



**MONROVIA COMMUNITY ADULT SCHOOL
CAREER TECHNICAL EDUCATION (CTE)
MEDICAL COURSE OUTLINE**

COVER PAGE

Course Title: Pharmacy Technician		Course Number: 4255	
Prerequisite: TABE Score of 9 or higher			
School:	Monrovia Community Adult School	District:	Monrovia USD
Address:	920 S. Mountain Ave., Monrovia 91016	Website:	monroviaadultschool.com
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CTE Industry Sector:	Health Science and Medical Technology		
Career Pathway:	Patient Care Health Care Administrative Services Health Care Operational Support Services		
Course Description:	The Pharmacy Tech program is a hybrid online/direct instruction course that prepares students to have a broad knowledge of pharmacy practice and to attain the skills required to order, stock, package, compound and prepare medications. The program prepares students to support and serve pharmacists, under their supervision, in various pharmacy settings. The pharmacy Technician Program address Basic Pharmacology, Pharmacy Calculations, Deciphering and Filling Medication orders, Reconstitution of Medications, Medical Terminology, Basic Anatomy and Physiology and Pharmacy Operations.		
Instructional Hours:	Contact Hours:	108	
	Lab Hours:	Included in contact hours	
	Online Hours:	144	
	Externship/Internship Hours:	200	
	Study Hours:	90	

COURSE OBJECTIVES

Upon successful completion of this course, students are able to do the following:

Personal/Interpersonal Knowledge and Skills

- (1) Demonstrate ethical conduct in all job-related activities.
- (2) Present an image appropriate for the profession of pharmacy in appearance and behavior.
- (3) Communicate clearly when speaking and in writing.
- (4) Demonstrate a respectful attitude when interacting with diverse patient populations.
- (5) Apply self-management skills, including time management, stress management, and adapting to change.
- (6) Apply interpersonal skills, including negotiation skills, conflict resolution, and teamwork.
- (7) Apply critical thinking skills, creativity, and innovation to solve problems.

Foundational Professional Knowledge and Skills

- (8) Demonstrate understanding of healthcare occupations and the healthcare delivery system.
- (9) Demonstrate understanding of wellness promotion and disease prevention concepts, such as use of health screenings; health practices and environmental factors that impact health; and adverse effects of alcohol, tobacco, and legal and illegal drugs.
- (10) Demonstrate commitment to excellence in the pharmacy profession and to continuing education and training.
- (11) Demonstrate knowledge and skills in areas of science relevant to the pharmacy technician's role, including anatomy/physiology and pharmacology.
- (12) Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of contemporary settings.
- (13) Demonstrate understanding of the pharmacy technician's role in the medication-use process.
- (14) Demonstrate understanding of major trends, issues, goals, and initiatives taking

place in the pharmacy profession.

(15) Demonstrate understanding of non-traditional roles of pharmacy technicians.

(16) Identify and describe emerging therapies.

Processing and Handling of Medications and Medication Orders

(17) Assist pharmacists in collecting, organizing, and recording demographic and clinical information for direct patient care and medication-use review.

(18) Receive and screen prescriptions/medication orders for completeness, accuracy, and authenticity.

(19) Assist pharmacists in the identification of patients who desire/require counseling to optimize the use of medications, equipment, and devices.

(20) Prepare non-patient-specific medications for distribution (e.g., batch, stock medications).

(21) Distribute medications in a manner that follows specified procedures.

(22) Practice effective infection control procedures, including preventing transmission of blood borne and airborne diseases.

(23) Assist pharmacists in preparing, storing, and distributing medication products requiring special handling and documentation [(e.g., controlled substances, immunizations, chemotherapy, investigational drugs, drugs with mandated Risk Evaluation and Mitigation Strategies (REMS))].

(24) Assist pharmacists in the monitoring of medication therapy.

(25) Prepare patient-specific medications for distribution.

(26) Maintain pharmacy facilities and equipment, including automated dispensing equipment.

(27) Use material safety data sheets (MSDS) to identify, handle, and safely dispose of hazardous materials.

Sterile and Non-Sterile Compounding

(28) Prepare medications requiring compounding of sterile products.

(29) Prepare medications requiring compounding of non-sterile products.

(30) Prepare medications requiring compounding of chemotherapy/hazardous products.

Procurement, Billing, Reimbursement and Inventory Management

- (31) Initiate, verify, and assist in the adjudication of billing for pharmacy services and goods, and collect payment for these services.
- (32) Apply accepted procedures in purchasing pharmaceuticals, devices, and supplies.
- (33) Apply accepted procedures in inventory control of medications, equipment, and devices.
- (34) Explain pharmacy reimbursement plans for covering pharmacy services.

Patient- and Medication-Safety

- (35) Apply patient- and medication-safety practices in all aspects of the pharmacy technician's roles.
- (36) Verify measurements, preparation, and/or packaging of medications produced by other healthcare professionals (e.g., tech-check-tech).
- (37) Explain pharmacists' roles when they are responding to emergency situations and how pharmacy technicians can assist pharmacists by being certified as a Basic Life Support (BLS) Healthcare Provider.
- (38) Demonstrate skills required for effective emergency preparedness.
- (39) Assist pharmacists in medication reconciliation.
- (40) Assist pharmacists in medication therapy management.

Technology and Informatics

- (41) Describe the use of current technology in the healthcare environment to ensure the safety and accuracy of medication dispensing.

Regulatory Issues

- (42) Compare and contrast the roles of pharmacists and pharmacy technicians in ensuring pharmacy department compliance with professional standards and relevant legal, regulatory, formulary, contractual, and safety requirements.
- (43) Maintain confidentiality of patient information.

Quality Assurance

- (44) Apply quality assurance practices to pharmaceuticals, durable and non-durable medical equipment, devices, and supplies.
- (45) Explain procedures and communication channels to use in the event of a product recall or shortage, a medication error, or identification of another problem.

COURSE CONTENT

The Pharmacy Technician program will cover the following content:

Pharmacy Settings and Occupations

Pharmacology

Medical Terminology

Compounding

Pharmacy Operations

Billing

Pharmacy Law

COURSE SYLLABUS

Week	Module	Content	Contact Hours	Online Hours
1-3	1	Pharmacy Settings and Occupation	18	24
		<p>Description</p> <ul style="list-style-type: none"> • History of Pharmacy and Health Care • Pharmacy Organizations • Pharmacy Settings • Technician Responsibilities • Pharmacy and Health Care 		
		<p>Outcomes</p> <p>Upon completion of this unit, the student is able to:</p> <ul style="list-style-type: none"> ➤ Describe the history of pharmacy from ancient times through today ➤ Describe the pharmacy profession as well as the settings ➤ Describe the overall aspects of the pharmacy technician job. ➤ Describe the general role of the pharmacy technician in relation to the pharmacist ➤ Describe pharmacy practice in the community setting ➤ Describe set up of a community pharmacy ➤ Discuss basic customer service principles ➤ Discuss basics of prescription processing in a community pharmacy ➤ Describe the duties and responsibilities of a pharmacy technician in the community pharmacy practice setting ➤ Describe the various members of the health-care team ➤ Describe the various roles of a pharmacy technician in a hospital pharmacy ➤ Define formulary and therapeutic exchanges ➤ Compare and contrast hospital medication orders with outpatient prescriptions ➤ Compare difference between single and multi-dose medication vials ➤ Describe what type of prescriptions are 		

Week	Module	Content	Contact Hours	Online Hours
		<p>used in mail order pharmacy</p> <ul style="list-style-type: none"> ➤ Describe automated systems in mail-order pharmacy ➤ Describe federal laws that apply to mail order pharmacy ➤ Describe long-term care pharmacy services ➤ Describe the role of nuclear pharmacies in health care. ➤ Identify the major groups in pharmacy that have specialized associations 		
4-6	2	Pharmacology	18	24
		<p>Description</p> <ul style="list-style-type: none"> • Science of Pharmacology • Dose forms and effects • Routes of Administration • Drug Classification • Anatomy and Physiology 		
		<p>Outcomes</p> <p>Upon completion of this unit, the student is able to:</p> <ul style="list-style-type: none"> ➤ Describe the different interpretations of "Dosage form" ➤ Describe advantages and disadvantages of the major classes of pharmaceutical dosage forms ➤ Differentiate the characteristics of dosage forms ➤ Distinguish between enteral and parenteral routes of administration. ➤ Describe common dosage forms used in enteral and parenteral routes of administration ➤ Describe the unique characteristics or limitations of dosage forms used in enteral and parenteral routes of administration. ➤ Explain how a drug produces a pharmacological effect. ➤ Describe why a blood concentration-time profile is an accepted method of indirectly determining the concentration of a drug at the site of 		

Week	Module	Content	Contact Hours	Online Hours
		<p>action.</p> <ul style="list-style-type: none"> ➤ Identify and explain the influence of ADME processes on the blood concentration-time curve. ➤ Describe why a blood concentration-time profile is an accepted method of indirectly determining the concentration of a drug at the site of action. ➤ Identify and explain the influence of ADME processes on the blood concentration-time curve. ➤ Identify and explain the influence of three factors on the processes of absorption, distribution, metabolism and excretion. ➤ Define bioequivalency and explain how the FDA uses this information ➤ Explain how to determine a drug's half-life. ➤ Describe physiological factors that influence drug disposition and lead to variation in drug response. ➤ Describe how common disease states can lead to altered drug response. ➤ Identify common adverse drug reactions and that such reactions can occur in one patient but not another ➤ Describe the mechanism of drug-drug interactions that affect the disposition of one or both drugs and result in either increases or decreases in therapeutic or side effects. ➤ Describe the types of drug-drug interactions that do not alter the drugs' disposition but interact at the site of action ➤ Describe drug-diet interactions that alter drug disposition ➤ Identify five factors that can affect the absorption of a drug ➤ Describe factors that could decrease the bioavailability ➤ Describe the processes of drug 		

Week	Module	Content	Contact Hours	Online Hours
		distribution, metabolism and elimination		
7-8	3	Medical Terminology	12	16
		<p>Description</p> <ul style="list-style-type: none"> • Review patient profiles • Medical abbreviations • Prescription Intake • Transcribing Prescriptions • Day supply calculations 		
		<p>Outcomes</p> <p>Upon completion of this unit, the student is able to:</p> <ul style="list-style-type: none"> ➤ Identify and describe Anti-Infectives and their common uses ➤ Review of Retail Intake & Hospital Intake of New prescriptions ➤ Review of SIG codes ➤ Explain why day supply calculations are important ➤ Explain how to calculate day supply for prescriptions tablets, capsules and oral liquid ➤ Explain how to estimate day supply for inhalers, specialized dosing packs and insulin ➤ Explain how to calculate day supply for creams, ointments, eye drops and eardrops. ➤ Describe the prescription process, including each of the steps involved from the creation of a prescription to patient pick up and counseling ➤ Explain the importance of preventing and identifying medication errors at every step of the prescription filling process. ➤ Distinguish the differences in responsibilities between pharmacy technicians and pharmacist as well as the legal and safety reasons for never assuming pharmacist-only responsibilities • Identify the importance of protecting patient privacy and treating all patients with respect. 		

Week	Module	Content	Contact Hours	Online Hours
		<ul style="list-style-type: none"> • Explain the common nomenclature system used in medical science terminology • Identify the medical science terminology associated with major body organ systems • Identify common nomenclature system used in naming drug classes • Identify medical abbreviations • Describe how to adjust the fill quantity and refills to comply with limitations of third-party programs • Identify medications that must be dispensed in originals, unopened packages • Describe three types of pharmacy literature • Identify and explain how to use pharmacy references • Identify websites used for pharmacy reference • Identify three examples of when dosing based on body weight is important • Calculate medication doses based on body weight • Identify which types of drugs are dosed according to body surface area • Use a monogram to calculate body surface area • Perform dosing calculations for drugs based on body surface area 		
9-11	4	Compounding	18	24
		<p>Description</p> <ul style="list-style-type: none"> • Calculations for compounding • Parenteral Compounding and Dosages • Percentages and Dilutions • Laminar Flow Hood and Biological Safety cabinets • Extemporaneous compounding • Sterile compounding 		
		<p>Outcomes</p> <p>Upon completion of this unit, the student is able to:</p> <ul style="list-style-type: none"> ➤ Identify and describe colloid and crystalloid IV fluids ➤ Explain osmosis 		

Week	Module	Content	Contact Hours	Online Hours
		<ul style="list-style-type: none"> ➤ Define tonicity and the actions of isotonic, hypotonic and hypertonic crystalloids in the body ➤ Identify the three most common IV solutions used in the prehospital setting and classify them as isotonic, hypotonic, and hypertonic ➤ Explain the need for compounded formulations ➤ Know the role of state boards of pharmacy, the USP-NF, and the FDA in regulating a compound pharmacy practice ➤ Explain factors that must be considered before a formulation is compounded. ➤ Explain how to determine a beyond-use date for a compound formulation ➤ Explain the difference in volumetric and non-volumetric glassware ➤ Describe common compounding techniques for a variety of formulations ➤ Explain complexity of flavoring and sweetening compounded liquids ➤ Explain the requirements of a sterile formulation ➤ Describe the differences between LVP and SVP solutions, and explain the purpose of common specialty parenteral solutions <ul style="list-style-type: none"> • Describe the use of administration sets and positive pressure pumps to administer parenteral solutions. • Explain the importance of using laminar flow hoods and various aseptic techniques in compounding parenteral solutions. • List and explain the factors that affect incompatibilities in parenteral solutions. • Explain the purposes of the different aspects of a quality assurance program. ➤ Compare the contrast the units of measurement unique to parenteral solutions 		
12-14	5	Pharmacy Operations	17	
		Description <ul style="list-style-type: none"> • Customer Service and Communication • Diversity 		

Week	Module	Content	Contact Hours	Online Hours
		<ul style="list-style-type: none"> • Ethics • Health and Safety • Drug Distributions • Inventory Management • Infection Control • Preventing and Managing medication errors 		
		<p>Outcomes</p> <p>Upon completion of this unit, the student is able to:</p> <ul style="list-style-type: none"> ➤ Describe the goal of inventory management ➤ Identify and describe the purpose of wholesalers ➤ Identify and describe formulary ➤ Describe inventory systems for maintaining adequate inventory ➤ Identify technology used in inventory systems ➤ Describe the ordering and receiving process related to inventory management ➤ Identify and complete forms used during inventory and ordering ➤ Describe procedures for stocking and storing pharmacy inventory ➤ List the six ethical principles available to resolve an ethical dilemma ➤ Identify and understand the Code of Ethics for Pharmacy Technicians ➤ Identify, prospectively, practice situations where ethical dilemmas may occur ➤ List four general causes of contamination of pharmaceuticals and sterile pharmacy products ➤ List three principal goals for infection control and prevention programs ➤ List three basic principles of asepsis ➤ Identify the precautions used by health care workers to protect themselves and others from exposure to bloodborne and other pathogens ➤ Name three bloodborne pathogens of most concern to health care workers and for which OSHA exposure control plans are 		

Week	Module	Content	Contact Hours	Online Hours
		<p>designed.</p> <ul style="list-style-type: none"> ➤ Recognize the routes of transmission of microorganisms ➤ List several components of the routine precautions used by healthcare workers to protect themselves from infections ➤ Describe what health care workers do when there is a possible occupational exposure to blood borne pathogens 		
15-16	6	Billing	17	
		<p>Description</p> <ul style="list-style-type: none"> • Insurance Services / Coverage • Pharmacy Reimbursement • Insurance Plans • Prior Authorization • Formularies • Insurance Audits 		
		<p>Outcomes</p> <p>Upon completion of this unit, the student is able to:</p> <ul style="list-style-type: none"> ➤ Describe how medication prices have changed over time ➤ Describe the role of third-party programs and pharmacy benefit managers in pharmacy. ➤ Identify and compare different types of managed care programs: HMOs, POSs and PPOs. ➤ Define Medicare and Medicaid ➤ Describe online adjudication ➤ Explain how a pharmacy technician can resolve rejected third-party claims ➤ Describe billing procedures for Medication Therapy Management services. ➤ Describe the factors that affect product and service reimbursement for the drug product in hospitals, skilled nursing facilities and community practice. ➤ List factors that affect prescription coverage 		

Week	Module	Content	Contact Hours	Online Hours
		<p>and reimbursement in community pharmacy practice.</p> <ul style="list-style-type: none"> ➤ Differentiate between the criteria in reimbursement issues in acute care and long term care ➤ Explain existing and possible avenues for reimbursement for cognitive services ➤ Describe the role of the pharmacy technician in increasing reimbursement for a health care provider 		
17-18	7	Pharmacy Law	9	
		<p>Description</p> <ul style="list-style-type: none"> • Regulatory Standards • HIPPA • Controlled Substance Schedules • Drug Regulation and Control • Certification test review 		
		<p>Outcomes</p> <p>Upon completion of this unit, the student is able to:</p> <ul style="list-style-type: none"> ➤ Identify the key legislative acts governing pharmacy practice ➤ Describe the FDA process for new drug approval ➤ Describe the process by which patents expire, making a drug eligible for release under a pharmaceutical or generic name, and what approval procedures manufactures must go through ➤ Identify the different requirements for labels and product labeling for stock medications, prescription containers, controlled substances, and over-the-counter drugs. ➤ Describe the restrictions for the different categories of over-the-counter drugs. ➤ Identify and describe the five groups of controlled substances and restrictions for each. ➤ Identify when a DEA number is required and know how to check it. ➤ Describe how to fill out and process 		

Week	Module	Content	Contact Hours	Online Hours
		<p>DEA form 222</p> <ul style="list-style-type: none"> ➤ Identify key DEA forms and when they are required ➤ Describe the process for FDA drug recalls. ➤ Describe the difference between statutes, rules, regulations and quasi-legal standards ➤ Explain the rules, regulations and reasons for practice standards in health institutions. ➤ State the need for the Food, Drug and Cosmetic Act. ➤ Discuss quasi-legal standards that define accepted professional practice. ➤ State reasons for OSHA regulations ➤ State several basic components of the Patient’s Bill of Rights ➤ Describe the drug use process ➤ Explain importance of control in the drug use process ➤ Explain the role of the pharmacist in the drug use process. ➤ State the mission of pharmacy practice. ➤ Explain pharmaceutical care. ➤ Discuss trends in the drug use process and how these trends may affect the roles of pharmacist and pharmacy technician. ➤ Identify the organizations for the Pharmacy Technician Certification Board ➤ Describe PTCB, including management and exam structure ➤ Define the process of certification ➤ Describe eligibility requirements to take PTCB examination 		

METHODS OF INSTRUCTION

Online Instruction:

Pharmacy Tech utilizes Coursesites, an online Learning Management System, to provide students instruction the week before class. The course is built out to provide a variety of interactive online features. Students could possibly have any of the following assignments:

- Watch a video and take a quiz or complete some written assessment
- Play a brain game to memorize brand and generic drugs and other items that require rote memorization
- Complete online course reading and complete formative assessments (matching, multiple choice, short answer) to demonstrate comprehension
- A variety of other activities

Class Instruction

Pharmacy Tech faculty utilize the following instructional strategies:

Lecture / Direct Instruction
Pharmacy Skills Lab
Direct Demonstrations
Cooperative Learning Strategies
Vocabulary Learning Strategies
Role Playing
Team Presentations
Team Health Fair for ESL classes
Reading/writing assignments
Oral and Written Testing
Practical / Application

METHODS OF EVALUATION

Students' grade in the class will be determined by demonstrating competency at the end of each module through written testing, skills performance, ability to state relation between theory and practical application, ability to demonstrate knowledge of theory given through practical application in clinical setting/lab.

Pharmacy Tech faculty will utilize the following means of assessment:

- Online Formative and Summative Assignments
- Class Quizzes
- Class Exams
- Short answer/short essay
- PowerPoint presentations
- Return Demonstration of all skills
- Roleplaying

ASSIGNMENTS

Module	Assignments
1	Pharmacy Settings and Occupation
	<ul style="list-style-type: none"> • Students will research a pharmacy setting of their choice and the pharmacy technician job functions that are required for that specific setting. Students will include a floor map of how the pharmacy is set up, what type of customers are serviced and a workflow map showing the processes of a prescription. Students will be placed in small groups with students that chose a different pharmacy setting. Students will work together to compare and contrast the different settings. • Students will be given a questioner and will interview a pharmacy technician about their daily job functions, likes and dislikes. Students will report to class what they found most interesting during their interview.
2	Pharmacology
	<ul style="list-style-type: none"> • Students will create a 3 dimensional route of administration. Students will use creativity to create body organs, label organs accurately and show how drugs are absorbed into the circulatory system. Students will present their project and orally describe how a drug is absorbed. • Students will draw a family tree of their immediate family on a poster board.

Module	Assignments
	<p>Students will then write a paper discussing human variability. Students will compare and contrast family members and why drugs will affect each of their family members in different ways.</p>
3	<p>Medical Terminology</p>
	<ul style="list-style-type: none"> • Students will create a large size body art poster board including all body parts and organs. Students will draw a picture of each organ and label it accurately. Using each organ system students will create a chart of Medical Specialist. i.e. Cardiovascular – Cardiologist, Hematologist. • Students will create a Medical Condition using terms or word parts, at least 3, in any combination. They will Include important details: Name of the condition (using at least 3 word parts), Definition of the word parts, ID the body system(s) affected by the disorder, Describe the pathology, effects, etc., Describe how it is diagnosed, possible treatment procedures, and what medical specialists would treat it (these should be factual possibilities), Describe advantages & disadvantages of having this disorder, Describe possible drugs that can be used to treat the medical condition.
4	<p>Compounding</p>
	<ul style="list-style-type: none"> • Students will chose a compound of choice and create an instructional video. Students will describe the accurate way to perform aseptic technique and describe how to accurately compound a medication. In addition, students must perform proper gowning process. Students will present video to classmates, classmates will score video using a certification rubric. • Students will be given a medication that only comes in tabs and needs to be made into a liquid for patient that is unable to swallow tablets. Students will find accurate compounding recipe, create a compounding sheet, collect ingredients needed for their compound and make their own compound.
5	<p>Pharmacy Operations</p>
	<ul style="list-style-type: none"> • Working with a group students will work together to create an inventory list of a section in our mock pharmacy. Given a specific pharmacy setting and usage list students will work together to create inventory levels needed to keep in stock. • Students will complete an interactive video called Virtual pharmacy externship for pharmacy technicians. Virtual Pharmacy Externship for Technicians simulates a retail pharmacy. Students step into a virtual pharmacy and interact with customers; work on prescriptions; interact with pharmacists, physicians, and insurance representatives; prepare medication

Module	Assignments
	<p>labels; and handle inventory or store management tasks. Through the use of dynamic video and interactive tasks, emphasis is placed on critical thinking and problem solving. Students choose their own path while progressing through the scenarios. The decisions they make impact the outcome and virtual pharmacist provides feedback as you work through real-life problems in a pharmacy. Soft skills, such as customer interaction, and hard skills, such as completion of a patient profile and fulfillment of a prescription, are fully integrated to make this a complete learning experience.</p>
6	Billing
	<ul style="list-style-type: none"> • Students will take a survey from 5 different family members that take medication about medications that have not been covered by their insurance in the past. Students will collect drug name and insurance company. Students will then chose one medication from their surveys and research why it was not covered by insurance. Is it a tier drug? Is there pre-requisite drugs? Is there a prior authorization form that can be done? Students will write a paper with their findings, what they learned about insurance companies and their views of insurance billing. • Students will work as a pharmacy technician auditor on an online pharmacy lab to verify claims paid by insurance. Students will need to find prescription billing errors to collect back the money the insurance company has paid. Students will compete with each other to see who can collect the most money.
7	Pharmacy Law
	<ul style="list-style-type: none"> • Students will work in pairs and role play different scenarios that can occur in the pharmacy. Classmates will observe the scenario and identify if a HIPPA violation was created. After each scenario class will discuss the different ways that a HIPPA violation could have been avoided. • Students will work in small groups (3-4) and will be given a set of 10 cards where they need to calculate pseudoephedrine limitations for both retail and mail order pharmacies. As a group they will decide if they will be able to complete the purchase of a pseudoephedrine product. If they are unable to complete the purchase they need to come up with a script of how they would tell the customer that they cannot complete the transcription. • Students will write a paper to compare and contrast how laws are different in California and another state. Students must be able to identify 4 differences.





REQUIRED TEXTS AND OTHER INSTRUCTIONAL MATERIALS

Coursesites LMS

McEvoy, Theresa, and Joyce A. Generali. *The Pharmacy Technician's Pocket Drug Reference*. N.p.: Apha, n.d. Print.

Johnston, Mike. *The Pharmacy Technician: Foundations and Practices*. 5th ed. New York: Morton, 2014. Print.