

COURSE MODULES

LEVEL 1.1

CAD & Graphic Applications

Students will learn the use of computer aided drafting (CAD) and industry-standard graphic software for drafting and design. Topics include drafting in CAD, image editing in Adobe Photoshop, 3D modelling and drawing in SketchUp. Students will gain hands-on practice to create plans, sections and perspectives for landscape drafting and design presentations.

Career & Professional Preparation I

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, and basic teamwork and interpersonal skills.

Floristry & Interiorscapes

In this module, students will come to appreciate the finer points of basic flower designs and the proper handling of fresh flowers and foliage, as well as the use of potted plants and hydroculture plants in interiorscapes.

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.

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.

LEVEL 1.2

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.

Landscape Design Communication 1

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

Landscape Studio 1 – Design Fundamentals

This module introduces the design fundamentals of space creation and visualisation, two- and three- dimensional designs and their application to simple designs. Students are given an overview of professional concerns and responsibilities to use land in an efficient and attractive manner.

Soil Science & Plant Nutrition

This module covers the fundamentals of soil science, types of growing media, mineral nutrients, soil environment, soilless culture and plant growth in hydroponics systems. Topics include soil formation, soil properties, soil chemical processes, soil fertility, soil pH and nutrient availability, nutrient cycle, soil biology, nutrients in media (soil and soilless),

and their uptake, functions, deficiency symptoms and management. Students will learn to use MS Excel to manage and present their data.

Urban Ecology & Conservation

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

COURSE CURRICULUM

Module Name	Credit Units
YEAR 1	
Level 1.1 (25.5 hours per week)	
CAD & Graphic Applications	5
Career & Professional Preparation I	1.5
Floristry & Interiorscapes	3
Plant Anatomy & Morphology	5
Taxonomy & Plant Identification	5
Innovation Toolkit ^	4
Sports & Wellness ^	2
Level 1.2 (25 hours per week)	
Chemistry	4.5
Landscape Design Communication 1	3
Landscape Studio 1 – Design Fundamentals	5
Soil Science & Plant Nutrition	6
Urban Ecology & Conservation	2.5
Communication & Contemporary Issues ^	4

Notes:

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

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.

COURSE MODULES

LEVEL 2.1

Hardscape Design

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

Horticulture & Turf Management

Students will learn topics on site preparation, planting and maintenance of turf and shrubs, drafting of maintenance schedule and horticultural management. Through fieldwork, students will demonstrate their competence in planting, forking, weeding, mowing and shrub pruning. Topics on types of media used, application of fertilizers and pesticides, mulching, turf establishment and its cultural practices are also covered.

Plant Biochemistry & Physiology

This module examines the molecular basis of living processes in plants, metabolism of carbohydrates, plant growth regulators, and environmental and plant stress physiology. Topics include comparative physiological and biochemical processes during growth, maturation, ripening and senescence in fruits, vegetables and flowers in relation to changes to quality and storage life.

Plant Identification 2

In this module, students will learn an additional 100 plants commonly used in the horticulture and landscaping industry in Singapore. Characteristics of plants from selected plant families will also be studied.

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.

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 CAD techniques to prepare softscape plans and planting plans. They will be introduced to bill of quantities, plant specifications and quantifying plants.

LEVEL 2.2

Arboriculture

This module outlines the aims and objectives of an urban forest, leading to an understanding of the value of non-commodity trees in our society. It addresses the theoretical and practical aspects of arboriculture in a city setting with emphasis on the selection, establishment, and maintenance of trees. Basic field machinery and safety precautions are also included.

Career & Professional Preparation II

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, practise 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.

Genetics & Plant Breeding

This module explores the organisation and expression of nuclear and plastid genomes of plants. Topics include the transcriptional regulation and structure of plant genes, gene regulation during plant development and techniques in molecular plant biology for plant research, genetics and breeding of tropical fruit and nut crops, and the classification, culture, cytogenetics and breeding of orchids (orchidology).

Landscape Design Communication 2

Students will apply the skills and techniques learned in CAD & Graphic Applications, 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

This module introduces landscape design from around the world, including historic landscapes and gardens, urban plazas and pedestrian areas, as well as parks and infrastructure. Topics include the arrangement of buildings, circulation, and other landscape design elements, as well as the development of landscape design processes as applied to small-scale projects.

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.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 2	
Level 2.1 (28 hours per week)	
Hardscape Design	4
Horticulture & Turf Management	5
Plant Biochemistry & Physiology	6
Plant Identification 2	2
Plant Pathology & Entomology	5
Softscape Design	4
Interdisciplinary Studies (IS) elective ^	2
Level 2.2 (26.5 hours per week)	
Arboriculture	3.5
Career & Professional Preparation II	2
Genetics & Plant Breeding	6
Landscape Design Communication 2	3
Landscape Studio 2 – Design Process	5
Propagation & Nursery Management	5
Interdisciplinary Studies (IS) elective ^	2

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COURSE MODULES

LEVEL 3.1

Urban Horticulture Technology

This module introduces current technologies used in the landscape and horticulture industries. Topics include introduction to structural materials, horticultural machinery and tools, irrigation systems and greenhouse management. Planting technologies such as hydroponic operations, vertical farming and greenroof and wall systems will also be covered.

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.

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.

COURSE CURRICULUM

Module Name	Credit Units
YEAR 3	
Level 3.1 (25.5 hours per week)	
Landscape Project Management	3
Landscape Studio 3	
• Independent Projects	6
Leisure & Park Management	2.5
Project (choose one):	
• Landscape Design Track	
• Horticultural Research Track	5
Urban Horticulture Technology	5
Interdisciplinary Studies (IS) elective ^	2
World Issues: A Singapore Perspective ^	2

Level 3.2

Internship

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