Pharmacology
At-A-Glance - Lamar CISD

Ongoing Skills Imbedded All Year	**Professional Standards/Employability Skills/Technical Skills** • Top 300 most prescribed drugs • Calculations • Medical Abbreviations (SIG codes) • Pharmacy-specific Medical Terminology • Drug classification prefixes and suffixes • Laws and enforcement • Professional communications • Dosage Forms • Safety and wellness • Infection Control and Aseptic Technique		
Ongoing Ways to Show	• Interactive Notebook (digital or physical)- Drug Information done every day and tested weekly • Games • Practical Skills Lab Stations • Scenario Role Play		
Grading Period	**Unit Name**	**Estimated Time Frame**	**TEKS**
Grading Period 1 **29 Days**	**Course Introduction**	**6 Days**	
	Course Overview, Certification, and Licensure. Enrollment in online PTCB Prep program (PassAssured, Pharmaseer, etc.) Introduction to program and content (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 Pharmacology course is designed to study how natural and synthetic chemical agents such as drugs affect biological systems. Knowledge of the properties of therapeutic agents is vital in providing quality health care. It is an ever-changing, growing body of information that continually demands greater amounts of time and education from health care workers. (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. * NOTE: ENSURE that students understand the rigor of this course and the difficulty of the national certification exam.		
	Federal Law	**12 Days**	4A, 4B, 4C, 4D
	PT 4(A) The student will explain the causes, effects and consequences associated with medical errors, including medication errors. PT 4(B) The student will define legal terminology associated with medical errors such as negligence, product liability, contributory negligence and regulatory law. PT 4(C) The student will analyze the principles of medical ethics, including beneficence, autonomy, maleficence, and justice. PT 4(D) The student will evaluate professional liability. • **6 PassAssured Days/ 6 lab or practice days= 12 days** • Pharmacy Laws – Discusses different laws & legislation that affect the pharmacy industry. • Federal Law & Drugs – Discusses the importance of the Controlled Substance Act of 1970 & shows how this act regulated the manufacturing, distribution & dispensing of controlled substances. • Rules for Controlled Substance Prescriptions – outlines filing procedures, maintaining records according to State & Federal Laws, & drug substitution requirements. • DEA Number Verification – Illustrates how a Doctor's DEA Number is determined & its purpose. • Schedule II Drugs – discusses storage requirements for Schedule II Drugs. • Investigational Drugs – defines the 4 phases of Investigational Drugs.		
	Medication Review - by System	**11 Days**	2A, 2B, 2C, 2D, 2E 3A, 3B, 3C, 5A, 5B, 7C, 7D, 7E, 7F, 7G
	PT 2(A) The student will differentiate between pharmacology subdivisions, including pharmacodynamics, pharmacokinetics, pharmaceutics, and pharmacotherapeutics. PT 2(B) The student will use common drug information materials such as accredited scientific journals, institutions of higher learning, current events, new reports, published journal articles, textbooks, and marketing materials. PT 2(C) The student will list examples of primary, secondary, and tertiary drug information references. PT 2(D) The student will research and describe the history of pharmacy and contributions of the field. PT 2(E) The student will draw inferences based on data from promotional materials for products and services.		

PT 3(A) The student will evaluate career pathways utilizing pharmacology.
PT 3(B) The student will define the role of the pharmacy team.
PT 3(C) The student will research and describe emerging opportunities within the pharmacy profession.
PT 5(A) The student will use the appropriate medical terminology to identify different classes of drugs.
PT 5(B) The student will communicate using medical terminology associated with pharmacology.
PT 7(C) The student will define medical terminology associated with drug dosage forms.
PT 7(D) The student will explain the difference between therapeutic effects, side effects, and toxic effects.
PT 7(E) The student will identify the mechanism of action of different drug classifications such as drug receptors, agonists, and antagonist relationships.
PT 7(F) The student will explain the dose response relationship concept such as the difference between oral and IV administration of drugs and explain the relationship between drug dosage, drug response, and time.
PT 7(G) The student will explain drug safety practices such as monitoring expiration dates and drug disposal.

8 PassAssured Days + 3 Lab Practice Days= 11 days

- Doses & Terminology – discusses the different terms used in pharmacology & provides an in-depth review of the different types of medication dosages.
- Central Nervous System – A medication review of drug interactions & the mechanism of action on the Central Nervous System.
- Peripheral Nervous System – a medication review of drug interactions which affect the Peripheral Nervous System.
- Hormones – A medication review of drugs classified as hormones.
- Cardiovascular Drugs – a medication review of drugs that affect the cardiovascular system.
- Renal Drugs – a medication review of drugs which affect the renal system & a basic review of renal definitions.
- Cancer Chemotherapy Drugs – a medication review of drugs classified as chemotherapy drugs & the therapeutic classes used in the treatment of cancer.
- Blood & Blood Formation - a medication review of blood & blood formation drugs & drug interactions.
- Vitamins – a medication review of vitamins & their drug interactions.

Grading Period 2
27 Days

Aseptic Technique	**20 Days**	7A, 7B, 7C, 8A, 8B, 8C, 9A, 9B, 9C, 9D

PT 7(A) The student will analyze the availability of different dosage forms such as solid, liquid, patch and IV solutions.
PT 7(B) The student will give examples of the brand or generic names of drugs such as the top 200 drugs in each dosage form and routes of drug administration.
PT 7(C) The student will define medical terminology associated with drug dosage forms.
PT 8(A) The student will identify technology components used in the pharmacy workflow such as ordering, entering, filling, and dispensing.
PT 8(B) The student will describe how technology applications improve efficiency in the pharmacy.
PT 8(C) The student will identify and demonstrate proper use and maintenance of equipment and instruments used in a pharmacy settings such as IV drop sets, scales, glucose supplies, dispensing units or cabinets, and other laboratory supplies.

Aseptic Technique

PT 9(A) The student will employ safety standards such as workplace standards.
PT 9(B) The student will interpret and apply pharmacy standards according to the strictest local, state, or federal regulations to enhance safety.
PT 9(C) The student will examine the consequences of unsafe practices.
PT 9(D) The student will demonstrate safe procedures in the administration of client care in a simulated or clinical setting.

10 PassAssured days/8 lab days/2 exam days=20

- Definitions – explores basic terminology & environmental contamination concerns in performing aseptic technique procedures.
- Syringes – explores the various types of syringes, needle assembly, & how to size the needle. Parenteral – a review of various injection types, & the 4 most widely used parenteral routs used.
- Techniques of Sterile Compounding – a review of sterile compounding procedures provide a broad overview of skills needed to perform sterile compounding.
- Solutions – Irrigation solutions, parenteral solutions & TPNs are examined.
- Parenteral Antineoplastic Agents – a general overview of preparation & the safe handling of antineoplastic agents used in the treatment of cancer.
- Stability Considerations for Parenteral Products – steps of parenteral admixture order for receiving the order to delivering to the patient are discussed.

Personal Presentation- Job Seeking Skills and Resume Writing	**7 Days**	1A, 1B, 1C, 1D, 1E, 1F

PT 1(A) The student will apply appropriate verbal and non-verbal communication in a clear, concise, and effective manner.
PT 1(B) The student will apply appropriate adaptability skills such as problem solving and creative thinking.
PT 1(C) The student will create and evaluate a career plan using methods such as educational pathways, career goals, and individual aptitudes.

Interview

PT 1(D) The student will demonstrate teamwork.
PT 1(E) The student will create an occupation-specific resume.
PT 1(F) The student will identify and apply soft skills desired by employers.

Grading Period 3
28 Days

Pharmacy Calculations	28 Days	5B, 5C, 5D, 6A, 6B, 6C, 6D

PT 5(B) The student will communicate using medical terminology associated with pharmacology.
PT 5(C) The student will analyze unfamiliar terms using the knowledge of word roots, suffixes, and prefixes.
PT 5(D) The student will interpret medical terminology to communicate with patients and caregivers.
PT 6(A) The student will calculate medication dosages using formulas, ratios, proportions, and allegations.
PT 6(B) The student will convert a measurement expressed in one standard unit within a system to a measurement expressed in another unit within the same system.
PT 6(C) The student will convert a measurement expressed in one system to a unit of the same measurement in a different system, including metric, apothecary, avoirdupois, and household systems.
PT 6(D) The student will evaluate statistical data and its limitations such as patient compliance, study design, and controls.
15 PassAssured Days/8 lab or practice days/2 exam days/3 midterm or semester exam day= 28 days

- Metric Measurements – the units of measurement for the Metric, Avoirdupois, & Apothecary system.
- Abbreviations – study the abbreviations used in prescriptions and the pharmacy industry. c. Roman Numerals – the eight primary Roman Numerals are illustrated w/the emphasis on "rules" for adding & subtracting.
- Fractions, Decimals & Percent – provide the student with a basic understanding of fractions, decimals & percentages.
- Temperature Conversions – study of the 2 widely used methods for Fahrenheit – Centigrade temperature conversions.
- Ratio Proportions – determining the proper amount of solution to mix w/drug active ingredients. Quantities, Dilutions, & Concentrations – discusses the different methods for determining quantities of ingredients & concentration of drugs when preparing or dispensing drug products. Dosage Regimen – learn to calculate the amount of drug product to dispense or the number of days' supply from a dosage regimen.
- IV Flow Rates – learn to determine the flow rate of an IV solution when given the total volume, total time of administration, & the drops delivered per ml by the administration set.
- Powder Volumes – learn how to calculate powder volume & how to use this information in reconstituting dry powders for suspension or solution.
- Pricing – review of various pricing methods used in retail pharmacy.

Grading Period 4
31 Days

Pharmacy Operations	21 Days	2G, 8A, 8B, 8C

PT 2(G) The student will evaluate the impact of scientific research on society, including drug development and the natural environment, including drug disposal.
PT 8(A) The student will identify technology components used in the pharmacy workflow such as ordering, entering, filling, and dispensing.
PT 8(B) The student will describe how technology applications improve efficiency in the pharmacy.
PT 8(C) The student will identify and demonstrate proper use and maintenance of equipment and instruments used in a pharmacy settings such as IV drop sets, scales, glucose supplies, dispensing units or cabinets, and other laboratory supplies.
9 PassAssured Days/11 lab or practice days/1 exam days = 21 days

- Basic Facts in Pharmacy – learn the generic and trade names given to each drug, identify drug containers, & learn NDC codes, mnemonic codes, & the importance of understanding different expiration date formats.
- Assisting the Pharmacist – study how prescriptions can be transmitted to a pharmacy & requirements for certain classes of drugs is discussed.
- General prescription Duties – details of what should be collected for a proper patient profile is discussed along with formularies, measuring & counting techniques, compounding & the different classes of balances are reviewed.
- Medication Distribution & Inventory Control – define key terms used in inventory management. Review proper ordering techniques.
- Third Party Reimbursement – a general overview of processes used for reimbursement & different payment plans currently offered is discussed.

3rd Party Reimbursement	10 Days	4B, 4C, 4D, 8A, 8B, 8C

PT 4(B) The student will define legal terminology associated with medical errors such as negligence, product liability, contributory negligence and regulatory law.
PT 4(C) The student will analyze the principles of medical ethics, including beneficence, autonomy, maleficence, and justice.
PT 4(D) The student will evaluate professional liability.
PT 8(A) The student will identify technology components used in the pharmacy workflow such as ordering, entering, filling, and dispensing.
PT 8(B) The student will describe how technology applications improve efficiency in the pharmacy.
PT 8(C) The student will identify and demonstrate proper use and maintenance of equipment and instruments used in a pharmacy settings such as IV drop sets, scales, glucose supplies, dispensing units or cabinets, and other laboratory supplies.
4 PassAssured days/6 lab days = 10 days
***NOTE: These are the questions most often missed on the PTCB**

Grading Period 5 30 Days	**Safety and Wellness**	**16 Days**	2F, 4A, 9A, 9B, 9C, 9D
	PT 2(F) The student will analyze the societal impact of medication costs. PT 4(A) The student will explain the causes, effects and consequences associated with medical errors, including medication errors. **Aseptic Technique** PT 9(A) The student will employ safety standards such as workplace standards. PT 9(B) The student will interpret and apply pharmacy standards according to the strictest local, state, or federal regulations to enhance safety. PT 9(C) The student will examine the consequences of unsafe practices. PT 9(D) The student will demonstrate safe procedures in the administration of client care in a simulated or clinical setting.		
	Mock Pharmacy	**14 Days**	9A, 9B, 9C
	PT 9(A) The student will employ safety standards such as workplace standards. PT 9(B) The student will interpret and apply pharmacy standards according to the strictest local, state, or federal regulations to enhance safety. PT 9(C) The student will examine the consequences of unsafe practices. **Uses all skills, knowledge, and communication to simulate daily operations in a retail or hospital pharmacy.**		
Grading Period 6 27 Days	**Preparation for PTCB Exam**	**26 Days**	9A, 9B, 9C
	PT 9(A) The student will employ safety standards such as workplace standards. PT 9(B) The student will interpret and apply pharmacy standards according to the strictest local, state, or federal regulations to enhance safety. PT 9(C) The student will examine the consequences of unsafe practices. Use all resources to include online prep, practice exams, books, manuals, labs, games, roll play, drills to ensure students are prepared to pass PTCE.		
	Take Exam at test site	**1 Day**	