

COURSE MODULES

LEVEL 1.1

Chemistry & Biochemistry

This module covers the fundamentals of organic and inorganic chemistry of biomolecules and some basic metabolic pathways.

General Anatomy & Physiology

This module covers the basic concepts of human systems. It links organs and tissues to their functions.

Geometrical & Physical Optics

This module equips students with the knowledge of the optics of lenses, lens systems and aberrations. It also covers topics of photometry, laser and behaviour of light and its interaction with matter.

Mathematics

This module ensures that students have sufficient mathematical knowledge and skills to solve problems in the course. It will also cover some basic principles of statistics.

Ocular Anatomy & Physiology

This module covers, in detail, the anatomy of the eye and its orbit. The anatomical relationships of the orbital contents including the extra-ocular muscles, the orbital nerves, the orbital blood vessels, and the ocular adnexa are described. Physiology and biochemistry of the principal constituents of the eye, including the cornea, crystalline lens, aqueous humour, vitreous humour, retina, ciliary apparatus and tear film are also covered.

LEVEL 1.2

General Pathology

This module teaches students basic pathology mechanisms, which includes cell and tissue damage, inflammations, infections, vascular disorders and tumours. Microbiology & Pathology This module provides students with knowledge of basic microbiology and the infection process. There is emphasis on ocular infection, diagnosis, prevention and treatment. It will also cover the nature of disease and its causes, processes, development and consequences.

Ocular Health Assessment & Disease Management I

This module covers the clinical optometric techniques such as the slit-lamp biomicroscopy and keratometry in examining the anterior segment of the eyes. The students will learn the detection and management of the anterior eye diseases based on the assessment and interpretation with these techniques.

Ophthalmic Optics & Dispensing

This module equips students with the knowledge on the types, materials, physical and optical properties of single vision lenses and spectacle frames available in the industry. Students will also be taught the basic skills such as hand neutralisation, pupillary distance measurement, focimetry and related measurements in fitting lenses into frame. Principles and processes of lens coating and basic single vision ophthalmic lens glazing will also be covered.

Refraction

This module focuses on clinical techniques of objective and subjective refraction. It also includes the clinical assessment of vision and visual acuity.

Visual Perception & Instrumentation A

This module studies the eye as an optical system. It includes refractive errors, visual resolution, spectral sensitivity, spatial perception, motion perception, depth perception and entoptic phenomena. The principles of psychophysical methods in studying the visual system are also included.

COURSE CURRICULUM

| Module Name | Credit Units |
|---|--------------|
| YEAR 1 | |
| Level 1.1 (29 hours per week) | |
| Chemistry & Biochemistry | 6 |
| General Anatomy & Physiology | 3 |
| Geometrical & Physical Optics | 6 |
| Mathematics | 5 |
| Ocular Anatomy & Physiology | 5 |
| Communication & Contemporary Issues ^ | 4 |
| Level 1.2 (29 hours per week) | |
| General Pathology | 2 |
| Microbiology & Pathology | 4 |
| Ocular Health Assessment & Disease Management I | 4 |
| Ophthalmic Optics & Dispensing | 4 |
| Refraction | 6 |
| Visual Perception & Instrumentation A | 5 |
| Innovation Toolkit ^ | 2 |
| Sports & Wellness ^ | 2 |

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

Binocular & Sports Vision

This module teaches the fundamental concepts of binocular vision and anomalies. This includes the assessment, diagnosis and management of binocular vision anomalies. The fundamentals of sports vision are also included.

Contact Lens & Fitting I

This module covers the history, types of contact lenses and the manufacturing processes of contact lens. It also covers the designs, materials and care and maintenance of the soft contact lens. Students will learn the techniques of insertion and removal, as well as the assessment of soft contact lens fitting.

Ocular Health Assessment & Disease Management II

This module covers the clinical optometric techniques direct and indirect ophthalmoscopy and emphasises the detection and management of the posterior eye diseases, as well as ocular tumours and systemic diseases of the eye. In addition, students will be equipped with the knowledge of ocular trauma and to differentiate between ocular emergencies and non-emergencies for referrals.

Ophthalmic Dispensing & Prescribing

This module equips students in the knowledge of the types of progressive and bifocal ophthalmic lenses. Students will also be taught the skills on fitting and glazing of single vision, bifocal and multifocal / progressive

lenses, as well as rimless and rimless frames. Applications and principle of tinted/photochromatic/filters lens will be covered. Students will also learn proper ophthalmic dispensing procedure and trouble shooting.

Visual Perception & Instrumentation B

This module covers topics on visual function such as colour perception, visual field and contrast sensitivity. Students will be trained in the use of various instruments and techniques in assessing colour vision, visual field, contrast sensitivity and photodocumentation.

LEVEL 2.2

Biostatistics & Research Methods

This module starts with basic statistics and moves on to include probability and statistical inference. Students will also learn the basic processes and principles applied in research, as well as how to conduct literature reviews.

Communication in Optometric Practice

This module equips students with effective communication skills that include listening and responding, non-verbal communication, rapport building with patients, patient education, as well as interdisciplinary interactions and communications.

Contact Lens & Fitting II

This module covers the designs and materials for rigid gas permeable (RGP) contact lenses. It also covers the verifications of both soft and RGP lenses. Students will learn the techniques of insertion and removal, as well as the assessment of the RGP fitting. In addition, practical effects of optical differences between contact lenses and spectacles will be covered.

Contact Lens Patient Management

The emphasis of this module is on the detection and management of chronic and acute complications induced by contact lens wear.

General Clinical Practice 1

Students will experience hands-on clinical practice in patient examination, case analysis, prescribing and dispensing optical aids.

Paediatric Vision Management

This module will cover visual development, eye examination and management of paediatric patients.

COURSE CURRICULUM

| Module Name | Credit Units |
|--|--------------|
| YEAR 2 | |
| Level 2.1 (27 hours per week) | |
| Binocular & Sports Vision | 4 |
| Contact Lens & Fitting I | 5 |
| Ocular Health Assessment & Disease Management II | 5 |
| Ophthalmic Dispensing & Prescribing | 5 |
| Visual Perception & Instrumentation B | 6 |
| Interdisciplinary Studies (IS) elective ^ | 2 |
| Level 2.2 (28 hours per week) | |
| Biostatistics & Research methods | 5 |
| Communication in Optometric Practice | 2 |
| Contact Lens & Fitting II | 5 |
| Contact Lens Patient Management | 3 |
| General Clinic Practice 1 | 6 |

| | |
|---|---|
| Paediatric Vision Management | 5 |
| Interdisciplinary Studies (IS) elective ^ | 2 |

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COURSE MODULES

LEVEL 3.1

Contact Lens Clinical Practice 1

This module provides hands-on clinical practice for prescribing contact lens, including preliminary assessment, contact lens fitting, contact lens delivery and aftercare.

General Clinical Practice 2

Students will experience hands-on clinical practice in patient examination, case analysis, prescribing treatment and dispensing. The module also covers topics related to various refractive surgeries.

Internship

Students will intern at establishments with optometric practice, where they get experience in dealing with patients requiring eye examinations and attending to the optometry needs of these patients in a realistic working environment. Students will learn about the operations of an optical shop, a hospital organisation, as well as interact with their supervisor and colleagues.

Research Project

A Students will undertake a topic of research, where they conduct literature reviews, draw up a research proposal and design an experimental protocol.

LEVEL 3.2

Contact Lens Clinical Practice 2

This module continues to provide students with hands-on clinical practice on the fitting of contact lens and contact lens patient management with the introduction of topics like keratoconus, orthokeratology and post-refractive surgery.

General Clinical Practice 3

This module provides continued training of students in hands-on clinical practice in patient examination, case analysis, management including special cases. It will include introduction to more advanced techniques of angiography, ultrasonography, electrophysical tests and optical coherence tomography.

Healthcare Career & Professional Preparation (Optometry)

The module helps to give students a foundational introduction to their three-year diploma course curriculum and how it prepares them for industry. It will help them to embark on their three-year course with the end in mind, through guided reflection of their personal characteristics, and producing an overall game plan for their future education and career goals. It also aims to deepen students' commitment to the sector that the course prepares them for.

Students will be equipped with skills necessary to seek and secure work. They will also be equipped to communicate their personal brand in a positive way. As students sharpen their communication skills, they will also learn how to market themselves effectively.

Low Vision & Community Optometry

This module covers the relevant principles of public health with an emphasis on the epidemiology of vision problems especially those affecting geriatric as well as paediatric patients. Delivery of eyecare services in a hospital environment will also be discussed.

Ophthalmic Pharmacology

Students will learn the fundamental principles of pharmacology and how these are relevant in the prevention and treatment of eye conditions and diseases.

Optometric Practice Management & Ethics

This module covers the basic concepts in operations, inventory control, marketing, people and service management, finance, and developing a business plan in an optometric retail outlet. This module also covers the legal and ethical responsibilities of optometrists during practice.

Research Project B

Students will conduct a research project either with an industry partner and/or at Ngee Ann Polytechnic. A supervisor both from Ngee Ann Polytechnic and/or the collaborating institution will be appointed. The project will culminate with a written report and presentations.

COURSE CURRICULUM

| Module Name | Credit Units |
|--|--------------|
| YEAR 3 | |
| Level 3.1 (29 hours per week) | |
| 4-Month Internship | 16 |
| Contact Lens Clinical Practice 1 | 6.5 |
| General Clinical Practice 2 | 7 |
| Research Project A | 1 |
| Level 3.2 (30 hours per week) | |
| Contact Lens Clinical Practice 2 | 4 |
| General Clinical Practice 3 | 7 |
| Low Vision & Community Optometry | 3 |
| Ophthalmic Pharmacology | 3 |
| Optometric Practice Management & Ethics | 3 |
| Research Project B | 3 |
| Healthcare Career & Professional Preparation (Optometry) | 3 |
| Interdisciplinary Studies (IS) elective ^ | 2 |
| World Issues: A Singapore Perspective ^ | 2 |

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Culture and Communication, and Personal Mastery and Development, while elective modules provide insights into Arts and Humanities, Business, Design, and Science and Technology.