses, Industries, etc.

Study trips to actual work sites/ completed landscape projects shall be conducted for documentation and understanding.

A. Landscapes for healing

The course explores the theory of landscapes of healing, the convalescent home landscapes and hospital landscapes. The healing nature; Medicinal gardens.

B. Industrial landscapes

The course explores the challenges of industrial landscapes, disposal / treatment of industrial waste, planting design to mitigate the negative impacts, greening the vertical and horizontal surfaces.

C. Commercial landscapes

The course explores the landscape theories and design for commercial areas / commercial landscapes. Planting design to attract / give relief to shoppers / planting design to reap commercial benefits.

D. Landscapes for sports

Landscape design for sports fields, stadiums, swimming pools; including illumination and services.

E. Institutional landscapes

Landscape design for educational institutes, theory and practice; design for concentration, inducing learning; design for leisure.

F. Landscape Conservation :

Course Objective: To understand the importance of landscape conservation including the Historic urban landscapes and the various approaches to same.

Course Contents: Landscape: an emerging historic preservation resource; study of various charters related with landscape conservation, Landscape Conservation in Indian Context,



Environmental conservation, Landscape conservation and its significance (natural resources such as soil, water, vegetation etc), Conservation of historic landscapes, HULs, National and International policies related to landscape conservation areas such as forests, national parks, protected landscapes, bio-reserves etc. UNESCO's recommendations for the Historic Urban Landscapes, safeguarding methods. The students shall take up an actual landscape conservation project as study and shall make a proposal for the same.

G. Visual landscapes

The landscape design of open atriums, visual courtyards; places visible from high rise buildings/ indoor spaces; places that can be seen and not used or visited; to add interest and to give relief from monotony through visual landscape design.

Suggested readings:

1. The Garden of Life: An Introduction to the Healing Plants of India, by *Navin Patnaik*,
2. Healing Gardens: Therapeutic Benefits and Design Recommendations by *Clare Cooper Marcus and Marni Barnes*,
3. Ethno botanical plants of India
4. Small garden by *John Brooke*.
5. Medicinal Plants of India: A Guide to Ayurvedic and Ethnomedicinal Use of Plants, by *Dinesh Jadhav*

MLAR 0206 SEMINAR IN LANDSCAPE APPRECIATION	2 credits
2 weekly contact hours	
End Semester Examination: One viva voce	

Course Objective: To make the students critically analyze designed/ natural landscapes and in the process develop a deep understanding of landscapes, together with art of written and oral expression of thoughts.

Course Contents:

1. Learning the art of critically appreciating a creative work, orally, in writing with graphical support.
2. Learning to differentiate between the natural organizations and re-organization systems and man's designed interventions.
3. Study of works of pioneer landscape architects.
4. Site visit to a particular designed landscape (preferably related with thesis topic) and a complete documentation of the same including observational studies.
5. Writing a report on the studied landscape and presenting the same in front of an audience.

MLAR 0207	LANDSCAPE STUDIO- II	12 credits
12 weekly contact hours		
End Semester Examination: One viva voce		



Course Objective: To develop the skill to integrate various knowledge systems to arrive at a design proposal of an urban scale, the process used for the same.

Course Contents: Examines how humans occupy exterior space and combines this information with the principles of design to create garden scale models. Models are used as a medium for design expression. Landscape character, design simulation, landscape media, landscape context, and human spatial experience are included. The design exercises shall be of urban scale, eg. urban open space systems, heritage zones, etc.

MLA- THIRD Semester

MLAR 0301	LANDSCAPE TECHNOLOGY –III	5 credits
5 weekly contact hours		
End Semester Examination: One written exam of 3 hours duration, One viva voce		

Course Objective: To develop an understanding of the working drawings and related documents required for the successful implementation of a project.

Course Contents: Preparation of set of construction drawings for a design project: Layout, grading, irrigation, utilities and services, planting, construction detailing, specifications, and cost estimating

1. Landscape construction-5: Construction of water features: ponds, pools, swimming pools, water bodies, fountains, etc. new materials like geo textiles, pond liners
2. Landscape Construction-6: Principles of design of outdoor illumination. Electrical lighting and services, construction, types of illumination fixtures. Electrical and communication services details in highways, large plazas, fields etc.
3. Landscape Construction-7: Lawn construction, Grading of various areas like sports fields. Landscape design considerations for roads, Indian Road Congress guidelines. incorporation of services
4. Landscape Construction-8: Construction details of Terrace gardens, roofscapes, vertical landscapes, garden ornaments
5. Landscape Construction-9: Landscape treatment techniques for disturbed sites like abandoned quarries, mines etc
6. Preparation of tender documents, Bill of quantities and specifications

Suggested readings:

1. Littlewood Michael: Tree Detailing. London. Butterworth Architecture, 1988.
2. Littlewood Michael: Landscape Detailing Vol.1 Enclosure
3. Hazlett Thomas C: Land Form Designs. P D A Publication
4. Publications of the Indian Road Congress

MLAR 0302	COMMON POOL ELECTIVE
	A. Landscape and City design
	B. The future cities
	C. Movement corridors
	D. Energy Efficient Landscapes
	E. Mining Landscapes



Electives offered by other courses:

Master of Planning (URP): **MPUR0302**: A. Urban Redevelopment, B. Planning for Tourism, Quantitative Methods and Systems Analysis.

Master of Planning (Environmental Planning): **MPEM0302**: A. Water resource management, B. Energy auditing and accounting

Master of Urban Design **MAUD0302**: A. Urban design politics, B. Architectural criticism, C. City and the Arts.

Master of Architecture (Conservation): **MACO0302**: A. Museum Design, B. Disaster Management of Cultural Resources

3 credits

3 weekly contact hours

End Semester Examination: One written exam of 3 hours duration

Course Objective: To offer the students an interdisciplinary setting to take up courses from other departments. The department shall offer three elective subjects based on Studies in role of landscape in city designs and movement corridors within and outside the cities. These are open to other departments.

Course Contents:

A. Landscape and City design

The course explores the city designs dictated by the landscape elements, their origin, the present situation and the projections into the future. Meaning, management and manipulation of place. (following the philosophy of Ian Mc Harg)

B. The future cities

The course explores the narratives in city landscapes, the cultural identity carrying capacity to the city of the future.

C.Movement corridors

The course explores the various vehicular movement corridors, the highways, the forest roads; impact of the resulting fragmentation of forests, landscapes; minimizing the impacts of movement corridors on nature. Greenways.

Suggested readings:

Design with Nature, Ian Mc Harg

D.Energy Efficient Landscapes

Course Objective: To give an opportunity to students to study energy efficient landscapes in detail to enhance its application in landscape planning or landscape design process.

Course Contents: Energy efficiency: Meaning and definitions Need for adopting Energy efficient landscape design techniques, Rating systems, Application at various scales, Examples of Energy efficient landscapes.

Suggested readings:

1. Crosbie Michael: Green Architecture. American Inst.Of Rch.Press,Washington

2. Papanek Victor: Green Imperative Ecology & Ethics In Design.

3. Vale Robert & Brenda: Green Architecture Thames And Hudson

4. Man's Role In Changing The Face Of Earth, Thomas, William L And Others, University Of Chicago Press, Chicago

E. Mining Landscapes



Landscape design for open cast and underground mining sites; management of top soils; treatment of abandoned sites; landscape design to mitigate the negative impacts of mining activities.

MLAR 0303	LAND ECONOMICS	2 credits
2 weekly contact hours		
End Semester Examination: One written exam of 3 hours duration		

Course Objective: To make the students understand the role of land values and economics in the functioning of the city.

Course Contents:

1. The global environment, natural resources and economic growth.
2. Economic concepts of land, objectives and scope of land economics; economic principles of land uses; economic rent, land use and land values, market dynamics and impact on land use pattern; land use restrictions affecting land availability; cost and benefits related to open space development; tangible costs of development; capital and maintenance costs; intangible costs; depletion of natural resources; modification of ecological systems rehabilitation cost; social and cultural changes; unit cost of development of open spaces.
3. Development of Land and Real Property process- cost of development, source of finance;
4. Economic aspects of land policies at various levels of decision making; Private ownership and social control of land; Valuation of land and property; methods of valuation; Land evaluation and site assessment.
5. Assembling the land for urban development; legal issues; social and cultural issues; economic incentives.

Suggested readings:

1. Urban economics, Arthur O'Sullivan, Mc Graw- Hill
2. Urban land market and land price change: a study in the 3rd world context, Amitabh kundu, Ashgate publishing company
3. Yu-Hung Hong, et al; Analyzing Land Readjustment-economics, law and collective action, 2007, Lincoln Institute of Land Policy.

MLAR 0304	WATER MANAGEMENT- II	2 credit
2 weekly contact hours		
End Semester Examination: One viva voce		

Course Objective : To understand the water efficient design for complex situations and special conditions. The advanced structural and technical aspects of irrigation design and application, including effective use and care of native plant materials and designing for native environments.

Course Contents:

1. Streams in urban landscapes; natural drainage paths-treatments; canals; surface run-off calculations and design; edging. Urban and highway storm water pollution-types and treatments; storm water management; recharge; reuse
2. River front developments; sea front developments; treatment of catchment areas; edgings. Understanding floodplains; lake and catchment areas
3. Water retention structures, water harvesting techniques and devices;
4. Advanced irrigation control systems; smart water harvesting solutions.



5. Study trips to actual work sites/ completed landscape projects to document and learn through observations and dialogue with the designer/ contractor.

Suggested readings:

- 1) Viessman Warren, Water Management-Technology and Institutions, Harper & Row, 1985
- 2) Bansil P.C, Water Management in India, Concept Publishing Company, 2004, pg 1- 48
- 3) Vaidhyanathan, Managing Water Scarcity, Lordson Publisher Pvt Ltd, 2004
- 4) Walesh, Stuart G, Urban surface water management, John Wiley New York, 1989
- 5) 'Ecological Riverfront Design: Restoring Rivers, Connecting Communities, by *Besty Otto, Kathleen McCormick, Michael Luccese.*

MLAR 0305	RESEARCH METHODS & THESIS PROGRAMMING	2 credits
2 weekly contact hours		
End Semester Examination: One written exam of 3 hours duration, One viva voce		

Course Objective : To make the students understand the process of carrying out research and to effectively programme the Thesis for the fourth semester.

Course Contents:

1. Introduction, definition, objectives of research, types of research,
2. Research process, research design, types of research designs,
3. Collection of primary data, data tabulation, and analysis, to draw inferences.
4. Application of above in programming the Thesis for the next semester.
5. Writing and communication skills for written and oral presentations; professional communications.

Suggested readings:

1. Research methodology-Theory and techniques, Jagdish R. Raiyani, New century publications
2. Introducing research methodology- a beginner's guide to doing a research project, Uwe Flick, Sage South Asia edition

MLAR 0306	LANDSCAPE STUDIO- III	12 credits
12 weekly contact hours		
End Semester Examination: One viva voce		

Course Objectives: To make the students understand the workings of a large site/ area of regional scale, design and implementation factors with the involvement of the stakeholders.

Course Content: Features the process of solving complicated site planning and site design problems. Each phase of the site planning process is examined in detail by undertaking one or more studio problems that involve resolution of issues related to existing site conditions, program development, conceptual design, design development, and design detailing. The design exercises shall be of regional scale, i.e. a large area of diversified elements. The studio should have a definitive Environmental focus with only one exercise. Studio exercise on Ecotourism may also be included.

MLAR 0307	PROFESSIONAL TRAINING *	4 credits
4 weekly contact hours		



End Semester Examination: One viva voce

Course Objective: Professional training under a practicing landscape architect or as research assistant under a landscape architect in academics, to enable the student to understand the nuances of the profession and its responsibilities.

An in-built system of weekly contact hours has been worked out. The minimum duration of the training period should be 8 weeks

MLA- FOURTH Semester

MLAR0401 PROFESSIONAL PRACTICE

3 credits

3 weekly contact hours

End Semester Examination: One written exam of 3 hours duration

Course Objectives: To prepare the students for the profession, to equip them with the required information so that they work efficiently, with due protection of their rights.

Course Contents: (taken from SPA Delhi)

1. Regulations and legal aspects: Codes, Standards, Bye-laws, Regulations applicable to building and landscape development. The role of statutory and regulatory bodies such as the Municipal Corporations, etc.
2. Construction administration, Implementation process
Sequence of activities from inception to completion; agencies involved at each stage, their professional relationships and obligations; Co-ordination of agencies and activities on site; practical examples. Budgetary control; progress evaluation and monitoring; various kinds of estimates, review and updating, simple examples of PERT charts and bar diagrams. Site documentation; importance of written records; Site instruction book; periodic reports; visual records; bar charts, etc. techniques of inspection and quality control; visits to site under development.
3. Construction documents: Contract procedure; criteria for selecting contractors; the process of calling tenders; comparison of various kinds of tenders with regard to objectives, utility and appropriateness; tender documentation and evaluation of tender; negotiations with contractors. Contract Documentation: Forms of contract, general and special conditions, specifications, Bill of quantities; significant clauses pertaining to defects; maintenance, arbitrations, etc. Parties to the contract, their roles; contractual relationships and legal obligations.
4. Professional Practice: Types of client: private, Government, Corporate, etc. The scope and meaning of professional services. Professional relationship between client and landscape architect; forms of agreement; conditions of engagement; scope of work and services to be provided. Scale of professional fees, common and accepted methods of charging fees, percentage, lump sum, time-basis, etc. calculation and estimation of fees based on work involved. Taxes, remuneration and reimbursement.
5. Role of professional Institute, Professional code of conduct, relationship of landscape architect with other professionals. Landscape design competitions: types and guidelines.

Suggested readings:

1. Code of professional practice and competition guidelines of Council of Architecture



2. Estimating Costing And Valuation, Singha Gurucharan, Singh Jagdish ,Standard Pub. Dis,Delhi
3. Civil Engineering ,Contracts And Estimates ,Patil B S ,Orient Longman, Calcutta
4. Estimating And Costing In Civil Engineering, Theory And Practice, Dutta B N ,Ubs Pub. Dis. Ltd, New Delhi
5. Estimating And Costing ,Rangwala S C And Rangwala K S And Rangwala Kk, Charotar Pub. House, Anand, India

MLAR0402	ENVIRONMENTAL IMPACT ASSESSMENT	2 credits
2 weekly contact hours		
End Semester Examination: One viva voce		

Course Objective: To comprehensively make the students understand the impacts of proposed development projects, enabling them to work out alternatives, so that wherever possible significant negative impacts may be avoided, minimized, or mitigated.

Course Contents: (partly taken from CEPT University Ahmedabad)

1. Environment Impact Assessment: definitions, methodologies, techniques, advantages and disadvantages. Process: data collection, identification of study area, scope, aim, environmental standards and their measurements.
2. EIA in India, legislation related to EIA, EIA in developed and developing countries, ecological attitudes in the past.
3. Pollution parameters.
4. Environmental criteria for location of human settlements or any major land based activity viz industries/ dam sites and quality of life; applicability of EIA to various development programs; integration of EIA methodology to landscape design; environmental planning and management strategies and approaches relevant to urban and regional planning. Environmental protection in urban and rural areas, co-ordination and enforcement, environmental costs.
5. EIA: standard methods for determining pollution; principles, suitability and range of instrumental analysis of pollutants; stack monitoring; air sampling and analysis. Environment management programme and its relationship to landscape design.

Note: A combined studio with the master of Environmental planning can be organized.

Suggested readings:

1. Environmental Impact of Construction, Carpenter T G
2. Environmental Impact of Power generation-1999, Hester R E & Harrison R M
3. John Felleman (Lead Author);Jonathan Herz, Sidney Draggan Ph.D. (Topic Editor) "Environmental Impact Assessment". In: Encyclopedia of Earth. Eds. Cutler J. Cleveland (Washington, D.C.: Environmental Information Coalition, National Council for Science and the Environment). [First published in the Encyclopedia of Earth July 20, 2010; Last revised Date July 20, 2010; Retrieved February 22, 2013.

MLAR0404	THESIS	25 credits
25 weekly contact hours		
End Semester Examination: One viva voce		



Course Objectives: To provide the students an opportunity towards application of the knowledge gained in an independent Thesis, with a design or a research focus, to arrive at a creative/ thoughtful design or findings, enriching the landscape architecture database.

Course Contents: Independent research and presentation of findings under the direction of a supervising committee. The findings of the thesis should extend the boundaries of the professional discipline by either presenting new and unique ideas or information, or by interpreting existing knowledge from a different perspective.

In case of a research thesis, the study should necessarily culminate into a methodology / policies/ guidelines.

