



Introduction to Pharmacy Science

PEIMS Code: N1302103
Abbreviation: PHARSCI
Grade Level(s): 9–10
Award of Credit: 1.0

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 *Introduction to Pharmacy Science* course is designed to provide an overview of the history of the pharmacy profession, legal and ethical aspects of pharmacy, skills necessary to work in the field of pharmacy (including professionalism, certifications/registration, communication and medical terminology, and rules and regulations pertaining to the field), medical math, anatomy and physiology/pathophysiology, pharmacology, and wellness as they pertain to pharmacy sciences. It is the first course in a pathway leading to certification as a pharmacy technician.

Essential Knowledge and Skills:

- (a) General requirements. This course is recommended for students in Grades 9 and 10. Recommended prerequisite: None. Students shall be awarded one credit for successful completion of this 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, diagnostic services, health informatics, support services, and biotechnology research and development.
 - (3) The Introduction to Pharmacy Sciences course is designed to provide an overview of the history of the pharmacy profession, legal and ethical aspects of pharmacy, skills necessary to work in the field of pharmacy including professionalism, certifications/registration, communication and medical terminology, and rules and regulations pertaining to the field, medical math, anatomy and physiology/pathophysiology, pharmacology, and wellness as they pertain to pharmacy sciences. It is the first course in a pathway leading to certification as a pharmacy technician.

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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) Professional integrity in the health science industry is dependent on acceptance of ethical and legal responsibilities. Students are expected to employ their ethical and legal responsibilities, recognize limitations, and understand the implications of their actions.
 - (6) Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other leadership or extracurricular organizations.
 - (7) 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/employability skills as required by business and industry. The student is expected to:
 - (A) express ideas in a clear, concise, and effective manner;
 - (B) exhibit the ability to cooperate, contribute, and collaborate as a member of a team; and
 - (C) identify employer expectations such as punctuality, attendance, time management, communication, organizational skills, and productive work habits.
 - (2) The student compares and contrasts the history of medicine and pharmacy with modern practices. The student is expected to:
 - (A) discuss ancient beliefs associated with illness and medicine from 440 BC through AD 1600;
 - (B) list treatments that were commonly practiced prior to the enlightenment in western civilization;
 - (C) describe eighteenth and nineteenth-century medicine and identify influences that major wars had on medicine;
 - (D) describe the issue of opioid addiction and misuse in the United States during the 21st century, including several interventions that were proposed to combat the problem;
 - (E) differentiate between opiates and opioids; and
 - (F) discuss advances in drug therapies and vaccinations.
 - (3) The student explains the ethical and legal responsibilities of pharmacists and pharmacy technicians. The student is expected to:
 - (A) describe the basic laws and regulations that govern pharmacy at the state and federal level;
 - (B) describe the legal terms and consequences associated with medication errors that occur when dispensing and compounding medications;

- (C) differentiate between negligence, product liability, contributory negligence, and regulatory law;
 - (D) differentiate between the duties of a pharmacist and a pharmacy technician;
 - (E) demonstrate the ability to maintain confidentiality of patient information, and understand applicable state and federal laws including Health Insurance Portability and Accountability Act (HIPAA);
 - (F) discuss tort law and how it relates to medical negligence cases; and
 - (G) define professional liability.
- (4) The student describes and demonstrates appropriate professionalism in pharmacy in appearance and behavior. The student is expected to:
- (A) define appropriate attire;
 - (B) define and demonstrate appropriate hygiene;
 - (C) define and demonstrate the professional attitude and behavior expected of pharmacy employees; and
 - (D) demonstrate professional behavior during challenging situations.
- (5) The student effectively communicates with patients and other healthcare workers. The student is expected to:
- (A) identify components of effective and non-effective communication;
 - (B) demonstrate effective communication skills for responding to the needs of individuals in a diverse society;
 - (C) evaluate the effectiveness of conflict-resolution techniques in various situations;
 - (D) accurately interpret, transcribe, and communicate medical vocabulary using appropriate technology;
 - (E) demonstrate active and engaged listening skills;
 - (F) explain the communication cycle;
 - (G) demonstrate clear and effective verbal and written communication;
 - (H) identify ways to eliminate barriers to effective communication;
 - (I) describe communication skills needed to work with individuals who are terminally ill, intellectually disabled, visually/hearing impaired, or other impairments; and
 - (J) demonstrate a respectful and professional attitude when interacting with a diverse patient population, colleagues, and professionals.
- (6) The student demonstrates the characteristics, training, and certifications necessary to work in the field of pharmacy. The student is expected to:

- (A) apply self-management skills, including time management, stress management, and change management;
 - (B) apply interpersonal skills, including negotiation skills, conflict resolution, customer service, and teamwork;
 - (C) demonstrate problem solving skills;
 - (D) explain the importance of maintaining competency through continuing education and continuing professional development; and
 - (E) list and differentiate between the various career paths in pharmacy, including pharmacist, pharmacy technician, sales representative, and pharmaceutical research.
- (7) The student uses appropriate medical vocabulary to communicate effectively with other health care professionals. The student is expected to:
- (A) identify the various routes of drug medication;
 - (B) differentiate among the various classes of drugs;
 - (C) define prefixes, roots, suffixes, and abbreviations common to the pharmacy profession;
 - (D) properly use common terms associated with pharmacology; and
 - (E) analyze unfamiliar terms using the knowledge of word roots, suffixes, and prefixes.
- (8) The student demonstrates mathematical knowledge and skills to solve problems with systems of measurement used in the pharmacy. The student is expected to:
- (A) perform medication calculations, including metric, apothecary, and household systems;
 - (B) convert units within a measurement system;
 - (C) convert measurements between the metric, apothecary, and avoirdupois systems; and
 - (D) perform multi-step ratio and proportion drug concentration problems.
- (9) The student demonstrates a fundamental knowledge of anatomy, physiology, pathophysiology, and basic pharmacology of the body systems. The student is expected to:
- (A) list the anatomy and physiology of the main body systems including integumentary, musculoskeletal, nervous, immune/lymphatic, endocrine, cardiovascular, respiratory, gastrointestinal, renal/genitourinary, hematological, and the senses;
 - (B) describe the pathophysiology of the main body systems including integumentary, musculoskeletal, nervous, immune/lymphatic, endocrine, cardiovascular, respiratory, gastrointestinal, renal/genitourinary, hematological, and the senses; and

- (C) identify the basic drug categories that affect each of the main body systems including integumentary, musculoskeletal, nervous, immune/lymphatic, endocrine, cardiovascular, respiratory, gastrointestinal, renal/genitourinary, hematological, and the senses.
- (10) The student demonstrates knowledge of basic concepts of wellness and disease prevention. The student is expected to:
- (A) discuss the recommended vaccination schedule including how to counsel a patient on recommendations for patient populations with certain chronic illnesses;
 - (B) explain accepted procedures for delivery and documentation of immunizations;
 - (C) discuss the role of Complementary and Alternative Medicines (CAM) alternative therapies such as acupuncture, acupressure, and coining and how they can affect and interact with mainstream medicines;
 - (D) discuss the role of health screenings in maintaining a healthy population;
 - (E) review the role of external factors in a healthy lifestyle, such as alcohol, tobacco, vaping, and legal/illegal drug use; and
 - (F) explain the role of Medication Therapy Management (MTM) in optimizing patient health and medication compliance.
- (11) The student demonstrates knowledge of regulations made by state and federal agencies. The student is expected to:
- (A) define Occupational Safety and Health Administration (OSHA), National Institute of Occupational Safety and Health (NIOSH), and United States Pharmacopeia (USP) requirements for prevention and treatment of exposure to hazardous substances including risk assessment, personal protective equipment, eyewash, and spill kits;
 - (B) identify, handle, dispense, and safely dispose of hazardous medications and materials using information from Safety Data Sheets (SDS), NIOSH Hazardous Drug List, and USP;
 - (C) describe OSHA requirements for prevention and response to blood-borne pathogen exposure, including accidental needle stick, post-exposure prophylaxis; and
 - (D) explain OSHA Hazard Communication Standard including “Employee Right to Know”.

Recommended Resources and Materials:

Davis, K. & Guerra, A. (2019). *Mosby’s Pharmacy Technician: Principles and Practice* (5th ed.). St. Louis, MO: Elsevier.

Recommended Course Activities:

- Project-based learning
- Classroom role-playing
- Laboratory projects
- Interactive simulations

Suggested methods for evaluating student outcomes:

- On-going summative and formative assessment by the classroom instructor
- Quizzing including Quizlet Live and Kahoot
- Role-playing in classroom
- Process validation through laboratory simulations

Teacher qualifications:

An assignment for Introduction to Pharmacy Science is allowed with one of the following certificates.

- Health Science 6-12.
- Health Science Technology 8-12.
- Vocational Health Occupations.
- Vocational Health Science Technology.

It is recommended, but not required, that the teacher hold the Certified Pharmacy Technician (CPhT) and Registered Pharmacy Technician (PhTR) credentials.

Additional information: