ANNEXURE – E (3) III

Proposal to offer Certificate courses and Minor degree in the field of Landscape Design and Planning for various UG and PG programs – IDPT

W.E.F. ACADEMIC YEAR 2025-

Approved in BOS meeting dated 02/05/2025

Approved in Faculty of Architecture, Design, Planning and Technology dated 02/05/2025

Proposal to offer Certificate courses and Minor degree in the field of Landscape Design and Planning for various UG and PG programs – IDPT

For the abovementioned purpose, the primary task is to identify the minimum core knowledge requisite to qualify for a Certificate program and/or a 'Minor Degree/Specialization' at both, UG and PG levels.

The core domain of IDPT is design of human habitats across scales. Some of the most cross cutting issues related to Sustainable Development, Climate Change and Resilience in contemporary discourses revolve around idea of integrating Nature based solutions (Nbs) as a principal objective.

naturebasedsolutionsinitiative.org

This is where the discipline of Landscape Architecture and Planning, poised well at the cross roads of natural and cultural systems can offer to act as a bridge between the two.

The areas of study that can comprehensively cover the subject matter in question are as follows:

1. Natural Processes and Systems – Geology, Hydrology, Climatology and Phytogeography.
2. Garden Design and Horticulture science.
3. Fundamentals of Ecology, Biodiversity and Ecosystem services.
4. Principles of Landscape Ecology and Design.
5. Planting Design and composition.
6. Landscape Theory.
7. Landscape Engineering – Basic and Advanced.
8. Landscape Graphics (Drawing and Representation).
9. Regional Studies in Landscape Architecture/Planning.
10. Photogrammetry and Geo-informatics.

Of the abovementioned comprehensive subject areas, some relevant topics can be incorporated within the UG & PG curricular structure to bring diversity of viewpoints as well as relevance in the contemporary context of synergetic co-existence between man-made and natural systems.

SARVAJANIK UNIVERSITY					
INSTITUTE OF DESIGN PLANNING & TECHNOLOGY					
Faculty	FADP&T		Programme	B.Arch./BID/BVA/MUD/MURP/MID	
Year	-		Version	1.0	
Semester	-		Effective From	June 2024	
Course Code		Course Name	Certificate course in Fundamentals of Garden Design and Horticulture		

Teaching Scheme				**Examination Scheme**		
Credits	Lecture	Studio	Practical	CCE	SEE	Total
4	2	2	0	60	40	100

Total Contact Hours: 4 hours/week, 64 hours/semester.

Note: Continuous Internal Evaluation shall be divided into A. 20% - Attendance B. 80% - Periodic Evaluation

Emphasis

Understanding basic concepts of Garden Design and Horticulture.

Course Outcome

After completion of this course, the student will be able to,

- Understand basic terminology used in garden design.
- Create a harmonious composition of hardscape and softscape elements.
- Understand various plant materials and their requirements in different conditions.
- Understand various styles of Garden Design.
- Use various hard and soft materials and elements of Garden Design.
- Create aesthetically pleasing indoor and outdoor built environments.
- Apply various lighting techniques in Garden design.
- Apply irrigation principles and methods for plants.
- Understand construction methods of various landscape elements.

Content

Modules	Description	Hours
I **Basics of Garden Design and Principles of Composition**	This module tries to cover application of elements of visual composition using Plant material from the point of view of Size, texture, colour, grouping, seasonal variations, flowering and fragrance in combination with other soft and hard materials used in Design of Gardens. It also briefly deals with History of Garden design across various cultures and geographies. In addition, it tries to apply principles of ecosystem for a holistic approach to garden design.	12
II **Landscape Graphics**	Deals with Graphical representation techniques used in Garden design like Land grading, Planting plan, slopes, lighting and irrigation systems.	4
III **Horticulture**	This involves understanding of basic environmental conditions needed by the plants for healthy growth like light, soil conditions, watering and nutrients, seasonal changes. It also explains use of various plant types like herbs, shrubs and trees along with their habits and adaptations.	12

Nature Based Solutions (Nbs) mandates this synergy as a precondition to build resilience through ecosystem services in our built environment across scales.

Below-mentioned are broad based subject areas to be offered for the Certificate Courses and Minor Degree with their respective eligibility:

Undergraduate Program/s (UG)	Postgraduate Program/s (PG)
Bachelor of Architecture (B'Arch) Bachelor of Interior Design (BID) Bachelor of Visual Arts (BVA)	Urban and Regional Planning (MURP) Urban Design (MUD) Master of Design (M.Des)
Principles of visual composition	Natural Processes and Systems
Natural Processes and Systems	Biodiversity and Ecosystem Services
Horticulture	Principles of Landscape Ecology
Planting Design	Advanced Landscape Engineering
Landscape Graphics	Urban and Natural systems interfacing.
Basic Landscape Engineering	Regional Studies in Landscape Planning
	Photogrammetry and Geo-informatics
	SDG's and Nature based solutions

- Certificate in **Fundamentals of Garden Design and Horticulture**. (UG + PG)
- Certificate in **Landscape Mapping and Analytics**. (UG-B.Arch + PG)
- Certificate in **Landscape Planning**. (PG)

OR

- Minor Degree in **Landscape Architecture and Planning**. (PG)

Module titles and Credit structure matrix.

Total Credits required for successful completion of the Minor degree Program: **12 Credits** (3 modules of 4 Credits per semester).

Alternatively aspirants can also secure a **Certificate** in any of the 3 modules of 4 credits each as per the eligibility mentioned in the table above.

Sr.no	Core Aspect	Module Title	Credits
1	Conceptual understanding	**Fundamentals of Garden Design and Horticulture**	4
2	Skill development	**Landscape Mapping and Analytics**	4
3	Applied knowledge and Problem Solving	**Landscape Planning**	4

(Note: PG students who have duly completed all the 3 Certificate courses individually or non-sequentially also qualify to obtain the Minor Degree in Landscape Architecture and Planning).

	The knowledge of plants is enhanced by site visits to well-designed gardens and also local nurseries.	
IV Landscape Engineering	Deals with design and construction of various hardscape elements like retaining structures, toe walls, swales, drain channels, pathways, sumps, cut and fill calculations, storm water channels, electrification and use of pumps, lighting and irrigation fixtures like sprinklers, drips, misters etc.	12
V Practical Application	Aims at offering hands-on training in applying the learning from the earlier modules. For this, students get to design and execute a small garden space as a collaborative exercise.	24

References

1. *The Landscape of Man :* Geofrey Jellicoe and Susan Jellicoe
2. *Plant Ecology and Phytogeography* - Dr. P.D. Sharma, Rastogi Publications.
3. *Form and Fabric in Landscape Architecture:* Catherine Dee
4. *Landscape Graphics* – Grant W Reid.
5. *Trees of Delhi* – Pradip Kishen.
6. *Jungle Trees of Central India* – Pradip Kishen.
7. *Landscape Architecture: A Manual of Environmental Planning and Design* – Barry W. Starke and John Ormsbee Simonds.
8. *Lunuganga* – Geoffrey Bawa.
9. *Tropical Garden Plants in Colour* – T. K. Bose and B. Chowdhury
10. *Landscape Architecture in India* – Mohammad Shaheer, Geeta Wahi Dua and Adit Pal
11. *Greater Perfections*: *The Practice of Garden Theory* – John Dixon Hunt
12. *Foundations of Landscape Architecture* – Norman K. Booth.
13. *Time Saver Standards for Landscape Architecture* – Charles W. Harris and Nicholas T. Dines
14. *Flowering Trees and Shrubs in India* – D. V. Cowen

SARVAJANIK UNIVERSITY					
INSTITUTE OF DESIGN PLANNING & TECHNOLOGY					
Faculty	FADP&T		Programme		B.Arch/MUD/MURP
Year	-		Version		1.0
Semester	-		Effective From		June 2024
Course Code		Course Name	Certificate course in Landscape Mapping and Analytics		

Teaching Scheme				Examination Scheme		
Credits	Lecture	Studio	Practical	CCE	SEE	Total
4	2	2	0	60	40	100

Total Contact Hours: 4 hours/week, 64 hours/semester.
Note: Continuous Internal Evaluation shall be divided into A. 20% - Attendance B. 80% - Periodic Evaluation

Emphasis

Incorporating advanced computational technologies in Land resource mapping, Remote sensing and data analysis to provide supporting framework for natural resource planning, sustainable development, resilience building and climate change adaptation.

Course Outcome

After completion of this course, the student will be able to,

- Use Geographical Information Systems (GIS) based applications like ArcGis, QGis, Google earth engine and related plugins.
- Use remotely sensed data for analysis and understanding patterns, trends and spatio-temporal changes using various geo-database.
- Create maps from online data to represent various spatial features.
- Map various LULC layers using DEM, NDVI, NDWI, NDSI generated using satellite Imagery.
- Use Drone based mapping technologies.
- Programming/coding using Python.
- Use Photogrammetry techniques in Landscape Survey.

Content

Modules	Description	Hours
I **Fundamentals of Remote Sensing**	This module explains basic concepts, terminology, types of datasets, characteristics and technologies used in remote sensing.	16
II **Basics of GIS**	Introduces GIS based applications like ArcGIS, QGis, Global mapper etc. along with techniques and processing tools to generate various kinds of datasets used in Landscape mapping.	16
III **Creating maps and generating geo-database**	This module involves basic cartography principles and reading, interpreting data and creating maps that can be used in research, reporting and presentations. It also enables performing spatial queries and analysis using various geospatial data bases.	16
IV **Google Earth Engine and basics of Python**	This module enables using Googles vast catalogue of satellite imagery, geo spatial datasets with Global scale analysis capabilities. Basic knowledge of Python enables building personal data analysis algorithms.	16

References

1. *Remote Sensing Application* - ed. by P.S. Roy, R.S. Dwivedi & D. Vijayan, Pulished by NRSC, ISRO, Hyderabad.
2. *Introduction to Geographic Information Systems* – Kang-tsung Chang.
3. *Remote sensing of the environment and earth resource perspective* – Jensen, John R.
4. *Remote sensing and Image Interpretation* – Thomas M. Lillesand
5. *Remote sensing for Landscape Ecosystem* – Ricardo Lopez
6. *GIS based Suitable Landscape Planning and Management* – Anh Tuan Nguyen

SARVAJANIK UNIVERSITY				
INSTITUTE OF DESIGN PLANNING & TECHNOLOGY				
Faculty	FADP&T		Programme	B.Arch/MUD/MURP
Year	-		Version	1.0
Semester	-		Effective From	June 2024
Course Code		Course Name	Certificate course in Landscape Planning	

Teaching Scheme				Examination Scheme		
Credits	Lecture	Studio	Practical	CCE	SEE	Total
4	2	2	0	60	40	100

Total Contact Hours: 4 hours/week, 64 hours/semester.

Note: Continuous Internal Evaluation shall be divided into A. 20% - Attendance B. 80% - Periodic Evaluation

Emphasis

This course attempts to address real world Planning issues involving integrated management of Natural and Cultural landscapes as dealt by the discipline of Landscape Architecture. This is looked at from the perspective of Sustainable development.

The central objective of the course is ecosystems approach driven spatial planning.

This course seeks creative and application-based problem solving for key contemporary global challenges like Urbanisation, Climate Change, Resilience building, Heat Island effects, Urban Liveability and Water & Food security.

Course Outcome

After completion of this course, the student will be able to,

- Understand various concepts and theories in Spatial Planning and Landscape Architecture.
- Apply principles of Landscape ecology in Spatial Planning.
- Understand unique problem-solving opportunities through integration of Natural systems and Urbanisation.
- Apply GIS based applications in Land use Planning.
- Address complex and multilayered issues in Landscape Planning using tools like Land Suitability Analysis.

Content

Modules	Description	Hours
I **Natural Systems and Processes.**	This module explains basic concepts of ecosystem in spatial and temporal contexts and effects of disturbance on it. It also discusses Ecosystem Services (ES) and Nature Based Solutions (Nbs) frameworks.	16
II **Landscape Ecology, Landscape Architecture and Spatial Planning Theories**	This module looks at various theories that have evolved pertaining to management of Land & Natural systems in relation to Spatial planning, alteration in LULC and their effects, Urbanisation and Sustainable Development agenda.	16
III **Regional studies in Landscape Architecture and Planning**	This module undertakes study of successful frameworks as case studies applied to meet Sustainable Development Goals (SDG's) in the context of Sustainable Land and Natural Resource Management practices in Urban regions, Urban Liveability, Inclusivity and Resilient Cities. (Related SDG's: 2, 3, 6, 7, 11, 13, 14, 15).	16

IV Land Suitability Analysis.	This application driven module takes up real-world issues in Landscape Architecture and Planning and solve them by using multi-layered analysis to arrive at appropriate and balanced strategies for development.	16

References

1. *Design with Nature* – Ian McHarg
2. *Fundamentals of Ecology* – Eugene. P. Odum
3. *Landscape Architecture: A Manual of Environmental Planning and Design* – Barry W. Starke and John Ormsbee Simonds.
4. *Landscape Architecture in India* – Mohammad Shaheer, Geeta Wahi Dua and Adit Pal
5. *The city in history: its origins, its transformations, and its prospects* – Lewis Mumford
6. *Landscape Ecology: Principles in Landscape Architecture and Land-Use Planning* - Wenche Dramstad, James D. Olson, Richard T.T. Forman
7. *Urban ecology: science of cities* - Richard T.T. Forman
8. *Environment Protection Act 1986.*
9. *Sustainable Urban Planning* – Robert Riddell
10. *Urban Ecology: Strategies for Green Infrastructure and Land Use* – Kimberley Etingoff.
11. *Remote Sensing & GIS based Terrain Analysis for Land Suitability* – Rawat J S
12. *Millenium Ecosystem Assessment (2005).*
13. *Nature-based Solutions for Resilient Ecosystems and Societies* – Ed. Shalini Dhyani, Anil Kumar Gupta, Madhav Karki.