STRANDS AND STANDARDS
PHARMACY TECHNICIAN

Course Description

An instructional program that prepares individuals to support pharmacists. This includes pharmacist approved consultation regarding Over-the-Counter (OTC) medications and natural products, counter dispensing operations, and prescription preparation; maintaining patient and related health record information; and by performing a wide range of practice-related duties for retail, hospital, home care, mail-order, and other pharmacy settings. Special emphasis will be placed on preparing the student to take the national Pharmacy Technician Certification Board (PTCB) certification examination and the State of Utah law examination.

Intended Grade Level	12
Units of Credit	2.5
Core Code	36.01.00.00.210
Concurrent Enrollment Core Code	36.01.00.13.210
Prerequisite	None
Skill Certification Test Number	Industry Exam (PTCB)
Test Weight	1.0
License Type	CTE and/or Secondary Education 6-12
Required Endorsement(s)	
Endorsement 1	Pharmacy Technician
Endorsement 2	N/A
Endorsement 3	N/A

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STRAND 1

Human Anatomy & Physiology-Students will describe the basic concepts of human anatomy and physiology, common diseases, and disorders of all body systems related to pharmacodynamics and pharmacokinetic properties of drugs.

Standard 1

Identify and describe basic human anatomy.

Standard 2

Identify and describe basic human physiology.

Standard 3

Analyze the relationship of human physiology and drugs.

Standard 4

Examine diseases and disorders of the human body.

STRAND 2

Pharmacology-Students will identify pharmacology, drugs, drug sources, drug actions, and their effects on the human body.

Standard 1

Differentiate between brand names, generic names, uses, and therapeutic classification of drugs.

Standard 2

Explain the pharmacodynamics and pharmacokinetics (biopharmaceutics) of drugs in the human body.

Standard 3

Explain the Absorption, Distribution, Metabolism, and Elimination (ADME) process of drugs.

Standard 4

Analyze the science of preparing and dispensing medications.

Standard 5

Demonstrate knowledge of therapeutic effects, side effects, and adverse reactions of drugs.

Standard 6

Discuss basic posology and toxicology.

Standard 7

Examine the ADME drug factors that relate to pediatric and elderly drug administration.

Standard 8

Identify different forms of drug products and the routes by which they are administered.

Standard 9
Explain the basic terminology of chronic drug administration and drug dependence.

Standard 10
Discuss factors that can alter drug response in the patient.

Standard 11
Compare beneficial and harmful effects of drugs.

STRAND 3
Pharmaceutical and Medical Terminology-Students will apply the skills necessary to interpret and understand pharmacy and medical terminology.

Standard 1
Identify basic structure of pharmaceutical and medical words.

Standard 2
Apply word building and definitions.

Standard 3
Correctly use pharmaceutical terminology, medical terminology, and medical abbreviations.

Standard 4
Define root words, prefixes, suffixes, abbreviations, and symbols of medical terminology.

Standard 5
Apply pharmaceutical terminology in processing prescriptions.

STRAND 4
Pharmacy Calculations-Students will assist the pharmacist in calculating ingredients and doses, and determine dosage form, quantity, and supply of medications dispensed in a variety of pharmacy settings.

Standard 1
Solve basic mathematical problems involving fractions, decimals, percent's, ratios, and proportions.

Standard 2
Perform conversions from one metric unit of measure to another.

Standard 3
Interpret and use the four systems of measurement and perform conversions.

Standard 4
Set up ratio and proportion equations and solve for unknown terms.

Standard 5
Evaluate drug problems, involving solutions, solid dosage forms, injection solutions, and TPN solutions.

Standard 6
Analyze problems involving pediatric and elderly dosing.

Standard 7
Prepare and calculate the drug dosage for intravenous solutions.

Standard 8
Prepare and calculate reconstituted non-injected solutions for oral and internal feeding.

Standard 9
Calculate drug dosage based on the body weight of the pediatric, adult, and elderly patient.

Standard 10
Demonstrate proficiency in meeting pharmacy efficiency and accuracy standards.

Standard 11
Demonstrate calculator functions.

Standard 12
Explain percentage preparations (w/w, w/v, v/v).

STRAND 5
Intravenous (IV) Preparations-Students will assist the pharmacist in the preparation of admixtures and demonstrate correct operation and procedures of admixture equipment.

Standard 1
Interpret the calibration of the appropriate equipment to administer the IV admixture medication to the patient.

Standard 2
Identify and explain the most common parenteral routes of administration used in the institutional pharmacy.

Standard 3
Accurately prepare an IV admixture in the laminar flow hood.

Standard 4
Describe and categorize the drugs most commonly used in an IV admixture.

Standard 5
Identify and describe the facilities, equipment, and supplies used in the preparation of IV admixture medications.

Standard 6
Explain and demonstrate the aseptic techniques and procedures followed in the preparation of an IV admixture.

Standard 7
Describe the preparation, equipment, supplies, techniques, and precautions used in compounding chemotherapy drugs.

Standard 8
Measure, calculate, and transfer IV drugs.

Standard 9
Identify universal precautions to avoid IV contamination.

Standard 10
Explain the proper procedure for repacking IV drugs.

Standard 11
Prepare TPN solutions for patients.

Standard 12
Describe the flow of IV admixture orders within an institutional setting.

STRAND 6
Extemporaneous Compounding-Students will illustrate knowledge of proper compounding techniques using equipment to weigh, measure, reduce, and combine ingredients.

Standard 1
Select the most appropriate methods and techniques used to prepare pharmaceutical compounds.

Standard 2
Describe extemporaneous compounding and common situations in which compounding is required.

Standard 3
Explain the basic concepts of the stability of compounded formulations.

Standard 4
Describe methods of preparing, packaging, labeling, shelf life, storage, and stability of the different drugs used in compounding formulations.

Standard 5
Describe the equipment used for weighing, measuring, and compounding of pharmaceuticals.

Standard 6
Choose proper techniques for weighing pharmaceutical ingredients and measuring liquid volumes.

Standard 7
Explain the processes by which solutions, suspensions, ointments, creams, powders, suppositories, gums, inhalations, injections, lip balms, lozenge or troches, nasal, otics, ophthalmic, oral solutions, rectal solutions, and veterinary formulas are prepared.

Standard 8
Apply compounding notes and calculation equations for preparing different formulas of compounding.

Standard 9
Explain the commercial availability of different medications used in pharmacy compounding.

Standard 10
Describe compounding principles for dosage forms.

Standard 11
Explain methods of mixing solid and semisolid dilutions.

STRAND 7
Pharmacy Law-Students will identify and assist the pharmacist in monitoring federal, state, and local laws, regulations, and professional ethics. Students will demonstrate knowledge of the pharmacy law system and regulations established by governmental bodies (FDA, DEA, and state boards of pharmacy.) Students will maintain professional standards and codes of ethics established by professional pharmacy associations/organizations.

Standard 1
Explain the common legal terms used by state and federal agencies involved with pharmacy drug regulation.

Standard 2
Explain the duties that may legally be performed by the pharmacy technician in Utah.

Standard 3
Distinguish among common law, statutory law, regulatory, or administrative law, ethics, and professional standards.

Standard 4
List and explain the federal and state regulation agencies (FDA, DEA, BOP).

Standard 5
Identify and explain safety considerations regulated by federal law.

Standard 6
Identify the federal regulations for the repackaging of medications.

Standard 7
Identify and follow the Utah pharmacy technician laws and rules required to practice pharmacy.

Standard 8
Discuss the Utah Pharmacy Practice Act (Title 58-17b).

Standard 9
Explain and describe the Utah Pharmacy Practice Act and Regulations for the practice of Pharmacy.

Standard 10
Identify and follow the Utah Controlled Substances Act and Rules.

Standard 11
Identify the rules of administrative law from the Division of Occupational and Professional Licensing Act and Title in Utah.

STRAND 8
Pharmacy Computer Systems-Students will describe and explain the basic concepts of a pharmacy computer system to assist the pharmacist in prescription processing, drug interaction, drug verification, and patient education.

Standard 1
Utilize the computer system and practice the prescription process.

Standard 2
Add or select third party records, utilizing information on patient's insurance prescription card, and add or update information.

Standard 3
Demonstrate the process of refilling prescriptions, utilizing the computer system.

Standard 4
Describe the DAW override code and preauthorization number used to fill or refill a prescription in the computer system.

Standard 5
Describe the override code for interactions and allergies and the preauthorization number used to fill or refill prescriptions in the computer system.

Standard 6
Explain the process for obtaining quotes for drugs requested by a patient and match prices at other pharmacies.

Standard 7
Demonstrate the steps used in the computer system program to assist patients in the process of obtaining prescriptions.

Standard 8
Describe the drug, physician, and patient maintenance programs.

Standard 9
Demonstrate use of the wholesale computer system program in creating orders, receiving orders, generating printouts, and managing quantity changes of drugs on hand.

Standard 10
Demonstrate use of the insurance company computer system program to charge prescriptions to a third party and determine eligibility for a patient.

Standard 11
Explain how to locate and utilize information about third party medication restrictions, exclusions, rejected claims, submitting claims, other coverage, and limitations, rebilling, and reimbursement processing.

Standard 12
Describe and demonstrate the computer process required to enter information for compounding medications.

Standard 13
Demonstrate the use of the computer system to process IV admixtures for patients.

STRAND 9
Pharmacy Laboratory-Students will demonstrate fundamental pharmacy techniques and skills.

Standard 1
Operate a computer system to process prescriptions.

Standard 2
Insert standard text Apply medical and pharmaceutical terminology when processing prescriptions.

Standard 3
Apply pharmacy law regulations.

Standard 4
Explain HIPAA and its impact on community and hospital pharmacies.

Standard 5
Operate the cash register for prescription sales.

Standard 6
Operate the computer to print patient information, drug interactions, drug information, call doctor labels, prescription labels, and other pharmacy information.

Standard 7
Locate brand name and generic drugs in the pharmacy.

Standard 8
Locate different sections of the pharmacy.

Standard 9
Locate drugs for therapeutic class or common use in the pharmacy.

Standard 10
Identify the five schedules of controlled substances in the pharmacy.

Standard 11
Demonstrate proper customer service when answering the telephone or working in the drop-off and pick-up windows.

Standard 12
Classify OTC drugs, active ingredients, drug action, and indication for use.

Standard 13
Identify the most common hospital and community drugs used.

Standard 14
Operate the pharmacy stations and demonstrate job responsibilities.

Standard 15
Utilize 100% of the pharmacy to acquire professional skills.

Standard 16
Develop logical, organized reasoning, and decision-making skills to identify and resolve problems in the pharmacy.

STRAND 10
OTC and Herbal Products-Students will prepare to assist patients in selecting OTC and herbal supplements to alleviate symptoms and to assist the pharmacist in determining which patients using OTC or herbal supplements need counseling.

Standard 1
Describe the role of self-medication with OTC products in the health care delivery system.

Standard 2
Explain when OTC or herbal medication is appropriate.

Standard 3
Explain federal regulations for OTC and herbal preparations.

Standard 4
Evaluate the advertising of OTC and herbal products.

Standard 5
Explain the labeling requirements for OTC and herbal products and their place in medical therapy according to the Dietary Supplement Health and Education Act.

Standard 6
Compare OTC, herbal, homeopathic, and dietary supplements.

Standard 7
Identify and practice methods to obtain patient history of non-prescription medications.

Standard 8
Explain potential hazards of non-prescription products including contamination, adulteration, interaction with prescription medications, and adverse reactions.

Standard 9
Apply techniques to determine which patients using non-prescription products need counseling by a pharmacist.

STRAND 11

Internet in the Pharmacy-Students will use the Internet to research and study a variety of pharmacy related topics. Students will also research opportunities for more training and job market entry options.

Standard 1
Insert standard text Apply and understand Internet terminology, structure, and function.

Standard 2
Explain and demonstrate professional use of the Internet.

Standard 3
Incorporate Internet information into the pharmacy technician profession.

Standard 4
Demonstrate use of the Internet browser.

Standard 5
List research capabilities and limitations of the Internet.

Standard 6
Demonstrate knowledge of legal and ethical issues.

Standard 7
Identify risks and safety concerns.

Standard 8
Describe the value of the Internet to the healthcare professional.

Standard 9
Analyze criteria to evaluate the validity of health information on the Internet.

STRAND 12
Pharmacy Management-Students will follow the guidelines of medication orders and returns, maintain security of the pharmacy, manage prescription and non-prescription drug lists in the pharmacy, keep the pharmacy clean and organized, and maintain and obtain the medication inventory.

Standard 1
Analyze the pharmacy department for efficient management, maximum function and workflow.

Standard 2
Identify and list the professional bodies and associations/organizations which set and maintain pharmacy standards (ASHP, UPS, JCAHO, ASCP, OSHA).

Standard 3
Explain the concept of pharmacy formulary.

Standard 4
Identify the work areas in the pharmacy.

Standard 5
Identify sources of medications.

Standard 6
Explain the medication purchasing process.

Standard 7
Apply concepts of inventory management.

Standard 8
Identify and describe the procedures for receiving orders.

Standard 9
Identify and describe the procedures for stocking medications.

Standard 10
Identify medication storage requirements for pharmaceutical companies.

Standard 11
Describe the procedures and methods used for returning unwanted medications and supplies.

Standard 12
Identify the function of a medication package.

Standard 13
Describe the procedures for sales transactions using the cash register.

Standard 14
Describe the routine duties to maintain the pharmacy.

Standard 15
Describe and identify OTC medications stocked by the pharmacy technician or pharmacist, assist customers to locate medication, and instruct on usage.

Standard 16
Differentiate between pharmacy compounding and manufacturing.

Standard 17
Explain important aspects of weighing pharmaceuticals and measuring liquid pharmaceuticals.

Standard 18
Describe the concept of reconstitution.

Standard 19
Identify common elements of the unit dose distribution system.

Standard 20
Discuss why pharmacy workers need to know how to safely handle the many potentially hazardous materials in the pharmacy environment.

Standard 21
Identify the general safety rules and precautions in the pharmacy environment.

Standard 22
Discuss the importance of cleanliness in the pharmacy work environment.

Standard 23
Explain the necessity and importance of cleaning and maintenance of specialized pharmacy equipment.

Standard 24
Review the pharmaceutical technology advancements that are common in the pharmacy system.

Standard 25
Identify the fire safety rules for the pharmacy workplace.

Standard 26
Restate general rules regarding what to do in the event of a pharmacy robbery.

STRAND 13
Pharmacy Customer Services-Students will assist the pharmacist by providing excellent customer service.

Standard 1
Demonstrate the importance of maintaining a caring attitude with the patient or customer.

Standard 2
Adopt a caring attitude towards patients in all aspects of the job responsibilities.

Standard 3
Compare and contrast the provision of direct patient care in various patient care settings.

Standard 4
Describe the importance of handling patients' or customers' problems.

Standard 5
Prepare to help the patient or customer locate OTC drugs.

Standard 6
Council patients on the use of OTC drugs as approved by the pharmacist.

Standard 7
Explain the importance of the professional pharmacy staff relationship with the patient or customer.

STRAND 14
Pharmacy Professional Ethics-Students will examine their personal ethics, assist the pharmacist in improving the code of ethics in the pharmacy setting, and demonstrate ethical conduct in all job related activities.

Standard 1
Explain the "Code of Ethics for Pharmacy Technician."

Standard 2
Explain the concept of the pharmacy as a moral community.

Standard 3
Explain the patient-pharmacy technician relationship.

Standard 4
Explain the pharmacy staff-other health professional relationship.

Standard 5
Demonstrate honesty and integrity.

Standard 6
Demonstrate professional and ethical competency.

Standard 7
Demonstrate ethical drug distribution.

Standard 8
Practice the standards of professional communication.

Standard 9
Analyze and discuss other principles of professional conduct that guide the pharmacist and pharmacy technician.

STRAND 15
Professionalism of the Pharmacy Technician-Students will maintain an image appropriate for the pharmacy technician profession and demonstrate professional skills necessary to benefit the patient or customer.

Standard 1
Adopt attire that follows the pharmacy's dress code.

Standard 2
Maintain appropriate personal hygiene.

Standard 3
Demonstrate personal control and professional decorum.

Standard 4
Communicate professionally when speaking or writing.

Standard 5
Demonstrate correct grammar, punctuation, spelling, style, and formatting conventions in preparing all written communications.

Standard 6
Pronounce technical terms correctly.

Standard 7
Demonstrate appropriate and effective listening skills.

Standard 8
Explain the importance of body language when communicating with others.

Standard 9
Choose a communication style appropriate for the audience and demonstrate effective strategies for communicating whit patients who are non-English speaking or who display other communication barriers.

Standard 10
Formulate plans to solve professional problems commonly encountered on the job.

Standard 11
Use a systematic approach to problem solving.

Standard 12
Identify and list pharmacy technician professional associations and organizations (PTCB, BOP, NPTA, ASHP, AAPT, APA, PTEC).

STRAND 16
HIPAA Pharmacy Regulation-Students will explain the Health Insurance Portability and Accountability Act (HIPAA) of 1996.

Standard 1
Demonstrate an understanding of HIPAA and its importance to health care.

Standard 2
Outline professional guidelines for safeguarding the confidentiality of patient and propriety business information.

Standard 3
Explain the role of the Department of Health and Human Services (HHS) as protectors of privacy of patient health information.

Standard 4
Explain protected health information (PHI) as used by health care providers.

STRAND 17
Pharmacy Technology and Automation-Students will be knowledgeable and demonstrate proficiency and safety with new pharmacy technology.

Standard 1
Examine how pharmacy technicians can help facilitate a more efficient and effective pharmacy practice system.

Standard 2
Explain the new roles technicians will assume in the drug distribution process using improved technology.

Standard 3
Describe bar coding as it applies to drug distribution and explain the role of the pharmacy technician in this process.

Standard 4
Describe how Computerized Prescription Order Entry (CPOE) differs in a variety of pharmacy settings and explain the role of the pharmacy technician in CPOE.

Standard 5
Explain how a robot can change the workload of the pharmacy.

Standard 6
Discuss the different functions of a personal digital assistant (PDA).

Standard 7
Describe the value of the Internet to the pharmacy in checking for, preventing and searching for medication errors, health information, DEA numbers, pharmacy regulations, and patient concerns.

STRAND 18
Employment Skills-Students will demonstrate the skills, knowledge, and responsibilities required to gain employment and maintain status as a professional pharmacy technician.

Standard 1
Complete a job application form.

Standard 2
Develop a current resume.

Standard 3
Create a letter of application.

Standard 4
Perform successfully in an interview.

Standard 5
Demonstrate appropriate follow-up procedures.

Standard 6
Complete pharmacy technician internship/externship.

Standard 7
Explain requirements to obtain and maintain national certification and state licensure.

STRAND 19

Medication Errors-Students will identify causes, prevention, reporting, and risk management of medication errors; practice safe medication use and prevent errors in the distribution, preparation, dispensation, and administration of medications; and will encourage patients to ask questions to minimize errors.

Standard 1

Identify causes of medication errors.

Standard 2

Explain the importance of the Food and Drug Administration (FDA) MedWatch program.

Standard 3

Discuss how to education patients to identify, minimize, and prevent medication errors.

Standard 4

Apply the five rights of drug administration. Explain medication errors and human perspectives.

Standard 5

Explain medication errors and human perspectives.

Standard 6

Choose methods to prevent medication errors and share responsibilities.

Standard 7

Explain the management procedures of medication errors.

Standard 8

Identify the Drug Utilization Evaluation (DUE) process.

Standard 9

Outline the criteria used to select medications for DUE reporting.

Standard 10

Identify medications errors in relation to specific diseases and conditions.

Standard 11

Explain the medication error reporting system.

Standard 12

Identify common medication errors in pediatric and elderly patients and discuss adverse drug reactions in these populations.

STRAND 20

Workplace Relations-Students will develop essential human-relation skills needed to maintain gainful and satisfying employment.

Standard 1

Apply problem-solving skills.

Standard 2

Demonstrate appropriate work relations.

Standard 3

Demonstrate appropriate attitudes and strategies for serving and working with diverse populations.

SUGGESTED OPTIONAL ENRICHMENT STANDARDS

STRAND 1

PTCB Practice Exams-Students will be prepared for the National PTCB Certification exam in assisting the pharmacist in serving patients, medication distribution, and inventory control systems and administration, and management of the pharmacy practice.

Standard 1

Review and explain the concepts studied in the program.

Standard 2

Demonstrate test taking and critical thinking skills in preparation for the PTCB exam.

Standard 3

Review knowledge and gain confidence for the exam.

STRAND 2

Advanced Pharmacy Calculations-Students will learn and perform advanced calculations for pediatric, adult, and geriatric IV admixtures and demonstrate advanced calculation concepts.

Standard 1

Determine the Body Surface Area (BSA) of children and adults using a calculation formula or a nomogram scale.

Standard 2

Compute the safe amount of drug to be administered according to the BSA.

Standard 3

Calculate pediatric intermittent IV drip rates for medications administered with IV infusion sets.

Standard 4
Calculate the amount needed to mix proportionate IV additive medication into pediatric volume IV solutions.

Standard 5
Demonstrate ability to calculate appropriate pediatric IV medications.

Standard 6
Calculate pediatric IV maintenance fluids.

Standard 7
Calculate IV flow rate.

Standard 8
Calculate the flow rate and assess safe dosage for critical care IV medication administered over a specified time period.

Standard 9
Calculate the flow rate for primary IV and IVPB solutions for patients with restricted fluid intake requirements.

STRAND 3
Advance IV Ad mixture-Students will demonstrate advanced knowledge in preparing intravenous admixtures.

Standard 1
Examine and explain advanced IV admixture formulations.

Standard 2
Prepare complete, uniform IV labels.

Standard 3
Reconstitute drug additives using appropriate aseptic technique.

Standard 4
Compound the admixture using appropriate aseptic techniques.

Standard 5
Examine the IV admixture for clarity and presence of particulate matter.

Standard 6
Prepare and maintain a patient profile so that admixture can be prepared and delivered to the nursing unit.

Standard 7
Deliver completed admixture to the patient care area and return unused admixtures to the pharmacy.

Standard 8
Initiate patient charges for admixture administered and credits admixture returned unused.

Standard 9
Demonstrate orderly maintenance of the admixture area.

Standard 10
Prepare chemotherapy solutions, advance TPN solutions, and recognize incompatibilities.

Standard 11
Demonstrate correct use of advanced calculations involved in preparing IV admixtures.

Standard 12
Explain the flow of the admixture orders.

Standard 13
Demonstrate quality assurance and performance improvement.

Standard 14
Describe an IV piggyback.

Standard 15
Explain the difference between working in a horizontal flow hood versus a vertical flow hood.

Standard 16
Define a class 100 area.

Standard 17
Identify major components of parenteral nutrition solutions.

STRAND 4
Advanced Compounding-Students will explain mythologies needed to make effective dosage forms to meet individual patient needs.

Standard 1
Define advanced compounding formulations.

Standard 2
Prepare advance dosage forms.

Standard 3
Maintain compounding forms and records.

Standard 4
Illustrate initial requirements necessary to compound a formulation.

Standard 5

Prepare prescription and medication orders using common compounding equipment and facilities.

Standard 6

Demonstrate the proper use of equipment, knowledge of required procedures, and maintaining a compounding log.

Standard 7

Explain detailed pharmaceutical considerations and common compounding procedures for various formulations.

Standard 8

Prepare sterile compounding formulations and explain how to administer them.