

CURRICULUM FOR THE DOCTORATE IN OPTOMETRY

1st Year: Fall: Term 1 - 15 weeks

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto SBS1 Systemic Biomedical Sciences I	4	45	30	0	0
Opto APP1 Applied Pharmacology I	3	45	0	0	0
Opto APO1 Applied Optics I	4	52.5	15	0	0
Opto PCO1 Principles and Practice of Primary Care Optometry I	2	15	30	0	0
Opto CCO1 Cultural Competency in Optometry I	2	30	0	0	0
Opto CCL1 Cultural Competency Language Lab I (Optional)	(1)	0	(30)	0	0
Opto HDA0 Human Development and Aging	2	30	0	0	0
Opto OAP1 Integrative Ocular Anatomy and Physiology I	2.5	30	15	0	0
Totals	19.5 (20.5)	247.5	90 (120)	0	0

1st Year: Spring: Term 2 – 15 weeks

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto SBS2 Systemic Biomedical Sciences 2	4	45	30	0	0
Opto APO2 Applied Optics 2	4	52.5	15	0	0
Opto PCO2 Principles and Practice of Primary Care Optometry 2	2	15	30	0	0
Opto VS01 Vision Screenings	0.5	0	0	30	0
Opto CCO2 Cultural Competency in Optometry 2	2	30	0	0	0
Opto CCL2 Cultural Competency Language Lab 2 (Optional)	(1)	0	(30)	0	0
Opto OAP2 Integrative Ocular Anatomy and Physiology 2	3	30	30	0	0
Opto APP2 Applied Pharmacology 2	3	45	0	0	0
Opto OCD1 Integrative Optometric Case Discussions 1	1	0	30	0	0
Totals	19.5 (20.5)	217.5	135 (165)	30	0

1st Year: Term 3: Summer (June) – 25 days

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto LFC0 Perception of Light, Form and Color	4	45	30	0	0
Totals	4	45	30	0	0

Totals First year	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
	43 (45)	510	255 (315)	30	0

2nd Year: Fall: Term 1

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto SBS3 Systemic Biomedical Sciences 3	4	60	0	0	0
Opto APO3 Applied Optics 3	4	45	30	0	0
Opto PCO3 Principles and Practice of Primary Care Optometry 3	5	30	90	0	0
Opto VSC1 Vision Screenings and Clerkship	1	0	0	30	30
Opto MBV0 Ocular Motility and Binocular Vision	4	45	30	0	0
Opto ODS1 Ocular Disease 1	4	60	0	0	0
Opto OCD2 Integrative Optometric Case Discussions 2	0.5	0	0	0	30
Totals	22.5	240	150	30	60

2nd Year: Spring: Term 2

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto PCO4 Principles and Practice of Primary Care Optometry 4	5	45	60	0	0
Opto CLK1 Clinical Clerkship	1	0	0	0	60
Opto CSA0 Comprehensive Clinic Skills Assessment	0.1	0	0	0	0
Opto PCL0 Primary Care Contact Lenses	3	30	30	0	0
Opto ODS2 Ocular Diseases 2	4	60	0	0	0
Opto DVT1 Developmental Optometry and Vision Therapy 1	3	30	30	0	0
Opto EPH0 Epidemiology and Public Health	2	30	0	0	0
Opto OCD3 Integrative Optometric Case Discussions 3	0.5	0	0	0	30
Totals	18.6	195	120	0	90

Totals second year	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
	41.1	435	270	30	150

3rd Year: Summer: Term 1 (July) – 25 days

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto PC01 Patient Care 1	0.66	0	0	0	30
Opto OVR0 Vision Research	2	30	0	0	0
Totals	2.66	30	0	0	30

3rd Year: Fall: Term 2 – 15 weeks

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto ODS3 Ocular Diseases 3	4	60	0	0	0
Opto DVT2 Developmental Optometry and Vision Therapy 2	3	30	30	0	0
Opto PLV0 Primary Care Low Vision	3	30	30	0	0
Opto GRO0 Geriatric Optometry	1.5	22.5	0	0	0
Opto PDO0 Pediatric Optometry	1.5	22.5	0	0	0
Opto EBO0 Clinical Reasoning and Evidence-Based Optometry	1	15	0	0	0
Opto POE0 Profession of Optometry and Ethics	1	15	0	0	0
Opto PCO2 Patient Care 2	4	0	0	0	180
Opto PBM0 Publishable Manuscript Submission	0.5	0	0	0	0
Totals	19.5	195	60	0	180

3rd Year: Spring: Term 3 – 15 weeks

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto ACL0 Advanced Contact Lenses	2	30	0	0	0
Opto AVT0 Advanced Vision Therapy	2	15	30	0	0
Opto ALV0 Advanced Low Vision	2	15	30	0	0
Opto NOR0 Neuro-Optometric Rehabilitation	2	30	0	0	0
Opto AOD0 Advanced Ocular Diseases	2	30	0	0	0
Opto AEP0 Advanced Electrophysiology	2	15	30	0	0
Opto SSV0 Sports Vision	2	15	30	0	0
Opto PMT0 Practice Management	2	30	0	0	0
Opto RVS0 Review Seminar	1	15	0	0	0
Opto PCO3 Patient Care 3	4	0	0	0	180
Totals	17	135 - 165	60 - 120	0	180

Third year totals	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
	39.16	360 - 390	120 - 180	0	390

4h year

Course	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
Opto PC40 Patient Care Bayamón Clinic	2.5	0	0	0	160
Opto PC41 In- House Satelite Clinics Rio Piedras Clinic	2.5	0	0	0	160
Opto PC42 In- House Satelite Clinics Caguas Clinic	2.5	0	0	0	160
Opto PC43 In- House Satelite Clinics Santurce Clinic	2.5	0	0	0	160
Opto PC44 In- House Satelite Clinics Hato Rey Clinic	2.5	0	0	0	160
Opto PC45 In- House Satelite Clinics Juana Diaz Clinic	2.5	0	0	0	160
Opto LE01 Local Externships Sites Site 1	2.5	0	0	0	160
Opto LE02 Local Externships Sites Site 2	2.5	0	0	0	160
Opto LE03 Local Externships Sites Site 3	5	0	0	0	320
Opto LE04 Local Externships Sites Site 4	5	0	0	0	320

Opto EA01 Externships Sites Abroad Externship Site 1	2.5	0	0	0	160
Opto EA02 Externships Sites Abroad Externship Site 2	2.5	0	0	0	160
Opto EA03 Externships Sites Abroad Externship Site 3	5	0	0	0	320
Opto EA04 Externships Sites Abroad Externship Site 4	5	0	0	0	320
Totals	*25	0	0	0	*1600

Note: Only 25 credits and 1600 hours are required for the 4th year program.

Fourth year totals	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
	25	0	0	0	1600

Program totals	Credits	Lecture hours	Laboratory / Demonstration hours	Screening hours	Clinic hours
	150.26	1305	645-765	60	2140
Program Totals Hours 4150-4270					

COURSE DESCRIPTIONS

First Year Fall Term

Opto SBS1 - Systemic Biomedical Sciences 1 - 4.0 credits

An organ-system based approach to the study of human histology, cell biology, anatomy and physiology, including that of the nervous system, leading to the study of abnormal development, injury, inflammation, and pathology of the organ and system. The discussion of systemic anomalies, include diagnostic characteristics and management. Emphasis will be given to those systemic conditions that have ocular manifestations. Through this course students will have a better understanding of the epidemiology and pathogenesis of diseases as well as interdisciplinary referral protocols. The neurology portion of this course includes the study of the human nervous system with respective neurologic conditions affecting physical, reflexive, and sensory aspects of the human body. All neural tracts are studied with concomitant clinical context to teach students how to discern and use relevant information to manage neurological conditions. Laboratories include computer-based virtual human anatomy study, and diagnostic procedures.

Lecture: three hours weekly

Laboratory: two hours weekly

Opto APP1 - Applied Pharmacology 1 - 3.0 credits

The initial portion of the course covers in detail the general principles of pharmacology: explanation of the principal areas of pharmacology, bioavailability of drugs, factors influencing drug response, pharmacokinetics, pharmacodynamics, drug delivery systems, and prescription writing. Subsequently, the course integrates the mode of action, pharmacokinetics, pharmacodynamics, side effects, contraindications, and drug interactions of the different systemic drug types with their respective clinical systemic and ocular applications and secondary or adverse effects. This course is divided according to the following topics: autonomic drugs, cardiovascular drugs, renal drugs, drugs that affect the smooth muscles, drugs that affect the central nervous system, drugs to treat blood diseases, drugs to treat inflammation, drugs that affect the endocrine system, chemotherapeutic drugs (anti-microbials, antifungals, antivirals, antiprotozoal, antihelminthic, cancer chemotherapeutics), dermatologic agents, drugs for gastrointestinal disease, disinfectants, antiseptics and sterilants, ophthalmic dyes, contact lens solutions, and important drug interactions. Clinical scenarios will be introduced to develop the student's patient management skills related to the use of systemic and ocular pharmacologic agents.

Lecture: Three hours weekly

Opto APO1 - Applied Optics 1 - 4.0 credits

The objectives of the applied optics I are to provide students with the fundamental concepts required for understanding refraction, reflection, ophthalmic lenses, and the human eye's optical system. This course covers geometrical optics, physical optics and simplified eye models to describe ametropias.

Lecture: three and one half hours weekly

Laboratory: one hour weekly

Opto PCO1 - Principles and Practice of Primary Care Optometry 1 - 2.0 credits

This course prepares first year students for their participation in vision screenings and clerkships during the second year of optometric education by teaching the theory and practical applications of basic introductory procedures in optometric patient care. Procedures include case history, visual acuity, color vision, and stereoacuity testing; pupil evaluation, cover test, and introductory concepts of retinoscopy. In addition, students will gain awareness of the professional and ethical principles of optometric patient care. Laboratory sessions will consist of the test procedures discussed in the didactic coursework.

Lecture: one hour weekly

Laboratory: two hours weekly

Opto CCO1 - Cultural Competency in Optometry 1 - 2.0 credits

This course introduces the basics of multi-cultural principles and how these affect interpersonal dynamics. The diversity of cultural values and how these affect the provision of eye care are exposed through clinical scenarios. The course also trains the fundamentals of communications in both the Spanish and English languages in order to develop their bilingual abilities.

Lecture: two hours weekly

Opto CCL1 - Cultural Competency Language Lab 1 - 1.0 credit

Spanish speaking students with minimal or moderate basic knowledge in English are taught to develop reading, writing, speaking skills through didactic and laboratory teaching. Likewise, English speaking students with minimal or no knowledge in Spanish are taught basic conversational skills of the language.

Laboratory: two hours weekly (separate sessions for Spanish and English speaking students) each

Opto HDA0 - Human Development and Aging - 2.0 credits

A lecture course that encompasses the different stages in the human life cycle. It includes the psycho-motor, cognitive and emotional development from the newborn to the aging. This course will have a comprehensive focus in order to aid the students to understand and manage patients that are seen in every day clinical optometric practice.

Lecture: two hours weekly

Opto OAP1 - Integrative Ocular Anatomy and Physiology 1 - 2.5 credits

This course provides comprehensive knowledge of the microscopic anatomy of the normal human eye and the physiology of its cellular components that make up tissues and determine their functions. Topics include epithelium, connective tissue, muscle and neurons. In addition, associated microanatomical ocular anomalies that lead to disease and pathophysiologies are discussed throughout every major section of the course. Laboratory sessions provide support for the material.

Lecture: two hours weekly

Laboratory: one hour weekly

First Year Spring Term**Opto SBS2 - Systemic Biomedical Sciences 2 - 4.0 credits**

An organ-system based approach to the study of human histology, cell biology, anatomy and physiology, including that of the nervous system, leading to the study of abnormal development, injury, inflammation, and pathology of the organ and system. The discussion of systemic anomalies, include diagnostic characteristics and management. Emphasis will be given to those systemic conditions that have ocular manifestations. Through this course students will have a better understanding of the epidemiology and pathogenesis of diseases as well as interdisciplinary referral protocols. The neurology portion of this course includes the study of the human nervous system with respective neurologic conditions affecting physical, reflexive, and sensory aspects of the human body. All neural tracts are studied with concomitant clinical context to teach students how to discern and use relevant information to manage neurological conditions. Laboratories include computer-based virtual human anatomy study, and diagnostic procedures.

Lecture: three hours weekly

Laboratory: two hours weekly

Opto APO2 - Applied Optics 2 - 4.0 credits

This course examines the optics of the human visual system and its relation to corrective vision devices. Students will obtain knowledge of refractive error and its relation to accommodation, spherical and cylindrical correction, lens powers, and magnification. Additional material covers radiation and the eye, wavefront aberrations of the eye and optical image quality. Also magnification and field properties of optical instruments such as telescopes, microscopes and magnifiers among others.

Lecture: three and one half hours weekly

Laboratory: one hour weekly

Opto PCO2 - Principles and Practice of Primary Care Optometry 2 - 2.0 credits

This course prepares first year students for their participation in vision screenings and clerkships during the second year of optometric education by teaching the theory and practical applications of basic introductory procedures in optometric patient care. Procedures include pupil evaluation, cover test, extraocular muscle movement testing, keratometry, retinoscopy, and ophthalmoscopy. In addition, students continue to gain awareness of the professional and ethical principles of optometric patient care. Laboratory sessions will consist of the test procedures discussed in the didactic coursework.

Lecture: one hour weekly

Laboratory: two hours weekly

Opto VS01 - Vision Screening - 0.5 credit

A patient care course where students, under the supervision of a clinical instructor, will practice on patients preliminary testing procedures learned in the Principles and Practice of Primary Care Optometry 1 course and those concurrently learned in Principles and Practice of Primary Care Optometry 2. A clinical presentation summarizing a patient experience of interest encountered during the semester must be submitted at the culmination of the course. Clinical performance is evaluated based on the level of skills in history-taking, examination procedures, record documentation, and attitude and professionalism documented on daily evaluations. Grading is on a Pass or Fail basis and is based on the clinical evaluations and the presentation.

Vision screenings: five to six hours of clinical exposure every other week

Opto CCO2 - Cultural Competency in Optometry 2 - 2.0 credits

This course further develops, through a series of didactic and laboratory activities the English/Spanish communication skills of students. The course discusses how ethnicity, national demographics, gender, religious believe, and language impact communication, interpersonal interactions and the quality of patient care. At the end of the course students will be capable of interacting efficiently and in a professional manner with teachers, health professionals, fellow students, and patients by identifying and bridging cultural differences.

Lecture: two hours weekly

Opto CCL2 - Cultural Competency Language Lab 2- 1.0 credit

Spanish speaking students with minimal or moderate basic knowledge in English are taught to develop reading, writing, speaking skills through didactic and laboratory teaching. Likewise, English speaking students with minimal or no knowledge in Spanish are taught basic conversational skills of the language.

Laboratory: two hours weekly (separate sessions for Spanish and English speaking students) each

Opto OAP2 - Integrative Ocular Anatomy and Physiology 2 - 3.0 credits

This course provides comprehensive knowledge of the microscopic anatomy of the normal human eye and the physiology of its cellular components that make up tissues and determine their functions. Topics include epithelium, connective tissue, muscle and neurons. In addition, associated microanatomical ocular anomalies that lead to disease and pathophysiologies are discussed throughout every major section of the course. Laboratory sessions provide support for the material.

Lecture: two hours weekly

Laboratory: two hours weekly

Opto APP2 - Applied Pharmacology 2 - 3.0 credits

The initial portion of the course covers in detail the general principles of pharmacology: explanation of the principal areas of pharmacology, bioavailability of drugs, factors influencing drug response, pharmacokinetics, pharmacodynamics, drug delivery systems, and prescription writing. Subsequently, the course integrates the mode of action, pharmacokinetics, pharmacodynamics, side effects, contraindications, and drug interactions of the different systemic drug types with their respective clinical systemic and ocular applications and secondary or adverse effects. This course is divided according to the following topics: autonomic drugs, cardiovascular drugs, renal drugs, drugs that affect the smooth muscles, drugs that affect the central nervous system, drugs to treat blood diseases, drugs to treat inflammation, drugs that affect the endocrine system, chemotherapeutic drugs (anti-microbials, antifungals, antivirals, antiprotozoal, antihelminthic, cancer chemotherapeutics), dermatologic agents, drugs for gastrointestinal disease, disinfectants, antiseptics and sterilants, ophthalmic dyes, contact lens solutions, and important drug interactions. Clinical scenarios will be introduced to develop the student's patient management skills related to the use of systemic and ocular pharmacologic agents.

Lecture: three hours weekly

Opto OCD1 - Integrative Optometric Case Discussions 1 - 1.0 credit

Development of metacognitive skills for the interpretation of clinical data and problem solving is essential for the evolution of the student into a clinician. These seminars are designed to better integrate all the knowledge acquired in courses presented in previous semesters in a clinical framework. As the seminars progress, so will be the complexity of the seminars, and more clinical examples will be used in order to better prepare the students for their final assessments of entry-level skills. The management options will be discussed within an evidence-based optometry framework.

Laboratory: two hours weekly: practice sessions

First Year Summer Term

Opto LFC0 - Perception of Light, Form and Color - 4.0 credits

Monocular sensory phenomena such as light detection, dark adaptation, scotopic and photopic vision, color vision, spatial and temporal vision. Gross electrical potentials. Clinical manifestations will be introduced as needed.

Lecture: three hours weekly

Laboratory: two hours weekly

Second Year Fall Term

Opto SBS3 - Systemic Biomedical Sciences 3 - 4.0 credits

An organ-system based approach to the study of human histology, cell biology, anatomy and physiology, including that of the nervous system, leading to the study of abnormal development, injury, inflammation, and pathology of the organ and system. The discussion of systemic anomalies, include diagnostic characteristics and management. Emphasis will be given to those systemic conditions that have ocular manifestations. Through this course students will have a better understanding of the epidemiology and pathogenesis of diseases as well as interdisciplinary referral protocols. The neurology portion of this course includes the study of the human nervous system with respective neurologic conditions affecting physical, reflexive, and sensory aspects of the human body. All neural tracts are studied with concomitant clinical context to teach students how to discern and use relevant information to manage neurological conditions. Laboratories include computer-based virtual human anatomy study, and diagnostic procedures.

Lecture: four hours weekly

Opto APO3 Applied Optics 3- 4.0 credits

This course presents the application of geometrical optics to the properties of ophthalmic lenses. Topics include: lens shapes, base curve, lens thickness, prismatic effects of lenses, lens design, frame materials and their nomenclature among others. Lensometry skills, eyewear design and dispensing techniques are part of the laboratory.

Lecture: three hours weekly

Laboratory: two hours weekly

Opto PCO3 - Principles and Practice of Primary Care Optometry 3 - 5.0 credits

A combination of lecture and clinical laboratory sessions evenly divided in two academic terms. The didactic portion includes the theory of instrumentation, description of procedures to assess functional vision, refractive state of the eye and ocular health, and methodology for case history-taking and patient communication. The remainder of didactic portion of the course is based on a comprehensive integration of concepts related to refractive errors and anterior and posterior ocular diseases, and to a lesser extent, concepts related to contact lenses, low vision, and vision therapy. Clinical laboratory sessions primarily consist of demonstrations, and repetitive hands-on practice on diverse human subjects to acquire proficiency in the clinical procedures that comprise a comprehensive primary-care optometric examination.

Lecture: two hours weekly first term

Laboratory: six hours weekly

Opto VSC1 - Vision Screening and Clerkship - 1.0 credit

A patient care course where students will have the opportunity to practice more advanced procedures in all types of patients under the supervision of a clinical instructor. They are evaluated on history-taking, examination techniques, record keeping, attitude and professionalism, and maintenance of patient logs. In addition, a literature review paper based on a condition of a patient encountered during the semester must be submitted at the culmination of the course. Those students not participating in screenings are assigned to clinic modules at the Bayamon main clinic and satellite health center clinic sites. Besides the expected level of clinical skills, they are expected to have an understanding of patient care, acquire effective patient communication skills, and begin to attaining ocular health assessment abilities. As the course progresses, students will have more participation during patient encounters. Grading is on a Pass or Fail basis, and is based on screening evaluations and the written paper.

Vision screenings: six hours of clinical exposure every other week

Opto MBV0 -Ocular Motility and Binocular Vision - 4.0 credits

Study of eye movements, including the structure, physiology, kinematics, neural control, and actions of extra ocular and intraocular muscles. The development and characteristics of normal binocular vision. Topics in binocular vision such as retinal correspondence, fusion, fixation disparity, stereopsis, localization and the horopter, are discussed. Included is the development and importance of visual-perceptual skills and inter-modal integrative skills.

Lecture: three hours weekly

Laboratory: two hours weekly

Opto ODS1 - Ocular Diseases 1 - 4.0 credits

A three-term course where primary basic concepts related to all types of ocular pathologies are linked to their respective primary and/or secondary clinical applications. At the conclusion of each major topic integrative discussions and/or interactive clinical case presentations are held. The conceptual portion of the course exposes pathology fundamentals related to the anterior and posterior segment of the eye as well as all neurological aspects of the eye. These pathological concepts embrace epidemiology, etiology, heredity, and functionally-related mechanisms of anatomical, physiological, and sensory-motor eye components. Clinical applications presented correlatively with basic concepts covered include diagnostic work-up, differential diagnoses and final assessments, and primary and secondary managements such as drug prescribing, laser treatment, surgical care and its co-management, multi-disciplinary care, and treatment prognosis.

Lecture: four hours weekly

Opto OCD2 - Integrative Optometric Case Discussions 2 - 0.5 credits

Development of metacognitive skills for the interpretation of clinical data and problem solving is essential for the evolution of the student into a clinician. These seminars are designed to better integrate all the knowledge acquired in courses presented in previous semesters in a clinical framework. As the seminars progress, so will be the complexity of the seminars, and more clinical examples will be used in order to better prepare the students for their final assessments of entry-level skills. The management options will be discussed within an evidence-based optometry framework.

Clinic lecture: two hours weekly

Second Year Spring Term**Opto PCO4 - Principles and Practice of Primary Care Optometry 4 - 5.0 credits**

A combination of lecture and clinical laboratory sessions evenly divided in two academic terms. The didactic portion includes the theory of instrumentation, description of procedures to assess functional vision, refractive state of the eye and ocular health, and methodology for case history-taking and patient communication. The remainder of didactic portion of the course is based on a comprehensive integration of concepts related to refractive errors and anterior and posterior ocular diseases, and to a lesser extent, concepts related to contact lenses, low vision, and vision therapy. Clinical laboratory sessions primarily consist of demonstrations, and repetitive hands-on practice on diverse human subjects to acquire proficiency in the clinical procedures that comprise a comprehensive primary-care optometric examination. Upon completion of the course, students will attain competence to perform comprehensive eye exams, reach proper diagnoses, and outline management plans for the majority of patients seen during the third year clinical program. Lecture: three hours weekly

Laboratory: four hours weekly

Opto CLK1 - Clinical Clerkships - 1.0 credits

The purpose of this clinical program is to provide students with patient care experience proportionate to the level of clinical skills learned in patient care courses taken to date. Students are assigned to clinic modules at the Bayamon main clinic and satellite health center clinic sites. Besides the expected level of clinical skills, they are expected to have an understanding of patient care, acquire effective patient communication skills, and begin attaining ocular health assessment abilities. As the level of clinical development increases, clinical instructors are encouraged to demand more participation during patient encounters. Clinical performance is evaluated based on the level of skills in history-taking, examination procedures, record documentation, and attitude and professionalism documented on daily evaluations. In addition, at the culmination of the clerkship students must submit a clinical case report of a patient encountered during the course of the clerkship. Grading is on a Pass or Fail basis, and is based on daily clinic evaluations and the clinical case report submitted.

Patient care: one day of clinic every other week

Opto PCL0- Primary Care Contact Lenses- 3.0 credits

Materials design, fabrication, modification, and functional analysis of contact lenses of all types, with techniques and criteria for fitting, evaluating, adapting, monitoring, and maintaining them, and for counseling concerning their use in various clinical circumstances.

Lecture: two hours weekly

Laboratory: two hours weekly

Opto ODS2 - Ocular Diseases 2 - 4.0 credits

A three-term course where primary basic concepts related to all types of ocular pathologies are linked to their respective primary and/or secondary clinical applications. At the conclusion of each major topic integrative discussions and/or interactive clinical case presentations are held. The conceptual portion of the course exposes pathology fundamentals related to the anterior and posterior segment of the eye as well as all neurological aspects of the eye. These pathological concepts embrace epidemiology, etiology, heredity, and functionally-related mechanisms of anatomical, physiological, and sensory-motor eye components. Clinical applications presented correlatively with basic concepts covered include diagnostic work-up, differential diagnoses and final assessments, and primary and secondary managements such as drug prescribing, laser treatment, surgical care and its co-management, multi-disciplinary care, and treatment prognosis.

Lecture: four hours weekly

Opto DVT1 - Developmental Optometry and Vision Therapy 1 - 3.0 credits

Comprehensive review of normal and abnormal functional pediatric developmental features related to motor and visuo-motor skills, and cognition; and how all these factors influence child's vision. These concepts are systematically integrated within the clinical orientation of the course to help students develop efficient critical thinking skills. Clinical applications are primarily based on description of developmental visual findings, and treatment modalities relevant to clinical cases presented. The vision therapy portion of the course primarily embraces conceptual facts pertaining to oculomotor, accommodative, and non-strabismic binocular dysfunctions systemically intercalated into respective clinical-case applications. The laboratory component of the course provides a setting for discussion and practical experience related to diagnostic and treatment procedures.

Lecture: two hours weekly.

Laboratory: two hours weekly.

OPTO EPH0: Epidemiology and Public Health - 2.0 credits

This course is intended to provide students with the essential aspects of scientific analysis of literature, application of the scientific method in research, public health and optometric principles to improve eye health and vision of the population. The course also pretends to study the epidemiology of eye diseases, and the management of conditions and systems from a population perspective. The course presents biostatistics methods and epidemiologic concepts and their applications useful to analyze statistical data in research. Levels of prevention, factors that affect access to healthcare and their impact in vision care of populations are also discussed. Analyze the importance of healthcare systems and finances for groups.

Lecture: two hours weekly

Opto OCD3 - Integrative Optometric Case Discussions 3 - 0.5 credits

Development of metacognitive skills for the interpretation of clinical data and problem solving is essential for the evolution of the student into a clinician. These seminars are designed to better integrate all the knowledge acquired in courses presented in previous semesters in a clinical framework. As the seminars progress, so will be the complexity of the seminars, and more clinical examples will be used in order to better prepare the students for their final assessments of entry-level skills. The management options will be discussed within an evidence-based optometry framework.

Clinic lecture: 2 hours weekly clinic discussions

Opto CSA0 - Comprehensive Clinic Skills Assessment - 0.1 credits

In order to become a primary eye care provider in the patient care program as a clinical intern, all candidates will have to satisfactorily perform a full visual assessment to a patient. The skills tested will be those that have been learned and practiced up to the end of the spring term of the second year. The skills evaluated will include but not be limited to those that are assessed for entry-level practice in the profession of optometry.

Third Year Summer Term

Opto OVR0 - Vision Research - 2.0 credits

The course embraces the development of research proposals for optometric research studies including the elements of statistical analysis. It also covers the scholarly activity involved in writing articles following standardized formats adopted in nationally recognized optometric journals. At the end of the course, students, will have the ~~tools~~ necessary skills to submit a research proposal and a publishable article.

Lecture: 30 hours

Opto PC01 - Patient Care 1 -0.66 credit

This is the first primary eye care practical course on actual patients for third year students. It primarily consists on providing supervised comprehensive eye examinations. In this stage of clinical development emphasis is primarily given to students' competence in clinical skills which includes patient's history, examination techniques, and record documentation. Some emphasis is also given to the correlation of basic concepts with clinical applications to enhance their capacity in clinical reasoning. Clinical sessions are held at the Institution's main clinic. In addition to weekly grand round sessions, students are assigned monthly to fourth year in-house clinic rotations to start exposing them to more advanced levels of patient care. Daily evaluations are submitted to assess their level of clinical development.

Main clinic: two days per week.

Third Year Fall Term

Opto ODS3 - Ocular Diseases 3 - 4.0 credits

A three-term course where primary basic concepts related to all types of ocular pathologies are linked to their respective primary and/or secondary clinical applications. At the conclusion of each major topic integrative discussions and/or interactive clinical case presentations are held. The conceptual portion of the course exposes pathology fundamentals related to the anterior and posterior segment of the eye as well as all neurological aspects of the eye. These pathological concepts embrace epidemiology, etiology, heredity, and functionally-related mechanisms of anatomical, physiological, and sensory-motor eye components. Clinical applications presented correlatively with basic concepts covered include diagnostic work-up, differential diagnoses and final assessments, and primary and secondary managements such as drug prescribing, laser treatment, surgical care and its co-management, multi-disciplinary care, and treatment prognosis.

Lecture: four hours weekly

Opto DVT2 - Developmental Optometry and Vision Therapy 2 - 3.0 credits

Course discussion primarily focuses on the integration of factual data such as natural history, etiology, and signs and symptoms with an organized clinical approach for the diagnosis and management of fixation disparity anomalies, suppression and amblyopia, strabismus and anomalous visual sensory-motor adaptation, aberrant visual perception, anomalous visual-motor and auditory-visual integration, aniseikonia, nystagmus and acquired brain injury. There is special emphasis on diagnostic techniques, clinical decision-making. Rehabilitative treatment modalities will be presented. In addition, the repercussion of these anomalies to learning achievements in the child as well as their sequela into adulthood is discussed. The laboratory component of the course provides a setting for discussion and practical experience related to diagnostic and treatment procedures.

Lecture: two hours weekly

Laboratory: two hours weekly

Opto PLV0 - Primary Care Low Vision- 3.0 credits

A study of the etiology, epidemiology, definition, signs and symptoms of low vision and blindness, including methods of examination, determination of prognosis, selection of appropriate therapy, treatment, and counseling and interdisciplinary coordination.

Lecture: two hours weekly

Laboratory: two hours weekly

Opto GRO0 - Geriatric Optometry - 1.5 credits

Comprehensive review of normal and abnormal structural and functional features related to motor and visuo-motor skills, verbal communication, emotional processing, and cognition in the geriatric population. In addition, it describes variations and expected findings in the refractive status of geriatric patients. In addition, the relation between systemic and acquired neurologic conditions, pharmacology and their effects on the visual system associated to the geriatric population is covered. These concepts are systematically integrated within the clinical orientation of the course to help students develop efficient critical thinking skills to derive adequate management and treatment plans. Clinical applications are primarily based on description of geriatric examination techniques, proper assessment, and treatment modalities relevant to clinical cases presented.

Lecture: one and one half hour weekly

Opto PDO0 - Pediatric Optometry - 1.5 credits

Comprehensive review of normal and abnormal structural and functional pediatric developmental features related to motor and visuo-motor skills, verbal communication, emotional processing, and cognition; and how all these factors influence a child's vision. In addition, it describes variations and expected findings in the refractive status of infants and children according to age. Diagnosis, treatment and management of common ocular diseases are to be presented. Special populations, as pertaining to the pediatric population, are included as well. These concepts are systematically integrated within the clinical orientation of the course to help students develop efficient critical thinking skills to derive adequate management and treatment plans. Clinical applications are primarily based on description of pediatric examination techniques, proper assessment, and treatment modalities relevant to clinical cases presented.

Lecture: one and one half hour weekly

Opto EBO0 - Clinical Reasoning and Evidence-Based Optometry - 1.0 credit

Interactive discussions of actual and sample clinical cases concerning all areas of optometry. It emphasizes the development of clinical thinking strategies to obtain an accurate clinical assessment. Evidence-based optometry will be the informative source for discussing management options. The course will develop the students' abilities to manage cases based on clinical scientific evidence to ensure the best outcomes.

Lecture: one hour weekly.

Opto POE0- The Profession of Optometry and Ethics- 1.0 credit

A web-based course that covers the development of optometry as a profession with its education, organizational, legislative, legal and ethical developments in the world, United States, and Puerto Rico.

Web based course

Opto PC02 - Patient Care 2 - 4.0 credits

This is the continuation of primary eye care practical course on actual patients for third year students. It primarily consists on providing supervised comprehensive eye examinations. In this stage of clinical development emphasis is primarily given to students' competence in clinical skills that include patient's history, examination techniques, and record documentation. Some emphasis is also given to the correlation of basic concepts with clinical applications to enhance their capacity in clinical reasoning. Clinical sessions are held at the Institution's main clinic. Also, in addition to weekly grand round sessions, once a month students are assigned to fourth year in-house clinic rotations to start exposing them to more advanced levels of patient care. Occasionally, students will provide domestic primary eye care services at geriatric home institutions, assisted living communities, and pre-scholar and scholar entities among others. Daily evaluations are submitted to assess level of clinical development.

Main clinic: one day per week

Grand rounds: half-a-day per week
In-house rotations: one day per month

Opto PBM0 - Publishable Manuscript Submission- 0.5 credit

In order to promote life-long learning and scholarly activities, must submit a publishable quality paper before February of the second term of the fourth year. This publishable paper must follow the International Committee of Medical Journal Editors guidelines and structure. The publishable quality paper must be an original experimental article, extensive literature reviews or case reports.
Recurrent until completion of requirement.

Third Year Spring Term

Opto RVS0 - Review Seminar - 1.0 credit

The purpose of this course is to enhance the preparation of our students for the first part of the entry level knowledge tests - National Boards Applied Basic Science. The course will comprise of material that has been covered during the previous years of optometric education in a concise manner to refresh important concepts relevant to clinical application of basic science concepts.

Lectures: 3 hours weekly for 2 weeks. Sessions are scheduled prior to National Boards examinations.

Opto PMT0 - Practice Management- 2.0 credits

Economic and sociological aspects of optometry and vision care needs and services, with specific attention to the analysis of community demands, doctor-patient and inter professional relationships, and practice modes, management and billing.

Lectures: two hours weekly

Opto PC03 - Patient Care 3 - 4.0 credits

Besides assuring students' competence in clinical skills, at this level of clinical development special emphasis is given to students' ability to correlate basic concepts with respective clinical applications to enhance their capacity in clinical reasoning. Sessions are held at the Institution's main clinic. Also, in addition to weekly grand round sessions, once a month students are assigned to fourth year in-house clinic rotations to start exposing them to more advanced levels of patient care. Domestic assignments continue for third year students during their spring term; to provide students with the expertise on the provision of domestic primary eye care services. Daily evaluations are submitted to assess level of clinical development.

Main clinic: one day per week.

Grand rounds: half-a-day per week.

In-house rotations: one day per month.

Elective Courses

The purpose of these courses is for the optometric student to further enhance their knowledge in specific areas within optometry in order to encourage the students to apply for optometric residency programs. All these electives are to be offered in the spring term of the third year and all will be evaluated on a pass/no pass basis. The optometric third year student must enroll in five elective courses

Opto AVT0 - Advanced Vision Therapy - 2.0 credits

This elective covers in more depth the treatment and management of complicated cases of binocular vision anomalies and visual-perceptual therapy. The course will include lectures, case presentations, and laboratory sessions to demonstrate and practice advanced therapeutic procedures.

Lecture: 1 hour weekly

Laboratory: 2 hours weekly

Opto ALV0 - Advanced Low Vision - 2.0 credits

This elective course covers in depth the assessment and management of complicated cases that require low vision rehabilitation. It will include eccentric viewing training techniques, advanced field enhancement equipment and training, advanced magnification equipment, and other techniques and equipment to manage complicated cases. The course will include lectures, case presentations, and laboratory sessions.

Lecture: 1 hour weekly

Laboratory: 2 hours weekly

Opto NOR0 - Neuro-Optometric Rehabilitation - 2.0 credits

This elective course covers in depth the assessment and management of complicated cases that require neuro-optometric rehabilitation. This course will include assessment techniques for the different clinical manifestations of those patients with acquired brain injury, rehabilitation techniques, and conventional and non-conventional optical devices.

Lecture: 2 hours weekly

Opto AOD0 - Advanced Ocular Diseases - 2.0 credits

This elective course will cover in depth those cases of ocular diseases that are uncommon, yet of clinical importance and relevance. The course will include signs and symptoms of the conditions, differential diagnosis, diagnosis,, use of advanced diagnostic equipment, and treatment and management. Case discussions may be used to better illustrate the conditions.

Lecture: 2 hours weekly

Opto AEPO - Advanced Electrophysiology - 2.0 credits

This elective course will cover in depth the use of electrophysiologic testing, their importance and clinical relevance to specific cases. The course will include case discussions-

Lecture: 1 hour weekly

Laboratory: 2 hours weekly

Opto SSV0 - Sports Vision - 2.0 credits

This elective course covers the skills required for different sports, the evaluation techniques, treatment, and management of binocular, sensory-integrative anomalies that may interfere with sports performance. The course will also include the use of optical compensation to enhance vision in athletes and vision therapy procedures to enhance the athletic performance.

Lecture: 1 hour weekly

Laboratory: 2 hours weekly

Opto ACL0 - Advanced Contact Lenses- 2.0 credits

The fitting of specialty contact lenses using advanced procedures for the correction of astigmatism, irregular corneas, presbyopia, and aphakia. Orthokeratology and the correction of ocular trauma with cosmetic lenses are also included.

Lecture: 2 hours weekly

Fourth Year

The fourth year program is strictly devoted to patient care. Primary eye care clinical training is primarily aimed towards developing students' capacity in critical thinking and clinical reasoning skills. In addition, students are trained in specialty eye care services such as pediatrics and vision training, specialty contact lenses, low vision rehabilitation, electrophysiological studies, and ocular prosthesis; all of which are offered at the Institution's main clinic.

Selection of clinic rotations is required to add up to 25 credits for the academic year. A total of 12.5 in one term and a total of 12.5 credits in the other term.

The Bayamon Clinic is a mandatory rotation for all fourth year interns. Of the remaining five (5) satellite clinics, rotation in four (4) of these clinics is mandatory. Each semester is composed of 20 weeks for a total of 40 weeks of clinical work for the academic year.

Evaluation is based on Pass/No Pass.

Patient Care 4 and 5 - 25 credits Total

Clinic sites are coded as follows:

Bayamón Main Clinic

Opto PC40 - Primary Eye Care Services and Specialty Clinics: 4 weeks: 2.5 credits.

The Bayamon main clinic of the Inter American Eye Institute is composed of specialty clinic rotations: Specialty Contact Lenses, Binocular Vision / Vision Therapy, Pediatrics and Infants' Vision, Learning Disabilities / Visual-Perceptual Evaluation, Low Vision, Electrodiagnosis, and Primary Eye Care.

In-House Satellite Clinics

Opto PC41 - Rio Piedras Clinic: 4 weeks: 2.5 credits.

The Rio Piedras Satellite Clinic of the Inter American Eye Institute is found within the Dr. Javier Antón hospital where integrative primary care services are provided to patients of all ages. Ocular diseases diagnosis management and treatment are emphasized.

Opto PC42 - Caguas Clinic: 4 weeks: 2.5 credits.

The Caguas Satellite Clinic of the Inter American Eye Institute is found within the Plaza SANOS Health Care Center where integrative primary care services are provided to patients of all ages. Ocular diseases diagnosis management and treatment are emphasized. Additional services provided in the Caguas Clinic are Vision Therapy / Binocular Vision, and Pediatrics / Infants' Vision.

Opto PC43- Santurce Clinic: 4 weeks: 2.5 credits.

The Santurce Satellite Clinic of the Inter American Eye Institute is found within the Dr. Gualberto Rabell hospital where integrative primary care services are provided to patients of all ages. Ocular diseases diagnosis management and treatment are emphasized.

Opto PC44 - Hato Rey Clinic: 4 weeks: 2.5 credits.

The Hato Rey Satellite Clinic of the Inter American Eye Institute is found within the Bernardini Building where integrative primary care services are provided to patients of all ages. Additional services provided include geriatrics, low vision and acquired brain injury diagnosis and management.

Opto PC45 - Juana Diaz Clinic: 4 weeks: 2.5 credits.

The Juana Diaz Satellite Clinic of the Inter American Eye Institute is found within the Centro San Cristobal Health Center where integrative primary care services are provided to patients of all ages. Ocular diseases diagnosis management and treatment are emphasized.

Local Externships Sites

Opto LE01 - Externship site 1: 4 weeks: 2.5 credits.

Externship selection of four (4) weeks within Puerto Rico. Selection may be private optometry, ophthalmology or joint practices that offer primary care or specialty practices, as well as hospitals, health care centers or additional rotations within the Inter American Eye Institute.

Opto LE02 - Externship site 2: 4 weeks: 2.5 credits.

Externship selection of four (4) weeks within Puerto Rico. Selection may be private optometry, ophthalmology or joint practices that offer primary care or specialty practices, as well as hospitals, health care centers or additional rotations within the Inter American Eye Institute.

Opto LE03 - Externship site 3: 8 weeks: 5 credits.

Externship selection of eight (8) weeks within Puerto Rico. Selection may be private optometry, ophthalmology or joint practices that offer primary care or specialty practices, as well as hospitals, health care centers or additional rotations within the Inter American Eye Institute.

Opto LE04 - Externship site 4: 8 weeks: 5 credits.

Externship selection of eight (8) weeks within Puerto Rico. Selection may be private optometry, ophthalmology or joint practices, that offer primary care or specialty practices, as well as hospitals, health care centers or additional rotations within the Inter American Eye Institute.

Externships Sites Abroad

Opto EA01 - Externship site 1: 4 weeks: 2.5 credits.

Externship selection of four (4) weeks outside of Puerto Rico: United States or international sites. Selection may be private optometry, ophthalmology or joint practices, that offer primary care or specialty practices, as well as hospitals or health care centers.

Opto EA02 - Externship site 2: 4 weeks: 2.5 credits.

Externship selection of four (4) weeks outside of Puerto Rico: United States or international sites. Selection may be private optometry, ophthalmology or joint practices, that offer primary care or specialty practices, as well as hospitals or health care centers.

Opto EA03 - Externship site 3: 8 weeks: 5 credits.

Externship selection of eight (8) weeks outside of Puerto Rico: United States or international sites. Selection may be private optometry, ophthalmology or joint practices, that offer primary care or specialty practices, as well as hospitals or health care centers.

Opto EA04 - Externship site 4: 8 weeks: 5 credits.

Externship selection of eight (8) weeks outside of Puerto Rico: United States or international sites. Selection may be private optometry, ophthalmology or joint practices, that offer primary care or specialty practices, as well as hospitals or health care centers.