

DIPLOMA IN LANDSCAPE DESIGN & HORTICULTURE

Want to be the creative drive behind Singapore's garden city or play a part in building a sustainable and green future? If you have a love for nature and a flair for design, the Diploma in Landscape Design & Horticulture (LDH) will put you on the right track to develop and enrich Singapore's green spaces.

Combining landscape design, plant science and horticulture management, LDH is the only diploma level course of its kind in Singapore. Thanks to our strong partnership with the National Parks Board, much of your practical training, field sessions and outdoor lessons will take place at the Greenhub, a dedicated classroom set in the midst of Clementi Woods Park, Singapore Botanic Gardens and other national parks and gardens.

In your first year, you will develop skills in landscape design and learn about urban ecology and conservation, as well as plant taxonomy. You will progress on to learn about horticulture, landscape management, plant physiology and breeding, and hardscape and softscape designs in your second year.

At our Internet of Things-enabled greenhouse facility, you will learn about urban agriculture and how to optimise crop growth through analysis of real-time environmental data detected by smart sensors. You will also get hands-on learning experiences out of the classroom, such as tree planting in Pulau Ubin and various locations in Singapore, or helping with the removal of invasive plant species in our nature reserves.

In your final year, you will get to go on a six-month internship that provides you with an opportunity to put your learning into practice in a work environment, at places such as Gardens by the Bay, Sentosa Golf Club, Singapore Botanic Gardens, Sungei Buloh Wetland Reserve, Pulau Ubin and Wildlife Reserves Singapore.

In addition, this course will hone your project management skills at the various parks and project sites in Singapore, where you can help to design guided tours, therapeutic gardens and biophilic play areas. You may also get a chance to create prototypes of hydroponics and aquaponics systems, and investigate and experiment on growth parameters for edible crops.

YEAR 1 COURSE MODULES

LEVEL 1.1

Career & Professional Preparation 1

This module is part of the Education and Career Guidance framework to provide students with the tools and resources necessary for their career and/or further education. In this first module, students will undergo personal discovery and exploration of industry and career prospects. Students will learn how to plan and set achievable goals in preparation for their future. Students will also learn the importance of passion and professionalism, along with basic teamwork and interpersonal skills.

Chemistry

In this module, students will study the basic concepts of chemistry, including the nature, properties, and transformations of matter; stoichiometry and equilibria of chemical reactions; acids and bases; redox reactions; and the fundamentals of organic chemistry.

Computer-Aided Design & Information Modelling

This module equips students with the basic skills of Computer-Aided Design (CAD) drafting and Building Information Modelling (BIM) to create 2-dimensional and 3-dimensional plans, elevation and section drawings to support the landscape design and construction processes. Appropriate CAD and BIM software and their applications will be taught to model landscape elements and topography.

Landscape Studio 1: Design Fundamentals 1

This module is designed to provide the knowledge and foundation on the tools of landscape design and design vocabulary. Students will learn to generate abstract diagrams to communicate design ideas as well as applying scale and generate plans, sections and elevations in landscape drawings.

Plant Anatomy & Morphology

This module explores the structural and functional features of plant cells, types of cells and tissues, anatomy and morphology of roots, stems and leaves, and the anatomical development of seeds. Other topics include differences between monocots and dicots, flower structure and plant reproductive cycle.

LEVEL 1.2

Landscape Design Communication 1

In this module, students will learn and apply techniques to produce landscape drawings manually and to communicate their designs through these graphics and plant symbols. Topics include drafting and rendering techniques, lettering conventions in creating landscape plans, sections, elevations and sketching using freehand representation.

Landscape Studio 1: Design Fundamentals 2

This module trains students to use the terms Hardscape & Softscape in communication about landscape and identify and use design metaphors in their design approach. It enables students to come up with design ideas through the process of creative thinking and communicate their design ideas in verbal presentation.

Soil Science

This module covers the basics of soil science and an introduction to soil properties, its physics and chemistry, the study of interactions between soil microorganisms and their natural environment. Students will study these properties in relation to managing plant growth in an urban context.

Taxonomy & Plant Identification

This module surveys the principles of plant taxonomy, the relationship among plants, and the classification and biology of algae, fungi, bryophytes, gymnosperms and angiosperms. Other topics include the identification, use, origin and cultural requirements of trees, shrubs, vines and ground covers used for horticultural practices. The emphasis is on common landscape plants used in Singapore.

Urban Ecology & Conservation

This module covers aspects of sustainable environmental management, biodiversity and its conservation, successions, water management and environmental pollution; and discusses how plants are used to restore habitats and enhance biodiversity in an urban environment.

YEAR 1 COURSE CURRICULUM

Module Name	Credit Units
Level 1.1 (18.5 hours per week)	
Career & Professional Preparation 1	1
Chemistry	3.5
Computer-Aided Design & Information Modelling	3
English Language Express*	NA
Health & Wellness^	1
Innovation Made Possible^	3
Landscape Studio 1: Design Fundamentals 1	2
Plant Anatomy & Morphology	5
Level 1.2 (18.5 hours per week)	
Communication Essentials^	3
Landscape Design Communication 1	3
Landscape Studio 1: Design Fundamentals 2	3
Soil Science	3.5
Taxonomy & Plant Identification	3
Urban Ecology & Conservation	3

Notes:

^ For more details on Interdisciplinary Studies (IS) electives, please log on to www.np.edu.sg/is *

This module is only offered to students who are weaker in the English Language.

IS Modules

The School of Interdisciplinary Studies (IS) delivers a broad-based curriculum, which nurtures a new generation of professionals with multidisciplinary skills and an innovative and entrepreneurial spirit to meet the challenges of a knowledge economy. IS offers both prescribed modules and electives to challenge boundaries. Prescribed modules develop students' competencies in core areas such as Communication, Innovation and Enterprise, Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.

YEAR 2 COURSE MODULES

LEVEL 2.1

Hardscape Design

In this module, students will be introduced to materials used for landscape design, designing and detailing hardscape elements as an extension of hardscape design and as a means of conveying design intent. Students will apply Computer-Aided Design (CAD) techniques to prepare hardscape working drawings.

Landscape Studio 2: Design Process 1

This design studio module enables students to apply a systematic approach to project site survey and analysis throughout a landscape design project. It introduces students to ideas on regenerative landscape design and allows them to understand typology of water sensitive urban design and their solutions in the urban context. It also heightens ecological awareness specific to landscape design and planning.

Plant Physiology & Breeding

This module covers the basic processes of photosynthesis and respiration in plants, the influence of plant growth regulators and environmental factors like water, light, soil and air on plant growth, development and postharvest. In plant breeding, students will learn the organisation and expression of nuclear and plastid genomes of plants, cell division, Mendelian genetics and various techniques in breeding of asexually and sexually propagated crops.

Urban Horticulture Technology

This practical module introduces students to the current technology and upcoming trends of tools, equipment and machinery used in the arboriculture and horticulture fields. It allows hands-on sessions in operating the tools and equipment in maintenance practices and exposure to the workplace safety and health, digitalisation and the Internet of things in horticulture management.

Urban Landscape Management

This module trains students in the site preparation, selection, installation and maintenance of shrubs, turf and trees, including preparing a maintenance schedule and troubleshooting a landscaped site for problems, defects, hazards and devising remedial actions. Students will demonstrate their competence in basic arboriculture, horticulture and turf management practices through substantial field sessions.

LEVEL 2.2

Career & Professional Preparation 2

This module is part of the Education and Career Guidance framework to provide students with the tools and resources necessary for their further career and/or education. In this module, students will explore basic job search strategies, practice writing effective resumes and cover letters, and learn interview skills. Students will also learn professional and intercultural communication skills to prepare them for a dynamic and diverse workplace.

Landscape Design Communication 2

Students will apply the skills and techniques learned in Computer-Aided Design and Information Modelling to digitally plan, draw and communicate their landscape designs. Students will further advance their presentation techniques and develop progressive skills in visual communication and digital representation in landscape design.

Landscape Studio 2: Design Process 2

This module requires students to conceptualise a landscape design plan with Active, Beautiful, Clean (ABC) Waters features based on the data collected and site analysis done in Landscape Studio 2: Design Process I. Students will learn about spatial conceptualisation and visualisation. They are required to propose planting schemes and plant species for their project sites.

Plant Pathology & Entomology

This module explores various plant pathogens and diseases as well as their classification and morphology. Topics covered include the biology of bacteria, fungi, nematodes and viruses attacking economic crops; etiology and the control of plant bacterial diseases; the biology of insect pests of horticultural plants; and the application of an integrated pest management system.

Propagation & Nursery Management

This module focuses on plant propagation using seeds, different plant parts, plant tissue culture techniques and nursery management. Topics include sexual and asexual propagation techniques, propagation media, plant growth management, nursery facility planning and work organisation, irrigation systems, nursery operations and management practices.

Softscape Design

This module covers planting design and documentation for different scales of landscape. Topics include the recognition of the visual and ecological characteristics of plants used in landscape design and the basic principles of planting design. Students will apply Computer-Aided Design (CAD) techniques to prepare softscape plans and planting plans. They will be introduced to bill of quantities, plant specifications and quantifying plants.

YEAR 2 COURSE CURRICULUM

Module Name	Credit Units
Level 2.1 (20 hours per week)	
Hardscape Design	2
Landscape Studio 2: Design Process 1	2
Plant Physiology & Breeding	6
Urban Horticulture Technology	3
Urban Landscape Management	5
World Issues: A Singapore Perspective [^]	2
Level 2.2 (20 hours per week)	
Career & Professional Preparation 2	2
Landscape Design Communication 2	2
Landscape Studio 2: Design Process 2	4
Plant Pathology & Entomology	5
Propagation & Nursery Management	5
Softscape Design	2

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YEAR 3 COURSE MODULES

LEVEL 3.1

Landscape Project Management

This module covers concepts of project management within the horticulture industry, work planning, cost analysis and risk management. Other topics include construction management, cost estimates and measurements, horticultural contract specifications, work supervision and schedules. Students will use project management software and analyse case studies.

Landscape Studio 3: Independent Projects

In this module, students will undertake individual projects that involve the entire landscape design process, addressing various aspects of landscape design taught in the first and second year.

Leisure & Park Management

This module examines the philosophy, history, psychology, science and development in leisure and park management. It will also cover the principles, practices and economics of such management and some contemporary issues on recreation and leisure. Site visits will enable students to integrate theory with practice.

Project

Students will work in groups and undertake developmental projects in an area that is of interest to them, either in horticultural research or landscape design, under the supervision of a staff member. In the course of their projects, students will acquire knowledge in literature research and gain technical expertise that will prepare them for working in the industry. They will submit a final year report and present their project through oral presentations.

Urban Agri-Technology

This practical module introduces students to the potential technology of vertical agriculture or farming in the form of indoor cultivation on high-rise buildings to provide reliable and healthy produce to consumers living in a dense urban environment. The module includes topics on the use of controlled environment agriculture and hydroponic techniques with the aim of efficient utilisation of land, water, fertiliser and energy.

LEVEL 3.2

Internship

In this 22-week programme, students will be attached to private companies or government bodies. They will be exposed to the rigours of the industry in a real-time environment and will receive valuable on-the-job training in areas of landscape implementation, cut flower retail, nursery management, turf management and horticulture management.

YEAR 3 COURSE CURRICULUM

Module Name	Credit Units
Level 3.1 (23 hours per week)	
Landscape Project Management	2
Landscape Studio 3: Independent Projects	6
Leisure & Park Management	2
Project	5
Project ID: Connecting the Dots [^]	4
Urban Agri-Technology	4
Level 3.2 (20 hours per week)	
Internship	20

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