
Faculty of Allied Medical Sciences
Specialty: Optometry Science
Course Description

A1131101 Introduction to Optometry {1} [1-1]

Introduction to the history of optometry; characteristics of the profession; legal status and scope of practice; fundamental terminology; basic procedures and concepts.

Prerequisite: None

A0111204 Optical Physics {2} [2-2]

Review of math concepts; waves; Maxwell's equations; wave equation, plane-wave solution and properties; Lorentz oscillator model of optical properties; reflection and refraction, polarization optics; Jones calculus; Fraunhofer diffraction; prisms and lenses.

Prerequisite: A1131101 Introduction to Optometry

A0111205 Visual Physics {2} [2-2]

The eye as an optical instrument; ametropia and emmetropia; the refracting mechanism; the stimulus to accommodation; ocular transmission; visual acuity and visual performance; stray light in the eye; analysis of the retinal stimulus pattern.

Prerequisite: A0111204 Optical Physics

A0111206 Visual Physics Lab {1} [1-2]

Refractive error demonstration: emmetropia, ammetropia; practical applications on the use of optical instruments available for the optometrist: trial lens set, retinoscope, ophthalmoscope, lensmeter, keratometer.

Corequisite: A0111205 Visual Physics

A1132101 Ocular Anatomy and Physiology {3} [3-3]

Extensive knowledge about the structure of the human eye and adnexa: anterior segment, the visual pathway, the posterior segment; detailed anatomy and physiology of each structure from theoretical and clinical perspectives; the vascular and nerve supply to various structures of the eye.

Prerequisite: A1111101 Anatomy & Histology

A1132102 Ocular Anatomy and Physiology Lab {1} [1-2]

Anterior segment of the eye; posterior segment of the eye; ocular muscles; ocular adnexa; head and neck bones; head and neck muscles; learning through: videos, practical demonstration, eye models, slides.

Corequisite: A1132101 Ocular Anatomy and Physiology

A1132201 Ophthalmic Lenses and Dispensing (1) {2} [2-2]

Basic optical principles; introduction to lenses and lenses materials; lens curvature; surface powers; forms of lenses; prisms characteristics; lens aberrations; frames types; frames mounting.

Prerequisite: A0111205 Visual Physics

A1132202 Ophthalmic Lenses and Dispensing Lab (1) {1} [1-2]

Practical applications on: the choice of lenses materials, forms of lenses, prisms measurement, lens power measurement, frames selection, frames mounting.

Corequisite: A1132201 Ophthalmic Lenses and Dispensing (1)

A1132203 Ophthalmic Lenses and Dispensing (2) {2} [2-2]

Modern lenses design; prismatic effect of lens decentration; oblique prismatic effect; prismatic effect of cylindrical lenses; specification of lens and frame sizes; lens decentration; bifocal and progressive lenses; lens tints.

Prerequisite: A1132201 Ophthalmic Lenses and Dispensing (1)

A1132204 Ophthalmic Lenses and Dispensing Lab (2) {2} [2-4]

Practical applications on lenses design; lens decentration; prismatic effect of cylindrical lenses; specification of lenses and frame sizes; bifocal and progressive lenses.

Corequisite: A1132203 Ophthalmic Lenses and Dispensing (2)

A1132301 Optometry Theory and Methods (1) {2} [2-2]

The course will teach the student how to perform basic visual examination techniques: case history, visual acuity, pinhole test, inter-pupillary distance, penlight examination of the external eye and anterior chamber, pupillary function, binocular vision tests.

Prerequisite: A0111205 Visual Physics

A1132302 Optometry Theory and Methods Lab (1) {1} [1-2]

Students will practice how to perform basic visual examination techniques: case history, visual acuity, pinhole, inter-pupillary distance, penlight examination of the external eye and anterior chamber, pupillary function, binocular vision functions.

Corequisite: A1132301 Optometry Theory and Methods (1)

A1132303 Optometry Theory and Methods (2) {2} [2-2]

Theoretical aspects of the following tests: Retinoscopy, keratometry, direct ophthalmoscopy, indirect ophthalmoscopy, slit-lamp biomicroscopy techniques, objective refraction, subjective refraction.

Prerequisite: A1132301 Optometry Theory and Methods (1)

A1132304 Optometry Theory and Methods Lab (2) {1} [1-2]

Students will practice how to perform the following tests: retinoscopy, keratometry, direct ophthalmoscopy, slit-lamp biomicroscopy, objective refraction, subjective refraction.

Corequisite: A1132303 Optometry Theory and Methods (2)

A1132601 Ocular Pharmacology {2} [2-2]

Classification and pharmacologic actions of currently employed ophthalmic drugs; clinical utilization of the drugs: indications, contraindications, dosages, and side effects; medications used routinely for the delivery of primary eye care.

Prerequisite: A1112103 Pathology

A1133101 Visual Perception {2} [2-2]

Introduction; physical aspects of vision; physiological aspects of vision; principles of psychophysical measurement; visual detection and discrimination; spatio-temporal resolution; color vision; binocular vision.

Prerequisite: A1132101 Ocular Anatomy and Physiology

A1133201 Contact Lenses (1) {2} [2-2]

Soft lenses design; manufacturing techniques; fitting considerations of soft lenses for optimal physiological function; criteria for patient selection and training; contact lenses care systems.

Prerequisite: A1133303 Visual Functions Testing Instruments

A1133202 Contact Lenses Lab (1) {1} [1-2]

Hygiene in contact lenses handling; measurements selection of soft contact lenses, fitting of soft lenses; criteria for patient selection; patient training on use of contact lenses.

Corequisite: A1133201 Contact Lenses (1)

A1133203 Contact Lenses (2) {2} [2-2]

History of rigid gas permeable contact lenses; hard lenses parameters; hard lenses materials; hard lenses design; patient selection criteria; hard lenses fitting; hard lenses care regime; review of keratoconus; review of irregular corneal surface conditions; corneal changes due to lenses wear; special lenses designs.

Prerequisite: A1133201 Contact Lenses (1)

A1133204 Contact Lenses Lab (2) {1} [1-2]

Measurements selection of various types of rigid lenses; fitting of rigid contact lenses; evaluation of irregular cornea conditions; practical application on: choice of materials of rigid gas permeable lenses, design of specialty contact lenses.

Corequisite: A1133203 Contact Lenses (2)

A1133301 Optometry Theory and Methods (3) {2} [2-2]

Normal vision development; visual development for special populations; relation between vision and learning; assessment methods for visual efficiency and visual information processing; treatment methods; introduction to the primary care clinic; emphasizing patient examination: assessment, plan and critical thinking.

Prerequisite: A1132303 Optometry Theory and Methods (2)

A1133302 Optometry Theory and Methods Lab (3) {1} [1-2]

Review of basic clinical skills; prescription refinement; assessment methods for: visual efficiency, visual information processing; advanced clinical skills; complete visual assessment of patients; introduction to pediatric and geriatric refraction.

Corequisite: A1133301 Optometry Theory and Methods (3)

A1133303 Visual Functions Testing Instruments {2} [2-2]

Principles of special testing instruments: electrophysiology, visual field testing, color vision testing, binocular vision assessment, corneal topography, fundus photography, fluorescein angiography, optical coherence tomography, tonometry.

Prerequisite: A1132301 Optometry Theory and Methods (1)

A1133304 Visual Functions Testing Instruments Lab {1} [1-2]

Practice the use of special testing instruments: visual field testing, color vision testing, corneal topography, fundus photography, optical coherence tomography, tonometry.

Corequisite: A1133303 Visual Functions Testing Instruments

**A1133305 Ocular Diseases (1) {3} [3-3]**

Introduction to the ocular structures of the anterior segment of the eye; common diseases affecting the anterior segment of the eye: pathophysiology, clinical presentations, diagnostic techniques, treatment options.

Prerequisite: A1132101 Ocular Anatomy and Physiology

A1133306 Ocular Diseases (2) {3} [3-3]

Introduction; diseases affecting the posterior segment of the eye: pathophysiology, clinical presentations, diagnostic techniques, treatment techniques; systemic diseases related to ocular diseases.

Prerequisite: A1133305 Ocular Diseases (1)

A1133401 Binocular Vision (1) {2} [2-2]

Introduction; review of ocular anatomy and physiology; Strabismus definition; strabismus types; etiology and pathophysiology of strabismus; diagnosis and treatment modalities.

Prerequisite: A1133305 Ocular Diseases (1)

A1133402 Binocular Vision Lab (1) {1} [1-2]

Basic techniques used to detect the presence of strabismus and binocular vision anomalies; advanced clinical techniques; instruments used in binocular vision assessment; patient rapport.

Corequisite: A1133401 Binocular Vision (1)

A1133601 Occupation Ethics {1} [1-1]

Ethical theory; ethics in health care; optometric ethics; health policy.

Prerequisite: None

A1133602 Optometric Business Management {1} [1-1]

Financial management; operations management; leadership; inter-professional relations; public health.

Prerequisite: None

A1134301 Optometry Neuroscience {2} [2-2]

Introduction to neuroscience; common neurological diseases; ocular neuropathology disorders: etiology, symptoms, signs, diagnosis, treatment.

Prerequisite: A1133305 Ocular Diseases (1)

A1134401 Pediatric Optometry {3} [3-3]

Introduction; ocular characteristics of the pediatric population; growth and development of the eye; pediatric vision assessment; diagnosis and management of pediatric eye disorders; vision screening; dyslexia; introduction to child psychology.

Prerequisite: A1133305 Ocular Diseases (1)

A1134402 Binocular Vision (2) {3} [3-3]

Introduction; review of diseases related to binocular vision anomalies; advanced investigation of binocular vision; advanced assessment techniques; management of a range of binocular vision anomalies within optometric practice.

Prerequisite: A1133401 Binocular Vision (1)

A1134501 Low Vision and Rehabilitation of Vision {2} [2-2]

Basic optical concepts; diseases related to low vision; proper usage and prescription of magnifying systems and imaging technology; non-optical low vision devices; introduction to vision rehabilitation.

Prerequisite: A1133305 Ocular Diseases (1)

A1134502 Low Vision and Rehabilitation of Vision Lab {1} [1-2]

Introduction; basic optical concepts; use of magnifying systems and imaging technology; use of non-optical low vision devices; clinical skills and techniques for assessment and management; environmental modifications for low vision patients; basics of vision rehabilitation.

Corequisite: A1134501 Low Vision and Rehabilitation of Vision

A1134503 Geriatric Optometry {3} [3-3]

Introduction; basic concepts of geriatrics medicine; ocular and systemic diseases related to geriatrics; assessment techniques; the role of optometrist in maintaining the independent lifestyles of these special populations.

Prerequisite: A1133305 Ocular Diseases (1)

A1134601 Methods of Scientific Research {2} [2-2]

Introduction; scientific method of research; tools of research; statistical measurements.

Prerequisite: None

A1134801 Ophthalmic Clinics - Field Training (1) {3} [3-6]

Under the supervision of the optometry department, the student will examine patients with many different problems in optometry clinics dealing with: primary health care, primary eye care, contact lenses, spectacle dispensing.

Prerequisite: A1133303 Visual Functions Testing Instruments

A1134802 Ophthalmic Clinics - Field Training (2) {3} [3-6]

Under the supervision of the optometry department, the students will expand their clinical skills by examining patients with many different problems in hospital clinics dealing with: primary health care, contact lenses, binocular vision, low vision, pediatric optometry, geriatric optometry.

Prerequisite: A1134801 Ophthalmic Clinics - Field Training (1)

A1134901 Graduation Project {2} [2-2]

Upon the approval of the head of the department, and under the supervision of an assigned supervisor, the student will conduct a research project in the fields related to optometry, the student will then present the findings in front of the students and a research committee.

Prerequisite: Passed 90 Credit Hours

A1132602 Laser Medical Applications {3} [3-3]

Types of lasers; laser-tissue interactions; ablation; photo-thermal processes; photochemical reactions; bio-stimulation and wound healing; interaction mechanisms; laser applications; laser delivery; laser safety.

Prerequisite: None

**A1133307 Occupational Vision {3} [3-3]**

Introduction; lighting principles; ergonomics and industrial hygiene; occupational and environmental regulation; protective and preventative principles of ocular injury.

Prerequisite: None

A1134701 Psychology in Optometry {3} [3-3]

Key topics include social and human behavior; personality and mental disorders; treatment, learning, memory, human development, and biological influences. Subjects may include sensation, perception and states of consciousness; thinking, intelligence, language, motivation and emotion; stress and health; intercultural psychology; applied psychology.

Prerequisite: None

A1134702 Sociology in Optometry {2} [2-2]

Key sociological concepts covered include: class/socioeconomic status; gender; youth; ethnicity; family; work; consumption and location.

Prerequisite: None

A1134703 Sociology in Optometry Lab {1} [1-2]

Applied practicals on key sociological concepts such as: class/socioeconomic status; gender; youth; ethnicity; family; work; consumption and location.

Prerequisite: A1134702 Sociology in Optometry

A1134704 Public Eye Health {2} [2-2]

Introduction; public needs assessment; health economics; epidemiology; basic biostatistics; international initiatives in public health; patient-optometrist communication skills; the role of eye care professionals in public eye health.

Prerequisite: None

A1134705 Public Eye Health {1} [1-2]

International initiatives in public health; patient-optometrist communication skills; the role of eye care professionals in public eye health.

Prerequisite: A1134704 Public Eye Health