

## Fundamental Differences in Opticianry Education Between World Countries and Türkiye

Sümeyye ÇETİN<sup>1,2</sup>, Mümin Mehmet KOÇ<sup>3,4</sup>

<sup>1</sup>Kırklareli University Rectorate, Kırklareli University, Kırklareli, Türkiye

<sup>2</sup>Department of Computer Education and Instructional Technologies, Graduate School of Educational Sciences,  
Gazi University, Ankara, Türkiye

<sup>3</sup>Department of Medical Services and Technics, School of Medical Services, Kırklareli University, Kırklareli, Türkiye

<sup>4</sup>Advanced Technologies Application and Research Center (ITUAM), Kırklareli University, Kırklareli, Türkiye

Received: 25.02.2026, Accepted: 20.06.2026, Published: 29.06.2026

### ABSTRACT

Opticianry, an integral part of the ophthalmic and healthcare industries, plays a vital role in protecting public health, correcting visual defects, and delivering precise vision care services. While often associated with the fashion industry, opticians are primarily essential visual healthcare providers, highlighting the critical importance of robust training programs. This study utilizes a descriptive comparative research design to evaluate opticianry education on a global scale. Data were compiled and analyzed across six distinct regions: the USA, Canada, Europe, MENA, APAC, and Türkiye. The comparison evaluates these programs based on key parameters, including nomenclature, licensing conditions, diploma competencies, graduation requirements, accreditation, curriculum frameworks, and legal regulations. The findings reveal distinct variations between Türkiye and its global counterparts regarding program nomenclature, duration of study, and licensing requirements, alongside commonalities in curriculum content and professional definitions. Ultimately, the study highlights the need for structural advancements in Türkiye, such as formally recognizing the profession of optometry, establishing bachelor's-level education programs, and updating legal frameworks governing practice establishment.

**Keywords:** Opticianry; Optometry; Opticianry Education; World Countries; Comparative Research

## Dünya Ülkeleri ve Türkiye Arasındaki Optisyenlik Eğitime İlişkin Temel Farklar

### ÖZ

Göz sağlığı sektörünün ayrılmaz bir parçası olan Optisyenlik mesleği temel olarak halk sağlığının korunması, görme kusurlarının iyileştirilmesi, doğru görme düzeltmesi hizmetlerinin sağlanmasında kilit rol oynamaktadır. Optisyenliğin moda endüstrisinin içerisinde yer almasının ötesinde görme sağlığının en önemli tedavi elemanlarından biri olması sebebiyle optisyen yetiştirme programları eğitimi oldukça önem arz etmektedir. Araştırmada Optisyen yetiştirmeye ilişkin eğitim programı isimlendirmeleri, küresel ölçekte optisyenlik lisansını elde etme koşulları, diploma ve sertifikaların sağladığı yetkinlikler, mezuniyet şartları, eğitim programının akredite olup olmadığı, müfredat içerikleri ve ders kredileri, eğitim türleri ve mesleğin yasal düzenlemeleri parametreleriyle incelenmiş, Türkiye'nin de dahil olduğu dünya ülkelerinin eğitim sistemleri arasındaki farklar ve ortak noktaları karşılaştırılmıştır. Araştırmada betimleyici araştırma yöntemlerinden karşılaştırmalı araştırma modeli kullanılmıştır. Dünya ülkeleri 6 farklı bölgeye (USA, Kanada, Avrupa, MENA, APAC ve Türkiye) ayrılarak bölgeler bazında araştırma verileri derlenmiştir. Türkiye'de Optisyenlik eğitimi ile dünya ülkeleri arasında eğitim program isimleri, eğitim süreleri,

lisanslama koşulları arasında farklar ve müfredat içerikleri, mezuniyet şartları, meslek tanımları arasında ortak noktalar belirlenmiştir. Sonuç olarak, elde edilen bulgular doğrultusunda Türkiye'nin optisyenlik mesleği içinde yasal örgütlenmeye, eğitim programlarının akreditasyonu ile optisyen kalifiyesinin artırılmasına, mezuniyet şartlarına bitirme projesi, yeterlik testi gibi ağır kriterlerin getirilmesine, optometri mesleğinin tanınmasına ve lisans seviyesinde eğitim programlarının açılmasına, müessese kanunlarında yasal düzenlemelerin yapılması iyileştirmelerine ihtiyaç duyulduğu önerilerde sunulmuştur.

**Anahtar Kelimeler:** Optisyenlik; Optometri; Optisyenlik Eğitimi; Dünya Ülkeleri; Karşılaştırmalı Araştırma

## 1. INTRODUCTION

In Türkiye, the practice of opticianry is regulated by Law No. 5193. Under this legislation, licensed opticians are authorized to dispense prescribed eyeglasses, contact lenses, frames, and optical aids, as well as to assemble and maintain eyewear. To legally practice, professionals must hold a two-year associate degree in opticianry, while individuals with foreign degrees must obtain an official equivalence certificate from Turkish authorities. Notably, while Law No. 5193 permits ophthalmologists to own an optical business, it strictly prohibits them from simultaneously operating a business and practicing medicine (5193 Sayılı Optisyenlik Hakkında Kanun, 2004).

According to the Regulation on Opticianry Establishments (Optisyenlik Müesseseleri Hakkında Yönetmelik), the "Responsible Manager" (mesul müdür) is the authorized individual designated to oversee both professional practices and business operations within the sector. The Responsible Manager plays a critical role in licensing and certification. Their duties include authorizing and archiving official business documents, monitoring the credentials of employed opticians, and submitting the necessary paperwork to the provincial directorate upon a staff member's resignation. They also need to present these documents upon an inspection. To establish and operate an opticianry business, it is first necessary to appoint an authorized a Responsible Manager. Additionally, a membership registration certificate of the responsible manager must be issued by the Chamber of Opticians and Optometrists, as well as a signed list by the responsible manager for the mandatory minimum equipment that must be used and kept in the business, are required. Businesses that fulfill these requirements can be awarded with licenses and get permissions to employ personnels (28886 Sayılı Optisyenlik Müesseseleri Hakkında Yönetmelik, 2014).

### ***1.1. Development and Organization of the Opticianry Profession in Türkiye***

In Türkiye, the institutional development and organization of the opticianry profession arose from the need to safeguard public health and elevate the quality of vision care services. This structural evolution progressed in tandem with the widespread adoption of modern medicine and healthcare systems. Besides their protective and occupational health purposes, eyeglasses can be used to correct visual and refractive errors. Therefore, licensed and qualified technicians, who can prepare glasses in accordance with ophthalmologists' prescriptions, are needed. These technicians should process lenses, mount them into frames, adjust and repair glasses. In Ottoman era, primal aim in the field was the fulfillment of healthcare needs. In later periods, many concerns arose, including the delineation of occupational boundaries, education of qualified technicians, determination and regulation of duties. Hence, "Optician" title was defined for the first time in 22/06/2004 under Law No:5193. In the law, the duties, authorities and definition of opticianry profession were determined (5193 Sayılı Optisyenlik Hakkında Kanun, 2004). Enacting of the

Law No 5193, opticians will have same right and authorization with eyeglass makers whose rights are defined with Law No: 3958 in 30/12/1940 while authorized to use optician title (*3958 Sayılı Gözlükçülük Hakkında Kanun*, 1940). According to the regulation on Opticianry Establishments No. 28886 dated 18/01/2014, individuals who hold a diploma in opticianry or a diploma in the field of opticianry obtained abroad and recognized as equivalent by the competent authorities, ophthalmologists (*28886 Sayılı Optisyenlik Müesseseleri Hakkında Yönetmelik*, 2014), and individuals holding an opticianry license under Law No. 3958 are authorized to practice this profession (*3958 Sayılı Gözlükçülük Hakkında Kanun*, 1940). In order to establish an opticianry business, the person assuming the managerial responsibility of the establishment must be an authorized optician, a holder of an opticianry license, or an ophthalmologist.

According to the law, opticians and ophthalmologists are not allowed to work together on the same business premises (or businesses have interconnected premises) even if they are registered as separate taxpayers. Opticianry businesses are not allowed to be established in health institutions and building containing health institutions (*5193 Sayılı Optisyenlik Hakkında Kanun*, 2004). People who would like to practice opticianry profession or people would like to open a opticianry business shall be a member of a proper chamber defined in accordance with Regulation of the Turkish Opticians and Optometrists Union No. 30783 dated 24/05/2019 (*30783 Sayılı Türk Optisyen-Gözlükçüler Birliği Yönetmeliği*, 2019). Turkish Optician - Eye Glass Makers Union (Türk Optisyen-Gözlükçüler Birliği - TOGB) is a professional institution which represents Opticians and Eye Glass Makers in highest level with authority of inspection. The organization has public institution status which was established as a result of legal needs. The establishment and actives of the union rely on Law about Opticianry with Law No 5193. Legal arrangements allowing the establishment of union and chambers was enforced upon the publication in the Official Newspaper (Resmi Gazete) on 5/12/2017 (Additional Article 1 added to Law No. 5193). Union defines Optician and Eye Glass Maker Chambers and organization. Membership to mentioned organizations is mandatory in order to practice any kind of occupational activities. Another duty of the TOGB is to issue internships and internship documents of Opticianry program students.

### ***1.2. Development and Organization of the Opticianry Profession Worldwide***

The opticianry profession has undergone a complex process of sectoral transformation from craftsmanship to science since the invention of eyeglasses, one of the oldest medical devices in human history. Opticianry is referred to as an essential field for eye health. Treatment of refractive errors is determined as main objectives by World Health Organization (WHO) in terms of “Universal Health Coverage” objectives where opticians play a key role. In literature, optician term may refer to various meanings in accordance with regulations and laws in various countries. Generally, Optician occupation is divided into three main occupational categories as Optician (i), Refracting Optician (ii), Manufacturing/Laboratory Optician (iii).

Dispensing Optician is a professional who selects, designs, assembles, and adapts ophthalmic lenses and frames in accordance with prescriptions issued by ophthalmologist and optometrists (*NHSScotland Careers, How to Become a Dispensing Optician*, 2025). Refracting Optician is a professional who has authorization to make eye examination and issue a prescription pertaining refractive errors (General Optical Council, 2023). Manufacturing/Laboratory Optician is a technical professional who employs surfacing and edging processes (Zentralverband des Deutschen Handwerks, 2022).

Historically, opticianry is at the intersection points of the history of science, the Industrial Revolution, and medical history. Development of the occupation strictly depends on improvements in glass processing techniques, theoretical and practical advancement of optic science. In 19<sup>th</sup> century, emerge of ophthalmology as a separate medical discipline led to a conflict between practitioners (doctors) and eye glass makers. Opticians Association in 1898 (the present-day American Optometric Association) constituted one of the earliest modern steps toward professional organization (*Goldsmith & Harvey Opticians, A Historical Journey through Vision Care*, 2025). In the United Kingdom, the Opticians Act of 1958 placed the profession under state regulation by establishing the General Optical Council (GOC) (General Optical Council, 2023). This Act legally protected the title of “Dispensing Optician” and introduced mandatory registration. In the United States, the establishment of the American Board of Opticianry (ABO) and the National Contact Lens Examiners (NCLE) in 1976 created a national certification standard aimed at minimizing interstate regulatory differences (Record, 2022). In Japan, for many years there was no mandatory licensing requirement for opticians, and eyeglasses could be sold by anyone. However, with the introduction of the “*Kitei*” (Certified Optician – Optical Fabrication Technician) system in 2022, a state-approved certification framework was established. In Japan, opticians are permitted to conduct vision testing using automated refractometers within optical establishments; however, these procedures are classified as “measurements” rather than “medical examinations” (*Doitsu Meister Gankyoin, A Challenge to Become a State-Certified Master Optician*, 2025).

## 2. METHODS

In this study, opticianry educations in various parts of the world were compared with opticianry education in Türkiye using the descriptive qualitative research methods. Comparative research is an appropriate method to compare and determine similarities or differences between two or more cases between different cultures with respect to specific phenomena (Walliman, 2006). Hence, following methods were preferred. Opticianry education curricula of different countries were examined. Countries were grouped according to their regional characteristics. Countries from six different regions were addressed: Europe, the United States, Canada, Asia–Pacific, the Middle East and North Africa, and Türkiye. Data pertaining to the similarities and differences in opticianry education were investigated regarding official institution reports,

education curricula, literature search and analysis reports. In the analysis, criteria to hold an opticianry license, occupational competence, accreditation status of education, curriculum content and education types and parameters were compared.

### 3. FINDINGS

#### 3.1. Opticianry Education in Türkiye

Opticianry education programs in Türkiye aim to train individuals who can read, and process prescriptions prepared by the ophthalmologist to treat the refractive errors. Their education is also expected to cover preparation, and distribution of eyeglasses, contact lenses, and help patients in need (*Sağlık Hizmetleri Meslek Yüksekokulu Optisyenlik Programı Tanıtımı*, 2025). The opticianry curriculum was also expected to include essential public health topics, strong communication skills, business management competencies, foreign language proficiency, and professional ethical values.

In 1989, the first opticianry education program plan in Türkiye was taken by the decision of High Education Institution (YÖK). In 1992, the first Opticianry program was established in Sivas Republic University. Ongoing establishments of opticianry programmes were followed by Universities in Mugla, Samsun Eskisehir and İzmir (Durmuş, 2023). Hence, a total of 700 opticians had been educated and awarded opticianry diplomas by 2004. However, for 12 years the graduates have been deprived from their rights because no changes were made to the Law in action, which has effectively prevented them from exercising their profession.

By 2025, more than 90 university provide opticianry education programs in Türkiye (*Optisyenlik Programı Bulunan Tüm Üniversiteler | YÖK Önlisans Atlası*, 2025). Optician training programs were conducted in both state and foundation universities at School (or vocational school) of Health Service for 2 years of education (4 terms). Candidates seeking admission to this program must hold a high school diploma or an equivalent degree. All admission and registration criteria are determined by the Assessment, Selection and Placement Center (ÖSYM) in accordance with the regulations of the Council of Higher Education (YÖK). Any student who scores 150 points or above on the Basic Proficiency Test administered by ÖSYM is eligible to apply to these programs (*İstanbul Sağlık ve Sosyal Bilimler Meslek Yüksekokulu Optisyenlik Programı*, 2025).

Program includes occupational practical theoretical lectures, basic health sciences and fundamental science–mathematics courses and compulsory courses determined by the Council of Higher Education (YÖK). Students successfully fulfilling the requirements of the program is awarded with an associate degree diploma in “Opticianry”. Opticianry program students are expected to complete 120 ECTS (AKTS) credits in four terms and should achieve a minimum cumulative grade point average (CGPA) of at least 2.00 over 4.00

(*Ege Üniversitesi Optisyenlik Programı Tanıtımı*, 2025). In some universities, students must complete compulsory summer internship for 20 to 30 working days (depending on university regulations) (*Sağlık Bilimleri Üniversitesi Optisyenlik Programı Tanıtımı*, 2025) (*Cumhuriyet Üniversitesi Optisyenlik Programı Tanıtımı*, 2025). In some universities education program was conducted as 3+1 format which corresponds to 3 terms of formal education and 1 term internship. As part of career days, technical visits to ophthalmic lens factories are organized to help students build industry connections and enhance their product knowledge. Additionally, students are encouraged to participate in seminars led by industry experts. In accordance with the regulations of Council of Higher Education (YÖK), Opticianry program alumni can transfer to bachelors programs in Physics, Optic and Acoustics Engineering, Physics Engineering, Health Management, Public Finance and Emergency Aid and Disaster Management (*Ege Üniversitesi Optisyenlik Programı Tanıtımı*, 2025).

The Opticianry curriculum is designed to train qualified professionals equipped with foundational knowledge in optical physics, ocular anatomy, physiology, refraction, and ophthalmic diseases. Furthermore, the program fosters essential interpersonal competencies, including effective communication, leadership, and teamwork. Ultimately, it aims to produce graduates who are committed to lifelong learning, guided by professional ethics, and capable of driving innovation and entrepreneurship within the field. The program also aims to train competent opticians in marketing, fitting, adjusting, assembling and preparing prescription eyeglass, contact lenses, and optical devices in accordance with prescriptions issued by specialist ophthalmologists. Moreover, program seeks to educate opticians who closely follow advancements in optical technologies and equipments, effectively apply these technologies in professional practice, and are capable of managing optical establishments, maintaining stock and inventory control, and keeping records in accordance with relevant legislation (*Sağlık Hizmetleri Meslek Yüksekokulu Optisyenlik Programı Tanıtımı*, 2025).

Furthermore, universities collaborate closely with key institutional stakeholders, including the Turkish Opticians and Optometrists Association, the Turkish Optical and Optometric Professions Association, the Social Security Institution, and Provincial Directorates of Health. These partnerships facilitate students' smooth integration into the profession and help them build professional networks that support lifelong learning post-graduation (Cumhuriyet University Opticianry Program Introduction, 2025).

Graduated students can have a career as responsible managers in refraction hospitals, in contact lens manufacturing facilities, optical establishments, optical lens factories, optical equipment warehouses. They may also work at universities or establish and operate their own optical establishments as the sole authorized healthcare professional (*İstanbul Sağlık ve Sosyal Bilimler Meslek Yüksekokulu Optisyenlik Programı*, 2025).

### **3.2. Opticianry Education in World Countries**

The opticianry education in countries around the world have been examined by dividing them into regions. Both differences and common contexts between the regions themselves, as well as differences and commonalities with Türkiye, have been identified. In this section, a few of the most widespread countries from each of the following regions have been selected: Canada, USA, Europe, Asia-Pacific, Middle East-Africa. The curricula of the countries, graduation requirements, graduate competencies, accreditation status of the programs, accrediting institutions, organizations, and associations have been examined and explained. According to the examinations below, it has been observed that in many developed countries of the world, the job description and responsibilities of opticianry are defined by laws, practice regulations have been established, unity has been achieved between vocational education and clinical education, and the scope of practice has been determined, with full accreditation in place; whereas in some countries, the quality has still not been sufficiently improved.

#### **3.2.1. Opticianry in Canada**

In Canada, professional programs that train opticians are organized in various ways, such as Optician, Opticianry, Dispensing Optician, Eyeglasses, Contact Lenses, or Refraction Technologies. To become a licensed optician, students must enrol in one of these accredited programs. They should also successfully complete an Opticianry Program that typically lasts between 1 and 3 years. Depending on the accredited institution, courses may be delivered full-time, part-time, or online. The curriculum includes 60 credits of theoretical education, followed by a 60-week practical internship (clinical placement) that allows students to apply the knowledge they have gained in real-world settings. Students who successfully complete the program and receive their opticianry diploma are awarded the title of “Provisional Optician.”

However, obtaining an opticianry diploma alone is not sufficient to become a licensed optician in Canada. Diploma holders must pass the NACOR (National Alliance of Canadian Opticians Regulators) National Optical Sciences Examination and the jurisprudence examination (which tests the legal and ethical aspects of the opticianry profession). Provisional Opticians preparing for the NACOR exam are permitted to begin working under the supervision of a licensed (specialist) optician. Once they successfully complete the NACOR examination, they receive full licensure and may practice independently under the title of Registered Optician (RO) (*About the Examinations - NACOR, 2025*).

Having a Registered Optician license is also not legally sufficient for opticians to dispense contact lenses. For this reason, they must additionally complete a Contact Lens Program and successfully pass the same NACOR National Optical Sciences Examination. In this way, they can obtain the title of Registered Contact

Lens Practitioner and dispense corrective contact lenses for vision defects (*Discover Licensed Optician Programs in Ontario | Become an Optician Today*, 2025).

As an exception, in the Canadian provinces of Ontario and Quebec, eyeglass and contact lens training are provided together in an integrated manner, and graduates receive their diplomas as dual-licensed. Students graduating from Ontario must participate in the NACOR National Optical Sciences Examinations to obtain licensure, successfully passing separate exams for eyeglasses and for contact lenses.

In Canada, only the province of Quebec has a slightly different evaluation process. The Quebec Regulatory Body does not recognize the NACOR examinations; instead, it grants licenses by conducting competency assessments using its own measurement and evaluation methods (*How To Become An Optician*, 2025).

Opticians who complete their education in Canada receive the following titles:

- (a) optician;
- (b) ophthalmic dispenser;
- (c) optical dispenser;
- (d) Registered Optician.

Those who complete the Contact Lens program receive the following titles:

- (a) contact lens practitioner;
- (b) contact lens fitter;
- (c) contact lens dispenser;
- (d) R.C.L.P. (Registered Contact Lens Practitioner) (*Opticianry | Ontariocolleges.Ca*, 2025).

The best university in Canada ranked based on their research performance in Optometry is the University of Waterloo in Ontario, which ranks 9th in the world (EduRank, 2025).

### 3.2.2. Opticianry in the United States

In the United States, higher education institutions and the Commission on Opticianry Accreditation (COA), recognized by the Council for Higher Education Accreditation (CHEA), accredit two-year Opticianry programs as well as one-year “Ophthalmic Laboratory Technology” certificate programs. Through its developed evaluation standards, COA aims to elevate opticianry education to the highest possible level (*About COA – Commission on Opticianry Accreditation*, 2025). For this reason, educational institutions must be accredited in order to offer an Opticianry program. According to 2025 data, there are 19 COA-accredited Opticianry degree and Ophthalmic Laboratory Technology certificate programs in the United States (*Directory of Accredited Programs – Commission on Opticianry Accreditation*, 2025). These programs are titled “Vision Care Technician/Opticianry,” “Ophthalmic Eyecare Technician,” and “Laboratory Eyecare Technician.” For an Opticianry program to be accredited, it must include a minimum

two-year curriculum and require students to take the examination administered by the American Board of Opticianry & National Contact Lens Examiners (*About ABO NCLE, 2025*).

In the Vision Care Technician/Opticianry program, courses are divided into two categories: general education courses (such as Mathematical Thinking, Algebra, Biology, U.S. History, Computer and Internet Literacy, and Oral Communication) and mandatory professional courses. The program consists of a total of 72 credits, combining theoretical and practical instruction (*Vision Care Technology/Opticianry, Associate of Science | Broward College, 2025*).

Graduates of these programs are expected to possess the following competencies:

- Recognizing the structure, function, and pathologies of the human eye
- Analyzing and interpreting prescriptions
- Taking facial and anatomical measurements of the patient
- Assisting the patient in selecting appropriate frames and lenses
- Maintaining patient/customer records, frame and lens inventory, materials, equipment maintenance, and third-party forms (surveys, opinions, etc.)
- Identifying eyeglass problems, troubleshooting, and performing adjustments
- Fabricating and dispensing prescription eyewear

According to research performance rankings in Optometry, the best university in the world is Johns Hopkins University, followed by Harvard University, which ranks second in the United States and third globally (EduRank, 2025).

### 3.2.3. Opticianry in Europe

In European countries, the federation and policies that supervise, examine, and monitor educational institutions providing opticianry diplomas or certificates are handled by institutions and organizations within each country individually. In Europe, the ECOO (European Council of Optometry and Optics) Accreditation Agency is the accreditation body that oversees educational institutions offering opticianry or optometry diplomas against the high standards set by the European Diploma in Optometry (EDO) or the European Qualification in Optics (EQO). It supports institutions in curriculum development, provides a structured framework and valuable feedback to strengthen educational outcomes, and ensures that graduates are well-prepared for clinical practice across Europe (*About the ECOO Accreditation Agency | ECOO, 2025*). As of 2025, the only institution accredited by ECOO under the European Qualification in Optics standards within

the scope of opticianry program accreditation in Europe is OHI GmbH, Optometrie & Hörakustik Initiative (*Accredited Universities and Institutions | ECOO, 2025*).

In some European countries, such as Denmark, optical stores are staffed more by optometrists rather than opticians. Optometrists are authorized to differentiate between normal and pathological findings in both the anterior and posterior segments of the eye. Although their bachelor's degree includes courses on ocular pathology and pharmacology, they are not permitted to use diagnostic or therapeutic drugs (*European Council of Optometry and Optics. Blue Book 2020. Trends in Optics and Optometry - Comparative European Data., 2025*). In Europe, examinations performed by optometrists and subsequent referrals to ophthalmologists have significantly increased patient numbers and substantially extended waiting times for appointments (Fahmy & Lindegaard, 2023). Optometrists working in optical businesses offer three types of examination services: 1) a free autorefractor-based estimate of visual acuity; 2) an extended examination that also includes optometrist-facilitated refraction and anterior segment investigation; 3) an eye health check. Within the scope of eye health checks, procedures include basic vision examination (refraction error measurement and anterior segment examination), intraocular pressure measurement, fundus imaging, Optical Coherence Tomography (OCT), visual field analysis, and biomicroscopy (slit-lamp examination) (Frederiksen et al., 2025). Some optical businesses in Europe use an AI-based preliminary assessment followed by a clinical decision support system involving health evaluations performed by ophthalmologists or specialist optometrists.

Europe's aging population structure is dramatically increasing the demand for eye health services. However, since the number of ophthalmologists has not increased sufficiently, chaotic problems in eye health treatment are anticipated. Studies show that between 2011 and 2021, the population aged 80 and over increased by 23.5%, while the number of ophthalmologists increased by only 6.3%. In the Danish example, there are 5.29 optometrists and 0.5 ophthalmologists per 10,000 people (*The Danish Health Data Authority. Arbejdsstyrken Af Sundhedsuddannede., 2025*). For all these reasons, as a solution to potential future threats and the risk of insufficient ophthalmologist numbers, optometrists' training curricula should be updated, and their scope of duties and authorities should be reorganized. There is a need to clearly define the role of optometrists in Europe, standardize their education to suit this role, and ensure effective medical communication between optometrists and ophthalmologists. Below, the training curricula and structures of education in selected European countries—England, France, Germany, Spain, and Italy—are examined. The best university in Europe ranked based on their research performance in Optometry is University College London in the UK, which ranks 2nd in the world (EduRank, 2025).

### 3.2.3.1. United Kingdom Example

In the United Kingdom, Dispensing Optics education is typically provided in further education colleges or universities. The training is delivered through Optometry BSc (Hons) programmes offered by universities. These programmes usually last 3 or 4 years. Some programmes may extend to 4 years when they include an integrated clinical placement year (sandwich year) or lead to a more advanced qualification such as the MOptom (Master of Optometry). Universities in the UK use the UK Credit Framework, which is similar in structure to the European Credit Transfer and Accumulation System (ECTS). A standard three-year honours bachelor's degree (BSc Hons) commonly requires a total of 360 UK credits for graduation (120 credits per year). This is broadly equivalent to approximately 180 ECTS credits.

Students who complete the academic coursework must gain workplace experience under the supervision of a GOC-approved dispensing optician. In UK Optometry BSc (Hons) programmes, a pre-registration placement year and a final-year dissertation project are compulsory. Mandatory workplace placements are not credit-rated as part of the university bachelor's degree (BSc Hons), so they carry 0 UK/ECTS credits. As is common in most UK bachelor's programmes (360 credits total), a significant portion of the final year in dispensing optics/optometry programmes—typically 30 to 40 UK credits—is devoted to a research project (*GOC Education and Training Requirements, 2025*).

There are currently 6 approved educational institutions in the UK that award qualifications in Dispensing Optics. Graduates must successfully pass the professional qualifying examinations conducted by the ABDO (Association of British Dispensing Opticians). To practise in the United Kingdom, registration with the General Optical Council (GOC) is mandatory (*Requirements for Approved Qualifications in Optometry or Dispensing Optics, 2025*).

### 3.2.3.2. France Example

In France, opticianry education is provided through a two-year programme called the Licence Professionnelle d'Optique (Professional Licence in Optics). This training consists of both practical and theoretical courses, and students receive education in areas such as the production of ophthalmic lenses, the use of optical instruments, and customer service. Holders of the Professional Licence in Optics are authorised to perform eye examinations (*Licence et Bachelors En Optique - Licence et Bachelors En Optique, 2025*). The FNOF (Fédération Nationale des Opticiens de France) — the National Federation of French Opticians — has been established to bring a corporate vision to the opticianry profession in France. It aims to provide opticians with a clearly defined and structured framework that includes the definition of the profession and the development of continuing professional education (*FNOF : Fédération Nationale Des Opticiens de France, 2025*).

### 3.2.3.3. Germany Example

Opticianry training in Germany is based on the country's traditional dual vocational education system. The training period is usually three years. Under the Ausbildung (apprenticeship) model, optician trainees receive one year of instruction at a vocational school (Berufsschule). They then spend the following two years working in an optical business to gain practical experience (Fassbender, 2025). For opticians, accredited vocational action competence (Handlungskompetenz) is defined in three dimensions: professional knowledge and skills (Fachkompetenz), personal and human competences (Humankompetenz), and social competences (Sozialkompetenz) (*Rahmenlehrplan Für Die Berufsschule Ansehen*, 2025). The curriculum also aims to foster awareness of current issues such as environmental protection, occupational health and safety, human rights, and cultural diversity.

In Germany, opticians do not only provide technical services aimed at detecting and correcting vision defects; they also take on roles such as customer communication, product advice, contact lens products, and the promotion of eye health-related items. Opticians combine lenses and frames with great precision and care to create customised eyewear for each customer (*Ausbildung - Zentralverband Der Augenoptiker Und Optometristen*, 2025).

### 3.2.3.4. Spain Example

According to the definition provided by the Liga Internacional de Óptica-Optometría in Spain, an optician-optometrist is a primary healthcare professional who deals with functionally deficient visual systems. These are university-educated professionals specialised in the normal and abnormal physiology of the eyes, the psychophysics of vision, perceptual processes, and their relationship with functional activities such as learning, work, the environment, and leisure. An optician-optometrist is trained and legally authorised to determine the health status and perform a functional assessment of the refractive-accommodative, ocular-sensory-motor, and perceptual components of the visual apparatus (*Qué Es Un Óptico Optometrista*, 2025).

In Spain, opticianry education is delivered under the Faculty of Optics and Optometry through a 4-year bachelor's degree programme. Over a total of 240 ECTS credits, students complete theoretical and practical courses, a final dissertation project, and workplace placements successfully to earn the degree. In Spain, opticians receive training to develop activities aimed at preventing, detecting, evaluating, and treating visual impairments in order to meet society's needs, and they are overseen by the Colegio Nacional de Ópticos-Optometristas de España (National College of Opticians-Optometrists of Spain).

The curriculum aims to equip graduates in Optics and Optometry with the knowledge and skills to perform optometric visual examinations, prescribe lenses, provide vision information for the preservation or improvement of vision, and adapt optical systems required for visual examination and contact lenses (such as spectacles, contact lenses, low-vision magnification systems, etc.) (*Qué Es Un Óptico Optometrista*,

2025). Graduates of this program acquire comprehensive clinical competencies, including patient history taking, diagnostic testing, and prognostic evaluation. They are also trained to select and administer treatments, as well as communicate clinical outcomes effectively to patients, families, and collaborating healthcare professionals (*Grado En Óptica y Optometría*, 2025). Consequently, these professionals are well-equipped to work across diverse domains of vision science, spanning both clinical practice and academic research.

They are employed in optical centres, optometry and ophthalmology clinics, professional consultancies, companies that manufacture and design compensatory elements such as ophthalmic lenses and contact lenses, and research laboratories focused on the human visual system (*Grado En Óptica y Optometría*, 2025). They also provide rehabilitation for low vision impairments and work for the ONCE (Spanish National Organisation of the Blind). In addition, opticians and optometrists participate in research projects for the Spanish National Research Council (CSIC), particularly at the Daza de Valdés Institute of Optics in Madrid (*Qué Es Un Óptico Optometrista*, 2025).

#### 3.2.3.5. Italy Example

In Italy, opticianry education is offered as the Optics and Optometry Bachelor's Degree Programme, located within the Department of Physics and Astronomy at Sesto Fiorentino. This programme, which awards a bachelor's level diploma, lasts three years and consists of a total curriculum of 180 credits (*Study Plans Optics and Optometry Università Di Firenze*, 2025). The programme is structured in three main components: compulsory courses (153 ECTS) and elective courses (12 ECTS) that combine theoretical and practical training, an English language proficiency exam (3 ECTS), an internship placement (9 ECTS), and the final examination (thesis) (3 ECTS). The final examination consists of the preparation and discussion of a written thesis in English before a qualified commission (*Corso Di Laurea Triennale in Ottica e Optometria*, 2025).

#### 3.2.4. Opticianry in the Middle East – North Africa (MENA) Region

Within the scope of MENA countries (Middle East and North Africa), the educational curricula of Israel, Egypt, and Morocco have been examined. The best university in the MENA region ranked based on their research performance in Optometry is Tel Aviv University in Israel, which ranks 61st in the world (EduRank, 2025).

### 3.2.4.1. Israel Example

In Israel, there is no distinct field called “opticianry”; instead, the services in this area are covered under Optometry programmes at the bachelor’s level, offered as a 4-year degree.

Optometric studies at Bar-Ilan University originated as a joint venture with the Israel College of Optometry. The College of Optometry was founded in 1975 under the auspices of the Israel Optometric Association. In 1993, the programme was officially recognised as the Department of Optometry within the university, operating under the umbrella of both the Faculty of Life Sciences and the Faculty of Exact Sciences. Bar-Ilan is the only university-based programme in Israel that confers a degree in Optometry, making its graduates highly attractive for employment across all sectors of the profession (*School of Optometry and Vision Science, 2025*).

The Bachelor of Science degree program in Optometry is an intensive, four-year, full-time curriculum designed to provide comprehensive education in the field. This exclusive program features a mandatory, non-elective course structure, integrating both didactic and clinical components without provisions for course rearrangement or alteration in study sequence. The didactic track encompasses foundational sciences, including Chemistry, Biology, and Physics, which are essential for understanding the anatomical, physiological, and pathological processes pertinent to the visual system. Specific topics such as ocular anatomy and physiology, organ nutrition, vascular supply, and eye-brain interactions are explored, emphasizing their interrelationship with fundamental scientific principles. The first year of study primarily focuses on an introduction to Optometry, alongside core concepts in Basic and Physiological Optics. Concurrently, the clinical track is dedicated to the study of various visual system dysfunctions, advanced examination techniques, and clinical analysis, culminating in proficient clinical decision-making for patients attending our facility. Commencing in the second year, students progressively develop their clinical skills, initially by examining peers, then family and friends, before transitioning to direct patient care within the clinical environment. In addition to our primary clinic, specialized clinics are maintained for Contact Lenses, Low Vision (catering to individuals with specific optical requirements), and Visual Therapy (addressing amblyopic eyes and functional binocular coordination issues). During the fourth year, students gain exposure to off-campus clinical modalities. This clinical training encompasses supervised rotations within hospital ophthalmology departments, allowing students to gain hands-on experience with diverse ocular conditions under medical guidance. Additionally, the curriculum incorporates participation in mobile optometry units, which extend essential vision care services to underserved communities lacking access to on-campus clinics. The programme comprises a total of 197 credits. In addition to the optometric curriculum, all students are required to complete five core courses in Jewish Studies, amounting to 10 hours per year (*Optometric Studies in Bar-Ilan University, 2025*).

#### 3.2.4.2. Iran Example

In Iran, the Department of Optometry was first established in the 1970s, initially providing education at the associate degree (pre-licensure) level in Optometry. Subsequently, bachelor's, master's, and doctoral degrees were introduced in 1983, 2009, and 2017, respectively.

To practise the profession of Optometry in Iran today, it is now required to hold at least a bachelor's or master's degree in optometry and to be registered with the Iranian Medical Council (IRIMC). Optometrists pursuing doctoral studies can work in universities or research institutes (*The Department of Optometry - Shahid Beheshti University*, 2025). At the master's level, the programme is offered under the School of Rehabilitation as the Department of Optometry and lasts 2 years. It awards the degree upon completion of a total of 32 credits, structured as follows: Prerequisite courses: 14 credits Special Courses: 10 credits, Thesis: 6 credits, Internship: 2 credits, Total: 32 credits (*Optometry at Tehran University of Medical Sciences*, 2025).

#### 3.2.4.3. Egypt Example

In Egypt, the boundaries of the educational curriculum for opticianry training are not very clearly defined for accreditation or licensing purposes. The Egyptian Optometric Association has established a vocational training centre to train specialist opticians. This centre offers courses such as Basics of Optics, Customer Service, Art of Selling, Communication Skills, Contact Lenses, Prescription Lenses, and Lens Coating (*Training Courses in Egyptian Optometric Association*, 2025). At the university level, education is provided through programmes titled Optical Technology Study at the bachelor's degree level. To obtain a bachelor's diploma, students must complete a total of 127 credit hours, of which 8 credits must be elective courses. In addition to numerous theoretical and practical courses, students are required to prepare a Graduation Project over two semesters (*Pharos University in Alexandria, Optical Technology Study Program*, 2025).

The Egyptian Optometric Association was established in 1967 and has operated as the sole central body nationwide. It is the first optical association in the Middle East. It remains the only organisation responsible for the professional development of all opticians graduating from optical vocational colleges and institutes (*Egyptian Optometric Association*, 2025). As of 2025, a total of 105 Certified Optical Centres are registered under the association across 20 different cities. The association carries out activities to protect and advance the profession, including: Establishing a centre or complex for optometrists, including an administrative building, a private hospital, and a lecture hall for seminars and events; Establishing vocational training centres focused on vocational trades; Establishment of medical clinics; Providing healthcare services such as health insurance and others for members and their families; Continuous optical development and training to raise the efficiency of optometrists and elevate the professional and scientific level. In addition, the

association organises: Holding cultural, scientific, and religious seminars and lectures Facilitating Hajj and Umrah trips for members (*Association Activities at Egyptian Optician Association, 2025*).

#### 3.2.4.4. Morocco Example

In Morocco, opticianry education is provided through both state university faculties and private higher schools and institutes. All institutions are under the supervision of the Ministry of Higher Education, Scientific Research and Innovation (Ministère de l'Enseignement Supérieur, de la Recherche Scientifique et de l'Innovation). Since 2011, programs have been accredited according to the evaluation system of the Moroccan Ministry of Education. In higher institutes, education is delivered at a theoretical level by leading professors from prominent universities or experienced opticians and optometrists with significant professional experience. Programs are offered under the faculties of Health Sciences or Faculty of Sciences with names such as “Optique”, “Optique-Photonique et Optométrie”, “d'Optique & Optométrie” or “Opticien Optométriste”. These are 3-year bachelor's degree programs leading to a diploma in optics and optometry. The primary aim is to train opticians and optometrists who can act as intermediaries between ophthalmologists and patients. The objectives of the optics and optometry training program are to enhance the competencies of Moroccan opticians in the field of optometry and their skills in contact optics, to bring them up to the required international standards, to provide Moroccan opticians with higher education opportunities in optometry, contact lenses, and eyewear, and to contribute to the establishment of a standard comparable to those in countries with extensive experience in the optical field (*L'Institut Supérieur Maghrébin d'Optique et d'Optométrie et La Formation d'optique, 2025*).

At the bachelor's level, graduation requires the completion of 180 ECTS credits, corresponding to approximately 60 ECTS per year. The curriculum includes courses such as optical sciences (physical and geometric optics), visual physiology, anatomical sciences, contactology, introduction to pathology, and practical opticianry (lunetterie) (*OPTIQUE Structure de La Formation, 2025*). In addition, the program includes periodic mandatory seminars involving visits to factories that manufacture and surface eyeglasses and contact lenses, showroom visits, product exhibitions, optical equipment and materials demonstrations, participation in forums, discussions on the practice and future of the profession, etc. (*L'Institut Supérieur Maghrébin d'Optique Votre Programme d'études, 2025*). In the final year of study, specifically in the last semester (Semestre 6), a long-term internship course is included as part of the curriculum to allow students to develop their clinical and commercial skills in opticianry stores, eye clinics, or optical laboratories. There is also a mandatory final project or internship report presented in the form of a thesis (Rapport de Stage). In this project, the student conducts in-depth research on a chosen topic, presents the results in a report (thesis), and usually defends it orally in front of a jury. Courses are generally taught in French and/or English/Spanish/Arabic/English. Since French is

usually the main language of instruction, proficiency in French is required (*Optique, Photonique et Optométrie Université Mohammed V*, 2025). Students who meet these requirements are awarded the Professional Bachelor's Degree in Optique et Optométrie and can apply to the relevant authorities for a work permit to practice as an Opticien-Lunetier (Optician-Eyewear Specialist) in Morocco (*OPTIQUE Université Internationale de Casablanca*, 2025).

The accreditation and official recognition of a university program (especially Professional Bachelor's programs) is primarily carried out by the Moroccan Ministry of Higher Education and Scientific Research (Ministère de l'Enseignement Supérieur, de la Recherche Scientifique et de l'Innovation).

The Moroccan Professional Union of Opticians (Union Professionnelle Des Opticiens Du Maroc) is one of the most important organizations representing the opticianry profession in Morocco. It aims to develop professional ethics and standards, promote collaboration among colleagues, and support the alignment of training programs with professional needs. It organizes internships and employment placements for student/graduate opticians and arranges scientific training courses to expand opticians' knowledge (*L'Union Professionnelle Des Opticiens Du Maroc - a Propos*, 2025).

### 3.2.5. Opticianry in APAC countries (Asia-Pacific countries)

Within the scope of the APAC region, the curricula of opticianry education in Japan, South Korea, Australia, and New Zealand have been examined in the study. The best university in Oceania ranked based on their research performance in Optometry and Vision Sciences is the University of Melbourne in Australia, ranked 4th in the world, followed by the University of New South Wales in Australia, ranked 5th in the world (EduRank, 2025). The best university in the Asia ranked based on their research performance in Optometry is National University of Singapore, 8th in the World (EduRank, 2025).

#### 3.2.5.1. Japan Example

In Japan, opticianry education is provided in vocational colleges (professional training colleges / senmon gakkō) through 2- or 3-year programs, upon completion of which graduates receive a “Eyeglass Manufacturing Technician” diploma. Unlike in many other countries, these programs are not offered under faculties of Medicine or Health Sciences; they are delivered exclusively in specialized vocational colleges focused solely on this field, with 149 credits for the 2-year program or 155 credits for the 3-year program. Graduates who complete the training must take national qualification examinations to be allowed to practice the profession. In addition to coursework, they are required to complete internships in companies and a graduation project. The internship course accounts for 14 credits in the 2-year program and 16 credits in the 3-year program. The graduation project is worth 10 credits in both the 2-year and 3-year programs (*Tokyo Optisyen Koleji Okul Bilgi Broşürü - School Brochure (PDF)*, 2025). In addition to the diploma awarded

by the schools, a national certification system managed by the Ministry of Health, Labour and Welfare provides the “Eyeglass Technician Certificate.” This system tests the skills and knowledge required to correctly manufacture eyeglasses, including refraction measurement, lens processing, and frame fitting, and awards first-class and second-class qualification certificates to those who pass the examination. The purpose of this system is to train technicians who can work alongside ophthalmologists to provide the public with better eyeglasses and help protect eye health (*What is a Certified Eyeglass Technician | Tokyo Optical College, 2025*).

In Japan, there is the Japan Contact Lens Society, chaired by the organization under presidential leadership. The Japan Contact Lens Society organizes academic meetings and annual conferences, establishes working groups, workshops, and other events, and publishes a journal to support members’ research, promote correct advancements in contact lenses, and encourage their widespread and proper use (*Japan Contact Lens Society About, 2025*). The national qualification test for opticians is conducted under Article 47, Paragraph 1 of the Act on Promotion of Human Resources Development. The Japan Optician Technicians Association (JOTA) was designated by the Minister of Health, Labour and Welfare on August 13, 2021, as one of the organizations authorized to administer the skill test for the eyeglass manufacturing profession. The national certification for optician technicians covers tasks such as vision testing, lens processing, and frame fitting. Certification consists of both written and practical examinations. Those who pass both receive the title of “Eyeglass Manufacturing Technician.” There are two levels: 1st Class and 2nd Class (*Optisyen Teknisyenleri İçin Ulusal Sertifikasyon - Eyeglass Fabrication Skill Certification - Official Website, 2025*).

### 3.2.5.2. South Korea Example

In South Korea, opticians are trained either through bachelor's degree programs named Visual Optics under the Faculty of Health Sciences or through 2-year associate degree programs in Optometry under the School of Natural Sciences. The Department of Optometry aims to produce professional vision care specialists who possess all the skills required of optometrists in clinical centers, optical shops, and ophthalmic optic companies. The department teaches ocular optics, binocular vision, contact lenses, eye refraction, ocular anatomy and physiology, eye diseases, dispensing, and optometry. Students acquire the techniques and knowledge necessary to provide prescriptions, glasses, and contact lenses (*Baekseok Culture University Department of Optometry, 2025*). To graduate from the bachelor's program, students must complete a total of 120 credits. After completing all courses, they must pass a graduation examination. The most challenging requirement is the Graduation Certification System implemented by the program. Students must meet evaluation criteria that include both Mandatory Specialized Competencies and Creativity (Broad Competencies) skills.

Under Mandatory Specialized Competencies, students must fulfill practical requirements such as workplace internships (field practice) and laboratory applications as determined by the department. For Creativity skills, students are expected to select and demonstrate proficiency in only one of the following: obtaining a Computer Usage Skills certificate, achieving a foreign language proficiency score at the level specified by the university (e.g., TOEIC, TOEFL for English), completing social service/volunteer activities for the required hours and standards, participating in leadership programs, or proving entrepreneurial achievement or business establishment capability (*Kyungdong University Graduation Requirements, 2025*).

The opticianry curriculum in South Korea provides future professionals with specialized and practical skills by offering courses in eye and eyeglass optometry, refraction and binocular vision testing, eyeglass manufacturing, optical science, contact lenses, and more. In addition to education in optical instruments, visual optics, and advanced optical topics, students also acquire entrepreneurship and management skills as well as practical eyeglass dispensing competencies. Through this curriculum, graduates become qualified to work in relevant fields such as eye hospitals, optical clinics, and optical companies dealing with contact lenses and eyeglass materials. Graduates can find employment in international eye hospitals and optical clinics, international contact lens companies, eyeglass material and optics-related companies, research institutes, and international graduate schools.

Graduates of the Optometry Department, unlike opticianry graduates, obtain an optometrist license that allows them to work independently without supervision by a specialist. This license opens various employment opportunities in ophthalmology hospitals, optical stores, and ophthalmic optic companies. The Optometry License is one of the few licenses without a mandatory retirement age, providing students with stable employment potential up to 100 years of age along with global competencies and technical capabilities (*Far East University Department of Visual Optics, 2025*). The curriculum aims to train opticians who will serve the eye health of society, to educate professional technicians knowledgeable in the fundamental principles and concepts of optics and visual science, and to develop advanced craftsmen who can creatively and proactively realize themselves in their industries.

Depending on the program type, graduates obtain an Optometrist License, Optical Technician Certificate, or IACLE Certificate. According to the 2025 curriculum, the total credits required for graduation amount to 90 credits, distributed as 24 credits of Mandatory Specialized Courses and 66 credits of Elective Specialized Courses. There are also mandatory workplace practice and practical laboratory courses.

In the first semester of the third year, there is a mandatory course called Mandatory Specialized Field Practice (internship). In the second semester of the third year, there is another internship course titled Eyeglass Preparation and Processing Apprenticeship. The Capstone Design (graduation project) and Contact

Lens Science Capstone Design courses are worth 2 credits each and are mandatory (*Far East University Optometry Curriculam, 2025*).

In South Korea, there is no domestic institution or organization that provides accreditation for opticianry (ophthalmic optics/vision science) programs.

### 3.2.5.3. Australia Example

In Australia, there are 18 different universities and institutions offering accredited opticianry and optometry programs. Education in the health sector, which is highly valued and rigorously monitored in Australia, is conducted at bachelor's, master's, and doctoral levels under names such as Certificate in Ocular Therapeutics, Vision Science & Master of Optometry, Doctor of Optometry, and Professional Credential in Ocular Therapeutics (*AHPRA-Approved Programs of Study, 2025*). At the bachelor's level, the 3-year "Optometry and Vision Sciences" program provides foundational education in optics, visual and biomedical sciences combined with clinical decision-making and patient care skills. At the master's level, the 2-year Master of Clinical Optometry program does not carry professional accreditation and is not a pathway to professional registration as an optometrist. To become a registered optometrist, students must, after completing the bachelor's degree, enroll in 4-year doctoral-level Doctor of Optometry programs. This program equips students with the following skills: Enhance the skills and knowledge of the student in all aspects of vision care; Enable the student to examine patients alongside eyecare practitioners in Australia and overseas in a variety of settings; Enable the student to receive constructive feedback and analysis regarding patient care and optometric knowledge with regard to the consultation, Introduce students to the business aspects of managing a practice (*Department of Optometry and Vision Sciences, 2025*).

An entry to practice degree for registration as an optometrist in Australia and New Zealand is 3 years at Bachelor degree. Students must complete 400 credit points over the 4-year program. These 400 points of credit are accumulated from a compulsory series of six core subjects totalling 100 points per year. 75 credits Integrated Ophthalmic Sciences, 25 credits Preclinical Optometry, 75 credits Applied Clinical Training, 25 credits Research Studies in Vision and Optometry, 100 credits Clinical Optometry Practice, 100 credits Optometry Internship (*The University of Melbourne Optometry & Vision Sciences, 2025*).

AHPRA (Australian Health Practitioner Regulation Agency) is the institution that administratively manages the National Registration and Accreditation Scheme for 16 health professions, including optometry, in Australia. It handles registration processes, complaint management, and operational procedures. The Optometry Board of Australia (national board) is an independent regulatory body supported by AHPRA that sets the standards for the optometry profession. The responsibilities of the Optometry Board of Australia include registering optometrists and students, developing standards, codes, and guidelines for the optometry profession, handling notifications, complaints, investigations, and disciplinary hearings, overseeing the

assessment of overseas-trained practitioners seeking to work in Australia, and approving accreditation standards and accredited programs of study (*Optometry Board of Australia - About, 2025*).

The Optometry Board of Australia establishes the standards, while AHPRA implements and manages the registration process in accordance with those standards. Optometrists must meet the Board's standards to be eligible for registration. In Australia, the Optometry Council of Australia and New Zealand (OCANZ) evaluates and accredits optometry programs against the Optometry Professional Competency Standards (*OCANZ Accreditation, 2025*). It is the body authorized to assess and accredit educational programs to ensure they meet the standards set by the Optometry Board of Australia. It oversees university optometry programs to guarantee that graduates possess the competencies required by the National Board and evaluates whether qualifications obtained overseas by opticians/optometrists are equivalent to Australian standards. Once accreditation is granted by OCANZ, the decision must be approved by both the Optometry Board of Australia (OptomBA) and the Optometrists and Dispensing Opticians Board New Zealand (ODOB) before the program becomes an approved program of study for registration purposes in Australia and New Zealand (*OCANZ Accreditation, 2025*).

Optometry Australia is a federated, not-for-profit organization in which all profits are reinvested into services for its members (*Optometry Australia, 2025*). The organization encourages and monitors the ongoing professional development of optometrists throughout their careers. To maintain active registration with the organization, optometrists must earn Continuing Professional Development (CPD) points. This requirement is not mandatory at initial registration but becomes compulsory upon renewal after the first year, and points must be earned annually. CPD is the process by which practitioners maintain, develop, and extend their knowledge, expertise, and competence throughout their professional lives, while also enhancing their personal and professional qualities. This registration standard sets out the Optometry Board of Australia's (the Board) minimum requirements for continuing professional development (CPD) for optometrists. This standard applies to all registered optometrists except those with student or non-practising registration. To meet this standard, you must (1) complete at least 20 hours of CPD each year, (2) complete within the previous three registration periods, training in cardiopulmonary resuscitation (CPR) provided by or through an approved training provider, and (3) maintain a portfolio of your learning goals, your planned CPD activities and your reflection on how these CPD activities are expected to improve or have improved your practice (*Continuing Professional Development, 2025*).

#### 3.2.5.4. New Zealand Example

In New Zealand, professional optometry training is delivered through the Bachelor of Optometry (BOptom) program within the Faculty of Medical and Health Sciences. This five-year undergraduate degree comprises 600 credits and stands as the country's sole BOptom program, making it one of only eight Australasian

degrees accredited by the Optometry Council of Australia and New Zealand. The curriculum follows a progressive structure. The first year focuses primarily on foundational biomedical sciences. The second and third years introduce a combination of core courses in applicable life sciences, vision and optometric sciences, ocular anatomy, disease mechanisms, and general optometric practice. In the fourth and fifth years, the coursework advances to specialized areas such as contact lenses, pediatric optometry, binocular vision, and ocular therapeutics. To fulfill graduation requirements, students must complete advanced clinical optometry courses, undertake a research project, and gain practical experience by examining and treating patients in public clinics and external clinical placements. (*Bachelor of Optometry – University of Auckland, 2025*). Applicants to the BOptom program are required to complete Multiple Mini Interviews (MMIs). The MMI is a specialized assessment designed to evaluate the non-academic attributes and interpersonal skills of candidates aspiring to careers in the healthcare sector. Specifically, this interview process measures core competencies such as oral English fluency, exceptional communication skills, the ability to lead and contribute positively within groups, and a comprehensive awareness of the professional responsibilities inherent in the healthcare industry. (*Multiple Mini Interviews, 2025*).

The ODOB (Optometrists and Dispensing Opticians Board) is the official regulatory body for Optometrists and Dispensing Opticians in New Zealand. Its primary responsibilities include:

(a) Setting Clinical Competence Standards, Cultural Competence and Cultural Safety standards, and Standards of Ethical Conduct.

The clinical competence standards for dispensing opticians represent the entry-level competency requirements for those practicing as dispensing opticians in Aotearoa New Zealand. These include skills such as interpreting and issuing prescriptions, maintaining records, communicating effectively with patients, managing an optical practice, and performing delegated tasks under the supervision of a registered optometrist or ophthalmologist.

Cultural competence relates to understanding and effectively communicating with people from diverse cultures. Cultural safety requires practitioners to be aware of how their own views and biases may influence the care they provide to patients. In Aotearoa New Zealand, cultural safety is particularly important in supporting Māori health equity. The Standards of Ethical Conduct set clear expectations for how optometrists and dispensing opticians should behave towards individuals, families, whānau, and communities during their professional work. This includes respecting individual dignity and autonomy, working safely and effectively, and advocating for fair and improved eye health services for vulnerable groups.

(b) Determining the qualifications required for the professions.

Authorizing the registration of optometrists and dispensing opticians and maintaining professional registers. Assessing applications for the Annual Practicing Certificate (APC), which must be renewed annually by practitioners. Evaluating the qualifications of graduates from institutions outside New Zealand and Australia. Accrediting and monitoring educational institutions and programmes in the professions. Establishing, recognizing, and accrediting programmes to ensure the ongoing competence of optometrists and dispensing opticians (*ODOB Standards & Guidelines*, 2025).

### 3.3. Comparison of Curricula by Region and Key Differences

In this study, the conditions for obtaining an opticianry licence on a global scale, the competencies provided by graduation, whether opticianry education is accredited, the contents and credits of curricula, educational structures, legal regulations, and graduation competencies have been examined with respect to optician training. Differences and commonalities among education systems in countries around the world, including Türkiye, have been compared using these parameters. This section focuses solely on the curriculum dimension among the examined parameters. General differences in Opticianry programme curricula by region include variations in the following dimensions:

Programme names, Duration of education, Total ECTS credits required for graduation, Compulsory status of practical skill-based courses (laboratory applications and workplace placements/internships), Final examination / thesis / graduation project requirements, Requirement for a competency/proficiency examination after completing mandatory ECTS credits, Other compulsory skill-based examinations, Course contents and course names. These dimensions are presented in table format below:

**Table 1:** Table of Program Names, Duration of Study, and Total ECTS by Region

Region	Program Name	Duration of Education	Total ECTS
USA	Vision Care Technician/Opticianry”, “Ophthalmic Eyecare Technician”, “Laboratory Eyecare Technician	2 Years	ECTS system not applied
Canada	Optician, Opticianry, Dispensing Optician, Eyeglasses, Contact Lenses, Refraction Technologies, Optometry	1-3 Years	ECTS system not applied.
Europe	Optics, Optometry, Professionnelle d’Optique, Master of Optometry, Óptica-Optometría	3-4 Years	149-155 ECTS
APAC	Visual Optics, Optometry, Ocular Therapeutics, Vision Science & Master of Optometry, Doctor of Optometry, Professional Credential in Ocular Therapeutics	2-5 Years	240 - 300+ ECTS
MENA	Optometry, Optometry and Vision Science, Optique, Optique-Photonique et Optométrie, d’Optique & Optométrie, Opticien Optométriste	2-3 Years	32-180 ECTS
Türkiye	Optisyenlik	2 Years	120 ECTS

**Table 2:** Graduation Requirements by Region – Workplace Placement (Internship), Final/Thesis/Graduation Project, Competency/Proficiency Examination, and Other Compulsory Examinations

<b>Region</b>	<b>Workplace Placement (Internship)</b>	<b>Final / Thesis / Graduation Project</b>	<b>Competency / Proficiency Examination (after mandatory credits)</b>	<b>Other Compulsory Examinations / Skill Tests</b>
USA	Yes	No	The American Board of Opticianry & National Contact Lens Examiners (ABO & NCLE) exams	Practical skills exams (e.g., hands-on lens fitting, dispensing) in many states
Canada	60 Weeks Internship	No	National Optical Sciences Examination conducted by NACOR (National Alliance of Canadian Opticians Regulators)	Jurisprudence exam (tests the legal and ethical aspects of the opticianry profession)
Europe	Yes	Dissertation	ABDO (Association of British Dispensing Opticians) qualifying examinations (in the UK); varies by country	Clinical skills assessments, OSCE-style exams in some countries
APAC	Yes	No	National competency test conducted by Japan Optician Technicians Association (JOTA); varies by country	Computer literacy certificate, required foreign language proficiency score (e.g., TOEIC, TOEFL for English), completion of specified hours/standards of social service/volunteering or leadership programmes, proof of entrepreneurship achievement or business establishment competency, Multiple Mini Interviews (MMI)
MENA	Yes	Compulsory Final Thesis/ Rapport de Stage	No	In Israel: Jewish Studies courses; in others: none
Türkiye	Yes	No	No	No

**Table 3:** Table of Sample Curricula by Region

<b>Accredited Curriculum (Credit)</b>					
<b>EUROPEAN</b>	<b>USA</b>	<b>CANADA</b>	<b>APAC Countries</b>	<b>MENA Countries</b>	<b>TÜRKİYE</b>
Geometrical Optics (6 ects)	Anatomy And Physiology of the Eye (3 ects)	Dispensing Optician Theory I-II	Molecules, Cells and Genes (6 ects)	Human Anatomy (3 ects)	Anatomy And Physiology of The Eye (2 ects)
Physical Optics (4 ects)	Contact Lens Clinic I-II (3 ects)	Dispensing Optician Lab Skills I-II	Mathematics for Life Sciences (6 ects)	Physical Chemistry	Introduction To Opticianry (4 ects)
Visual Optics (2 ects)	Contact Lens Theory-Lab (3 ects)	Interpersonal Skills for the Workplace	Seeing the World: Perspectives from Vision Science (6 ects)	Biomedical Physics (3 ects)	Opticianry I-II (5 ects)
Optical Appliances (12 ects)	Eyewear Fabrication I -II- Lab (3 ects)	Ocular Science for Contact Lenses I-II	Chemistry 1A: Atoms, Molecules and Energy (6 ects)	Medical Terminology (1 ects)	Opticianry Practices I-II (5 ects)
Occupational Optics (2 ects)	Ophthalmic Dispensing Lab-Clinic- I-II (3 ects)	Dispensing Optician Clinical Practice I-II	Geometrical and Physical Optics	Basic Microbiology (3 ects)	Basic Physics I-II (4 ects)
Methods of Ocular Examinations (3 ects)	Ophthalmic Dispensing Practicum I-II (2 ects)	Applied Optics I-II	Fundamentals of Physics	Ocular Anatomy and Physiology (3 ects)	Project (3 ects)
Refractive error (4 ects)	Ophthalmic Lenses (2 ects)	Dispensing Optician Eyeglass Preceptorship	Biological Chemistry for Optometry Students (6 ects)	Geometrical, Physical and Visual optics (3 ects)	Physics And Geometric Optics I-II (3 ects)
Contact Lenses (4 ects)	Ophthalmic Lenses Lab (2 ects)	Theory in Contact Lenses & Optical Technologies I-II	Visual Optics (6 ects)	Optics Introduction (2 ects)	Financial Accounting (3 ects)

Ocular conditions and emergencies (4 ects)	Ophthalmic Management Policy and Procedures (2 ects)	Laboratory in Contact Lenses & Optical Technologies I-II	Introductory Anatomy (6 ects)	Introduction to Optometry (3 ects)	General Chemistry (3 ects)
Business management (10 ects)	Orientation To Vision Care (2 ects)	Ocular Science for Refraction and Low Vision	Physiology (6 ects)	Optometry instruments (3 ects)	Contact Lenses (3 ects)
Communication (3 ects)	Orientation To Vision Care Clinic (3 ects)	Clinical in Contact Lenses & Optical Technologies I-II-III	Optical Dispensing (6 ects)	Clinical Methods I-II (3 ects)	Optical Devices And Materials Knowledge (3 ects)
Professional Conduct (3 ects)	Physical And Geometric Optics (3 ects)	Ethics and Professional Standards of Practice for Opticianry	Ocular Anatomy and Physiology (6 ects)	Visual Science 1 (2 ects)	Eye Diseases I-II (3 ects)
Chemistry Of Materials for Optics (9 ects)	Physical And Geometric Optics Lab (1 ects)	Eyeglass Dispensing, Fabrication and Customization Lab I-II	The Clinical Environment	Ophthalmic Optics I (2 ects)	Turkish Language I-II (2 ects)
Laboratory Of Optics I-II (6 ects)	Refractometry (3 ects)		Organisation and Function of the Visual System (6 ects)	Application of Laser in medicine (3 ects)	Summer Internship (6 ects)
Geometrical Optics (12 ects)	Refractometry Lab (3 ects)		Disease Processes of the Eye I-II	Contact Lenses I-II (3 ects)	English I-II (2 ects)

English (3 ects)	Vision Care Clinic I-II (3 ects)	Ocular Imaging & Applied Vision Science (6 ects)	Digital Optics Technology (2 ects)	Ataturk's Principles and History Of Turkish Revolution (2 ects)
Informatics (6 ects)	Mathematical Thinking or College Algebra or Corequisite College Algebra (3 ects)	Development and Aging of the Visual System (6 ects)	Ocular Diseases (3 ects)	Opticianry Business (3 ects)
Physics I-II (9 ects)	Composition (3 ects)	Vision Science in the Consulting Room (6 ects)	Advanced Optometric Techniques (3 ects)	Visual Optics and Refraction (3 ects)
Optometry With Laboratory I-II-III (6 ects)	Computer And Internet Literacy (3 ects)	Pharmacology for Optometry (6 ects)	Binocular Vision& its Anomalies (2 ects)	Customer Relationship Management (3 ects)
Mathematic I-II (6 ects)	General Biology for Non-Majors (3 ects)	Working in Clinical Contexts (6 ects)	Optometric Practice I-II (3 ects)	Packaged Software Practices In Opticianry (3ects)
Mathematical Methods for Optics (6 ects)	History Of the United States To 1877 (3 ects)		Low Vision (2 ects)	Professional Ethics (3 ects)
Ocular Medicine (9 ects)			Graduation Project I-II (4 ects)	Basic First Aid (3 ects)
General Biomedicine (12 ects)			Geriatric Optometry techniques (2 ects)	Entrepreneurship And Innovation (3 ects)
Specialization In Contact Lenses with Laboratory (12 ects)			Endoscopic Optics and Lighting (2 ects) (Elective Courses)	Presentation Techniques In Opticianry (3 ects)

Physical Optics (6 ects)				First Aid for health care providers (2 ects) (Elective Courses)	Anatomy And Physiology (3 ects)
Optics For Vision (6 ects)				Optical Mirrors and their applications (2 ects) (Elective Courses)	Mathematics (3 ects)
Final Examination (3 ects)				Principles of Marketing	Medical Terminology (3 ects)
Training (9 ects)				Entrepreneurs (2 ects) (Elective Courses)	
				Environmental Health (2 ects) (Elective Courses)	
Ref: ( <i>European Qualifications in Optics   ECOO, 2025</i> ) ( <i>Study Plans Optics and Optometry Università Di Firenze, 2025</i> )	Ref: ( <i>Vision Care Technology/Optician ry, Associate of Science   Broward College, 2025</i> )	Ref: ( <i>The Eye Care Field as an Optician - Georgian College, 2025</i> )	Ref: ( <i>Undergraduate Course Information   School of Optometry and Vision Science - UNSW Sydney, 2025</i> )	Ref:( <i>Pharos University in Alexandria, Optical Technology Study Program, 2025</i> )	Ref: ( <i>SBU Sağlık Hizmetleri Meslek Yüksekokulu Optisyenlik, 2025</i> )

---

#### **4. DISCUSSION**

The research comparatively examined the global educational and regulatory paradigms of the opticianry profession and revealed that the definition of the profession exhibits certain structural differences across regions. The findings indicate distinctions in the definitions of the profession, programme naming conventions, scopes of duties, authorities and responsibilities, quality assurance processes in education, graduate competencies, duration of training, credit requirements, and the position of the profession within the respective country's healthcare system.

In particular, the differences between the long-duration, clinically focused programmes in the USA, Canada, and APAC; the 180 ECTS-based Optometry bachelor's structures common in Europe; and Türkiye's 2-year associate degree model demonstrate that the scope of authority and educational level of opticianry in Türkiye lags behind global Optometry standards.

In this context, the fact that all examined countries (including Türkiye and Japan) impose a national competency examination or mandatory supervised practice (internship) as a condition for practising the profession after graduation confirms a global common ground aimed at protecting public health and ensuring professional discipline.

In this section of the research, the critical implications of these structural differences between regions for the future of the profession and potential improvements in Türkiye will be discussed.

In Türkiye, both the opticianry profession and ophthalmology play roles in improving public eye health. The duties of the opticianry profession have been defined and delimited by regulation. However, as is the case in Europe, the USA, and Canada, the task definitions, authorities, and scopes of practice for the professions involved in eye health services—ophthalmology, optometry, and opticianry—should be reorganized and redefined. For this reason, a revision of the Opticianry Law is also needed.

In Türkiye, opticianry businesses are legally prohibited from performing eye examinations or any other activities beyond their defined scope. Even when tax obligations differ, ophthalmologists and eye disease specialists cannot open businesses in premises that share the same entrance door or have internal connections. Opticianry businesses are not permitted to be established within healthcare institutions or facilities buildings.

In other regions, it is observed that ophthalmologists, optometrists, and opticians work collaboratively within the same clinics, which reduces the workload of eye doctors and enables significantly faster delivery of vision care and treatments. Implementing a similar model in Türkiye—allowing ophthalmologists specialized in eye examinations and authorized to issue prescriptions (excluding those performing eye surgeries) to collaborate with opticians in the same facility—would both alleviate the workload of specialist eye doctors and provide the public with faster and more reliable healthcare services.

From a public health perspective, specific provisions within the Opticianry Establishment Laws carry paramount importance. These regulations strictly prohibit any contact lens applications within optical premises and mandate that each store secures an operational license from the provincial health authority. Furthermore, to ensure strict oversight, the law requires a dedicated responsible manager for every establishment, explicitly forbidding a single manager from operating multiple branches or working in more than one location simultaneously. In their research, Durmuş states that despite the increasing interest in opticianry programmes each year, there was a decline in placement rates during the pandemic period (Durmuş, 2023). They attribute the rise in the number of students who were placed in opticianry programmes but did not register to the impact of distance education processes. The nature of the opticianry programme inherently requires practical skill-based training, including laboratory applications and workplace placements (internships). In the event of potential future distance education processes, solutions should be developed to increase student motivation, enhance engagement with the courses, improve the effectiveness and efficiency of instruction, and enable remote applicability. The advantages of innovative technologies that are trending in our era—such as artificial intelligence tools, virtual reality, augmented reality, and gamification—should be utilized.

In the 2025–2026 academic year, opticianry programmes are offered at 178 universities across Türkiye. Approximately 3,000 opticians graduate each year; however, the total number of actively practicing opticians is only around 8,500. According to 2025 TÜİK data, the average time for opticianry graduates to find employment in the sector is 9.4 months (*TÜİK Yükseköğretim İstihdam Göstergeleri*, 2025). This situation demonstrates that the rapid increase in the number of graduates is making employment in the sector more difficult (*Optisyenin Sesi, Mezun Artışı ve Sektörel Denge Sorunu*, 2025).

The number of opticianry establishments providing services for the protection and improvement of vision health in Türkiye is increasing every year. As of 2025, there are 8,463 licensed optical establishments nationwide. Despite this increase, the rapid rise in the number of graduates is exacerbating unemployment in the sector (*Optisyenin Sesi, Mezun Artışı ve Sektörel Denge Sorunu*, 2025). At this point, the training of opticians should be made more qualified, and their competencies should be enhanced. Improvements should be made to the opticianry education system in line with other regions of the world. In addition to workplace experience, graduation requirements should include a graduation project, a competency/proficiency examination, and other compulsory examinations aimed at developing non-field-specific skills. Optometry programmes at the bachelor's level should be introduced, and all programmes should be accredited.

The absence of Optometry programmes in our country imposes an additional burden on social health services for the prescription of spectacles and contact lenses.

In their study, Sürücü (Sürücü, 2019) emphasized that ophthalmologists believe opticians should be allowed to use medical devices for measurement and control of the eye and vision health—excluding surgical and

medical interventions—and that they wish to collaborate with opticians in the processes of protecting patients' eye health.

It is argued that planning and managing the optometry profession in Türkiye in a similar way to Europe would increase the demand for labour among opticians. Due to the low number of ophthalmologists per capita in Türkiye, introducing the optometry profession would reduce the patient load on ophthalmologists and accelerate the diagnosis and treatment process. The accompanying rise in the rates of spectacle and contact lens use would increase the need for opticians and create the necessary job demand.

A study conducted at a training and research hospital found that an ophthalmologist spends approximately 70% of their working hours on correcting refractive errors and issuing prescriptions for spectacles/contact lenses. As a result, specialist ophthalmologists do not have sufficient time and energy to devote to operational treatments, research, academic publications, and educational activities (Sürücü, 2019).

It is observed that the problems identified in 2004 regarding opticianry education in Türkiye still persist in 2025. In their research, Bulut highlighted deficiencies in theoretical courses and emphasized that addressing these deficiencies to bring them up to international opticianry standards is important for achieving professional equivalence with EU countries once the free movement phase is reached (Bulut, 2004). They also drew attention to the need for optometry education to be included in university programmes and delivered at the four-year bachelor's degree level.

In Türkiye, the specialties dealing with eye diseases and their treatments, as well as eye and vision disorders, need to be separated as is the case worldwide. In developed countries, eye health is delivered through the harmonious collaboration of the trio consisting of ophthalmologists, optometrists, and opticians. To resolve this issue, the paramedical profession of optometry must be incorporated into university education programmes. The absence of optometry education constitutes a major obstacle to the development of the sector. Optometry education should be initiated as soon as possible (Bulut, 2004).

From the perspective of spectacle users, spectacles were initially preferred as a tool to improve vision quality without aesthetic concerns; however, in recent times, they have undergone a major transformation due to the fashion phenomenon. In addition to being an important health device, they have come to be regarded as an accessory with aesthetic value (Bulut, 2004). For this reason, the opticianry profession is not only part of the healthcare sector but also interacts with the fashion industry. The most fundamental element of the sector—spectacle use—is naturally shaped according to users' personal tastes and preferences as an accessory. At the same time, designs should be created in line with users' usage contexts and lifestyle habits. In this regard, when the compulsory course contents of opticianry programmes are examined, courses that develop knowledge and skills in areas such as “fashion”, “design”, “aesthetics”, “art”, and “technology” should also be added to the curriculum (Semercioğlu, 2022).

## **5. CONCLUSION**

This comparative research has revealed a fundamental bifurcation (branching) in the global education and regulatory models of the opticianry profession. In the USA, Canada, the United Kingdom, and APAC regions, education is advancing toward Optometry standards (at bachelor's or postgraduate level), focusing on primary eye health services, with programmes lasting 3 to 5 years and requiring high academic and clinical commitments.

In contrast, in countries such as Türkiye, Japan, and South Korea, education primarily emphasizes technical competency, prescription dispensing, and product management, with shorter durations or vocational school-based structures.

A common ground across all examined models is the mandatory enforcement of professional standardization and ethical oversight by a national body (such as TOGB in Türkiye, OCANZ in Australasia, or GOC in the UK). Furthermore, regardless of programme length, a global norm exists: practicing the profession requires either a national competency/proficiency examination or supervised internship following academic graduation.

In Türkiye, opticianry is delivered through a 2-year associate degree programme. Although it is defined as an integral part of the healthcare sector, its educational duration and academic level lag behind global Optometry standards.

Despite Türkiye's success in legal organization (the establishment of TOGB), a review of the curriculum and academic duration holds significant potential to strengthen the scope of authority and responsibilities of the opticianry profession, thereby maximizing its contribution to public health services.

## **CONFLICT OF INTEREST STATEMENT**

There is no conflict of interest among the authors.

## **ACKNOWLEDGEMENT**

Part of this research was supported by Kırklareli University Scientific Research Coordination Office with project number KLÜBAP-306. Part of this research was conducted using the facilities of Kırklareli University Advanced Technologies Application and Research Center (ITUAM).

## CONTRIBUTIONS OF AUTHORS

S.Ç.: Conceptualization, methodology, validation, formal analysis, investigation, resources, writing—original draft preparation.

M.M.K.: Investigation, resources, conceptualization, writing—review and editing.

## REFERENCES

- 28886 Sayılı Optisyenlik Müesseseleri Hakkında Yönetmelik. (2014).  
<https://www.resmigazete.gov.tr/eskiler/2014/01/20140118-5.htm>
- 30783 Sayılı Türk Optisyen-Gözlükçüler Birliği Yönetmeliği. (2019).  
<https://www.resmigazete.gov.tr/eskiler/2019/05/20190524-3.htm>
- 3958 sayılı Gözlükçülük Hakkında Kanun. (1940). <https://www.saglik.gov.tr/TR-10410/tarih-30121940--sayi-3958-gozlukculuk-hakkinda-kanun.html>
- 5193 Sayılı Optisyenlik Hakkında Kanun. (2004).  
<https://www.mevzuat.gov.tr/mevzuat?MevzuatNo=5193&MevzuatTur=1&MevzuatTertip=5>
- About ABO NCLE. (2025). <https://www.abo-ncle.org/ABONCLE/ABONCLE/About-ABO-and-NCLE/About-ABO-NCLE.aspx?hkey=1900618a-77ce-4ea6-9b93-fcd923925209>
- About COA – Commission on Opticianry Accreditation. (2025). <https://coaccreditation.com/about-coa/>
- About the ECOO Accreditation Agency | ECOO. (2025). <https://ecoo.info/ecoo-accreditation-agency/about-the-ecoo-accreditation-agency/>
- About the Examinations - NACOR. (2025). <https://nacor.ca/national-examination/about-the-examinations/>
- Accredited universities and Institutions | ECOO. (2025). <https://ecoo.info/ecoo-accreditation-agency/fully-and-partially-accredited-universities/>
- AHPRA-Approved Programs of Study. (2025). <https://www.ahpra.gov.au/Accreditation/Approved-Programs-of-Study.aspx?ref=Optometrist>
- Association activities at Egyptian Optician Association. (2025). <https://egyptianoptician.com/en/association-activities/>
- Ausbildung - Zentralverband der Augenoptiker und Optometristen. (2025). <https://www.zva.de/der-beruf/ausbildung/>
- Australian Health Practitioner Regulation Agency - What we do. (2025). <https://www.ahpra.gov.au/About-Ahpra/What-We-Do.aspx>
- Bachelor of Optometry – University of Auckland. (2025). <https://www.auckland.ac.nz/en/study/study-options/find-a-study-option/bachelor-of-optometry-boptom.html>
- Baekseok Culture University Department of Optometry. (2025). <https://www.bscu.ac.kr/eng/2692/subview.do>
- Bulut, M. (2004). Türkiye’de Gözlük Sektörü. <https://www.scribd.com/doc/6867225/Turkiye-de-Gozluk-Sektoru>
- Continuing professional development. (2025). <https://www.optometryboard.gov.au/Registration-Standards/CPD.aspx>
- Corso di Laurea Triennale in Ottica e Optometria. (2025). <https://www.ottica.unifi.it/p11.html>
- Cumhuriyet Üniversitesi Optisyenlik Programı Tanıtımı. (2025).  
<https://shmyo.cumhuriyet.edu.tr/program/633610354-optisyenlik>
- Department of Optometry and Vision Sciences. (2025). <https://mdhs.unimelb.edu.au/study/current-students/placements/org/department-of-optometry-and-vision-sciences>
- Directory of Accredited Programs – Commission on Opticianry Accreditation. (2025).  
<https://coaccreditation.com/directory-of-programs/>
- Discover Licensed Optician Programs in Ontario | Become an Optician Today. (2025). <https://www.ontario->

opticians.com/education

Doitsu Meister Gankyoin, *A challenge to become a State-certified Master Optician*. (2025). <https://meister-gankyoin.com/en/meister.html>

Durmuş, H. (2023). Türkiye’deki Optisyenlik Programlarının Tercih Edilme Durumu. *Sağlık Hizmetleri Araştırma Dergisi*, 1(1), 35–38. <http://hesjournal.cumhuriyet.edu.tr/pub/hes/issue/79081/1289955>

EduRank. (2025). *World’s 100+ best Optometry universities [2025 Rankings]*. <https://edurank.org/medicine/optometry/>

Ege Üniversitesi Optisyenlik Programı Tanıtımı. (2025). <https://egeatasaglik.ege.edu.tr/tr-4938/optisyenlik.html>

Egyptian Optometric Association. (2025). <https://egyptianoptician.com/en/about-us/>

European Council of Optometry and Optics. *Blue Book 2020. Trends in optics and optometry - comparative European data*. (2025). <https://ecoo.info/ecoo-blue-book/>

European Qualifications in Optics | ECOO. (2025). <https://ecoo.info/ecoo-accreditation-agency/european-qualifications-in-optics/>

Fahmy, P., & Lindegaard, J. (2023). Er patientsikkerheden i orden, når optikere med ny teknologi undersøger for sygdomme? *Ugeskrift for Læger*, 185(48). <https://pubmed.ncbi.nlm.nih.gov/38018733/>

Far East University Optometry Curriculam. (2025). <https://www.kdu.ac.kr/optics/sub.do?mncd=518&mode=view&no=492787735>

Far East Univerty Department of Visual Optics. (2025). <https://www.kdu.ac.kr/optics/sub.do?mncd=515>

Fassbender, U. (2025). Academic versus vocational education: A comparison of curricula for Dispensing Opticians in the UK and Germany. *Research in Comparative and International Education*, 20(2), 190–216. [https://doi.org/10.1177/17454999251327550/ASSET/7871A2A6-786C-48D8-9540-4106A055F35D/ASSETS/IMAGES/LARGE/10.1177\\_17454999251327550-FIG3.JPG](https://doi.org/10.1177/17454999251327550/ASSET/7871A2A6-786C-48D8-9540-4106A055F35D/ASSETS/IMAGES/LARGE/10.1177_17454999251327550-FIG3.JPG)

FNOF : Fédération Nationale des Opticiens de France. (2025). <https://fnof.org/>

Frederiksen, I. N., Muttuvelu, D. V., Subhi, Y., & Rasmussen, M. L. R. (2025). Components of eye health checks provided by optician retail stores in Denmark. *Danish Medical Journal*, 72(1). <https://doi.org/10.61409/A05240301>

General Optical Council. (2023). *International comparisons on refraction services with the sight test model in the UK*. <https://optical.org/asset/3FA48112-2001-4FF9-88B0C913D265F149/>

GOC Education and training requirements. (2025). <https://optical.org/education/for-education-providers/education-and-training-requirements.html>

Goldsmith & Harvey Opticians, *A historical journey through vision care*. (2025). <https://goldsmithandharveyopticians.co.uk/when-did-opticians-start/>

Grado en Óptica y Optometría. (2025). <https://www.ucm.es/opticayoptometria-1/presentacion1>

How To Become An Optician. (2025). <https://opticians.ca/Web/Web/Public/HowToBecomeAnOptician.aspx?hkey=2bc22b17-f1c9-4109-a5a4-a271f163303d>

İstanbul Sağlık ve Sosyal Bilimler Meslek Yüksekokulu Optisyenlik Programı. (2025). <https://www.issb.edu.tr/kampuslerimiz/istanbul-kampus/optisyenlik>

Japan Contact Lens Society About. (2025). [http://www.clgakkai.jp/eng/about\\_us/greeting.html](http://www.clgakkai.jp/eng/about_us/greeting.html)

Kyungdong University Graduation Requirements. (2025). <https://www.kduniv.ac.kr/opt/CMS/Contents/Contents.do?mCode=MN051>

L’Institut Supérieur Maghrébin d’Optique et d’Optométrie et la formation d’optique. (2025). <http://www.ismoosarl.ma/ismoo-et-la-formation-doptique/>

L’Institut Supérieur Maghrébin d’Optique Votre programme d’études. (2025). <http://www.ismoosarl.ma/votre-programme-detudes/>

- L'Union Professionnelle des Opticiens du Maroc - a propos.* (2025). <https://upo.ma/a-propos/>
- Licence et Bachelors en optique - Licence et Bachelors en optique.* (2025). <https://www.iso.fr/formations-opticien-iso/licence-et-bachelors-en-optique/>
- Multiple Mini Interviews.* (2025). <https://www.auckland.ac.nz/en/fmhs/study-with-us/application-and-admission/mmi.html>
- NHSScotland Careers, How to become a dispensing optician.* (2025). <https://www.careers.nhs.scot/explore-careers/optometry/dispensing-optician/>
- OANZ Accreditation.* (2025). <https://www.oanz.org/accreditation/programs-of-study/>
- ODOB Standards & Guidelines.* (2025). <https://www.odob.health.nz/site/standards-guidelines>
- Opticianry | ontariocolleges.ca.* (2025). <https://www.ontariocolleges.ca/en/programs/health-food-and-medical/opticianry>
- Optique, Photonique et Optométrie Université Mohammed V.* (2025). <http://www.fsr.ac.ma/content/optique-photonique-et-optométrie>
- OPTIQUE Structure de la Formation.* (2025). <https://uic.ac.ma/formation/optique/>
- OPTIQUE Université Internationale de Casablanca.* (2025). <https://uic.ac.ma/formation/optique/>
- Optisyen Teknisyenleri için Ulusal Sertifikasyon- Eyeglass Fabrication Skill Certification - Official Website* (2025). <https://www.megane-joa.jp/about/>
- Optisyenin Sesi, Mezun Artışı ve Sektörel Denge Sorunu.* (2025). <https://optisyeninsesi.com/mezun-artisi-ve-sektorel-denge-sorunu/>
- Optisyenlik Programı Bulunan Tüm Üniversiteler | YÖK Önlisans Atlası.* (2025). <https://yokatlas.yok.gov.tr/onlisans-program.php?b=34373>
- Optometric Studies in Bar-Ilan University.* (2025). <https://optometrics.biu.ac.il/en/node/909>
- Optometry at Tehran University of Medical Sciences.* (2025). <https://en.tums.ac.ir/en/department/major/164/optometry>
- Optometry Australia.* (2025). <https://www.optometry.org.au/about-us/>
- Optometry Board of Australia - About.* (2025). <https://www.optometryboard.gov.au/About.aspx>
- Pharos University in Alexandria, Optical Technology Study program.* (2025). <https://www.pua.edu.eg/applied-health-sciences-technology/study-program-2/optical-technology-study-program/#1574758586158-c7e06069-6584>
- Qué es un óptico optometrista.* (2025). <https://www.cnoo.es/area-ciudadanos/que-es-un-optico-optometrista/>
- Rahmenlehrplan für die Berufsschule ansehen.* (2025). [https://www.zva.de/wp-content/uploads/Augenoptiker11-03-25-E\\_01.pdf](https://www.zva.de/wp-content/uploads/Augenoptiker11-03-25-E_01.pdf)
- Record, A. D. (2022). *The Apprentice Orientation Class (Optical Seminars Course # HS-05).*
- Requirements for Approved Qualifications in Optometry or Dispensing Optics.* (2025). <https://optical.org/static/54e78564-f5c2-4f1c-b2c47250126f8f9d/requirements-for-approved-qualifications-in-optometry-and-dispensing-optics.pdf>
- Sağlık Bilimleri Üniversitesi Optisyenlik Programı Tanıtımı.* (2025). <https://shmyo.sbu.edu.tr/akademik/tibbi-hizmetler-ve-teknikler-bolumu/optisyenlik-programi/>
- Sağlık Hizmetleri Meslek Yüksekokulu Optisyenlik Programı Tanıtımı.* (2025). <https://shmyo.cumhuriyet.edu.tr/program/633610354-optisyenlik>
- SBU Sağlık Hizmetleri Meslek Yüksekokulu Optisyenlik.* (2025). [https://shmyo.sbu.edu.tr/uploads/99da0592-672a-2b73-5903-3a0814cb2444/optisyenlik.pdf\\_c63ef9.pdf](https://shmyo.sbu.edu.tr/uploads/99da0592-672a-2b73-5903-3a0814cb2444/optisyenlik.pdf_c63ef9.pdf)
- School of Optometry and Vision Science.* (2025). <https://optometrics.biu.ac.il/en/about>
- Semerçioğlu, M. G. (2022). Ülkemizdeki “Optisyenlik” bölümünün ders içeriklerine ve eğitim programına genel bakış. *6th Cukurova International Scientific Researches Conference.*

- Study Plans Optics and Optometry Università di Firenze.* (2025). <https://www.unifi.it/en/study-us/degree-programs/first-cycle-degree/optics-and-optometry>
- Sürücü, B. (2019). *Optisyenlerin istihdamının planlanması ve yönetilmesi üzerine bir model önerisi / A model proposal for the planning and management of opticians employment* [İstanbul Okan Üniversitesi]. [https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=w3VOWDKP1\\_zIcIgfQCYzJg&no=0Ts7j8eupn8ePUK1Ykz5Pg](https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=w3VOWDKP1_zIcIgfQCYzJg&no=0Ts7j8eupn8ePUK1Ykz5Pg)
- The Danish Health Data Authority. Arbejdsstyrken af sundhedsuddannede.* (2025). <https://sundhedsdatabank.dk/sundhedsvaesenets-rammer/uddannede-sundhedspersoner-i-arbejdsstyrken>
- The Department of Optometry - Shahid Beheshti University.* (2025). [https://en.rehab.sbmu.ac.ir/About-the-Department\\*](https://en.rehab.sbmu.ac.ir/About-the-Department*)
- The eye care field as an optician - Georgian College.* (2025). <https://www.georgiancollege.ca/academics/programs/opticianry/>
- The University of Melbourne Optometry & Vision Sciences.* (2025). <https://study.unimelb.edu.au/find/study-areas/optometry-and-vision-sciences/>
- Tokyo Optisyen Koleji Okul Bilgi Broşürü - School Brochure (PDF).* (2025). <https://www.toc.ac.jp/img/schoolguide.pdf>
- Training Courses in Egyptian Optometric Association.* (2025). <https://egyptianoptician.com/en/Services/training-courses/>
- TÜİK Yükseköğretim İstihdam Göstergeleri.* (2025). <https://data.tuik.gov.tr/Bulten/Index?p=Yuksekogretim-Istihdam-Gostergeleri-2024-54096>
- Undergraduate course information | School of Optometry and Vision Science - UNSW Sydney.* (2025). <https://www.unsw.edu.au/medicine-health/our-schools/optometry/student-life/undergraduate-resources/undergraduate-course-information>
- Vision Care Technology/Opticianry, Associate of Science | Broward College.* (2025). <https://catalog.broward.edu/programs-study/vision-care-technologyopticianry-as/#coursestext>
- What is a Certified Eyeglass Technician | Tokyo Optical College.* (2025). <https://toc.ac.jp/gankyo.html>
- Walliman, N. (2006). *Social Research Methods* (1st ed.). SAGE COURSE COMPANIONS. [https://ndl.ethernet.edu.et/bitstream/123456789/79439/6/Walliman %282006%29 Social Research Methods.pdf](https://ndl.ethernet.edu.et/bitstream/123456789/79439/6/Walliman%282006%29%20Social%20Research%20Methods.pdf)
- Zentralverband des Deutschen Handwerks. (2022). *The German Meister qualification in the skilled crafts sector is a highly relevant, well-known, and very prestigious qualification.* [https://www.zdh.de/fileadmin/Oeffentlich/English/2022-08\\_German\\_Meister\\_Overview.pdf](https://www.zdh.de/fileadmin/Oeffentlich/English/2022-08_German_Meister_Overview.pdf)