

Courses Description for Optometry and Vision Science

Spring Semester – Pre 1

UNI 101 -First Year University Experience (3 Credits)

This course acclimates and prepares students for university life. It introduces students to academic practices such as critical reading and thinking, study and research skills, information literacy, cultural diversity, and collaborative learning within an American Style liberal arts educational environment. Prerequisites: None.

MAT 101 – College Algebra (3 Credits)

Introduces the idea of multiple representations of linear and non-linear functions. Includes mathematical concepts for understanding rational numbers, various expressions, analyzing and solving linear equations & inequalities, data analysis, probability, statistics, and polynomials. It has hands-on material providing the student with problem-solving skills where algebra concepts are applied. Prerequisites: None.

BIO 101- Introductory Biology (3 Credits)

This course covers basic concepts in biology. An introduction to the basis of life, structure and function of cells and systems, forms and functions of plants and animals, as well as genetics, evolution, and ecology.

PHY 100- Conceptual Physics (3 Credits)

This course provides introductory physics for health science professionals. The course material includes topics related to physical optics, mechanics, waves, fluids and thermodynamics, vibrations and waves, atomic and nuclear physics, and radiation. The course aims to provide a basic understanding of physical processes and techniques needed for further understanding of complex concepts in advanced health sciences courses. Course pre-requisite: MAT 101.

HCT 101 - Fundamentals of Healthcare Professions (3 Credits)

This course provides students with an overview of the various health professions by covering and discussing fundamental aspects of the healthcare system. It includes an overview of healthcare development, how health delivery systems are structured, legal and ethical considerations of healthcare delivery, and an overview of various healthcare professions. Students are encouraged to discover health professions through assignments, observations, and interviews. Prerequisites: None.

Fall Semester – Pre 1

CSC 101 - Introduction to Computer Science (3 Credits)

This course covers the fundamentals of computers and computer nomenclature, particularly with respect to personal computer hardware and software used in today's business environment. Students will survey and use business applications programs utilizing pre-written programs that include word processing, spreadsheets, databases, presentation graphics, and web browsers. Students completing the course will

have a solid understanding of computer concepts, how to use computers in today's business world, and how to access information on the World Wide Web. Prerequisites: None.

OVS 101 - Ocular Anatomy (4 Credits)

Introducing the foundation of anatomy and physiology of the human visual system. It is designed to provide students with a comprehensive understanding of the visual system's anatomical structure, function, and neural mechanisms. The course will cover the fundamental principles of visual perception, including the organization and structure of the visual system, the physiology of visual neuronal transduction, and the visual information neural processing that including the visual pathways, the role of the brainstem, and the visual cortex. Prerequisites: None.

OVS 110 - Introduction to Physical optics (3 Credits)

The introduction to physical optics course provides the foundation of optics in vision science. The course is designed to introduce students to the fundamental concepts of optics, including the properties of light, the anatomy and physiology of the eye, and the optics and components of visual instruments and devices. The course will delve into the practical applications of visual optics, including correction of vision, optical instrumentation and technology, and ophthalmic imaging systems. Pre-requisite: MAT 101.

OVS 115 Clinical Optometry and Refraction I (2 Credits)

Fundamentals of the optometric examination. Students will learn the reasoning and basic interpretation of the entrance tests. Patient observation, case history, visual acuities, pinhole, pupil testing, extra-ocular eye movements, lid evaluation, saccades, confrontational visual fields, cover test, color vision, stereopsis. Course pre- or co-requisite: OVS 101.

OVS 115L – Clinical Optometry and Refraction Laboratory I (1 Credit)

In this clinical laboratory course, students will practice and develop technical skills for important components of the optometric examination. The clinical lab will focus on patient observation, case history, extra-ocular eye movements, lid evaluation, saccades, confrontational visual fields, cover test, color vision, stereopsis. Course pre- or co-requisite: OVS 115.

OVS 211 - Ocular Physiology (3 Credit)

Ocular Physiology is a comprehensive course that explores the functional processes of the human vision system. This undergraduate course is designed to provide students with a foundational understanding of the physiological mechanisms and processes of the eye, essential for careers in optometry, ophthalmology, vision sciences, and other health-related disciplines. Course pre- or co-requisite: OVS 101.

Spring Semester – Pre 2

ENL 101 - Expository Writing (3 Credits)

This course will enable students to practice writing in several contexts and forms (from personal narrative to inquiry and argument). They will develop increasingly complex essays incorporating the ideas and language of other writers in placing their voice within academic or public debates. Prerequisite: Successful completion of ASP 6 or its equivalent.

OVS 210 - Geometrical and Spectacles Optics (3 Credits)

This course provides a full understanding of the principles and applications of geometrical and spectacle optics in ophthalmology and visual science. The course is designed to give students a full understanding of the principles of light and optics and their practical applications in geometry, ophthalmology, and visual science. In addition, it covers the fundamental principles of geometrical optics and how they can be applied to solve problems related to image formation and aberrations. Prerequisite: OVS 110.

OVS 210L - Geometrical and Spectacles Optics Laboratory (1 Credit)

This laboratory course has been arranged to accompany OVS 210. Pre- or co-requisite: OVS 210.

OVS 215 Clinical Optometry and Refraction II (3 Credits)

This is the second course in the Clinical Optometry sequence. The major emphasis is on classification and epidemiology of refractive errors, understanding objective and subjective refraction, evaluation of binocular status. Maddox rod, W4dot, retinoscopy, refraction, prism. Course pre-requisite: OVS 115.

OVS 215L Clinical Optometry and Refraction II Laboratory (1 Credit)

This is a laboratory course arranged to accompany OVS 215. The course focuses on refraction and provides the students skills needed to perform retinoscopy, refraction, Maddox rod, W4dot, prism testing. Prerequisite or corequisite: OVS 215.

OVS 251 – Ocular Disease and Pathophysiology I (3 Credits)

This course explores the pathological conditions that affect the human visual system. The course is designed to provide students with a comprehensive understanding of the underlying mechanisms and clinical manifestations of visual system disorders for anterior segment. The course will cover a range of disorders affecting the eye, optic nerve, and visual cortex, including both acute and chronic conditions including glaucoma, cataracts, diabetic retinopathy, age-related macular degeneration, neurological conditions, and retinitis pigmentosa. Prerequisite: OVS 211.

Fall Semester – Pre 2

OVS 255 – Visual perception and Color (2 Credits)

This course covers principles and applications of color and vision perception in humans. The course is designed to provide students with a comprehensive understanding of physiology, psychology, and perception of color vision and their clinical implications. The course will give an overview of anatomy and physiology of the visual system, including the retina, visual pathways, and the brain's role in visual perception with an emphasis on color vision. Students will learn about the properties of light and their interactions with the visual system, including the principles of color mixing, chromatic adaptation, and color constancy. Prerequisite: BIO 211, OVS 101.

OVS 261- Ocular Disease and Pathophysiology II (3 Credits)

This course explores the pathological conditions that affect the posterior segment of the human eye. The course is designed to provide students with a comprehensive understanding of the underlying mechanisms and clinical manifestations of visual system disorders of the posterior segment. The course will cover a range of disorders affecting the optic nerve, and visual cortex, including both acute and chronic

conditions including glaucoma, diabetic retinopathy, age-related macular degeneration, neurological conditions, and retinitis pigmentosa. Prerequisite: OVS 251.

OVS 227 - Clinical Optometry and Optical Devices in Optometry (3 Credits)

This course introduces the basic instrumentation and devices used in optometry and ophthalmology. It is designed to provide students with a comprehensive understanding of the principles of optical devices including slit lamp microscopy, retinoscopy, ophthalmoscopy, ultraviolet Burton lamp, pupillometer and tonometry and their applications in the diagnosis and management of ocular disorders. Prerequisite: OVS210.

OVS 227L - Clinical Optometry and Optical Devices in Optometry I Laboratory (1 Credit)

The laboratory session will support the OVS 217 lecture, providing the students with the skills needed to perform retinoscopy, refraction, Maddox rod, W4dot, prism testing. Prerequisite: OVS 215. Pre- or co-requisite: OVS 227.

OVS 280 Neuroanatomy and Neuro-ophthalmology

This course focuses on neuroanatomy and its implications in neuro-ophthalmology. The neuroanatomy segment of the course will cover topics such as the neuroanatomy of the eyes and its supporting structures, as well as Visual pathways and the optic nerve. In the neuro-ophthalmology component, the course will explore the complex interactions between the nervous system and the visual apparatus. Clinical applications of neuro-ophthalmology will be a key focus, with an emphasis on the diagnosis and management of disorders affecting vision and ocular motility. Course pre-requisite: OVS 101.

ENL 201 - Academic Writing

This course enables students to demonstrate critical reading, interdisciplinary investigations, and research skills practiced in their core courses by investigating more deeply a question or idea raised in their core coursework and exploring topics in their proposed major. Prerequisite: ENL 101.

Spring Semester – P1

PHI 101 - Introduction to Ethics (3 Credits)

This course provides a grounding in classical and historical ethics (eastern and western) with an “applied” focus. The students will connect ethical and moral considerations to real-world scenarios (in business, for example, or when discussing the environment) that will introduce how and why ethics matter in every discipline or profession they may choose to study. Topics may include environmental ethics, liberty, and morality, and war. Prerequisites: None

OVS 310 – Ocular Disease and Pathophysiology III (3 Credits)

This course explores the pathological conditions that affect the human visual system. The course is designed to provide students with a comprehensive understanding of the underlying mechanisms and clinical manifestations of systemic diseases of the eye. The course will cover a range of disorders affecting

the eye, optic nerve, and visual cortex, including both acute and chronic conditions including glaucoma, cataracts, diabetic retinopathy, age-related macular degeneration, neurological conditions, and retinitis pigmentosa. Prerequisite: OVS251.

OVS 312 – Introduction to Ocular Pharmacology (3 Credits)

This course is an undergraduate course that introduces the study of drugs and their effects on the body. The course is designed to provide students with a comprehensive understanding of the principles of pharmacology, including drug classification, pharmacokinetics, pharmacodynamics, and the principles of drug action. The course will begin with an overview of the basic principles of pharmacology, including drug nomenclature, classification, and the different modes of drug administration. Students will learn about the fundamental concepts of pharmacokinetics, including absorption, distribution, metabolism, and elimination of drugs from the body. Prerequisite: OVS251.

OVS 315L Clinical Optometry and Optical Devices in Optometry II Laboratory (1 Credit)

This hands-on training will include basic examination of the anterior ocular structures, Intraocular pressure testing, gonioscopy. Course pre-requisite: OVS 277L.

OVS 220 – Introduction to Soft Contact Lenses (3 Credits)

The course introduces the principles and applications of contact lenses. The course is designed to provide students with a comprehensive understanding of the types of contact lenses, fitting techniques, care and maintenance, and the potential complications associated with contact lens use. It also covers the types of contact lenses available, including rigid gas permeable lenses, soft lenses, and hybrid lenses, and the indications for their use. The course will then delve into the principles of contact lens fitting, including the assessment of corneal shape, size, and curvature, and the selection of the appropriate lens design and material. Students will learn about the principles of refraction and visual acuity testing and their applications in contact lens fitting. Prerequisite: OVS225.

OVS 220L – Introduction to Soft Contact Lenses Laboratory (1 Credit)

This is a laboratory course arranged to accompany OVS 220. Prerequisites or co-requisite: OVS 220 – Introduction to Contact Lenses.

Fall Semester – P1

ENL 210 - Public Speaking (3 Credits)

Introduction to Public Speaking strengthens student's reasoning skills and understanding of the various rhetorical strategies available to them in both the writing process and in speaking publicly. Students are required to practice ethical integration and documentation of sources into speeches. The course is designed to introduce students to extemporaneous and both planned and documented types of speaking. To this end, students will be required to do research on topics and give oral presentations to the class based on their research. This course strongly reinforces the connection between writing and speaking. Pre-requisite: ENL 101.

OVS 380- Special and Rigid Contact Lenses (3 Credits)

Special and Rigid Contact Lenses is an undergraduate course that provides an in-depth exploration of the principles and applications of special and rigid contact lenses in optometry and ophthalmology. The course is designed to provide students with a comprehensive understanding of the principles of advanced contact lens fitting and customization, as well as the management of contact lens-related complications. The course delivers overview of the principles of contact lens fitting, including the assessment of corneal shape, size, and curvature, and the selection of the appropriate lens design and material for several types of advanced contact lenses available, including scleral lenses, orthokeratology lenses, and hybrid lenses. Prerequisite: OVS 320.

OVS 380L- Special and Rigid contact lenses Laboratory (1 Credit)

This is a laboratory course arranged to accompany OVS 380. Pre- or co-requisite: OVS 380.

OVS 340 - Low Vision (2 Credits)

This course introduces students to the principles and applications of low vision rehabilitation in optometry and ophthalmology. The course is designed to provide students with a comprehensive understanding of the techniques used in the assessment, diagnosis, and management of low vision including the definition of low vision and its epidemiology. Students will learn about the various aspects of low vision, including age-related macular degeneration, diabetic retinopathy, and glaucoma. Prerequisite: OVS 320.

OVS 385 – Glaucoma (2 Credits)

Glaucoma is an advanced-level undergraduate course that provides students with an in-depth understanding of one of the leading causes of irreversible blindness worldwide: glaucoma. The course is intended for students majoring in optometry, medicine, biomedical sciences, and related fields. Course pre-requisite: OVS 251.

OVS 330L Dispensing and Edging Laboratory (2 Credits)

Dispensing Laboratory I is an undergraduate course designed to provide students with practical, hands-on experience in the fabrication and fitting of eyeglasses. The course is designed to help students apply the theoretical knowledge and skills they have acquired in their coursework to real-world situations. Pre- or co-requisite: OVS 330.

Summer Semester – P1

OVS 390 Practicum I (2 Credits)

Internship in Optometry Workshops is an undergraduate course designed to provide students with practical, hands-on experience in the optics industry. The course is designed to help students apply the theoretical knowledge and skills they have acquired in their coursework to real-world situations. The internship will highlight the clinical competency assessment and evaluations are used to document the student's clinical performance. Course pre-requisite: student must have completed 75 credits of undergraduate courses.

Spring Semester – P2

HCT 210 - Basic Life Support (0 Credit)

The course provides students with a comprehensive understanding of emergency medical care and the skills necessary to respond in a crisis. Through a combination of lectures, hands-on training, and scenario-based simulations, students will learn how to assess and manage medical emergencies, perform CPR (cardiopulmonary resuscitation), use automated external defibrillators (AEDs), control bleeding, and manage respiratory and cardiac arrest. Prerequisite: None.

OVS 495 - Practicum II (3 Credits)

Internship in Optometry Workshops is an undergraduate course designed to provide students with practical, hands-on experience in the optics industry. The course is designed to help students apply the theoretical knowledge and skills they have acquired in their coursework to real-world situations. The internship will highlight the clinical competency assessment and evaluations are used to document the student's clinical performance. Pre or co-requisite: OVS 390.

OVS 388 Clinical Decision making in Optometry (2 Credits)

Explore the core principles of clinical decision making in optometry. This course integrates theory with clinical skills, emphasizing evidence-based approaches for optimal patient care. Students will understand and apply the decision-making process in optometry, integrate patient history and clinical findings, interpret imaging and diagnostic test results, and to identify a differential diagnosis. Students will further develop effective treatment plans using pharmacological and non-pharmacological interventions, while considering patient preferences and values in decision making. This will also integrate optometric care into overall patient health and adhere to legal guidelines and standards. Course pre-requisites: OVS 210 and OVS 210.

Fall Semester – P2

FIN 101 - Finance for Non-Business Students (3 Credits)

This course introduces the principles of finance and their applications in the main areas of finance such as corporate finance, personal finance, property management, international finance, Islamic finance, small businesses finance, banking, and investment. Prerequisite: None

CLA (3 Credits)

HCT 4XX – Technical elective (3 Credits)

OVS 470 - Pediatric Optometry, Binocular Vision and Strabismus (3 Credits)

is an undergraduate course designed to provide students with a comprehensive understanding of the visual development, assessment, and management of children, including those with strabismus and other

visual anomalies. The course is designed to help students develop the skills necessary to provide effective and appropriate eye care to pediatric patients. The course covers the normal visual development in infants and children, common vision disorders in children, such as amblyopia, refractive errors, and strabismus, diagnosis, and management of vision disorders in children and principles of vision therapy and its applications in pediatric eye care. Prerequisites: OVS 380; OVS 370.

OVS 499 Practicum III: Internship in Ophthalmology Centers (3 credits)

Internship in Optometry Workshops is an undergraduate course designed to provide students with practical, hands-on experience in the optics industry. The course is designed to help students apply the theoretical knowledge and skills they have acquired in their coursework to real-world situations. The internship will highlight the clinical competency assessment and evaluations are used to document the student's clinical performance. Prerequisite: OVS 495

Technical Electives

HCT 480 - Marketing in the Healthcare Sector (3 Credits)

The course on Marketing in the Healthcare sector is designed to provide students with a comprehensive understanding of marketing principles and their application in the healthcare industry. The course will cover various aspects of healthcare marketing such as market research, consumer behavior, branding, product development, pricing, distribution, and promotion. Students will learn how to apply marketing concepts to real-world healthcare scenarios, including the marketing of medical devices, pharmaceuticals, hospitals, and other healthcare services. The course will also cover regulatory considerations and ethical issues in healthcare marketing. The goal of this course is to equip students with the knowledge and skills required to develop and execute effective marketing strategies in the healthcare sector. (Content not verified by AUIB) Prerequisite: None.

HCT 481 - Health Informatics (3 Credits)

This course describes the fundamental principles, concepts, and technological elements that make up the building blocks of Health Informatics. The course introduces fundamental characteristics of data, information, and knowledge in the domain, the common algorithms for health applications, and IT components in representative clinical processes. It also introduces the conceptual framework for handling the collection, storage, and the optimal use of biomedical data, as well as the concepts of population health and precision medicine and the information systems that support them. Emphasis is on the basic principles of knowledge management systems in biomedicine, various aspects of Health Information Technology standards, and IT aspects of clinical process modeling. Prerequisite: None.

HCT 486 - Leadership in Vision Sciences and Optometry (3 Credits)

Leadership in Vision Sciences and Optometry is an undergraduate course designed to provide students with an understanding of leadership principles and their application in the context of vision sciences and optometry. The course is designed to help students develop the skills necessary to lead and manage teams,

organizations, and projects in vision sciences and optometry. (Content not verified by AUIB). Prerequisite: None.

HCT 483 - Introduction to Clinical Research (3 Credits)

This course provides an overview of the fundamental concepts, principles, and practices involved in clinical research and research works involving human subjects. The course covers the process of designing, conducting, and analyzing clinical research, with a focus on ethical considerations, human subject protection, regulatory requirements, and the impact of clinical research on healthcare delivery and patient outcomes. Documentations required in clinical research will be described, and responsibilities of agencies and organizations responsible for human subject protection will be identified.

Throughout the course, students will learn about several types of clinical research studies, including observational, interventional, and registry studies. They will also learn about the key components of a clinical study protocol, including eligibility criteria, randomization, and blinding. Prerequisite: None.