

Optometry

A Career Guide

Acknowledgments

This career guide was written and compiled by the Association of Schools and Colleges of Optometry (ASCO) Recruitment Materials Task Force. The guide was written to provide a “core document” that could represent the most current, consistent, and reliable information on optometry as a career for use by prospective students, prehealth advisors, and optometrists who want to share information about their profession with others. The material is intended for use by ASCO and its member colleges in any format that will make information about optometry accessible and available to those who express interest in the profession.

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Table of Contents

I. DEFINITION OF THE PROFESSION.....	2
II. OUTLOOK FOR THE PROFESSION.....	2
Population Changes and the Optometry Profession.....	3
Social and Legal Changes Affecting Optometry.....	3
Demographics of the Profession.....	4
Professional Satisfaction.....	4
III. NEW FRONTIERS IN EYECARE.....	4
Lasers.....	5
Instrumentation.....	5
Medication.....	5
IV. MODES OF PRACTICE.....	5
Individual Private Practice.....	5
Partnership or Group Practice.....	6
Health Maintenance Organizations (HMOs).....	6
Retail/Optical Settings.....	6
Optometric/Ophthalmologic Professional Settings.....	6
Military/Public Health.....	6
Interdisciplinary Care.....	6
Academic/Research.....	6
Corporate/Industrial.....	6
Consultants.....	7
V. INCOME POTENTIAL.....	7
VI. OPTOMETRY AREAS OF EMPHASIS.....	7
VII. A TYPICAL DAY IN THE LIFE OF AN OD.....	9
VIII. FUNCTIONAL STANDARDS FOR AN ADMISSIONS CANDIDATE TO CONSIDER.....	9
IX. THE OPTOMETRY CURRICULUM.....	12
X. BECOMING LICENSED TO PRACTICE OPTOMETRY.....	13
Postgraduate Programs.....	14
XI. ADMISSION REQUIREMENTS.....	15
OptomCAS.....	15
Optometry Admission Test (OAT).....	16
XII. FINANCING AN OPTOMETRIC EDUCATION.....	17
Sources of Financial Aid.....	17
Loan Programs.....	18
Scholarship Programs.....	18
Applying for Financial Aid.....	18
Managing Educational Indebteness.....	19

I. DEFINITION OF THE PROFESSION

“Doctors of optometry (ODs) are the primary health care professionals for the eye. Optometrists examine, diagnose, treat, and manage diseases, injuries, and disorders of the visual system, the eye, and associated structures as well as identify related systemic conditions affecting the eye” (American Optometric Association [AOA]).

Today, the profession of optometry involves much more than just prescribing and fitting glasses and contact lenses. ODs are trained to evaluate any patient’s visual condition and to determine the best treatment for that condition. ODs are viewed increasingly as primary care providers for patients seeking ocular or visual care.

Conditions typically cared for by ODs are:

- Corneal abrasions, ulcers, or infections; glaucoma; and other eye diseases that require treatment with pharmaceutical agents, management and referral when necessary;
- Visual skill problems such as the inability to move, align, fixate, and focus the ocular mechanism in such tasks as reading, driving, computer use, and in tasks related to hobbies and employment;
- The inability to properly process and interpret information requiring perception, visualization, and retention, such as that needed for most learning tasks;
- Poor vision–body coordination when one interacts with the environment, as in sports, occupations, and other everyday activities requiring spatial judgments; and
- Clarity problems such as simple near- or far-sightedness or complications due to the aging process, disease, accident, or malfunction.

ODs also work to:

- Diagnose, manage, and refer systemic diseases such as hypertension, diabetes, and others that are often first detected in the eye;
- Provide pre- and postsurgical care of cataracts, refractive laser treatment, retinal problems, and other conditions that require pre- and postsurgical care; and
- Encourage preventative measures such as monitoring infants' and children’s visual development, evaluating job/school/hobby–related tasks, and promoting nutrition and hygiene education.

II. OUTLOOK FOR THE PROFESSION

According to the U.S. Department of Labor’s Bureau of Statistics, job opportunities should be very good over the next decade. With favorable working conditions, regular hours, and a minimum of emergency calls, optometric careers offer many options and great freedom in choosing a location to live and practice. Optometrists provide the majority of primary vision care administered. Over half the people in the United States wear glasses or contact lenses. Even people who may not require corrective eyewear need regular care to prevent, detect, and manage eye disease.

Population Changes and the Optometry Profession

The aging of the U.S. population has had two effects on the practice of optometry. First, nearly one quarter of practicing optometrists are approaching retirement age. As the baby-boomer generation enters retirement, many aging optometrists are looking for younger doctors who can take over their practices or offer new specialties to their practices.

Second, as the population ages, optometry services will be in increasing demand. The growing numbers of senior citizens with age-related eye diseases such as cataracts, glaucoma, diabetic retinopathy, hypertensive retinopathy, and macular degeneration will require increased services from optometrists.

Senior citizens are in a better position to consult optometrists following a change in the Medicare law in 1987, which authorized reimbursement to optometrists. Primary eye care examinations for individuals over the age of 65 performed by optometrists have increased since the Medicare law was passed.

Social and Legal Changes Affecting Optometry

ODs are highly valued by a population that is increasingly conscious of the benefits of good health and regular vision care. Rising personal incomes, the availability of employer-sponsored vision care benefits, and Medicare coverage for optometry services make regular eye care provided by optometrists even more desirable and affordable.

As society becomes more highly mechanized, vision requirements become more exacting. The number of persons needing professional help for near-point visual tasks, including both older patients and schoolchildren, is steadily growing. Increased demands for vision care result not only from population changes but also from an increased understanding of how good vision relates to driving, workplace requirements, student achievement, leisure activities, adjustments to aging, and other areas crucial to a modern computer and technology-driven society.

Demand for optometry services is also expected to increase as state laws, which regulate optometric practice (similar to all medical professions), have expanded to place responsibilities for virtually all primary eye care services on optometrists. All states in the United States recognize that optometrists are trained to prescribe medications to treat eye diseases.

Most new opportunities for graduates are created by the retirement of optometrists, the establishment of new offices, the inclusion of optometrists in interdisciplinary practices, and the growth of group practices, in addition to the expanding scope of care provided by optometrists. There has also been an increase in the number of corporate optometry locations, which has created demand for optometrists.

The number of new practicing optometrists is limited by the fact that there are 20 schools and colleges of optometry in the United States and Puerto Rico, with two additional schools in Canada. Class sizes are restricted, and, therefore, the number of new graduates remains fairly constant. Federal data indicate employment of optometrists is projected to grow 24% through 2018. A growing population that recognizes the importance of good eye care will increase demand for optometrists. In addition, an increasing number of health insurance plans that include vision care should generate more job growth, as cited by the U.S. Department of Labor's Bureau of Labor Statistics in the *Occupational Outlook Handbook*, 2010-2011 edition.

Demographics of the Profession

According to the AOA, the demographic characteristics of optometrists entering practice today are quite different from that of older optometrists.

- More than 40% of ODs under the age of 40 are women compared with less than 3% of ODs over the age of 50.
- More than 60% of new optometry graduates are women.
- More than 35% of today's graduates are Asian American, African American, or Latino.

There continues to be a significant need for underrepresented minorities in this profession. As a result, minority students are encouraged to consider a career in optometry and apply to the school/college(s) of their choice.

Professional Satisfaction

Practicing ODs experience keen satisfaction in their profession. The fact that many optometrists choose to practice on a part-time basis well into their retirement speaks highly of the rewards of the profession.

Adding to optometrists' satisfaction is the fact that increases in their incomes have outpaced inflation for the past few years. Over the years, optometrists have expanded their services to include more eye-health-related procedures, which assist their patients and have enabled their practices to grow.

III. NEW FRONTIERS IN EYE CARE

New technologies have helped the profession of optometry to expand both the scope and the efficiency of practice. Optometrists and their patients are benefiting from the many advances in eye care and medical technology.

There has been a significant increase in the use of new and relatively new lens treatments, designs, and corrective materials such as contact lenses. Today, millions of people wear contact lenses.

Lasers

Lasers have been used for many years for treating eye diseases (e.g., diabetes, macular degeneration, glaucoma, and some forms of cataracts) and for help with diagnosing visual problems. In recent years, the use of lasers to correct forms of refractive errors (“near-sightedness,” “far-sightedness,” or astigmatism) has been increasing. Traditionally, these conditions were correctable only with glasses, contact lenses, and invasive surgery.

ODs play a key role in helping patients determine whether they are candidates for new procedures in laser surgery. When laser surgery is appropriate for a patient, optometrists provide nearly all pre- and postoperative care.

Instrumentation

Technology is rapidly improving diagnostic instruments used by all health care practitioners. More accurate and efficient testing results enable ODs to better diagnose, manage, and treat eye disorders and diseases. Technology also helps optometrists educate patients about their conditions—long a hallmark of the profession—and allows patients to participate in their care and treatment decisions.

Medication

New medications are developed each year that optometrists use to treat diseases of the human eye. This area, perhaps more than any other, reinforces the need for a well-rounded continuing education, because it serves as the foundation of an OD’s lifelong service in a modern health care delivery system.

IV. MODES OF PRACTICE

Optometrists practice in many different kinds of situations and with different types of employers.

Individual Private Practice

The individual private practitioner usually is a primary care optometrist with a stand-alone practice. Such practitioners may specialize in fields such as:

- Contact lenses,
- Pediatrics,
- Low vision/geriatrics, and
- Vision therapy.

An individual practice may be in a variety of settings and locations, ranging from a free-standing to a professional building.

Partnership or Group Practice

This mode of practice is very similar to an individual practice except that there are two or more optometrists in the group. Each member of the group may specialize in a different area of practice. This is an increasingly popular form of practice.

Health Maintenance Organizations (HMOs)

An optometrist practicing in this setting usually is the primary eye care practitioner within a group of other types of primary health care practitioners. He or she may be employed or contracted by the HMO.

Retail/Optical Settings

In this setting, optometrists usually rent space from or are employed by a large retail outlet. However, they remain independent practitioners.

Optometric/Ophthalmologic Professional Settings

The optometrist practices in conjunction with the ophthalmologist and comanages the patients in this setting.

Military/Public Health

Optometrists are commissioned officers who work in a hospital or clinical setting with other health care practitioners.

Interdisciplinary Care

The optometrist works with other health care practitioners in a hospital-based or clinic setting, such as in a Department of Veterans Affairs (VA) hospital, as part of an interdisciplinary team.

Academic/Research

The OD either teaches about primary care or performs research in a university setting. Academics pursue additional training after optometry school and have completed a residency, masters of science, or doctoral program.

Corporate/Industrial

Optometrists are employed by large corporations to perform clinical research or to provide patient care in a clinic within the corporate setting.

Consultants

Optometrists work as consultants to the ophthalmic industry, education, sports (high school to professional), and government.

V. INCOME POTENTIAL

Optometrists enjoy the benefits of financial security, independence, and recognition in their communities. Optometry is often rated an "excellent" career choice because of its expectations for job growth, earnings potential, and the opportunity for meaningful work and good quality of life.

According to the 2007 AOA Economic Survey, the mean income from self-employment per optometrist was \$175,329. The same survey revealed the following:

- Self-employed optometrists in individual, partnership, and group practice continue to have a larger total individual mean net income than their counterparts employed in other settings.
- Practitioners in midsized (three- to five-person) groups have the highest average net income at \$179,205.
- Those in small (two-person) practices earn an average of \$176,944.
- Individual practitioners earn an average of \$134,094.
- Practitioners in large partnerships or groups (six or more) earn an average of \$159,300.
- Practitioners associated with optical chains earn an average of \$100,704.

Income may be limited only by the individual optometrist's initiative, since the majority of optometrists are in private practice. Partnerships and group practices are becoming common today because they reduce practice costs and offer specialized services more cost efficiently. Partnership and group practice also give optometrists more flexibility in arranging their work schedules.

The individual net (mean) income of optometrists, like that of most professionals, tends to rise with the number of years in practice.

- Those in practice six to 10 years average an income of \$104,866.
- Optometrists with 11 to 15 years in practice average \$135,900.
- Practitioners with 16 to 20 years in practice average \$171,644, reaching peak income between 26 and 30 years of practice at \$177,179.
- Optometrists with 31 to 35 years in practice report average earnings of \$132,235.

VI. OPTOMETRY AREAS OF EMPHASIS

Most ODs practice "full-scope," primary care optometry and treat and manage all forms of visual and ocular conditions. However, a practitioner may choose to concentrate his/her practice on treating a selected population or visual condition.

Residencies are not required to develop an area of emphasis. Because the four-year optometry curriculum prepares graduates in all areas, a residency does not introduce but enhances experience in a selected area.

Some of the more typical areas of emphasis found in optometry are:

Pediatrics: Treats children's visual needs.

Infants: Treats conditions that arise during the first four years of life.

Geriatrics: Treats persons who are elderly.

Cornea and Contact Lenses: Treats conditions of the cornea with medication and/or contact lenses.

Low Vision Rehabilitation: Treats clarity problems that cannot be remedied with routine lenses but requires more sophisticated magnifying devices. These patients are often classified as "legally blind," most often due to reduced retinal function.

Vision Therapy (also Referred to as "Behavioral" or "Functional" Optometry): Attempts to overcome deficiencies in how effectively a patient uses his/her eyes (as in the eye movements, aiming, fixating, tracking, focusing the eyes, etc.). Vision therapy also works in ways where the patient processes visual information and interacts with the environment (i.e., problems of perception, visualization, retention, vision-body coordination, and so forth).

Binocular Vision: Treats problems in which the two eyes do not work together effectively, causing discomfort or, in extreme cases, crossed eyes.

Sports Vision: Enhances visual skills required in sports.

Learning Disabilities: Enhances and improves those skills required in the learning task, especially relating to children.

Head Trauma: Improves various visual skills that have been lost due to a stroke or head injury.

Environmental and Occupational Vision: Enhances those visual skills that are essential in a given work environment (e.g., occupations involving near-point tasks, such as computing/data entry, sewing, accounting, and so forth) and/or provides appropriate eyewear (as in hazardous environments).

Ocular Disease and Special Testing: Treats and manages complex ocular diseases, often on a referral basis. In many cases, optometrists work with other physicians for systemic management of related diseases.

School Consultant: Optometrists work with educators to establish an optimal learning environment and enhance the visual skills of the students.

Teaching and Vision Research: With advanced experience and/or degrees, an optometrist can be involved in optometric education or research.

VII. A TYPICAL DAY IN THE LIFE OF AN OD

Each workday is different for ODs, and the scope and mode of practice in which the doctor are engaged can make the differences even more pronounced. If he/she specializes, the day is filled with evaluating new patients and providing the treatment particular to the area of emphasis. If the doctor is a member of a group practice, he/she may be the specialist in that group for certain kinds of patients or conditions. If the doctor is involved in a more commercial practice or as an employee, he/she may be limited by the dictates of the corporation or employer. If the doctor chooses to provide care in a nursing home or makes house calls, the patient demands and instrumentation available to him/her are different from the doctor who consults in a hospital or a grade school. The self-employed doctor or a partner in a group practice can more easily set his/her own hours, whereas the doctor employed in other settings is less able to do so.

Most ODs are “generalists” and, assuming they provide full-scope primary optometric care, their day can be quite varied and challenging. Patient interaction can include performing routine visual exams, removing a foreign body from the cornea, evaluating a child who is not performing well in school, fitting a contact lens patient, prescribing medication for glaucoma, providing follow-up care after refractive surgery, and/or fitting a patient who is legally blind with a magnifying device that enables the patient to read.

Typically, the doctor works with a technician who administers preliminary tests, advises patients on the use and care of contact lenses, and assists patients in selecting frames. The doctor spends time with the patient, gathering more information, testing, making a diagnosis, determining the treatment required, and discussing the treatment regimen with the patient. The doctor records all information into the patient’s record, dictating letters of referral if conditions like diabetes or hypertension are detected or letters to schools reporting on a child’s visual status. An office manager or receptionist (depending on the size of the practice) may take care of completing information required by the patient’s health insurance provider.

VIII. FUNCTIONAL STANDARDS FOR AN ADMISSIONS CANDIDATE TO CONSIDER

Following are the *Functional Standards for Didactic and Clinical Optometric Education*. The Board of Directors of ASCO developed these standards in 1998 and revised them in 2009. Although developed for several reasons, the functional standards give prospective students an accurate idea of the skills required to perform the duties of an optometrist.

To provide guidance to those considering optometry as a profession, the Association of Schools and Colleges of Optometry (ASCO) has established functional guidelines for optometric education. The ability to meet these guidelines, along with other criteria established by individual optometric institutions, is necessary for graduation from an optometric professional degree program.

One of the missions of each school and college of optometry is to produce graduates fully qualified to provide quality comprehensive eye care services to the public. To fulfill this mission, each institution must ensure that students demonstrate satisfactory knowledge and skill in the provision of optometric care. Admission committees, therefore, consider a candidate's capacity to function effectively in the academic and clinical environments, as well as a candidate's academic qualifications and personal attributes.

The functional guidelines in optometric education require that the candidate/student possess appropriate abilities in the following areas: 1) observation; 2) communication; 3) sensory and motor coordination; 4) intellectual –conceptual, integrative and quantitative abilities; and 5) behavioral and social attributes. Each of these areas is described in this document.

In any case where a student's abilities in one of these areas are compromised, he or she must demonstrate alternative means and/ or abilities to meet the functional requirements. It is expected that seeking and using such alternative means and/or abilities shall be the responsibility of the student. Upon receipt of the appropriate documentation, the school or college will be expected to provide reasonable assistance and accommodation to the student.

OBSERVATION ABILITIES

The student must be able to acquire a defined level of required knowledge as presented through lectures, laboratories, demonstrations, patient interaction and self-study. Acquiring this body of information necessitates the functional use of visual, auditory and somatic sensation enhanced by the functional use of other sensory modalities. Examples of these observational skills in which accurate information needs to be extracted in an efficient manner include:

Visual Abilities: (as they relate to such things as visual acuity, color vision and binocularity):

- Visualizing and reading information from papers, films, slides, video and computer displays
- Observing optical, anatomic, physiologic and pharmacologic demonstrations and experiments
- Discriminating microscopic images of tissue and microorganisms
- Observing a patient and noting non-verbal signs
- Discriminating numbers, images, and patterns associated with diagnostic tests and instruments

- Visualizing specific ocular tissues in order to discern three-dimensional relationships, depth and color changes

Auditory Abilities:

- Understanding verbal presentations in lecture, laboratory and patient settings
- Recognizing and interpreting various sounds associated with laboratory experiments as well as diagnostic and therapeutic procedures

Tactile Abilities:

- Palpating the eye and related areas to determine the integrity of the underlying structures
- Palpating and feeling certain cardiovascular pulses

COMMUNICATION ABILITIES

The student must be able to communicate effectively, efficiently and sensitively with patients and their families, peers, staff, instructors and other members of the health care team. The student must be able to demonstrate established communication skills using traditional and alternative means. Examples of required communications skills include

- Relating effectively and sensitively to patients, conveying compassion and empathy
- Perceiving verbal and non-verbal communication such as sadness, worry, agitation and lack of comprehension from patients
- Eliciting information from patients and observing changes in mood and activity
- Communicating quickly, effectively and efficiently in oral and written English with patients and other members of the health care team
- Reading and legibly recording observations, test results and management plans accurately
- Completing assignments, patient records and correspondence accurately and in a timely manner

SENSORY AND MOTOR COORDINATION ABILITIES

Students must possess the sensory and motor skills necessary to perform an eye examination, including emergency care. In general, this requires sufficient exteroception sense (touch, pain, temperature), proprioceptive sense (position, pressure, movement, stereognosis, and vibratory) and fine motor function (significant coordination and manual dexterity using arms, wrists, hands and fingers). Examples of skill required include but are not limited to:

- Instillation of ocular pharmaceutical agents
- Insertion, removal and manipulation of contact lenses
- Assessment of blood pressure and pulse
- Removal of foreign objects from the cornea
- Simultaneous manipulation of lenses, instruments and therapeutic agents and devices
- Reasonable facility of movement
- Injections into the eye, lids or limbs

INTELLECTUAL-CONCEPTUAL, INTEGRATIVE AND QUANTITATIVE ABILITIES

Problem solving, a most critical skill, is essential for optometric students and must be performed quickly, especially in emergency situations. In order to be an effective problem solver, the student must be able to accurately and efficiently utilize such abilities as measurement, calculation, reasoning, analysis, judgment, investigation, memory, numerical recognition and synthesis. Examples of these abilities include being able to:

- Determine appropriate questions to be asked and clinical tests to be performed
- Identify and analyze significant findings from history, examination, and other test data
- Demonstrate good judgment and provide a reasonable assessment, diagnosis and management of patients
- Retain, recall and obtain information in an efficient manner
- Identify and communicate the limits of one's knowledge and skill

BEHAVIORAL AND SOCIAL ATTRIBUTES

The student must possess the necessary behavioral and social attributes for the study and practice of optometry. Examples of such attributes include:

- Satisfactory emotional health required for full utilization of one's intellectual ability
- High ethical standards and integrity
- An empathy with patients and concern for their welfare
- Commitment to the optometric profession and its standards
- Effective interpersonal relationships with patients, peers and instructors
- Professional demeanor
- Effective functioning under varying degrees of stress and workload
- Adaptability to changing environments and uncertainties
- Positive acceptance of suggestions and constructive criticism

Candidates with questions or concerns about how their own conditions or disabilities might affect their ability to meet these functional guidelines are encouraged to meet with an optometry school counselor prior to submitting an application.

IX. THE OPTOMETRY CURRICULUM

Students must successfully complete a four-year accredited degree program at a school or college of optometry to earn the OD degree.

The sequence of coursework varies from one program to another, but some general characteristics are shared by all. In the first and second year of the professional program, course work is concentrated in the basic health sciences (anatomy, physiology, pathology, biochemistry, pharmacology, and public health), optics, and vision science. Students begin their clinical experience in a clinical simulation laboratory, with classmates serving as patients, and then proceed to clinical training

with real patients. This training includes taking case histories, performing examinations, learning diagnostic techniques, and discussing treatment services.

In the third year, students spend part of their time in the classroom and part of their time in the clinic examining patients.

Fourth-year students continue their clinical training, which may include off-campus clinical externship rotations. Sites for rotation are available in the United States and abroad. Clinic settings include military facilities, VA hospitals, public health service hospitals, and various specialty and private practices. The lengths of the external rotations vary from eight to 16 weeks.

After successfully completing the fourth year, students graduate with an OD degree. To ensure a better understanding of the different educational programs, contact the specific schools or colleges of interest for curricular details.

Students graduating from schools and colleges of optometry have access to numerous resources that provide optometry practice (placement) opportunities. Students may obtain information from individual schools and colleges of optometry, state optometry associations, and the Optometry Career Center, which is housed at the AOA office in St. Louis, Missouri. The phone number is 1-800-365-2219 and their website is www.aoa.org.

X. BECOMING LICENSED TO PRACTICE OPTOMETRY

Optometrists need to be licensed by the board of optometry in each state where they wish to practice optometry. Licensing assures that optometrists have met established standards of knowledge and are able to provide patient care. All states either accept or require passage of Parts I and II of the National Board examinations offered by the National Board of Examiners in Optometry (NBEO).

Part I (Applied Basic Science) tests epidemiology, patient's history, presenting symptoms and signs, clinical testing, diagnosis and pathophysiology knowledge obtained from the first two years of optometric study. Part II (Patient Assessment and Management) tests knowledge of clinical science through patient simulations. Forty-four states and the District of Columbia also require that the applicant pass Part III (Clinical Skills) of the National Board, which tests the candidate's ability to provide patient care. Some states require the passage of the section previously called "TMOD" but not part III. Thirty-seven states require a state-administered practical exam, law exam or oral exam prior to state licensure in addition to the NBEO sections.

Each state has its own set of regulations governing the practice of optometry, and many states also require an optometrist to take an examination that tests the applicant's knowledge of the laws of that state.

An applicant can apply for licensure as early as the spring of the fourth year in the OD program in most states. If the applicant is successful in all parts of the NBEO and other state examinations, he/she can be licensed to practice optometry in the summer or fall of that year, following graduation.

Becoming licensed to practice optometry in Canada requires passing the Canadian Standard Assessment in Optometry, which is administered by the Canadian Examiners in Optometry. In addition, each province has its own licensing body with specific requirements, such as provincial law and other exams. At least one province requires new graduates who were educated in the United States to have passed the U.S. NBEO test in addition to the Canadian Standard Assessment in Optometry.

Periodic renewal of a license to practice optometry is required, depending on the state. Requirements for relicensure can be fulfilled through continuing education or other modes.

Postgraduate Programs

Residencies

Residencies in the profession of optometry are optional and not required either for licensure or for the establishment of a specialty practice. The four-year OD degree encompasses all areas in which optometrists are licensed to practice. After a student receives the OD degree, residencies are typically one year in duration and the resident receives a salary during this course of clinical training. Most often, residencies are located within hospitals, VA facilities, outpatient clinics, or the clinical facilities of the various colleges and schools of optometry. Residencies vary within specialty areas and typically are identified by specific areas in the profession or at a location in which the specialty is emphasized (see Section VI Optometry Areas of Emphasis).

Graduate Degree Programs

Graduate programs are not required to be licensed to practice optometry. In fact, these programs usually are research oriented and are for the individual interested in delving further into the “whys” and “hows” of the visual system.

A master’s degree can be sought by someone who has an OD degree or who is simultaneously working on the OD degree. This individual usually plans to practice optometry but also wishes to be grounded in the basics of research to do some clinical research within his or her practice.

A PhD degree is most often sought by someone intending to go into full-time research and/or teaching. For those possessing a PhD, opportunities exist not only to teach and do research at a college or university but to engage in research within the corporate and government sectors. Individuals can enter these programs with or without an OD

degree. Some choose to work on both the OD and the PhD at the same time, taking approximately six to seven years to complete both degrees.

Graduate degree programs at schools and colleges of optometry are identified by different names, but all emphasize and explore some aspect of vision and the visual and ocular system.

XI. ADMISSION REQUIREMENTS

Because each optometry school may have slightly different admissions criteria, it is strongly recommended that applicants contact all the schools and colleges to which they are interested in applying. Each school can provide information on specific application deadlines, additional policies and procedures, class size, grade point average (GPA), Optometry Admissions Test (OAT) averages, international requirements, and tuition and fees considerations. A complete listing of the schools and colleges of optometry is provided by ASCO at www.opted.org.

No valid ranking of optometry schools exists. The best advice to a candidate is to obtain information from the individual schools, talk to recent graduates, visit selected schools, and ask pointed questions of faculty and students.

Candidates should be most concerned with the academic rigor of a program, the clinical experience offered, and the availability of faculty and support services. Of course, the cost of the program, availability of financial aid, and the location and environment of the college can be contributing factors in deciding which program is best suited to the candidate.

In general, colleges of optometry admit students who have demonstrated strong academic commitment and who exhibit the potential to excel in deductive reasoning, interpersonal communication, and empathy. Optometry schools are looking for well-rounded candidates who have achieved not only in the classroom but also in other areas. Leadership ability, a disposition to serve others, and a work ethic characterized by dedication and persistence are just a few of the qualities that impress most admission committees.

OptomCAS

Optometry's centralized application (OptomCAS) launched in July 2009. OptomCAS allows optometry applicants to use a single web-based application and one set of materials to apply to multiple schools and colleges of optometry. Applicants who apply through OptomCAS submit a completed web-based application comprised of biographical data, colleges and universities attended, academic course history, letters of recommendation, work experience, extracurricular activities, honors, and a personal essay. It is the applicant's responsibility to read and follow specific instructions for OptomCAS and the schools and colleges of optometry. More information can be found on the OptomCAS website at www.optomcas.org.

A student's academic evaluation is based on overall GPA, science GPA, college attended, degree progress, and course load difficulty. A bachelor's degree is not required by most optometry schools but is strongly preferred. Most students major in the natural sciences in college (e.g., biology, chemistry) because the prerequisites for optometry school are science intensive. However, prospective students can major in any degree discipline as long as they complete all of the prerequisite courses for optometry.

Listed below are the common prerequisite courses for most optometry schools:

- General biology with labs,
- General chemistry with labs,
- Organic chemistry/biochemistry with labs,
- General physics with labs,
- Microbiology with labs,
- Calculus,
- Psychology,
- Statistics,
- English,
- Social science, and
- Other humanities.

Most schools consider an applicant's exposure to optometry to be of vital importance. Each applicant should become acquainted with at least one optometrist and if possible gain some firsthand experience to see what optometrists do on a daily basis. Most schools require personal interviews for admission, and experience/exposure to the field is often a topic for discussion.

Optometry Admission Test (OAT)

The OAT is sponsored by ASCO for applicants seeking admission to an optometry program. The 20 schools and colleges of optometry in the United States and Puerto Rico and the University of Waterloo, Canada, require applicants to take the OAT.

The OAT is a standardized examination designed to measure general academic ability and comprehension of scientific information. It consists of four subtests: Survey of the Natural Sciences (Biology, General Chemistry, and Organic Chemistry), Reading Comprehension, Physics, and Quantitative Reasoning. The OAT is scored on a 200- to 400-point scale in increments of 10. The national average for the test is generally between 300 and 310.

At least one year of college education, which should include courses in biology, general chemistry, organic chemistry, and physics, is required prior to taking the OAT. Most students, however, elect to complete two or more years of college prior to taking the exam.

The OAT is offered in a computerized format. Testing is available year-round. Examinees are allowed to take the computerized format of the OAT an unlimited number of times but must wait at least 90 days between testing dates. Only scores from the four most recent attempts and the total number of attempts will be reported.

There is a fee to take the OAT exam. This fee includes the submission of official transcripts of scores to five optometry schools, a personal copy, and a copy for the preoptometry advisor.

You can register to take the OAT test online by going to the ASCO website at www.opted.org and clicking on OAT online registration. Or you can request a free OAT informational booklet and a test application form by contacting the Optometric Admission Testing Program, 211 East Chicago Avenue, 6th Floor, Chicago, IL 60611-2678 or call 1-800-232-2159. Only the electronic examinee guide has sample test questions.

XII. FINANCING AN OPTOMETRIC EDUCATION

Students who are considering a career as an optometrist may be concerned that they do not have sufficient personal resources to cover all of the educational costs. The cost of attendance generally includes tuition, fees, books, equipment and supplies, and living expenses, such as rent, groceries, insurance, and transportation. The majority of students finance their education by a combination of personal and family contributions, grants and scholarships, low- and high-interest loans, and work–study opportunities.

As the overall costs of optometric education continue to increase, it is important that prospective optometry students begin to investigate potential financial aid sources as early as possible. Because outside employment during optometry school is a limited option for the majority of students and university sources of funds are also often limited, accepted applicants should contact their school's financial aid office early to explore their options and understand the school's financial aid policies and procedures.

Sources of Financial Aid

Accepted applicants should be aware of loans, scholarships, grants, and work–study, which provide the majority of aid to optometry students.

Loans, which are the primary source of financial aid for optometry students, must be repaid after graduation. Scholarships and grants, which are merit-based or need-based, do not require the recipient to repay the award. Work–study gives students the opportunity to work part time. In addition, there are state contract programs, which pay a portion of a student's tuition, and U.S. Armed Forces' scholarship programs, which require a service commitment following graduation.

The following list presents an overview of the most commonly used federal sources of assistance. Applicants are cautioned that requirements for the various loan programs may change or programs may be eliminated based on actions of the government.

Loan Programs

1. Federal Perkins loan
2. Federal Stafford loan/federal direct loan
3. U.S. Department of Health & Human Services (DHHS) Loans for Disadvantaged Students (LDS)
4. DHHS Health Professions Student Loan (HPSL)
5. Grad PLUS loans
6. Private alternative loans
7. Institutional loan programs

Scholarship Programs

8. DHHS Scholarships for Disadvantaged Students (SDS)
9. State contracts
10. Military Health Professions Scholarship
11. Institutional scholarship programs

Applying for Financial Aid

The federal government and the optometry schools sponsor the majority of financial aid money available to optometry students. The applicant should begin by contacting the optometry schools he/she would like to attend. They will provide the applicant with information on the programs they offer as well as forms and deadline dates. The following list identifies the forms and information generally required.

1. Free Application for Federal Student Aid (FAFSA)

This is the most important form, because the information from it is used to calculate the applicant's expected family contribution and determines eligibility for federal sources of financial aid. The FAFSA asks for information about the applicant, the applicant's spouse, and the applicant's parents. Although an applicant may be financially independent from his/her parents, parents may still need to fill out sections of the FAFSA because certain financial aid programs require that this information be considered. This form is submitted online at www.fafsa.ed.gov. There is no processing fee for the FAFSA.

2. Institutional Application

In addition to the FAFSA, optometry schools may require an institutional form, which is returned directly to the school. Schools do not charge processing fees for their financial aid forms.

3. Tax Returns

Optometry schools often require copies of the applicant's and the applicant's parents' most recent tax returns to confirm the financial information that was provided on the FAFSA and the other application forms.

4. Certifications

Students receiving funds, especially from federal sources, must attest to certain eligibility requirements. For example, students will need to vouch that funds were used only for educational purposes, that the student is not in default on a loan or owes a refund on a grant, and that the student is in compliance with Selective Service registration requirements.

Managing Educational Indebtedness

The majority of optometry students borrow to pay for the cost of their education. Borrowing means the student has the benefit of using someone else's money now in exchange for paying it back with interest at a later date. Students are legally obligated to repay their loans. Defaulting on a student loan has financial and legal consequences that can have negative personal and professional effects. The vast majority of optometry graduates repay their loans either on time or early. The financial aid office at a specific college can provide information on management of a student's debt.

Resources:

American Optometric Association, <http://www.aoa.org/>. April 2008.

American Optometric Association. *2007 AOA Economic Survey*. December 2007. St. Louis, MO.

U.S. Department of Labor, Bureau of Statistics. *Occupational Outlook Handbook, Edition 2010-2011*. Washington, DC.