

COURSE CODE:	HRT 509
COURSE TITLE:	Landscape Horticulture
NUMBER OF UNITS:	2 Units
COURSE DURATION:	Three hours per week

COURSE DETAILS:

Course Coordinator:	O.M. Olosunde., M.Agric, B.Agric.
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Other Lecturers:	Professor J.G Bodunde, Dr. O.O. Olubode

COURSE CONTENT:

Definition of landscaping, Natural versus man made landscape, Scope and historical sketches of landscaping, needs for landscaping: to enhance property beauty and value; to provide screening effect etc. Institutional, private property, industrial, parks and gardens, roundabout and recreational areas, Landscaping: gardens, sporting arena, stadia etc. Design principles, design practice, basic styles, preparing landscape plan, Landscape construction, Hard landscaping, soft landscape, Contract and contractual agreements.

Practical: Identification of tropical ornamental plants. Visit to places of interest, Plan reading and translation. Drawing and design production, design (Private./residential, institutional and industrial Field work-contour development. Topographic map production. How to prepare contract document

COURSE REQUIREMENTS:

This is a compulsory elective for all 500 level students in the Department of Horticulture. In view of this, students are to participate in all course activities and have a minimum of 75 % attendance to be able to write the final examination.

READING LIST:

1. VanDerZanden,A.M. and Rodie, S.N. 2007. Landscape Design: Theory and Application. Thomson Delmar Learning, Canada.
2. Roger Bonnet. 1991. Amenity Horticulture, MacMillan Press Ltd, London.
3. Simond B. 1993. Elements of visual design in landscape, E&FN Spon, London.
4. Jack, E.I.1994. Ornamental Horticulture: Science, Operation and Management. Delmar Publishers Inc, New York, USA.

LECTURE NOTES

General introduction

Horticulture- science concerned with intensively cultured plant directly used by people for food, medicinal purposes or for aesthetic gratification (environmental beautification). In summary it is a science that deals with cultivation of garden crops.

Branches: Pomology, Olericulture, Floriculture, landscape Horticulture, Horticultural Engineering etc

An overview of landscape horticulture industry in Nigeria: prospects and problems.

Landscaping: The art and science of developing the outdoor environment using soft landscaping, e.g. ornamental plants, and hardscapes e.g. non-plant objects, components to serve the needs and desires of people. It serves both the aesthetic and functional purposes. The outdoor surroundings could be designed with natural or man-made components/materials/objects i.e it could be natural or artificial. Landscaping involves design, construction and maintenance of landscapes.

Landscape design/Garden design: Science and art of organizing and enriching outdoor space through the placement of plants and structures in agreeable and useful relationship with natural environment.

It involves the qualitative and functional arrangement and spacing of plants and non-plants garden features on a parcel of land set aside in the planning process that gives an overall pleasing effect.

Design essentially entails manner in which objects are artificially arranged in order to attain a particular objective, usually may be not always, a functional and a visibly pleasing arrangement. Designs are evaluated aesthetically with regards to their element of colours, texture, line and form by long established man made value judgment called design principles. A successful design is normally functional and beautiful.

Landscape design is more than just a cosmetic treatment to be applied to indifferent or insensitive architectural or engineering in order to soften the harsh edges or disguise an awkward layout.

It is to integrate structures in to the environment by reducing the visual intrusiveness, by repairing damage to the existing vegetation and more positively by providing a setting that is attractive and welcoming.

Landscape: Layout/arrangement of ground or land in scenery. It could be natural or artificial (man-made)

Natural versus man-made (artificial) landscaping

Natural landscape: A landscape that is unaffected by human activities. It may contain components that are living or non-living or both. Natural landscape remains intact if the living and non-living of the natural environment are free to move and change. Today no place on earth is unaffected by human activities. Thus landscape tends to vary in their degree of naturalness. Therefore, classification had been made into four types:

- a **natural** landscape is one that is unaffected by human activity
- a **sub-natural** landscape is one where if human activity was removed it would go back to a normal state
- a **semi-natural** landscape is one that has been drastically modified by human activity but has some natural elements left intact
- an **agricultural** landscape is one that has been totally altered and arranged by human activity
- very little if any naturalness is left

Examples of natural landscape in Nigeria are; natural surrounding such as forest or desert, rocks (Olumo rock, Zuma rock), Erin Ijesa water falls, Ikogusi warm/cold spring, plateau in Jos, Mambila, bar beach, etc.

Artificial Landscape: The use of artificially made plants (synthetic or otherwise) for landscaping of outdoor environment. Nowadays, it is common to see large quantities of artificial plants (trees, palms, lawns) being used for landscaping. Though, it will not and cannot replace the natural plants in their effects and functions on the landscape, but could also add to the beauty of the environment. It has the advantage of low maintenance in terms of watering, fertilizer application, mowing incase of lawns and turfs, trimming/pruning and so on. Other items in artificial designs include the use of art works, e.g. sculpture (UNAAB Olumo model), concrete benches and tables, water bodies such as water fountains, artificial springs, etc.

Scope and historical sketches of landscaping

Scope: Landscape by its very nature encompasses all other specialist sections of Amenity horticulture in one form or the other. It includes the design, construction, maintenance and management of landscape features. Knowledge of floriculture, landscape architecture, and engineering are usually important.

History: Landscaping is an important sector which has expanded and still expanding in recent years in Nigeria. Despite this development, it is by no means comparable to what is obtainable in the developed countries in terms of development, quality, patronage and boom experienced in the landscape horticulture industry.

People have designed garden throughout the recorded history. Thousands years ago in Egypt and Babylon, there were planted architectural structures. The roots of renaissance garden extend back to the tradition of antiquity, especially those of ancient Rome. To self conscious revival of the idea of Vitruvius and Pliny, there was added the influence of Islamic world and medieval theory and practice. The use of water and fountains and organization of garden in to geometric quarters were part of wider inheritance.

In Nigeria, from the time immemorial, people consciously or unconsciously add physiographic and environmental characteristics to the land around them either for aesthetic gratification and or environmental enrichment and protection.

Traditionally, people keep garden and trees around their buildings. Though, the experience of the colonial era did little to influence creation and preservation of beauty in the surroundings as it was in Francophone countries.

Nevertheless, the inception of colonialism changed the trends of events as concerted effort were made to formally landscape some public buildings, government reservation areas (GRAs), institutions of higher learning, and sport fields which marked the beginning of organized/formal landscaping in Nigeria. Missionaries (Christian) also established plants in churches and schools. Some individual copied this idea and planted some ornamental plants in their surroundings.

Nowadays, landscaping business is fashionable and there is influx of all sorts of people in to the profession, having seen it as an avenue to make quick money. There is generally, limited concern for landscape planning and management in Nigeria, most importantly from government with the exception of few state governments, who recently seem to brace up to the challenges of creating a beautiful and welcoming environment.

Needs for landscaping:

Basically, if human beings had never altered the natural world, there would be no need for designers. Nature is such a perfect designer that left unchanged by human beings, the earth's beauty and natural system would never have require improvement. This idea is however not realistic in the modern world.

Therefore, some of the reasons why landscaping is important are;

1. Aesthetic/ Beautification of environment which is the primary purpose of landscaping

2. Engineering purpose: e.g. Environmental control and protection of structures against environmental hazards i.e. rain storms, wind breaks, shade trees for guide against sun glares etc.

3. Architectural purpose: e.g. re-integration of structures in to the natural environment. Landscaping compliment rather than competing with the architectural features of structures thereby making enhancing their outlook.

4. Biological purpose: e.g. improves the micro-climate (environment), absorbs dust, noise, pollutants and assist in air purification by consuming CO₂ and releasing O₂.

5. Ecological purpose: e.g. some ornamental plants can be used to solve ecological problems such as flooding, to control erosion and absorb chemical from soil (oil spillage)

6. Economic purpose: e.g. creation of job opportunities, add value to property, creates wealth for plant growers and government (taxes, foreign exchange), beautiful environment also attract tourists and investors.

7. Social purpose: e.g. landscaped areas are useful as recreation and relaxation venues (parks), sporting arenas (polo, football fields), and symbols of affluence/wealth.

8. Nutritional/Medicinal purpose: e.g. some plants used primarily for landscaping could also be used for food (fruits and vegetables) and medicines, plants have therapeutic effect on patient etc.

1. Private property/residential landscaping: Landscaping of personal residential properties like a flat, bungalow, duplex, estate etc. Most private or residential buildings need at least three general areas;

(a). For public access-

(b). For service and work:

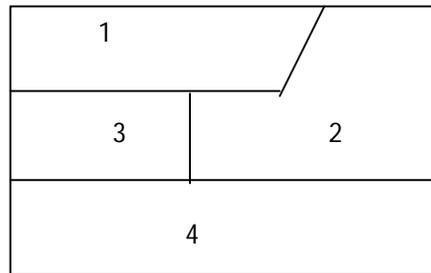
(c). For family living:

2. Industrial landscaping: It involves the establishment of plants and hardscapes within the industrial estate/area e.g Agbara industrial estate, Nigeria Breweries Ltd, Portland/Lafage cement company, etc.

3. Institutional landscaping: Landscaping that involves all sorts of institutions- universities, colleges, polytechnics, hospitals, research institutes, barracks etc.

4. Recreational landscaping: It involves landscaping recreational arenas (polo ground, parks and gardens, football pitches, game villages etc) for adults and children. It has special inclusions such as restaurant, water fountains, focal plants, green lawns and other areas for social like picnic, marriages, honey moon, film shooting. Nowadays, ICT and photocopy centre have been added.

Using the 'Indoor room concept' to describe the Outdoor



- 1- Public area
- 2- General living room
- 3- Service area
- 4- Private living room

Walls- hedges, avenue trees,
Ceilings- shade trees, canopies, etc.
Floors- lawns, foundation plants, concrete
floors and walk ways, roads with
interlocking blocks or asphalt.

i.) Use areas

- 1. Public area –** usually the front part of the property accessibility to visitors
- 2. General living room –** an area of the home that joins the public area, service room and private room
- 3. Service area –** accessible to only the occupants
- 4. Private living room –** an area for rest and occupies the rear of the property and not accessible to outsiders

ii.) Components of the outdoor room:

a. Walls - defines the limit and shapes of the outdoor room, direct traffic through the landscape (hedges, avenue trees), provides full or partial privacy (), provide security (thorny plants e.g. bougainvillea spp.), etc.

b. Ceilings – defines the upper limit of the outdoor room, provide full or partial shade, provide privacy from overhead viewers, etc.

c. Floors – defines the base line of the outdoor room, absorbs shock or impact of traffic, e.g. turfs / lawn, paving, ground covers,

Principles of landscape design

The goal in developing a landscape plan is to design a plan that will achieve unity and harmony. The principles of landscape design are the building blocks used by designers to create beautiful and functional landscapes. Landscape design principles are the same for all types of landscapes. They are in many different ways, depending on the site, the clients' wishes, and designer's knowledge and preferences. Similar to elements of art, these principles represent the primary concepts that influence landscape design. Design principles are not rules that require precise adherence, but instead reflect a framework of universal concepts that prove effective in creating designs.

Therefore the following principles should be considered in designing the plan;

1. Simplicity:

2. Order:

3. Repetition:

Rhythm and line:

5. Unity:

6. Balance:

7. Proportion and scale:

8. Emphasis:

Preparing/Developing/Creating the landscape plan

The development of landscape plan be it private, public or institutional merges the arrangement of plants and other materials with the graphic skills necessary to symbolize them. A well developed landscape plan provides an orderly means of landscaping a site and prevents waste of labour, money and possibly plants. It requires that the principles of design be applied to an entire property, not just sections and that the final design possess a unity which integrates all use areas in to a total plan. The time spent in analyzing a site and developing the plan is a good investment that can prevent frustration, save time and provide the appearance desired. The preparation of landscape plans requires a lot of work, considerable thought and planning.

The following procedures are suggested as a guide to initial design and planning of garden and landscape plan.

A. The first step in the development of a landscape plan is the site analysis which is divided in to the on-site and off-site analysis. One or more visits to the site may be necessary to analyze or evaluate the site.

On-site analysis: Landscape designer should draw the site features and the proposed building plan on graph paper. Normally/usually, a prepared chart/checklist should be completed on the site. At least two peoples are required to carry out site analysis.

A number of factors or condition should be considered in making site evaluation and should be accurate and in detail. Highlights of some of these factors are;

1. Climate of the site:
2. Soil conditions.
3. Location:
4. Existing structures:

5. Existing vegetations:

6. Rock outcropping- T

7. Utilities:

8. Presence of water bodies-

9. Dimension –

Off site analysis:

The purpose of this part of site analysis is to consider the site in relation to distant views and neighbouring areas which has a distinct influence upon the needs of the site. Features like trees, adjoining backyard, mountains, valleys, bodies of water e.g lakes, sea etc, forests, towns, cities etc located within the adjoining site becomes part of the site landscape. If a good view is spoilt by an untidy building, plant to hide the building, not the whole view. If the outlook from a property is not very good, a view can be created within the landscape by suitable screen planting on the boundary and attractive planting inside this screen-planting. Off-site factors that may present problems in landscaping are pedestrian traffic, noise, dust, bright lights, bill board, utility lines, roads, and neighbouring properties. It may be desirable to use screens to eliminate unfavourable factors.

B. Analysis of clients/family needs:

C. Match the client needs and site capabilities as closely as possible.

D. Area layout plan: There are three principal areas that are usually considered in landscape plans.

These are

i The public area which generally is the area in front of the house. However it could be on the side of the house if this is the approach owner wishes the visitors to use.

ii The service area is the area in which trash cans, cloth lines, dog runs, and work areas are located. It is often screened from view.

iii The private: This is the area normally used by the family for outdoor entertainment and lawn grasses. It is usually located at the rear of the house, but it may be on the side. Screening may be used to provide privacy in the area. The vegetable and flower garden may be located in this area.

After these three areas have been designated on the tracing paper, rough sketches of the organization of these areas should be drawn.

E. Select a scale that allows the site to be reproduced on paper, including lot, building and existing structures/features.

F. Assign use areas to appropriate region of the property.

G. Select focal points and locate them within the used areas

H. Shape each use areas in a way that directs attention to the focal point and relates it to adjoining use areas.

L. Selection criteria for plants: Selecting the best plants for a given position require a knowledge of the plant materials available and the types of growing conditions they prefer. A plant can be beautiful in its natural environment can be very ragged out of it, so it is important to give plants right growing conditions. Planting is needed to give privacy, cut down wind, give protection from sun, give pleasant effects etc.

1. Ability to fill the role assigned it in the design
2. Ability to survive the growing conditions of the site
3. Availability and affordability by clients
4. Plant size at maturity
5. Flowering qualities
6. Foliage and tree back colour
7. Presence or absence of thorns
8. Plant rate of growth and length of life
9. Deciduous or evergreen
10. Susceptibility to pests and diseases
11. Frequency of pruning required
12. Soil preference
13. Able to withstand severe trimming/pruning eg hedge plants
14. Attractive appearance
15. Ability to keep out intruders, including animals
16. etc

Selection criteria for pavings:

1. Ability to fill the role assigned it in the design
2. Availability and affordability by clients
3. Durability
4. Maintenance requirements

M. Review of soft and hard landscaping.

Soft landscaping: refers to the plant component of landscaping. It entails the use of plants of all categories (palms, trees, shrubs, grasses, herbaceous plants etc) that are natural in a landscape. The plantings of especially indigenous plant species ensure integration of structures in to the natural environment thus appearing natural in nature, among other many uses of plants in our surroundings. Both soft and hard components are employed to realize a beautiful and functional landscape.

Hard landscaping: The use of any non-plant materials in the development of a landscape. Examples include walkways, driveways, patio, decks, walls, ponds, fences, pergolas, steps, landscape lightings, water fountains, furniture, containers for potted plants etc. These features, individually and in combination, make up the ground, vertical, and overhead planes within a landscape and define outdoor living spaces. Hardscapes should be used to compliment the plants component to meet a client's need.

Landscape Project Cost Estimation

Accurate cost estimation for landscape projects is central to the success of the industry. Over or under estimation of cost of the materials required for the job must be avoided. It is usually done after accurate measurement and examination of the site, pricing all materials required for a successful project and a reasonable profit added. It must be prepared by the most experienced person to ensure precision since it is one of the veritable tools for contract bidding.

Methods

- Superficial/Simplest

- Bay system/method
- Grouped quantity method
- Scheduled method
- Accurate estimation/ Bill of quantity

Generally things to cost include;

- Labour
- Tools
- Transportation
- Ornamental plants
- Topsoil/ Manure
- Professional charges
- Contingency
- Maintenance cost before project delivery
- Etc

Studio Works:

- Preparing Private/ residential, institutional and industrial landscape design/plan
- Preparing contract document.

Field trips to relevant sites within the campus/Abeokuta city .