Texas CTE: Health Science

Pharmacy II

Implementation. A

1 The provisions of this section shall be implemented by school districts beginning with the 2022- 2023 school year. A.1

2 School districts shall implement the employability skills student expectations listed in §127.15(d)(2) of this chapter (relating to Career and Technical Education Employability Skills) as an integral part of this course. A.2

General requirements. This course is recommended for students in Grades 11 and 12. Prerequisites: one credit in biology, one credit in chemistry, and Pharmacy I. Recommended prerequisite: Algebra I, Introduction to Pharmacy Science, and Pharmacy I. Students shall be awarded two credits for successful completion of this course. B

b General requirements. This course is recommended for students in Grades 11 and 12. Prerequisites: one credit in biology, one credit in chemistry, and Pharmacy I. Recommended prerequisite: Algebra I, Introduction to Pharmacy Science, and Pharmacy I. Students shall be awarded two credits for successful completion of this course. B

Introduction. C

1 Career and technical education instruction provides content aligned with challenging academic standards, industry-relevant technical knowledge, and college and career readiness skills for students to further their education and succeed in current and emerging professions. C.1

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. C.2

3 **The Pharmacy II course provides students with the advanced knowledge and skills to explore various careers in the pharmacy field, including pharmacology, pharmacy law, medication errors, inventory pharmacy calculations, compounding, and workflow expectations in a pharmacy setting. Pharmacy II is designed to be the third course in a pathway leading to college and career readiness in the healthcare therapeutics professions. The course content aligns with the competencies of pharmacy technician certification examinations.** C.3

4 **Students are encouraged to participate in extended learning experiences such as career and technical student organizations and other organizations that foster leadership and career development in the profession such as student chapters of related professional associations.** C.4

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.5

Knowledge and skills. D

1 **The student communicates effectively with diverse populations. The student is expected to:** D.1

A practice a respectful and professional attitude in communications with diverse patient populations, colleagues, and professionals such as written, oral, and electronic communications; D.1.A

B demonstrate communication techniques that are effective for various populations such as terminally ill, intellectually disabled, visually/hearing impaired, and elderly/pediatric populations; and D.1.B

C demonstrate skills for supporting communication between various stakeholders such as serving as a liaison between the nurse and the patient. D.1.C

2 **The student demonstrates the use of medical terminology and abbreviations in a pharmacy setting. The student is expected to:** D.2

A interpret and translate prescription and medication orders according to pharmacy settings such as community and hospital environments; D.2.A

B create pharmacy correspondence such as prescriptions, medication administration records (MARs), and patient order sheets using medical terminology and abbreviations; D.2.B

C use medical terminology found in various pharmacy settings to communicate appropriately; and D.2.C

D translate sig codes and abbreviations used in the pharmacy to communicate instructions to patients. D.2.D

3 The student applies the strictest requirements using the laws of local, state, and federal agencies. The student is expected to: D.3

- A demonstrate the proper handling and disposal of non-hazardous, hazardous, and pharmaceutical substances and waste; D.3.A
- B apply the requirements for controlled substance prescriptions, including new, refill, and transfer prescriptions; D.3.B
- C apply the requirements for receiving, storing, ordering, labeling, and dispensing controlled substances and the reverse distribution, take-back, and loss or theft of controlled substances; D.3.C
- D classify controlled substances such as cocaine, heroin, marijuana, fentanyl, dextroamphetamine, amphetamine salts, benzodiazepines, and anabolic steroids according to their Drug Enforcement Administration (DEA) schedules; D.3.D
- E identify the federal requirements for restricted drugs such as pseudoephedrine and related medication processing programs such as Risk Evaluation and Mitigation Strategies (REMS) and iPLEDGE; D.3.E
- F demonstrate the process for Food and Drug Administration (FDA) recalls based on classification for medications, devices, supplies, and supplements; and D.3.F
- G explain pharmacy compliance with professional standards such as scope of practice and relevant legal, regulatory, formulary, contractual, and safety requirements. D.3.G

4 The student interprets drug information. The student is expected to: D.4

- A apply knowledge of brand name, generic name, classification, and indication of use for common medications such as the top 200 drugs with automaticity in a pharmacy setting; D.4.A
- B analyze the common and life-threatening drug interactions and contraindications such as drug-disease, drug-drug, drug-lab, and drug-food; D.4.B
- C apply knowledge of the narrow therapeutic index (NTI) to drug use evaluations; and D.4.C
- D integrate the use of digital and hard copy references such as United States Pharmacopeia (USP) standards, drug reference books, and clinical information sources as needed to perform job duties. D.4.D

5 The student demonstrates the dispensing process in various pharmacy settings. The student is expected to: D.5

- A analyze a prescription and medication order for completeness, including drug strength, dosage form, directions, quantity, date, and refills, and obtain missing information if needed; D.5.A
- B communicate with patients or care givers using the appropriate modality to obtain information, including demographics, medication history, health conditions, allergies, and insurance, for the patient profile; D.5.B
- C collect, organize, and record demographic and clinical information accurately for patient continuity of care; D.5.C
- D identify the required steps in preparing sterile compounded products, including putting on (donning) personal protective equipment (PPE), cleaning the vertical or horizontal flow hoods, selecting correct supplies, and preparing the product for dispensing; D.5.D
- E select the appropriate equipment and supplies, including diabetic supplies, spacers, and oral/injectable syringes, for drug administration based on package size and unit dose; D.5.E
- F apply lot numbers, expiration dates, and National Drug Codes (NDC) on drug packaging for the dispensing of medication; and D.5.F
- G differentiate between the use of effective infection control procedures such as sterile and non-sterile compounding in various pharmacy related settings. D.5.G

6 The student analyzes common medication errors and practices error prevention strategies. The student is expected to: D.6

- A use knowledge of high alert/risk and look-alike/sound-alike (LASA) medications to prevent medication errors; D.6.A
- B apply knowledge of current error prevention strategies such as using Tall Man lettering, trailing/leading zeros, and barcodes; separating inventory; and limiting use of error-prone abbreviations to prevent medication errors; D.6.B
- C apply knowledge of various prescription errors such as abnormal dose, early refill, incorrect quantity, incorrect patient, and incorrect drug for improved accuracy; D.6.C
- D demonstrate how to assist pharmacists in recognizing issues that require intervention such as adverse drug events, drug utilization review (DUR), and use of equipment and devices; and D.6.D
- E demonstrate knowledge of medication errors such as near miss and adverse events and various reporting procedures such as MedWatch, vaccine adverse event reporting system (VAERS), and route-cause analysis (RCA). D.6.E

7 The student applies pharmacy workflow procedures according to federal, state, local, and facility guidelines. The student is expected to: D.7

- A describe the process for creating a prescription or medication order in compliance with pharmacy standards such as standards for patient rights, completeness of a prescription or medication order, and authorization; D.7.A
- B discuss the steps in verifying a prescription or medication order such as right patient, right drug, right dosage, right time, and right route; D.7.B
- C identify the proper procedures for entering a prescription or medication order, including procedures for workstation, use of technology, validation with drug enforcement administration (DEA) calculations, and transcribing such as using military time and Roman numerals; D.7.C
- D apply the proper techniques for filling a prescription or medication order such as techniques for use of technology, counting, and selecting the correct medication; D.7.D
- E explain the proper procedure for the administration of prescription or medication orders such as ear drops, eye drops, inhalations, parenteral, and enteral; D.7.E
- F demonstrate knowledge of the workflow process for prescriptions and medication orders such as creation of the order, order entry, adjudication, verification, filling, labeling, billing, dispensing, and administration; and D.7.F
- G describe the elements of third-party billing for out-patient dispensing, including prescription insurance ID cards, group numbers, BIN numbers, prior authorization, quantity limits, patient co-pays, maximum out-of-pocket costs, and deductibles. D.7.G

8 The student evaluates mathematical process standards related to the practice of pharmacy. The student is expected to: D.8

- A calculate dosage calculations for adults and special populations using conversions, ratios, and dimensional analysis to perform duties in a pharmacy setting; D.8.A
- B apply conversions to systems of measurements, including apothecary, metric, and household, to perform duties in a pharmacy setting; D.8.B
- C calculate the flow rate (or rate of administration) for an IV solution using ratios and conversions such as milliliters to drops, weight, or hours to minutes; D.8.C
- D calculate days supply for a prescription order given a dose and sig; D.8.D
- E calculate volume or mass of each of the total parenteral nutrition (TPN) components such as lipids, amino acids, dextrose, calcium, and magnesium; D.8.E
- F calculate volume or mass of ingredients needed for compounding both sterile and non- sterile products; D.8.F
- G calculate amount needed for percent of weight-to-volume, volume-to-volume, and weight-to-weight based on stock concentration; and D.8.G
- H use calculations related to business math in a pharmacy setting, including profit, net profit, discounts, mark-ups, dispensing fee, average wholesale price, depreciation, and third-party. D.8.H

9 **The student demonstrates the use of technology in a pharmacy setting. The student is expected to:** D.9

- A identify the types and uses of automated dispensing technology such as cabinets, units, and carousels; D.9.A
- B demonstrate knowledge and components of pharmacy dispensing software used in the out-patient setting, the in-patient setting, and in-office use dispensing; D.9.B
- C apply professional standards using communication technology such as telephone, emails, fax, electronic prescriptions, and social media appropriate for a pharmacy setting; D.9.C
- D apply knowledge of technology hardware devices for input and output such as computers, scanners, printers, interface devices, and other devices; and D.9.D
- E select and use appropriate technology tools to search for drug information such as pill identification, adverse events, and contraindications. D.9.E

10 **The student uses critical thinking, scientific reasoning, research, or problem solving to make informed decisions and communicate within and outside the classroom. The student is expected to:** D.10

- A critique the validity and reliability of scientific research such as assessing for bias, conflict of interest, and study design; D.10.A
- B demonstrate the ability to independently find valid and reliable sources such as primary, secondary, and tertiary literature; D.10.B
- C identify safe use of online resources that maintain the privacy and confidentiality of the user and patient; D.10.C
- D analyze online resources used in scientific research; D.10.D
- E describe the recent innovations and advances in pharmacy; D.10.E
- F identify opportunities for extended learning experiences such as community services, career and technical service organizations (CTSOs), and professional organizations; and D.10.F
- G evaluate scientific information extracted from various sources such as accredited scientific journals, institutions of higher learning, current events, news reports, published journal articles, and marketing and promotional materials. D.10.G

11 The student performs inventory procedures according to federal, state, local, and facility guidelines. The student is expected to: D.11

- A analyze proper storage for medications in regard to temperature, light sensitivity, product demand, cost, and restricted access; D.11.A
- B analyze therapeutic substitutions and product selection using the knowledge of formularies or preferred product list; D.11.B
- C practice procedures for inventory control such as removal of expired/recalled drug products, rotating inventory, performing a physical inventory, and ordering medications/supplies; D.11.C
- D explain how just-in-time or drop ship ordering and periodic automatic replenishment (PAR) levels are used to maintain pharmacy inventory; D.11.D
- E analyze how laws affect the procedures for purchasing or ordering medications, devices, and supplies; and D.11.E
- F analyze lot numbers, expiration dates, and National Drug Codes (NDC) on drug packaging for inventory accuracy. D.11.F

12 The student demonstrates knowledge of safety procedures in a pharmacy setting. The student is expected to: D.12

- A apply appropriate hygiene and cleaning standards, including hand washing and cleaning counting trays, countertops, and equipment; D.12.A
- B perform basic safety and emergency preparedness procedures such as basic life support (BLS) and first aid applicable to pharmacy services; D.12.B
- C explain the risks of drug diversion to employees, patients, and the community; D.12.C
- D explain the potential solutions to minimize drug diversion such as identifying red flags, controlling inventory, and monitoring the prescription drug monitoring program (PDMP); D.12.D
- E explain the types and uses of PPE and the steps for putting on (donning) and removing (doffing) PPE; and D.12.E
- F explain why collecting and documenting patient allergies are important steps in medication safety. D.12.F