



## Optical Technician

PEIMS Code: N1302126

Abbreviation: OPTTECH

Grade Level(s): 1.0

Award of Credit: 10-12

### Approved Innovative Course

- Districts must have local board approval to implement innovative courses.
- In accordance with Texas Administrative Code (TAC) §74.27, school districts must provide instruction in all essential knowledge and skills identified in this innovative course.
- Innovative courses may only satisfy elective credit toward graduation requirements.
- Please refer to [TAC §74.13](#) for guidance on endorsements.

### Course Description:

The Optical Technician course introduces high school students to the profession of dispensing eyeglasses and fitting contact lenses. The course includes classroom lectures, hands-on lab hours, and community clinics. The student will be proficient in the terminology of a dispensing optician and in using appropriate professional communication when engaging with patients, peers, colleagues, supervisors, and eye care providers. The course is designed to help the student prepare for entry-level positions in wholesale, retail, benevolent, and independent optical settings.

### Essential Knowledge and Skills:

- (a) General Requirements. The Optical Technician course is recommended for students in grades 10-12. Recommended prerequisites: Biology or Principles of Health Science. Students shall be awarded one credit for successful completion of the course.
- (b) Introduction.
  - (1) Career and technical education instruction provides content aligned with challenging academic standards and relevant technical knowledge and skills for students to further their education and succeed in current or emerging professions.
  - (2) The Health Science Career Cluster focuses on planning, managing, and providing therapeutic services, diagnostics services, health informatics, support services, and biotechnology research and development.
  - (3) The Optical Technician course introduces high school students to the profession of dispensing eyeglasses and fitting contact lenses. The course includes classroom lectures, hands-on lab hours, and community clinics. The student will be proficient in the terminology of a dispensing optician and in using appropriate professional communication when engaging with patients, peers, colleagues, supervisors, and eye care providers. The course is designed to help the student prepare for entry-level positions in wholesale, retail, benevolent, and independent optical settings.

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- (4) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
  - (5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples.
- (c) Knowledge and Skills.
- (1) The student demonstrates professional standards and employability skills as required by optical business and industry. The student is expected to:
    - (A) express ideas in a clear, concise, and effective manner;
    - (B) cooperate, contribute, and collaborate as a member of an optical team;
    - (C) discuss and analyze employer expectations;
    - (D) demonstrate the characteristics of good work ethic;
    - (E) demonstrate appropriate and effective communication skills to understand the needs of individuals in a diverse society; and
    - (F) explain the importance of applying effective listening skills in the workplace.
  - (2) The student identifies and translates optical terminology and optical abbreviations to communicate and perform tasks in an optical setting. The student is expected to:
    - (A) identify and demonstrate proficiency in optical terminology;
    - (B) integrate optical abbreviations in verbal and nonverbal communication; interpret, transcribe, and communicate written prescriptions using vocabulary appropriate to industry technology;
    - (C) facilitate communication by using conversational language to translate optical industry terms; and
    - (D) demonstrate effective communication through effective role play as a patient and optician.
  - (3) The student interprets ethical behavior standards and legal responsibilities encountered in the optical industries governed by American Board of Opticianry (ABO). The student is expected to:
    - (A) explain and apply the Health Insurance Portability and Accountability Act (HIPAA) Privacy Rules; and
    - (B) summarize provisions delegated to opticianry professionals under the Texas Optometry Act.
  - (4) The student explores ophthalmic lens history, theory, and application. The student is expected to:
    - (A) explain the history of lenses, eyeglasses, and opticianry;
    - (B) differentiate between classic and modern optics;
    - (C) investigate and explain behaviors of light waves, including reflection, refraction, diffraction, and interference through various mediums such as water, plastic, and glass;

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- (D) measure and explain how light refracts through convex and concave ophthalmic lenses; and
  - (E) analyze the effects of various ophthalmic lenses and prisms.
- (5) The student investigates the structures, functions, and pathologies of the eye as it relates to vision. The student is expected to:
- (A) identify and describe the anatomy of the eye, including the cornea, iris, retina, optic nerve, and macula;
  - (B) explain the order of structures that light passes through the eye to create vision;
  - (C) research and present on common eye pathologies such as glaucoma, diabetic retinopathy, and their effects on vision; and
  - (D) analyze the effects of common eye pathologies on the anatomy and physical appearance of the eye.
- (6) The student describes the refractive errors in vision and their correction. The student is expected to:
- (A) identify and describe common refractive errors such as myopia, hyperopia, and astigmatism;
  - (B) analyze and describe the effect of refractive errors on vision including nearsightedness, farsightedness, and astigmatism;
  - (C) identify components of a written eyeglass prescription in relationship to refractive errors and ophthalmic lenses; and
  - (D) analyze the properties of ophthalmic lenses to determine refractive errors by optical changes such as images appearing magnified, minified, or distorted.
- (7) The student demonstrates proper use of optical tests and equipment. The student is expected to:
- (A) measure and record patient's visual acuity using Snellen Charts on electronic monitors;
  - (B) evaluate and record potential prescription strength using appropriate equipment, such as an autorefractor;
  - (C) identify and describe visual effects of eye disease such as cataracts or macular degeneration; and
  - (D) administer various methods of testing for glaucoma, including iCare Tonometer, Non-Contact Tonometer, and Tonopen.
- (8) The student demonstrates proper use of optical bench hand tools and equipment. The student is expected to:
- (A) identify and describe appropriate bench tools and equipment used to repair and adjust ophthalmic frames;
  - (B) measure and record ophthalmic frame standards box measurements, including A, B, effective diameter (ED), distance between lenses (DBL) and pupillary distance (Pd);

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- (C) measure facial position in the ophthalmic frame for pupillary distance and multifocal height; and
  - (D) use and demonstrate maintenance of tools and equipment based on industry standards.
- (9) The student demonstrates the skills needed to perform optical dispensing. The student is expected to:
- (A) analyze the components of a written prescription to determine appropriate lens material such as plastic, polycarbonate, or trivex;
  - (B) assess recommendations for lens upgrades such as transitions, anti-glare, progressives, or polarized on the prescription prior to submission of order;
  - (C) communicate the differences in ophthalmic lens styles such as single vision and multifocal;
  - (D) employ effective communication skills to survey patient lifestyle in order to recommend practical ophthalmic options such as polarized for fishing, blue blockers for computer users, or yellow tint for hunting;
  - (E) describe lens treatment options advantages and disadvantages based on lifestyle, such as anti-reflective coating, transitions, polarized, and blue blocking; and
  - (F) submit lab orders on various industry-related platforms or websites.
- (10) The student develops clinical skills to perform entry level optical laboratory tasks. The student is expected to:
- (A) describe the purpose of surfacing and finishing lenses;
  - (B) describe the purpose and functions of the tracer, blocker, edger, and lensometer;
  - (C) interpret a written prescription to determine the selection of finished lenses such as semi-finished, finished, or uncut;
  - (D) use optical calculations to transform multifocal prescriptions to single vision;
  - (E) distinguish between spherical, astigmatic, line, and progressive multifocal lenses;
  - (F) identify and demonstrate proper mounting techniques of lenses based on frame material;
  - (G) demonstrate how to adjust and repair frames using bench tools; and
  - (H) apply American National Standards Institute (ANSI) standards to perform quality
- (11) The student applies acquired opticianry knowledge and skills in real-world clinical settings under the supervision of an experienced practitioner. The student is expected to:
- (A) participate in direct patient care in local retail offices or community clinics;
  - (B) apply communication, optical dispensing, and laboratory skills during clinical experiences;
  - (C) identify and demonstrate the use of personal protective equipment (PPE);

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- (D) demonstrate safe practices during clinicals such as securing / shielding records from other patients, cleaning up workstations, keeping tools and instruments cleaned and covered, putting bench tools away from patients; and
  - (E) demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.
- (12) The student assesses career options and skills preparation necessary for employment in the optical industry. The student is expected to:
- (A) investigate career pathways related to the optical industry including commercial, retail, military, private, and charity clinics;
  - (B) research and identify emerging optical careers; and
  - (C) review academic requirements for certification, licensure, registration, continuing education, advanced, degrees, and entrepreneurship.

### Recommended Resources and Materials:

Brooks, Clifford W., and Irvin M. Borish. *System for Ophthalmic Dispensing*. St. Louis: Butterworth-Heinemann Elsevier, 2007.

McCleary, David S. *The Optician Training Manual Simple Steps To Becoming A Great Optician*. Temecula, CA: Santa Rosa Publishing, 2018.

Stein, Harold A., Raymond M. Stein, and Melvin I. Freeman. *The Ophthalmic Assistant: A Text for Allied and Associated Ophthalmic Personnel*. S.I: Elsevier, 2018.

**Technology:** The following list of equipment is generically referenced in the student expectations; these are examples of some of the brand names available.

- Auto Lensometer
- Manual Lensometer
- Optronics Tracer
- Optronics 3BX Blocker
- Optronics 7EX Edger
- NIDEK Auto-Refractor
- 3-Netra Retinal Camera
- Nikon RetinoMax
- iCare Tonometer
- Electronic Point of Sale
- Pupillometer

### Recommended Course Activities:

Under the direction of the classroom instructor, the students can demonstrate their skills with direct patient care by conducting the following:

- Registration (Patient information, medical history, chief complaints)
- Visual Acuities (Aided and Unaided)
- Glaucoma screenings (iCare Tonometer)
- Auto Refraction
- Frame Styling
- Written prescription interpretation

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- Proper measurement of bifocals
- Cutting and mounting of prescription lens in frames
- Adjusting and repairing of frames
- Verify exactness (final Inspection) of prescription lens
- Dispensing of final glasses

Student experiences are possible through participation in Community Clinics (Direct Patient Care) such as:

- Eye Can Optical – Mobile Clinic (Service Texans Can Campuses)
- City of Ft. Worth Project Homeless Connect
- Homeless Coalition
- Local supporting optometric practices (retail or private)

### Suggested methods for evaluating student outcomes:

Several learning outcomes may be used to evaluate Optical Tech Students. These include:

- Students complete formative assessments after each lesson through oral quizzes and exit-tickets.
- Quizzes and exams are given periodically regarding aspects of the course lecture and skills.
- Students will complete an Optical Tech Patient Log daily and weekly to catalog patient information and daily tasks completed on patients. This will provide students the opportunity to learn industry standards for medical recordkeeping.
- Student learning is assessed in their knowledge and skills in their actual use of the various technology and equipment during the term of the classes.
- Using national standards and tolerance values, the students will be assessed on the completion of the use of ophthalmic kits.
- Peer and self-evaluation at several key junctures in the course, allowing the students to evaluate both their own and their team members' contributions and performance.
- Teacher supervision provides opportunities to maintain safe working conditions and an informal observation.

### Teacher qualifications:

An assignment for Optical Technician educator is allowed with one of the following certificates:

- Health Science: Grades 6-12.
- Health Science Technology Education: Grades 8-12.
- Vocational Health Occupations.
- Vocational Health Science Technology.

### Additional information:

In partnership with an American Board of Ophthalmology (ABO) licensed optician, the teacher will be required to complete staff development to obtain familiarity with industry equipment.