GUJARAT TECHNOLOGICAL UNIVERSITY (GTU)

Competency-focused Outcome-based Green Curriculum-2021 (COGC-2021)
Semester - V

Course Title: Landscape Architecture
(Course Code: 41056306)

Diploma programme in which this course is offered	Semester in which offered
63 - Architecture	Fifth

1.   RATIONALE

Landscape design is combining creativity with nature and land modulation for aesthetic presentation of overall beauty of buildings. Landscape architects are responsible for good presentation of various aspects of exteriors for health, safety and welfare of users.

An architect should be aware of the environment and climate, as this awareness helps him/her in designing an efficient building. Knowledge and skill of landscaping helps architect to create an environment suitable to a designed building to make it healthy and pleasant to inhabit.

The course content designed will provide an exposure and skills about landscaping.

2.   COMPETENCY

The course content should be taught and curriculum should be implemented with the aim to develop required skills in students so that they are able to acquire following competencies:
- **Prepare Landscape Design for a given site**

3.   COURSE OUTCOMES (COs)

The practical exercises, the underpinning knowledge and the relevant soft skills associated with the identified competency are to be developed in the learner for the achievement of the following course outcomes in cognitive, psychomotor and affective domains:
- a. Conceptualize landscape design for a given site.
- b. Develop the design using various components and elements of landscape architecture.
- c. Prepare all necessary plans, sections and elevations - fully rendered with materials, and description of landscape elements.
- d. Develop a model of the proposed landscape design.

4.   TEACHING AND EXAMINATION SCHEME

Teaching Scheme (In Hours)			Total Credits (L+T+P/2)	Examination Scheme				
				Theory Marks		Practical/Studio Marks		Total Marks
L	T	S	C	CA	ESE	CA	ESE	
0	0	4	2	00	00	25*	25	50

*(*): For this practical/studio only course, 25 marks under the practical CA should be done by assessment of process of designing a landscape design with all design parameters. This is designed to facilitate attainment of COs holistically. Thus, this course should be considered as an **Applied 'Theory' Course** where the theory portion has to be taught during the practical/studio hours.*

*Legends: **L**-Lecture; **T** – Tutorial/Teacher Guided Theory Practice; **S**–Studio; **C** – Credit, **CA** - Continuous Assessment; **ESE** -End Semester Examination.*

5.   SUGGESTED PRACTICAL/STUDIO EXERCISES

The following practical outcomes (PrOs) are the sub-components of the COs. T*hey are crucial for that particular CO at the 'Precision Level' of Dave's Taxonomy related to 'Psychomotor Domain'.*

S. No.	Practical Outcomes (PrOs)	Unit No.	Approx. Hrs. required
1	**Identify the components of Landscape design:** Brief introduction of landscaping and basic components of natural landscape Landforms, Water, Vegetation, etc. Explanation on Climatic effect of landscaping.	I	04
2	**Assimilate various landscape architectural styles:** Study and Prepare presentation of prevailing landscape architectural styles.	II	08
3	**Prepare required drawings of a given residential site:** Develop Landscape design of a selected a building unit and prepare all the drawings, sketch to a suitable scale.	III	12
4	**Draw landscape design sketches for the given residential site:** Design hard and soft landscape features as per requirements and develop the design using the components and elements of landscape architecture discussed afore.	IV	16
5	**Prepare all final presentation drawings:** Prepare all Plans, Sections, Elevations and Details - fully rendered with colour scheme, material, and description of species used. Also prepare 3D views/ sketches to explain the elements & designs.	V	16
	Total Hrs.		**56**

Note
i. *More **Practical/Studio Exercises** can be designed and offered by the respective course teacher to develop the industry relevant skills/outcomes to match the COs. The above table is only a suggestive list.*
ii. *Study report, data collection and analysis report must be assigned in a group. Teacher has to discuss about type of data (which and why) before group start their site visits.*
iii. *The following are some **sample** 'Process' and 'Product' related skills (more may be added/deleted depending on the course) that occur in the above listed **Practical/Studio Exercises** of this course required which are embedded in the COs and ultimately the competency.*

Sr. No.	Sample Performance Indicators for the PrOs	Weightage in %
Assessment should be done on the basis of demonstration of,		
1	Skills	40
2	Learning Process	20
3	Communication	20
4	Learning Attitude	20
	Total	**100**

6.   MAJOR EQUIPMENT/ INSTRUMENTS REQUIRED

These major equipment with broad specifications for the PrOs is a guide to procure them by the administrators to usher in uniformity of practicals in all institutions across the state.

S. No.	Equipment Name with Broad Specifications	PrO.No.
1	Measuring tape, laser measure tape, drawing sheets, tracing papers	1-5
2	Drawing board (A1 size @ 23"X32") with other instruments like parallel, set squares (45˚ and 30˚-60˚), adjustable set square, triangular scale, tracing papers, and drawing sheets.	1-5
3	Interactive board with LCD overhead projector.	1-5
4	Desktop PCs with latest configuration	1-5

7.   AFFECTIVE DOMAIN OUTCOMES

The following *sample* Affective Domain Outcomes (ADOs) are embedded in many of the above-mentioned COs and PrOs. More could be added to fulfil the development of this competency.
   a) Work as a leader/a team member.
   b) Follow ethical practices.
   c) Social and Functional Competence of design.
   d) Participate in class discussions and present the design effectively, Generate new ideals.
   e) Practice environmentally friendly methods and design processes.

The ADOs are best developed through the laboratory/field based exercises. Moreover, the level of achievement of the ADOs according to Krathwohl's 'Affective Domain Taxonomy' should gradually increase as planned below:
   i.   'Valuing Level' in 1st year
   ii.   'Organization Level' in 2nd year.
   iii. 'Characterization Level' in 3rd year.

8.   UNDERPINNING THEORY

The major underpinning theory is given below based on the higher level UOs of *Revised Bloom's taxonomy* that are formulated for development of the COs and competency. If required, more such UOs could be included by the course teacher to focus on attainment of COs and competency.

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
Unit – I Introduction	**1a.** Apply understanding of landscape design components to analyse and evaluate existing landscapes. **1b.** Understand the basic elements and features of landscape design and explain their uses **1c.** Appreciate environment/climate requirements on landscape designing.	**1.1** Brief introduction of landscaping. **1.2** Introduction to Elements of Landscape Design: • Plants and Vegetation • Hardscape Elements • Water Features • Structures and Features • Uses of the various landscape elements **1.3** Climatic effect of landscaping. • Temperature Regulation • Wind Regulation • Microclimate Modification

Unit	Unit Outcomes (UOs)	Topics and Sub-topics
		• Stormwater Management • Air Quality Improvement • Biodiversity and Habitat Creation • Energy Efficiency
Unit – II **Landscape** **Typologies**	**2a.** Enlist the various components of Landscape architectural styles.	**2.1** Introduction to Historical landscape architectural styles i. Indian Orchard System ii. Mughal Landscape iii. Oriental Landscape iv. Roman Landscape v. French Landscape vi. English Landscape vii. Modern Landscape
Unit – III **Remodelling** **to Character** **Bungalow**	**3a.** Develop Landscape design model of a selected a residential building unit/s. **3b.** Draw all the drawings, sketch to a suitable scale.	**3.1** Floor plan with complete Site layout should including building units, roads and landscaped areas drawn clearly without rendering. **3.2** Landscape details to understand the layout in its totality.
Unit – IV **Design of** **Landscape** **for a** **Character** **Bungalow**	**4a.** Design hard and soft landscape features as per requirements. **4b.** Develop the design using the components and elements of landscape architecture discussed afore.	**4.1** Development of sketches showing spatial relationships and interactions to an appropriate scale. **4.2** Development of site layout with road network and landscaping. **4.3** Development of elevations and sections with respect to activities and usage of different spaces.
Unit – V **Presentation** **Drawings**	**5a.** Prepare all necessary Plans - - fully rendered with colour scheme, material, and description of species used. **5b.** Prepare 3D views/ sketches to explain the elements & designs.	**5.1** Plans and sectional elevations with detailed rendering showing all the components and elements of landscape e.g. Vegetation, garden furniture, hard and soft landscapes, water bodies, etc. as per the design.

9.   SUGGESTED SPECIFICATION TABLE FOR QUESTION PAPER DESIGN

Unit No.	Unit Title	Teaching Hours	Distribution of Theory Marks			
			R Level	U Level	A Level	Total Marks
I	Introduction					
II	Landscape Typologies					
III	Remodelling to Character Bungalow		**Not Applicable**			
IV	Design of Landscape for a Character Bungalow					
V	Presentation Drawings					
	Total					

Legends: *R=Remember, U=Understand, A=Apply and above (Revised Bloom's taxonomy)*

Note: This specification table provides general guidelines to assist learners for their learning and to teachers to teach and question paper designers/setters to formulate test items/questions to assess the attainment of the UOs. The actual distribution of marks at different taxonomy levels (of R, U and A) in the question paper may slightly vary from above table.

10.   SUGGESTED LEARNER ACTIVITIES

Other than the classroom and laboratory learning, following are the suggested learner-related **co-curricular** activities which can be undertaken to accelerate the attainment of the various outcomes in this course. Learners should perform following activities in group and prepare reports of about 5 to 7 pages for each activity. They should also collect/record physical evidences for their (learner's) portfolio which may be useful for their placement interviews.

Students should survey the market for above mentioned landscape materials, collect data of different plants and materials used for landscape design, understand their applications and analyse them by making a presentation and/or an interactive group discussion. These could be done individually or in a group. For such data collection and other study, students need to go out of the institute to markets, gardens, plant nurseries or landscape sites. Students should go for site visits and prepare a report on it. Such visits should be organized by concerned faculty member/s who should compulsorily accompany the students for this purpose.

The practical/exercises should be properly designed and implemented with an attempt to develop different types of practical skills (Course Outcomes in psychomotor and affective domain) so that learners are able to acquire the competencies (Programme Outcomes).

Note: Here only Course Outcomes in psychomotor domain are listed as practical/exercises. However, if these practical/exercises are completed appropriately, they would also lead to development of Programme Outcomes/Course Outcomes in affective domain as given in a common list at the beginning of curriculum document for this programme. Faculty should refer to that common list and should ensure that learners also acquire those Programme Outcomes/Course Outcomes related to affective domain.

11.   SUGGESTED SPECIAL INSTRUCTIONAL STRATEGIES (if any)

These are sample strategies, which the teacher can use to accelerate the attainment of the various outcomes in this course:
   a)   Massive open online courses (***MOOCs***) may be used to teach various topics/sub topics.
   b)   Guide learner(s) in undertaking micro-projects.
   c)   *'L' in section No. 4*means different types of teaching methods that are to be employed by teachers to develop the outcomes.
   d)   About ***20% of the topics/sub-topics*** which are relatively simpler or descriptive in nature is to be given to the learners for ***self-learning***, but to be assessed using different assessment methods.
   e)   With respect to ***section No.10***, teachers need to ensure to create opportunities and provisions for ***co-curricular activities***.
   f)   Guide learners on how to address issues on sketching, model making, etc.
   g)   Use different instructional strategies in classroom teaching.
   h)   Use the relevant architectural assignments in the given situation.
   i)   Guide learners on form, functions utility, method of construction, etc. to facilitate them to prepare actual measured drawings.

j) Use the technique of table top discussions along with design jury sessions to teach the relevant content to the learners.

k) Adopt various strategies to enhance each learner's individual creative ability especially with reference to concept and form

12.   SUGGESTED MICRO-PROJECTS

Only one micro-project is planned to be undertaken by a learner that needs to be assigned to him/her in the beginning of the semester. In the first four semesters, the micro-project is group-based (group of 3 to 5). However, **in the fifth and sixth semesters**, the number of learners in the group should **not exceed three**.

The micro-project could be industry application based, internet-based, workshop-based, laboratory-based or field-based. Each micro-project should encompass two or more COs which are in fact, an integration of PrOs, UOs and ADOs. Each learner will have to maintain dated work diary consisting of individual contribution in the project work and give a seminar presentation of it before submission. The duration of the microproject should be about **14-16 (fourteen to sixteen) learner engagement hours** during the course. The learners ought to submit micro-project by the end of the semester to develop the industry-oriented COs.

A suggestive list of micro-projects is given here. This has to match the competency and the CO. Similar micro-projects could be added by the concerned course teacher:
   a. Undertake an **Architectural Apprenticeship** to gain practical exposure of the actual on-going projects.
   b. Undertake a design project in consultation with the teacher.

13.   SUGGESTED LEARNING RESOURCES

S. No.	Title of Book	Author	Publication with place, year and ISBN
1	Time-Saver Standards for Landscape Architecture	Charles W. Harris, Nicholas T. Dines	McGraw-Hill Professional; 2nd edition (16 January 1998); ISBN-10 0070170274 : ISBN-13 0070170278-978 :
2	Manual of Woody Landscape Plants Their Identification, Ornamental Characteristics, Culture, Propagation and Uses	Michael A. Dirr	Stipes Pub Llc; Revised edition (January 1, 1990) ISBN-10 1588748685 : ISBN-13 1588748683-978 :
3	Landscape Graphics: Plan, Section, and Perspective Drawing of Landscape Spaces	Grant W. Reid	Watson-Guptill; First edition (September 1, 2002) ASIN 0823073335 : ISBN-10 9780823073337 : ISBN-13 0823073337-978 :
4	Encyclopaedia of Landscape Design: Planning, Building, and Planting Your Perfect Outdoor Space	DK	DK; Illustrated edition (September 19, 2017) ISBN-10 1465463852 : ISBN-13 1465463852-978 :
5	GGN: Landscapes 1999-2018	Thaïsa Way, Jennifer Guthrie,	Timber Press (November 27, 2018) ISBN-10 1604698233 :

S. No.	Title of Book	Author	Publication with place, year and ISBN
		Kathryn Gustafson, Shannon Nichol, Rodrigo Abela	ISBN-13 1604698237-978 :
6	Gardens in Detail: 100 Contemporary Designs	Emma Reuss	The Monacelli Press; Illustrated edition (September 16, 2014) ISBN-10 1580933998 : ISBN-13 1580933995-978 :
7	Residential Landscape Architecture: Design Process for the Private Residence (What's New in Trades & Technology)	Norman Booth James Hiss	Pearson; 7th edition (January 4, 2017) ASIN 0134602803 : ISBN-10 9780134602806 : ISBN-13 0134602806-978 :

14.   SOFTWARE/LEARNING WEBSITES

- www.houzz.com
- www.archdaily.com/category/landscape
- www.asla.org
- www.worldlandscapearchitect.com
- www.landscapearchitecturemagazine.org
- www.landezine.com
- www.landarch.org
- www.lajournal.in

15.   PO-COMPETENCY-CO MAPPING

Semester V	Landscape Architecture (Course Code:4355006)								
	POs and PSOs								
Competency & Course Outcomes	PO 1 Basic & Discipline specific knowledge	PO 2 Problem Analysis	PO 3 Design/development of solutions	PO 4 Engineer-ing Tools, Experimentation &Testing	PO 5 Engineer-ing practices for society, sustain-ability &environ-ment	PO 6 Project Management	PO 7 Life-long learning	* PSO 1 Planning & Design	#PSO 2 Execu-tion
Competency	Prepare Landscape Design for a given site								
a) Conceptualize landscape design for a given site	2	2	3	1	3	0	1	1	-
b) Develop the design using the components and elements of landscape architecture.	2	1	2	-	2	0	-	3	-
c) Prepare all necessary Plans, sections and elevations - fully rendered with colour scheme, material, and description of species used.	3	-	-	-	1	-	-	1	-
d) Develop 3D-model of the proposed landscape design	2	1	1	2	-	-	-	1	-

Legend: '3' for high, '2' for medium, '1' for low and '-' for no correlation of each CO with PO/PSO.

*PSO 1: Planning & Design: Prepare architectural designs and all types of drawings with appropriate material specifications and application techniques as per specific
project requirements.
#PSO 2: Execution: Suggest appropriate building materials as per the requirement.

16. COURSE CURRICULUM DEVELOPMENT COMMITTEE
GTU Resource Persons

S. No	Name and Designation	Institute	Contact No.	Email
1	Shri Bhaskar J. Iyer, HOD (Arch), Coordinator& Associate Dean	Government Polytechnic for Girls, Ahmedabad.	9879474833	bhaskariyer2004 @gmail.com
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