

**SYLLABUS**

**FOR**

**ADVANCED PHARMACY TECHNICIAN**

8/14

**Total Hours**

825 hours

**Prerequisites**

HCC Core, Medical Terminology, A&P, Core CPR and First Aid

**Advanced Pharmacy Technician Major Description**

The aim of this course is to give a comprehensive body of information and tools to the student to achieve the competencies needed to obtain certification as a Pharmacy Technician.  It will introduce the student to the techniques and procedures necessary to prepare and dispense medications in both the institutional and community pharmacy setting.  In addition, other medicine and non-medication pharmacy-related activities are introduced, including billing and inventory management.

Upon completion of all required coursework and clinical, the student will be eligible to take the NHA National Certification Exam for Pharmacy Technicians.

**Career Major Goals**

            Upon completion of this course, the student should be able to:

1.     Apply concepts of assisting the pharmacist in collecting and organizing patient information.

            2.     Demonstrate steps to processing the prescription/medication order.

            3.     Recognize how to prepare and deliver medication to patient.

            4.     Know how to maintain inventory control.

            5.     Understand administrative duties for the pharmacy practice.

7. Know safety procedures for preventing errors when processing prescriptions

8. Comprehend professional standards in the health care work place

9. Apply professional communication techniques for the pharmacy technician

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|  | **Sequence of Courses**  **Course Title**  Orientation to the Pharmacy Technician Career    **Course Hours**  15 Hours    **Course Description**    Students will enroll in the Pharmacy Technician Program by filling out all required enrollment forms. The pharmacy industry and general rules pertaining to school, classroom and labs will be covered. Safety in the workplace and healthy work habits are emphasized throughout the year.    **Knowledge & Skills**    A. Complete Administrative Forms and Requirements for Enrollment.  1. Complete forms pertaining to enrollment.  2. Demonstrate knowledge necessary to receive school certificate.  3. Discuss district, school and class policies and procedures.  4. Complete required math test.  5. Complete required reading test.  6. Discuss grading criteria.  7. Explain ethics regulations for computers and software.  B. Participate in Health Occupations Students of America (HOSA).  1. Discuss the purpose of HOSA.  2. Participate in business-type meetings.  3. List characteristics and responsibilities of leaders and effective group members.  4. Participate in HOSA activities.  5. Discuss citizenship.  6. Participate in a service project.  C. Practice General Safety.  1. List personal safety rules.  2. Discuss accident prevention.  3. Discuss types and location of fire extinguishers.  4. Demonstrate office safety.  5. Discuss the importance of ergonomics in the work place.  6. Apply infection control procedures including standard precautions  7. Compare the different methods of controlling the growth of microorganisms  8. Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Center for Disease Control (CDC) regulations.  9. Apply proper use of personal protective equipment (PPE).  10. Apply principles of body mechanics and ergonomics.  11. Evaluate the environment to recognize safe and unsafe working conditions.  12. Demonstrate methods of fire prevention in the healthcare setting.  13 Understand proper safety techniques to prevent accidents and to maintain a safe work environment.  D. Identify the Duties of a Pharmacy Technician.  1. Describe the functions that a technician may perform.  2. Describe the functions that a technician may not perform.  3. Describe confidentiality in the practice of pharmacy.  4. Describe the general layout of a pharmacy department.  5. Describe the federal and state agencies and regulations affecting pharmacy.  6. Describe the role of the state board of pharmacy.  7. Demonstrate basic computer skills necessary for a pharmacy technician.  E. Common Safety Hazards  9. Recognize Materials Safety Data Sheets (MSDS).  10. Comply with safety signs, symbols, and labels.  11. Understand implications of hazardous materials.  12. Apply safety principles within given environments.  F. Emergency Procedures and Protocols  13. Explain an evacuation plan for a healthcare setting.  14. Execute an emergency plan in response to a natural disaster or other emergency.  **Course Title**  Pharmacy Law and Ethics  **Course Hours**  15 Hours  **Course Description**  Upon completion of this course, the student will comprehend state and federal laws and regulations regarding controlled substances, storage and dispensing of controlled substances. The agencies that regulate pharmacy practice will also be studied.    **Knowledge & Skills**  A. Describe the major Pharmacy Laws and understand their impact of the practice of pharmacy.  1. Explain the Pure Food and Drug Act of 1906. 2. Explain the Food, Drug, and Cosmetic Act of 1938. 3. Explain the Duham-Humphrey Amendment to 1962. 4. Explain the Kefaufver-Harris Amendment of 1962. 5. Explain the Comprehensive Drug Abuse Prevention and Control Act of 1970. 6. Explain the Poison Prevention Act of 1970. 7. Explain the Drug Listing Act of 1972. 8. Explain the Orphan Drug Act of 1983. 9. Explain the Drug Price Competition And Patent-Term Restoration Act of 1984. 10. Explain the Prescription Drug Marketing Act of 1987. 11. Explain the Omnibus Budget Reconciliation Act of 1990 (OBRA-90). 12. Explain the FDA Modernization Act. 13. Explain the Dietary Supplement Health and Education Act (DSHEA) of 1994.  B. Describe State and Federal Laws and Regulations Pertaining to Controlled Substances  1. Describe the classifications of controlled dangerous substances. 2. Explain Schedule I (C-I). 3. Explain Schedule II (C-II). 4. Explain Schedule III (C-III). 5. Explain Schedule IV (C-IV). 6. Explain Schedule V (C-V).  C. Dispensing and Reordering Controlled Dangerous Substances.  1. Explain partial filling and refilling regulations for different schedules of CDS. 2. List procedures for storing the different schedules of CDS. 3. List procedures for ordering the different schedules of CDS. 4. List procedures for maintaining inventory of the different schedules of CDS. 5. List the FDA requirements for "stock bottle" labels of CDS. 6. List the different filing schemes for hard copy prescriptions.  D. Health Insurance and Portability. (HIPPA)  E. Explain Difference Between Pharmacist and Pharmacy Technician Job Duties.  1. Understand legal and ethical consequences of performing duties only allowed by pharmacist. 2. Explain how state laws and regulations determine what activities associated with collection of patient specific information can be delegated by the pharmacist to technicians. 3. Explain how state laws and regulations determine what activities associated with receiving and screening prescription/medication orders for completeness and authenticity can be delegated by the pharmacist to technicians. 4. Explain how state laws and regulations determine what activities associated with preparing medications for distribution can be delegated by the pharmacist to technicians. 5. Explain how state laws and regulations determine what activities associated with verifying the measurements, preparation and/or packaging of medications reproduced by other technicians can be delegated by the pharmacist to technicians. 6. Explain how state laws and regulations determine what activities associated with patient counseling to optimize the use of medication, equipment and devices can be delegated by pharmacists to technicians.  F. Explain Insurance Fraud.  1. Discuss prevention. 2. Discuss legal and ethical consequences.  G. Explain the Role of Boards of Pharmacy.  H. Recognize and Understand the Functions of the Agencies That Regulate and Effect Pharmacy Practice.  1. Food and Drug Administration (FDA). 2. Drug Enforcement Agency (DEA). 3. National Association of the Boards of Pharmacy (NABP). 4. State Board of Pharmacy.  I. Demonstrate Knowledge of Pharmacy Law.  1. Give examples of policies and procedures related to the practice of pharmacy. 2. Describe the difference between statutes, rules, regulations and quasi-legal standards. 3. Identify several state and regulatory agencies. 4. Explain the rules, regulations and reasons for practice standards in health institutions. 5. State the need for the Food, Drug, and Cosmetic Act. 6. Discuss quasi-legal standards that define accepted professional practice. 7. State reasons for OSHA regulations. 8. State the intent of the Poison Prevention Packaging Act of 1970. 9. List the exemptions and describe the method of enforcement of the Poison Prevention Packaging Act of 1970. 10. State the history of the Omnibus Budget Reconciliation Act of 1990 (OBRA 90). 11. List the counseling guidelines, documentation requirements, standards, and methods of enforcement of OBRA 90. 12. State the history of the Health Insurance Portability and Accountability Act of 1996 (HIPAA). 13. List the guidelines, documentation requirements, standards and method of enforcement of HIPAA. 14. List the prescription, prescription label, refill and record requirements associated with medications. 15. Describe who may prescribe medications.  J. Legal Implications  1. Understand legal responsibilities and limitations. 2. Analyze implications of actions.  3. Implement problem solving techniques when confronted with legal issues. 4. Explain practices that could result in malpractice, liability, and/or negligence. 5. Apply procedures for accurate documentation and record keeping. 6. Implement established procedures based on risk management criteria. 7. Understand an incident report. 8. Summarize non-discriminatory laws. 9. Interpret healthcare facility policies and procedures.  K. Legal Practices   1. Implement mandated standards for Health Insurance Portability and Accountability Act (HIPAA). 2. Recognize common threats to confidentiality. 3. Summarize clients' rights according to the Patients' Bill of Rights. 4. Understand informed consent. 5. Compare licensure, certification, registration, and legislated scope of practice of a healthcare professional. 6. Explain mandated standards for harassment, labor, and employment laws.  L. Legal and Ethical Boundaries  1. Differentiate between morality and ethics. 2. Differentiate between ethical and legal issues impacting healthcare including confidentiality. 3. Compare personal, professional, and organizational ethics. 4. Recognize ethical issues and their implications related to healthcare.  M. Ethical Practice  1. Apply ethical behaviors including honesty and integrity in a healthcare setting. 2. Apply procedures for reporting activities and behaviors that affect the health, safety and welfare of others.  N. Cultural, Social, and Ethnic Diversity  1. Understand religious and cultural values as they impact healthcare services. 2. Demonstrate respect for individual diversity.  **Course Title**  Pharmaceutical Compounding  **Course Hours**  45 Hours  **Course Description**  This course will cover the basics of pharmaceutical compounding including compounding basics, equipment and supplies needed types of compounding, methods of administering compounded drugs and quality assurance and record keeping.    **Knowledge & Skills**  A. Introduction to Compounding  1. Explain the reasons why compounding is a vital part of pharmacy practice.  2. List different types of compounding formulations. 3. Identify specific consideration for patient care and compounding. 4. Describe various patient types that commonly use compounding. 5. Discuss the role of pharmacy technicians in compounding.  B. Compounding Practices and Considerations   1. List the factors that must be considered when deciding to compound. 2. List the reference books that every compounding pharmacy should have. 3. Define and describe solubility stability and shelf life. 4. Explain general compounding practices. 5. List general guidelines to follow when determining expiration dates.  C. Facilities, Equipment, and Supplies  1. Describe what a compounding facility looks like. 2. Identify the equipment contained within a pharmacy. 3. List the supplies necessary to extemporaneously compound prescription medications. 4. Outline important factors with regard to setting up a facility. 5. Specify procedures for maintaining the facility.  D. Quality Assurance and Record Keeping  1. Define quality control and quality assurance. 2. Recognize standard operation procedures (SOPs) and how to use them. 3. Explain how to perform en product testing on non-sterile compounds. 4. List the records required for compounding activities. 5. To properly document information about compounding activities. 6. Describe the proper training required compounding personnel.  E. Capsules, Tablets, and Powders  1. Distinguish the different types of capsules, tablets, and powders. 2. List the ingredients and composition properties required to prepare capsules, tablets and powders. 3. Explain the procedures and techniques used to prepare capsules, tablets and powders. 4. Describe how to perform quality control testing of capsules, tablets, and powders. 5. Select appropriate packaging for the compounded capsules, tablets and powders. 6. List the labeling requirements for capsules, tablets, and powders. 7. Evaluate the stability of capsules, tablets, and powders.  F. Lozenges, Troches, Sticks and Suppositories  1. Distinguish the different types of lozenges, troches, sticks, and suppositories. 2. List the ingredients and the composition properties required to prepare lozenges, troches, sticks, and suppositories. 3. Explain the procedures and techniques used to prepare lozenges, troches, sticks, and suppositories. 4. Describe how to perform quality control testing of lozenges, troches, sticks, and suppositories. 5. Select appropriate packaging for the compounded lozenges, troches, sticks, and suppositories. 6. Define the labeling requirements for lozenges, troches, sticks, and suppositories. 7. Evaluate the stability of lozenges, troches, sticks, and suppositories.  G. Solutions, Suspensions, and Emulsions  1. Distinguish the different types of solutions, suspensions, and emulsions. 2. List the ingredients and the composition properties required to prepare solutions, suspensions, and emulsions. 3. Explain the procedures and techniques used to prepare solutions, suspensions, and emulsions. 4. Describe how to perform quality control testing of solutions, suspensions, and emulsions. 5. Select appropriate packaging for the compounded solutions, suspensions, and emulsions. 6. Define the labeling requirements for solutions, suspensions, and emulsions. 7. Evaluate the stability of solutions, suspensions, and emulsions.  H. Ointments, Creams, Pastes and Gels  1. Identify the different types of ointments, creams, pastes and gels. 2. List the ingredients and the composition properties required to prepare ointments, creams, pastes and gels. 3. Explain the procedures and techniques used to prepare ointments, creams, pastes and gels. 4. Describe how to perform quality control testing of ointments, creams, pastes and gels. 5. Select appropriate packaging for the compounded ointments, creams, pastes and gels. 6. Define the labeling requirements for ointments, creams, pastes and gels. 7. Evaluate the stability of ointments, creams, pastes and gels.  I. Ophthalmic, Otic, and Nasal Preparations  1. Identify the different types of ophthalmic, otic, and nasal preparations. 2. List the ingredients and the composition properties required to prepare ophthalmic, otic, and nasal preparations. 3. Explain the procedures and techniques used to prepare ophthalmic, otic, and nasal preparations. 4. Describe how to perform quality control testing ophthalmic, otic, and nasal preparations. 5. Select appropriate packaging for the compounded ophthalmic, otic, and nasal preparations. 6. Define the labeling requirements ophthalmic, otic, and nasal preparations. 7. Evaluate the stability of ophthalmic, otic, and nasal preparations in assigning beyond-use dates and storage requirements.    **Course Title**  Sterile Products  **Course Hours**  45 Hours    **Course Description**  Students will learn the theory and principal aspects of a pharmacy sterile program. Terminology, techniques, quality control and quality assurance are covered. Students will perform all pharmaceutical calculations for compounding sterile products.  **Knowledge & Skills**  A. Introduction to Sterile Products  1. Define aseptic compounding and explain the need for sterile products. 2. Distinguish between inhalants, enterals, topicals, ophthalmics, otics and parenterals asdosage forms used in sterile products. 3. Explain why it is important the parenterals administration route must be sterile or prepared aseptically. 4. Distinguish and explain the different forms of parenteral administration. 5. Determine which types of parenteral administration must be preservative-free.  B. Facilities, Garb, and Equipment  1. Explain how laminar flow biological safety cabinets contribute in infection control. 2. Describe the difference among class 100, 1000, and 10,000 clean rooms. 3. Explain the importance of aseptic technique in compounding. 4. Explain the reason for each step in the proper procedure for cleaning a laminar flow biological safety cabinet. 5. Describe the proper protective dress required in a clean room.  C. Aseptic Calculations  1. Show calculations related to products prepared using aseptic technique. 2. Calculate the quantity of active ingredient needed for each preparation. 3. Calculate the volume of active ingredient to add to an IV admixture. 4. Calculate the volume of electrolytes to add to a TPN. 5. Discuss and calculate dilution technique.  D. Properties of Sterile Products  1. Explain the cautions associated with microbial contamination. 2. Understand the pH range and why it is important. 3. Understand the concepts of compatibility and stability. 4. Explain the difference between tonicity, osmolarity and osmolality. 5. Know how to calculate the osmolarity of an IV solution.  E. Aseptic Technique  1. Define aseptic compounding and explain the need for sterile products. 2. Distinguish between inhalants, enterals, topicals, ophthalmics, otics, and parenterals as dosage forms used in sterile products. 3. Explain why it is important that the parenterals administration route must be sterile or prepared aseptically. 4. Distinguish and explain the different forms of parenteral administration. 5. Determine which types of parenteral administration must be preservative-free.  F. Sterile Product Preparations  1. List and describe the different types of sterile products. 2. Know the different used for large-volume and small-volume IV bags. 3. Understand the concept of pediatric dosing and realize why sterile products prepared for this type of patient are different from those for adults. 4. List some specialty protein-based sterile products.  G. Total Parenteral Nutrition  1. Explain why a patient receives a TPN. 2. List the additives used in making TPN. 3. Explain why the ingredients are necessary in a TPN. 4. Describe how to admix a TPN. 5. Discussautomated mixing equipment.  H. Chemotherapy  1. Describe what happens with cancer and cells. 2. Explain how cytotoxic agents are used to treat cancer. 3. Explain safety procedures of handling chemotherapy agents. 4. Describe the types of biological safety cabinets. 5. Discuss appropriate procedures for preparing chemotherapy agents. 6. List the hazards involved with preparing chemotherapy agents. 7. Describe how to clean a chemotherapy spill.  I. Quality Control and Assurance  1. Explain the necessity of quality control. 2. State task that require quality assurance procedures. 3. Help the pharmacist ensure the quality of all pharmaceutical services. 4. List the principles of quality assurance to all pharmacy activities. 5. Discuss the implications of USP Chapter 797. 6. Compare the various risk levels for differing compounded sterile preparations and the quality-assurance requirements of each.   J. ProcessValidation  1. Demonstrate the following skills in the pharmacy setting:  -Aseptic Hand Washing -Horizontal Laminar Airflow Hood -Ampule Preparation -TPN Preparation -Ampule Preparation- Hazardous Drugs -Vial Preparation-Hazardous Drugs -Sterile Ophthalmic Solution Preparation -Sterile Product Label Preparation -Vertical Laminar Airflow Hood    **Course Title**  Pharmacology for PhT  **Course Hours**  75 Hours    **Course Description**  This course provides the student with an overview of the major categories of classifications of drugs. Emphasis is placed on actions of drugs in the human body as well as trade and generic names.    **Knowledge & Skills**   1. Describe the Evolution of Medicinal Drugs  1. Recognize the important figures, events and resources in the development of pharmacology through the ages. 2. Know what is meant by pharmacology. 3. Define drugs, identify their sources and understand how they work. 4. Be familiar with the federal laws that regulate drugs and the agencies that administer them. 5. Be familiar with the procedure for getting a new drug to market.  B. Describe the Goal of Drug Therapy  1. Understand receptors and their function in mechanisms of drug actions. 2. Be aware of the pharmacokinetics involved in developing and testing drugs. 3. Understand that some drug effects are beneficial while others can be harmful. 4. Be familiar with the common terms used to describe drug interactions.  C. Demonstrate Knowledge of Drug Classifications  1. List the major classes of drugs. 2. Describe the important action and/or therapeutic uses for the major classes of drugs. 3. Describe the most common or most serious adverse effect for the major classes. 4. Describe special dispensing precautions for the major classes of drugs.  D. Describe the Use and Function of Antibiotics  1. Identify the major types of antibiotics by drug class. 2. Know indications for the major antibiotics. 3. Define therapeutic effects, side effects and administration routes of major antibiotics. 4. Use antibiotic and general drug terminology correctly in written and oral communication.  E. Describe the Use and Function of Antivirals, Antiretrovirals and Antifungals  1. Introduce the student to antivirals, antiretrovirals and antifungals. 2. Differentiate antivirals, antiretrovirals, and antifungals by their indications, therapeutic effects, side effects, dosages, and administration. 3. Use antiviral, antiretroviral, and antifungal terminology correctly in written and oral communication. 4. Define difference in mechanisms of action of antibiotics, antivirals, antiretrovirals and antifungals.  F. Describe the Use and Function of Antihistamines, Decongestants, Antitussives and Expectorants  1. Understand the differences in the antihistamines, decongestants, antitussives and expectorants. 2. Know how and when each drug class should be used. 3. Recognize and understand the side effects that may occur with each group. 4. Know why some drugs are prescribed for their side effects.  G. Discuss the Use and Function of Anesthetics, Analgesics and Narcotics  1. Understand the central and peripheral nervous systems, their functions and their relationship to drugs. 2. Become aware of the role of neurotransmitters. 3. Learn how drugs affect body systems and where they work in the body. 4. Understand the concept of general and local anesthesia, and know the functions of these agents. 5. Define the action of neuromuscular blocking agents in reducing muscle activity. 6. Distinguish between narcotic and nonnarcotic analgesia. 7. Become familiar with the various types of agents for migraine headaches.  H. Discuss the Use and Function of Antidepressants, Antipsychotics and Antianxiety Agents  1. Differentiate the antidepressant, antipsychotics and antianxiety agents. 2. Be prepared to discuss the antidepressant classes, their uses and their side effects. 3. Know why and how lithium and other drugs are used in treating bipolar disorders. 4. Be familiar with antipsychotics and the drugs that prevent their side effects. 5. Define anxiety, learn its symptoms, and know the drugs used in its treatment. 6. Recognize the course and treatment of panic disorders, insomnia and alcoholism.  I. Describe the Use and Function of Anticonvulsants and Drugs to Treat other CNS Disorders  1. Develop an understanding of the physiologic processes that occur in epilepsy. 2. Classify seizures and the goals of their therapy. 3. Understand that specific drugs are used in different classes of seizures. 4. Be familiar with Parkinson's disease and the drugs used in its treatment. 5. Know the symptoms of myasthenia gravis, the attention-deficit disorders, ALS, MS, and Alzheimer's and their treatments.  J. Discuss the Use and Function of Respiratory Drugs  1.Differentiate the pulmonary diseases. 2. Learn the pathophysiology and treatment of asthma. 3. Define the goals of asthma treatment. 4. Discuss the pathophysiology and treatment of emphysema and chronic bronchitis. 5. Learn how pneumonia, cystic fibrosis and respiratory distress syndrome fit into this category of diseases. 6. Be aware of the reemergence of tuberculosis and of treatment for this disease. 7. Outline smoking cessation plans and supportive therapy.  K. Describe the Use and Function of Gastrointestinal Drugs  1. Describe gastrointestinal physiology and how it impact GI disease. 2. Be aware of drug treatment for these diseases. 3. Identify the chemo-receptor trigger zone (CTZ) and its role in nausea. 4. Know which antiemetics act on the CTZ and their mechanisms of action. 5. Describe the role of fiber in the digestive process. 6. Understand gastroesophageal reflux disease and its ramifications. 7. Discuss how antidiarrheals work and the agents in this class. 8. Discuss laxatives, their use and misuse. 9. Explain the use of antiflatulents. 10. Know how to calculate ideal body weight and body mass index, and define obesity. 11. Identify the parasites that invade the human body and treatment for the diseases they cause.  L. Describe the Use and Function of Urinary System Drugs  1. Understand the renal system, its importance and how it works. 2. Differentiate the parts of the renal system. 3. Recognize renal failure and the agents to treat this progressive disease. 4. Know the causes and treatment of urinary tract infections. 5. Understand the classes of diuretics and how they work.  M. Discuss the Use and Function of Cardiovascular Drugs  1. Understand the cardiovascular system. 2. Differentiate arrhythmias, congestive heart failure, myocardial infarction, angina and hypertension. 3. Know the drugs and treatment for each separate aspect of heart disease. 4. Recognize anticoagulant and antiplatelet drugs and know their functions. 5. Discuss stroke and the drugs used to treat it. 6. Identify hyperlipidemia and its role in heart disease and stroke.  N. Describe the Use and Function of Muscle Relaxants, Nonnarcotic Analgesics and Drugs for Arthritis  1. Define muscle relaxants. 2. Identify muscle relaxants and their various mechanisms of action. 3. Identify the nonnarcotic analgesics, and describe their uses and mechanisms of action. 4. Define rheumatoid arthritis and gout. 5. Identify agents used to treat arthritis, rheumatoid arthritis; and gout; their usage and side effects.  O. Discuss the Use and Function of Hormones  1. Explain the concept of hormones and how they regulate the body. 2. Discuss thyroid replacement therapy. 3. Discuss adrenal sex hormones and male dysfunction. 4. Understand the concept of estrogen replacement therapy. 5. Understand the formulation of oral contraceptives. 6. Describe the diseases of the genital systems and how to avoid them. 7. Discuss corticosteroids. 8. Understand diabetes and the proper treatment and care of patients. 9. Know the applications for growth hormone.  P. Describe the Use and Function of Topicals, Ophthalmics and Otics  1. Describe the skin as an organ. 2. Understand the physiology of the skin. 3. Recognize the classes of antiseptics and disinfectants. 4. Identify the parasites that infest the skin. 5. Know the topical drugs and the conditions they treat. 6. Explain the action of the topical corticosteroids and their application. 7. Recognize the ophthalmic and otic agents and their uses.  Q. Discuss the Use and Function of Recombinant Drugs and Chemotherapy  1. Understand recombinant DNA and the process for producing medications in this manner. 2. Identify colony-stimulating factors and their uses. 3. Understand the immune system and how it works. 4. Summarize the body's defenses. 5. Identify neoplastic disease and the classifications of drugs used in its treatment.  R. Describe the Use and Function of Vitamins, Nutritional Supplements, Natural Supplements, Antidotes and CODE Blue Emergencies  1. Understand total parenteral nutrition, its purposes, ingredients, stability and complications. 2. Discuss and calculate electrolyte levels. 3. Recognize herbs, their values, uses and dangers. 4. List various types of emergencies and general guidelines for handling them. 5. Understand the importance of the Blue Alert cart, its supplies and its maintenance.     **[Course Title](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)**  [Pharmacological Calculations](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)  **[Course Hours](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)**  [60 Hours](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)  **[Course Description](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)**  [Basics of pharmaceutical mathematics are covered to include reading, interpreting and solving calculation problems encountered in the preparation and distribution of drugs. Conversions of measurements, ratio and proportion, percentage, dilution and concentration, mill equivalents, units, intravenous flow rates, and solving dosage problems are included.](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)  **[Knowledge & Skills](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)**  [A. Practice Fundamentals Of Mathematical Calculations  1. Express Arabic numbers as Roman numerals. 2. Express Roman numerals as Arabic numbers. 3. Identify the numerator and denominator in a fraction. 4. Add and subtract fractions. 5. Multiply and divide fractions. 6. Add and subtract decimals. 7. Multiply and divide decimals. 8. Convert fractions to decimals. 9. Convert decimals to fractions. 10. Define percent. 11. Convert percents to fractions. 12. Convert percents to decimals. 13. Convert fractions to percents. 14. Convert decimals to percents. 15. Define ratio. 16. Convert ratios to fractions. 17. Convert ratios to decimals. 18. Convert ratios to percents. 19. Convert fractions to ratios. 20. Convert decimals to ratios. 21. Convert percents to ratios.  B. Use Units And Measures For The Calculation Of Drug Dosages  1. Explain the apothecary system. - Units of fluid measure - Units of weight measure - Perform fundamental computations and conversions within the system 2. Explain the Avoirdupois (household) measurement system. - Units of fluid measure - Units of weight measure - Perform fundamental computations and conversions within the system 3. Explain the metric system. -Units of length measure -Units of weight measure -Units of volume measure -Express metric measure correctly using the naming convention of the metric system -Perform fundamental computations and conversions within the system 4. Convert the between the systems. -Conversion of linear measurements -Conversion of volume measurements -Conversion of weight measurements  C. Use Ratio And Proportion  1. Define ratio and proportion. 2. Define means and extremes. 3. State a ratio-proportion to solve a given dose calculation problem. 4. Calculate problems for a missing term using ratio and proportion method.  D. Perform Pharmaceutical Calculations  1. Calculate doses for oral and liquid medications using ratio and proportion method. -Calculations involving tablets -Calculations involving capsules -Calculations involving liquids 2. Calculate quantities to be administered when medication is ordered in fractional doses. 3. Calculate safe dosages for infant and children. -Dosages based upon weight. -Dosages based upon age. -Dosages based upon formulas. -Dosages based upon nomograms. 4. Calculate dosages for individual patients given the patient's weight and/or height and the recommended dose. 5. Perform calculations necessary for the infusion of I.V. medications. -Calculate I.V. flow rates -Calculate I.V. infusion and completion times 6. Calculate doses of parenteral medications already in solution. 7. Calculate doses from reconstituted medications. 8. Determine the best concentration strength for medications ordered when there are several directions for mixing. 9. Determine amount of insulin to be administered based upon labels. -Low-dose -Regular -U-100 10. Calculate dilutions and concentrations for solutions. -Dilution and concentration of liquid solutions -Dilution of stock solutions -Dilution and concentration of solid solutions -Alligation calculations](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/85fbb7e65df531ee9eafcd7af83d02a6.html)    **Course Title**  Hospital and Long Term Care Pharmacy Operations  **Course Hours**  15 Hours  **Course Description**  This course will prepare the student to function in a hospital pharmacy setting. The student will practice purchasing, inventory and quality assurance skills in the lab, hospital or long term care environment.  **Knowledge & Skills**  A. Describe The Functions Of Institutional Pharmacy Practice  1. Explain the primary function of a hospital. 2. Understand the differences between centralized and decentralized pharmacy services. 3. Understand the roles and responsibilities of technicians in the hospital pharmacy. 4. Define pharmaceutical care and how it relates to pharmacy technicians' roles. 5. Explain how quality control and quality improvement are used in institutional pharmacy practice.  B. Describe The Functions Of Home Care And Long-Term Care Pharmacy Practice  1. Describe the evolution of home health care related to home infusion therapy and home care pharmacy practice. 2. Describe the future of home health care related to home infusion therapy and home care pharmacy practice. 3. Explain the scope of services available to a patient requiring home health care. 4. Describe the five most common drug categories of home infusion therapy. 5. Describe the medical indications for home infusion therapy. 6. Describe the complication of homeinfusion therapy. 7. Describe the various roles for a pharmacy technician in a home infusion company. 8. List the labeling requirements for sterile products that are to be used in a patient's home. 9. Identify the different types of long-term care facilities. 10. Identify the major source of funding for long-term care. 11. Identify the difference between a service pharmacist and a consultant pharmacist. 12. Describe the supportive role of the pharmacist and pharmacy technician in a long-term care facility.  C. Demonstrate Knowledge Of Overall Pharmacy Operations  1. Identify the components of a complete prescription or medication order. 2. Prioritize prescriptions and medication orders on the basis of pertinent criteria. 3. Identify the necessary steps in processing a prescription or medication order. 4. List information normally found in a patient profile. 5. Identify the proper language to be used on medication labels. 6. List the information needed to make a medication label complete. 7. Accurately count and fill prescriptions. 8. Accurately fill unit dose packages. 9. Describe how automation impacts the drug distribution process. 10. Describe the different automation needs for institutional pharmacy. 11. Describe the different automation needs for ambulatory care pharmacy. 12. List three applications for bar coding in health care. 13. Describe the difference between decentralized and centralized automated dispensing systems. 14. Describe the limitations of automated dispensing systems.  D. Demonstrate Knowledge Of Pharmacy Inventory Control  1. Demonstrate an understanding of the formulary system and its application in a purchasing and inventory system. 2. State the information that must be included in a pharmacy purchase order. 3. Apply the proper processes when receiving and storing pharmaceuticals. 4. Identify key techniques for reviewing packaging, labeling, and storage considerations when handling pharmaceutical products. 5. Define the temperature requirements for drug storage -Cold -Cool -Room temperature -Warm -Excessive heat 6. List pharmaceutical products that should be refrigerated. 7. Demonstrate both an understanding and the application of appropriate processes for maintaining and managing a pharmaceutical inventory. 8. Complete the appropriate processes in the handling of pharmaceutical recalls. 9. Complete the appropriate processes in the disposal of pharmaceutical products. 10. Demonstrate an understanding of pharmaceutical products that require special handling within the purchasing and inventory system. 11. Describe the advantages of using automation for inventory control. 12. Describe the features of an automated narcotic control system. 13. Execute the proper procedures for borrowing and lending pharmaceuticals between pharmacies. 14. Describe the methods of inventory control that may be utilized to maintain adequate stock of pharmaceuticals and medical devices. 15. Describe ordering and inventory procedures for recalled products. 16. Describe ordering and inventory procedures for controlled substances. 17. Describe ordering and inventory procedures for investigational drugs.  F. Demonstrate Knowledge Of Medication Errors  1. Describe the different types of medication errors. 2. Identify causes or factors that contribute to medication errors. 3. Describe things that can be done to prevent medication errors from occurring. 4. List examples of common errors. 5. Recognize possible consequences of actual medication errors. 6. Describe steps to be taken when an error has been identified. 7. Understand the role of quality assurance monitoring of medication errors. 8. Discuss the role of the pharmacy technician in preventing medication errors.  G. Demonstrate Knowledge, Methods and Labeling of Packaging  1. Perform unit dose packaging  H. Demonstrate Knowledge of Pharmacy Automation  1. Demonstrate ability to use pharmacy robot (example Pyxis)  **Course Title**  Retail Pharmacy Operations  **Course Hours**  30.00  **Course Description**  This course will prepare the student to function in a retail pharmacy setting. The student will practice purchasing, inventory and quality assurance tasks.  **Knowledge & Skills**   1. Describe The Functions Of Ambulatory Care Pharmacy Practice.  1. Discuss the history of ambulatory care pharmacy. 2. Describe current practices of ambulatory care pharmacy. 3. List the similarities and differences between the various ambulatory care practice sites. - Chain - Independent - Clinic - Managed care - Mail order 4. Explain the importance of customer service and communication skills in ambulatory care practice. 5. Describe the typical prescription distribution process in an ambulatory care pharmacy. 6. Describe the role of the technician in ambulatory care pharmacy. 7. Describe the various third-party payment programs. 8. Explain how third-party payment programs affect prescription processing in ambulatory care.  B. Demonstrate Knowledge Of Overall Pharmacy Operations  1. Identify the components of a complete prescription or medication order. 2. Prioritize prescriptions and medication orders on the basis of pertinent criteria. 3. Identify the necessary steps in processing a prescription or medication order. 4. List information normally found in a patient profile. 5. Identify the proper language to be used on medication labels. 6. List the information needed to make a medication label complete. 7. Accurately count and fill prescriptions. 8. Describe how automation impacts the drug distribution process. 9. Describe the different automation needs for institutional pharmacy. 10. Describe the different automation needs for ambulatory care pharmacy. 11. List three applications for bar coding in health care. 12. Describe the difference between decentralized and centralized automated dispensing systems. 13. Describe the limitations of automated dispensing systems.  C. Demonstrate Knowledge Of Pharmacy Inventory Control  1. Demonstrate an understanding of the formulary system and its application in a purchasing and inventory system. 2. State the information that must be included in a pharmacy purchase order. 3. Apply the proper principles and processes when receiving and storing pharmaceuticals. 4. Identify key techniques for reviewing packaging, labeling, and storage considerations when handling pharmaceutical products. 5. Define the temperature requirements for drug storage. -Cold -Cool -Room temperature -Warm -Excessive heat 6. List pharmaceutical products that should be refrigerated. 7. Demonstrate both an understanding and the application of appropriate processes for maintaining and managing a pharmaceutical inventory. 8. Complete the appropriate processes in the handling of pharmaceutical recalls. 9. Complete the appropriate processes in the disposal of pharmaceutical products. 10. Demonstrate an understanding of pharmaceutical products that require special handling within the purchasing and inventory system. 11. Describe the advantages of using automation for inventory control. 12. Describe the features of an automated narcotic control system. 13. Execute the proper procedures for borrowing and lending pharmaceuticals between pharmacies. 14. Describe the methods of inventory control that may be utilized to maintain adequate stock of pharmaceuticals and medical devices. 15. 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Demonstrate ability to use pharmacy robot (example ScriptPro)     **[Course Title](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)**  [Pharmaceutical Terminology](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)  **[Course Hours](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)**  [15 Hours](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)  **[Course Description](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)**  [This course is an in-depth study of pharmaceutical terminology and its applications to the health care industry. Course content focuses on identification of word parts, proper pronunciation and enunciation of medical terms, spelling of medical terms, and application of each medical term to the anatomy and physiology of the body. Correct pronunciation of drug names, which include brand, generic and chemical will also be studied.](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)  [Contact Information](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)  **[Knowledge & Skills](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)**  [A. Identify, Define, and Discuss Word Parts and the Word Building Rules Associated with Pharmaceutical Terminology  1. List the three basic component parts of a word. 2. Accurately define the terms word root, prefix, combining vowel and combining form. 3. Correctly state the rule for joining prefixes to a word root 4. Correctly state the rule for attaching a suffix to a word root. 5. Demonstrate the ability to apply the word building rules by accurately completing exercises.  B. Define, Compare, and Contrast the Meanings for Common Prefixes  1. Define a prefix and state the rule for using prefixes in words. 2. Correctly identify prefixes that deal with numbers, color, measurements and negatives. 3. Correctly identify prefixes that deal with position and direction. 4. Correctly identify prefixes. 5. Demonstrate the ability to create new words using prefixes by completing the appropriate exercises.  C. Define, Compare and Contrast the Meaning for Common Suffixes and Discuss Situations When Suffixes Alter the Grammatical Classification of a Word (noun, adjective, prefix).  1. Define a suffix and state the rule for using suffixes in words. 2. Correctly identify suffixes that make a word a noun. 3. Correctly identify suffixes that make a word an adjective. 4. Correctly identify suffixes that deal with instruments and diagnostic and surgical procedures. 5. Identify and define suffixes that deal with specialties and specialists.  D. Pronounce, Enunciate, Spell and Define the Terms Most Commonly Associated with the Human Body from an Overall Perspective and Discuss Application of General Medical Terms to the Anatomy and Physiology of the Body  1. List the five body cavities of the human body. 2. List the organs contained within the five body cavities. 3. Define terms relating to the body as a whole. 4. Identify body regions. 5. Identify terms relating to the structural organization of the body. 6. Identify terms relating to the body as a whole. 7. Create medical terms relating to the body as a whole.  E. Describe the Administration of Pharmacologic Agents.  1. Know the components of the prescription, including the accepted standard abbreviations. 2. Understand the five rights of correct drug administration. 3. Recognize common dosage forms. 4. Know the routes of administration.  F. Correctly Interpret Prescriptions.  1. Write prescriptions using standard prescription abbreviations. 2. Read prescriptions that use standard prescription abbreviations.  G. Understand the Naming Scheme Used to Identify Various Drug Classes.  H. Pronounce, Enunciate and Spell the Top 200 Drugs of 2004.  1. Match correct brand to generic. 2. Match correct generic to brand. 3. Spell brand name. 4. Spell generic name. 5. Spell chemical name. 6. Pronounce brand name. 7. Pronounce generic name. 8. Pronounce chemical name.  I. Use Correct Pharmaceutical Abbreviations.  1. List commonly used abbreviations and symbols. -Units for systems of measurements -Dosage forms -Routes administration -Time or frequency -Controlled release medications -Commonly abbreviated medications  J. Pharmaceutical Dosage Forms  1. Explain the different interpretations of "dosage form" by the patient, by members of the health care team, and by pharmacists. 2. Name four formulation aids used in the preparation of a given dosage form. 3. Describe the advantages and disadvantages of the major classes of pharmaceutical dosage forms. -Liquids -Solid -Aerosols 4. Differentiate the characteristics of a solution and a suspension.  5. Describe the characteristics of the categories of liquid dosage forms. -Solutions -Emulsions -Suspensions 6. List five desirable qualities for an external suspension. 7. Describe situations where ointment may be preferred over cream preparations. 8. Name and define four solid dosage forms currently in use. 9. Explain the differences between compressed tablets, sublingual or buccal tablets, and multiple compressed tablets. 10. Explain the differences between the various solid dosage forms. -Tablets -Capsules -Lozenges -Powders -Granules 11. Outline five advantages of the transdermal patch.  K. Pharmaceutical Routes Of Administration  1. List six routes of administration by which drugs may enter or be applied to the body. 2. Identify special considerations for each route of administration. -Oral -Parenteral -Topical -Transdermal -Rectal -Vaginal -Otic -Ophthalmic -Nasal -Inhalation 3. List five parenteral routes of administration. 4. Explain the difference between the topical and transdermal routes. 5. Describe how medication should be labeled to ensure correct route of administration. -Take -Give -Apply -Insert -Place or instill -Inhale](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/c4284ac642771d572b153a4c6d4d7487.html)  **Course Title**  Professional Skills in the Pharmacy    **Course Hours**  15 Hours  **Course Description**  This course will prepare the student to meet the public in a pharmacy setting. The student will practice greeting customers, preparing prescriptions and instructing the customer on medication pickup. This course helps students develop employability skills necessary for success in the workplace, such as communication, personal responsibility and time management. Resume writing and practice job interviews will be conducted.  **Knowledge & Skills**  A. Practice Greeting Customers  1. Discuss personal appearance. 2. Discuss attitude. 3. Discuss handling customer’s problems. 4. Discuss proper telephone etiquette. 5. Discuss calls that must be transferred to the pharmacist. 6. Ensure the patient is getting the correct prescription.  B. Gather Patient-Specific Information  1. Ask the information required on a prescription form. -Patient's date of birth -Patient's address -Patient's medication allergies -Acquired health conditions since last visit -Third party insurance coverage 2. Be familiar with the pharmacy software package. 3. Enter all patient information into the patient's record on the computer. 4. Enter prescription information into computer. 5. Print labels.  C. Differentiate Between the Types of Third Party Payment Plans  1. Describe the difference between HMO's and PPO's 2. List and explain the sources of payment. 3. Process a third party claim. -Electronic -Paper 4. Discuss third party cost control.  D. Use Drug Information Sources To Answer Questions About Medications  1. List items of knowledge that can be identified for a particular drug. 2. Describe the major duties of a pharmacy technician in drug information services. 3. List resources that can be used to access drug information. 4. Identify the best resource to use when answering a specific pharmacy-related question. 5. Distinguish between questions that may be answered by a technician and those that should only be answered by a pharmacist. 6. Successfully answer drug information questions using resources found in the workplace.  E. Preparing for Employment  1. Identify traditional and non-traditional employment sources. 2. Identify present and future employment opportunities (by geographic location). 3. Research prospective employer and services performed. 4. Research job opportunities, including non-traditional careers. 5. Compile an occupational profile. 6. Identify rights and responsibilities of equal employment opportunity laws. 7. Investigate generic and specific employment tests (e.g., civil service exam; drug screening). 8. Interpret job description. 9. Demonstrate ability to accurately complete a job application. 10. Design resume and cover letter. 11. Target resume. 12. Secure references. 13. Demonstrate legible written communication skills using correct grammar, spelling, punctuation, and concise wording. 14. Describe methods for handling illegal questions on job application forms and during interviews. 15. Use proper diction in interviews. 16. Explain critical importance of personal appearance, hygiene, and demeanor. 17. Demonstrate appropriate interview question and answer techniques. 18. Demonstrate methods for handling difficult interview questions using simulated role-playing exercises. 19. Describe procedures for following up after an interview. 20. Use follow-up techniques to enhance employment potential. 21. Compare salary ranges and benefit packages. 22. Evaluate job offers. 23. Give notice to employer of job change. 24. Write letter of acceptance. 25. Write letter of declination.  F. Projecting Professional Image  1. Define professionalism. 2. Exhibit professional appearance. 3. Exhibit professional manner. 4. Project professional attitude. 5. Identify individuals' vital role in organizations. 6. Explain the need for professional and ethical standards. 7. Explain responsibility of the individual to apply ethical standards. 8. Identify responsibility to patient(s), customer(s), and employer(s). 9. Explain consequences of unprofessional and/or unethical behavior. 10. Explain importance of conflict resolution in the workplace.  G. Exhibiting Appropriate Work Ethic  1. Define work ethics. 2. Identify factors that influence work ethics. 3. Differentiate between laws and ethics. 4. Describe how personal values are reflected in work ethic. 5. Describe how interactions in the workplace affect personal work ethic. 6. Describe how life changes affect personal work ethic. 7. Use time-management techniques. 8. Avoid personal activity during work hours. 9. Attend work as scheduled. 10. Adhere to company and/or governmental policies, procedures, rules, and regulations. 11. Exercise confidentiality. 12. Demonstrate appropriate human relations skills. 13. Adhere to roles of conduct. 14. Accept constructive criticism. 15. Offer constructive criticism. 16. Take pride in work. 17. Resolve conflict. 18. Manage stress. 19. Avoid sexual connotations and harassment. 20. Adjust to changes in the workplace. 21. Demonstrate punctuality. 22. Assume responsibility for personal decisions and actions. 23. Take responsibility for assignments. 24. Follow chain-of-command.  H. Demonstrating Positive Relations in the Work Place  1. Identify personality types of self and others. 2. Identify various management styles. 3. Support employer expectations. 4. Support employer decisions. 5. Accept construction criticism. 6. Give constructive feedback. 7. Adapt to changes in the workplace. 8. List factors to consider before resigning. 9. Write letter of resignation.  I. Demonstrating Job Retention Skills  1. Identify employer expectations regarding job performance, work habits, attitudes, personal appearance, and hygiene. 2. Exhibit appropriate work habits and attitude. 3. Demonstrate ability to set priorities. 4. Identify behaviors to establish successful working relationships. 5. Identify alternatives for dealing with harassment, bias, and discrimination based on race, color, national origin, sex, religion, handicap, or age. 6. Identify opportunities for advancement. 7. List reasons for termination. 8. List consequences of being absent frequently from job. 9. List consequences of frequently arriving late for work. 10. Demonstrate interpersonal relations skills (i.e., verbal and written). 11. Demonstrate negotiation skills. 12. Demonstrate teamwork. 13. Follow chain-of-command. 14. Exhibit appropriate job dedication.  J. Exhibiting Characteristics for Job Advancement  1. Display positive attitude. 2. Demonstrate knowledge of position. 3. Perform quality work. 4. Adapt to changing situations and technology. 5. Demonstrate capability/responsibility for different positions. 6. Identify characteristics of effective leaders. 7. Identify opportunities for leadership in work place/community. 8. Demonstrate initiative to affect change in workplace. 9. Participate in continuing education/training program. 10. Responds appropriately to criticism from employer, supervisor, or other employees. 11. Exhibit awareness of corporate culture. 12. Prepare for job setbacks. 13. Exhibit continual growth based on performance evaluation. 14. Set realistic goals.  K. Applying Decision-Making Techniques  1. Identify decision to be made. 2. Identify ownership of decision to be made. 3. Identify possible alternatives and their consequences. 4. Make decisions based on facts, legality, ethics, goals, and/or culture. 5. Apply time factor(s). 6. Present decision to be implemented. 7. Evaluate decision made. 8. Take responsibility for decision.  L. Applying Problem-Solving Techniques  1. Identify problem. 2. Select appropriate problem solving tools/techniques. 3. Identify root problem cause(s). 4. Track root problem cause(s). 5. Identify possible solutions and their consequences (e.g., long term, short term, crisis). 6. Use resources to explore possible solutions to problem. 7. Contrast advantages and disadvantages of each solution Identify appropriate action. 8. Evaluate results. 9. Identify post-preventive action.  M. Managing Personal Finances  1. Explain need for personal management record. 2. Balance checkbook. 3. Identify tax obligation. 4. Analyze how credit affects financial security. 5. Compare types and methods of investments. 6. Compare types and methods of borrowing. 7. Compare types and methods of insurance. 8. Compare types of retirement option/plans. 9. Discuss social security. 10. Identify discriminatory vs. non-discriminatory expenditures.  N. Analyzing Effects of Family on Work and Work on Family  1. Identify how family values, goals, and priorities are reflected in work place. 2. Identify responsibilities and rewards associated with paid and non-paid work. 3. Identify responsibilities and rewards associated with families. 4. Explain how family responsibilities can conflict with work. 5. Explain how work can conflict with family responsibilities. 6. Explain how work-related stress can affect families. 7. Explain how family-related stress can affect work. 8. Identify family support systems and resources. 9. Identify work-related support systems and resources. 10. Communicate with family regarding work.  O. Apply Lifelong Learning Skills  1. Define lifelong learning. 2. Identify factors that cause need for lifelong learning. 3. Analyze effects of change. 4. Identify reasons why goals change. 5. Describe importance of flexibility and adaptability 6. Evaluate need for continuing education/training.  P. Demonstrating Teamwork  1. Define self-direction. 2. Define responsibility. 3. Define accountability. 4. Differentiate work groups and teams (i.e., internal, external). 5. Identify conditions essential to teamwork (e.g., problem solving). 6. Explain influence of culture (e.g., corporate, community) on teamwork. 7. Identify appropriate situations for using teams. 8. Define team structures (e.g., cross functional, quality improvement, task force, quality circles). 9. Identify team building concepts. 10. Describe characteristics and dynamics of teams. 11. Identify characteristics of effective team leaders and members. 12. Identify responsibilities of team members. 13. Identify methods of involving each member of a team. 14. Explain how individuals from various backgrounds contribute to work-related situations (e.g., technical training, cultural heritage). 15. Explain the purpose of facilitators. 16. Define consensus. 17. Define reward/recognition system. 18. Define mutual respect. 19. Define equality. 20. Define group think. 21. Provide feedback. 22. Receive feedback. 23. Define communication styles. 24. Define management styles. 25. Define social style. 26. Identify purpose of team and intended goal (include time frames). 27. Structure team around purpose. 28. Define responsibilities of team members (e.g., talents, skills, abilities). 29. Contribute to efficiency and success of team. 30. Work toward individual and team milestones. 31. Analyze results of team project. 32. Facilitate a team meeting. 33. Assist team member(s) with problem. 34. Monitor time frame. 35. Stress continuous improvement. 36. Recognize failure as part of learning.  **Course Title**  Pharmacy Technician Certification Preparation  **Course Hours**  30 Hours  **Course Description**  This course will prepare the student to take and pass the national Pharmacy Technician Certification exam. Students will be given the opportunity to reinforce learning of material covered in class and while on the job training.  **Knowledge & Skills**  A. Review The Procedures In Assisting The Pharmacist  1. Understand the federal, state, and/or practice site regulations, codes of ethics, and standards pertaining to the practice of industry. 2. Understand the pharmaceutical, medical, and legal developments that impact the practice of pharmacy. 3. List state-specific prescription transfer regulations. 4. List pharmaceutical and medical abbreviations and terminology. 5. List generic and brand names of pharmaceuticals. 6. Describe therapeutic equivalence. 7. Understand epidemiology. 8. Understand risk factors for certain diseases. 9. Understand anatomy and physiology. 10. List signs and symptoms of disease states. 11. List standard and abnormal laboratory values. 12. Understand drug interactions (such as drug-disease, drug-drug, drug-laboratory, drug-nutrient). 13. Understand strengths/dose, dosage forms, physical appearance, routes of administration and duration of drug therapy. 14. Understand effects of patient's age on drug and non-drug therapy. 15. List and describe drug information sources including printed and electronic reference materials. 16. Understand pharmacology (method of action, etc.) 17. List common and severe side or adverse effects, allergies and therapeutic contraindications associated with medications. 18. Understand drug indications. 19. Knowledge of relative role of drug and non-drug therapy (for example, herbal remedies, lifestyle modification, smoking cessation). 20. Knowledge of practice site policies and procedures regarding prescriptions or medication orders. 21. Knowledge of information to be obtained from patient/patient's representative (for example, demographic information, allergy, third-party information). 22. Knowledge of required prescription order refill information. 23. Knowledge of formula to verify the validity of a prescriber's DEA number. 24. Knowledge of techniques for detecting forged or altered prescriptions. 25. Knowledge of techniques for detecting prescription errors (for example, abnormal doses, early refill, incorrect quantity, incorrect patient ID #, incorrect drug). 26. Knowledge of effects of patient's disabilities (for example, visual, physical) on drug and non-drug therapy. 27. Knowledge of techniques, equipment and supplies for drug administration (for example, insulin syringes and IV tubing). 28. Knowledge of non-prescription (over-the-counter [OTC]) formulations. 29. Knowledge of monitoring and screening equipment (for example, blood pressure cuffs, glucose monitors). 30. Knowledge of medical and surgical appliances and devices (for example, ostomies, orthopedic devices, pumps). 31. Knowledge of proper storage conditions. 32. Knowledge of automated dispensing technology. 33. Knowledge of packaging requirements. 34. Knowledge of NDC number components. 35. Knowledge of purpose for lot numbers and expiration dates. 36. Knowledge of information for prescription or medication order label(s). 37. Knowledge of requirements regarding auxiliary labels. 38. Knowledge of requirements regarding patient package inserts. 39. Knowledge of special directions and precautions for patient/patient's representative regarding preparation and use of medications 40. Knowledge of techniques for assessing patient's compliance with prescription or medication order. 41. Knowledge of action to be taken in the event of a missed dose. 42. Knowledge of requirements for mailing medications. 43. Knowledge of delivery systems for distributing medications (for example, pneumatic tube, robotics). 44. Knowledge of requirements for dispensing controlled substances. 45. Knowledge of requirements for dispensing investigational drugs. 46. Knowledge of record-keeping requirements for medication dispensing. 47. Knowledge of automatic stop orders.  48. Knowledge of restricted medication orders. 49. Knowledge of quality improvement methods (for example, matching NDC number, double-counting narcotics). 50. Knowledge of pharmacy calculations (for example, algebra, ratio and proportions, metric conversions, IV drip rates, IV admixture calculations). 51. Knowledge of measurement systems (for example, metric and avoirdupois). 52. Knowledge of drug stability.  53. Knowledge of physical and chemical incompatibilities. 54. Knowledge of equipment calibration techniques. 55. Knowledge of procedures to prepare IV admixtures. 56. Knowledge of procedures to prepare chemotherapy. 57. Knowledge of procedures to prepare total parenteral nutrition (TPN) solutions. 58. Knowledge of procedures to prepare reconstituted injectable and non-injectable medications. 59. Knowledge of specialized procedures to prepare injectable medications (for example, epidurals and patient controlled analgesic [PCA] cassettes). 60. Knowledge of procedures to prepare radiopharmaceuticals. 61. Knowledge of procedures to prepare oral dosage forms (for example, tablets, capsules, liquids) in unit-dose or non-unit dose packaging. 62. Knowledge of procedures to compound sterile non-injectable products (for example, eyedrops). 63. Knowledge of procedures to compound non-sterile products (for example, ointments, mixtures, liquids, emulsions)  64. Knowledge of procedures to prepare ready-to-dispense multidose packages (for example, ophthalmics, otics, inhalers, topicals, transdermals). 65. Knowledge of aseptic techniques (for example, laminar flow hood, filters). 66. Knowledge of infection control procedures. 67. Knowledge of requirements for handling hazardous products and disposing of hazardous waste. 68. Knowledge of documentation requirements for controlled substances, investigational drugs and hazardous wastes 69. Knowledge of pharmacy-related computer software for documenting the dispensing of prescriptions or medication orders. 70. Knowledge of manual systems for documenting the dispensing of prescriptions or medication orders. 71. Knowledge of customer service principles. 72. Knowledge of communication techniques. 73. Knowledge of confidentiality requirements. 74. Knowledge of cash handling procedures. 75. Knowledge of reimbursement policies and plans. 76. Knowledge of legal requirements for pharmacist counseling of patient/patient's representative.  B. Review Medication Distribution And Inventory Control Systems  1. Knowledge of drug product laws and regulations and professional standards related to obtaining medication supplies, durable medical equipment and products (for example, Food, Drug and Cosmetic Act; Controlled Substances Act; Prescription Drug Marketing Act; USP-NF; NRC standards). 2. Knowledge of pharmaceutical industry procedures for obtaining pharmaceuticals. 3. Knowledge of purchasing policies, procedures and practices. 4. Knowledge of dosage forms. 5. Knowledge of formulary or approved stock list. 6. Knowledge of par and reorder levels and drug usage. 7. Knowledge of inventory receiving process. 8. Knowledge of bioavailability standards (for example, generic substitutes). 9. Knowledge of the use of DEA controlled substance ordering forms. 10. Knowledge of regulatory requirements regarding record-keeping for repackaged products, recalled products, and refunded products. 11. Knowledge of policies, procedures, and practices for inventory systems. 12. Knowledge of products used in packaging and repackaging (for example, child-resistant caps and light-protective unit-dose packaging). 13. Knowledge of risk management opportunities (for example, dress code, personal protective equipment [PPE], needle recapping). 14. Knowledge of the FDA's classifications of recalls. 15. Knowledge of systems to identify and return expired and unsalable products. 16. Knowledge of rules and regulations for the removal and disposal of products. 17. Knowledge of legal and regulatory requirements and professional standards governing operations of pharmacies (for example, prepackaging, difference between compounding and manufacturing). 18. Knowledge of legal and regulatory requirements and professional standards (for example, FDA, DEA, state board of pharmacy, JCAHO) for preparing, labeling, dispensing, distributing, and administering medications. 19. Knowledge of medication distribution and control systems requirements for the use of medications in various practice settings (for example, automated dispensing systems, bar coding, nursing stations, crash carts). 20. Knowledge of preparation, storage requirements, and documentation for medications compounded in anticipation of prescriptions or medication orders. 21. Knowledge of repackaging, storage requirements, and documentation for finished dosage forms prepared in anticipation of prescriptions or medication orders. 22. Knowledge of policies, procedures, and practices regarding storage and handling of hazardous materials and wastes (for example, Materials Safety Data Sheet [MSDS]). 23. Knowledge of medication distribution and control systems requirements for controlled substances, investigational drugs, and hazardous materials and wastes. 24. Knowledge of the written, oral, and electronic communication channels necessary to ensure appropriate follow-up and problem resolution (for example, product recalls, supplier shorts). 25. Knowledge of quality assurance policies, procedures, and practices for medication and inventory control systems.  C. Review The Administration And Management Of Pharmacy Practice  1. Knowledge of the practice setting's mission, goals and objectives, organizational structure, and policies and procedures. 2. Knowledge of lines of communication throughout the organization. 3. Knowledge of principles of resource allocation (for example, scheduling, cross training, work flow). 4. Knowledge of productivity, efficiency, and customer satisfaction measures. 5. Knowledge of written, oral, and electronic communication systems. 6. Knowledge of required operational licenses and certificates. 7. Knowledge of roles and responsibilities of pharmacists, pharmacy technicians, and other pharmacy employees. 8. Knowledge of legal and regulatory requirements for personnel, facilities, equipment, and supplies (for example, space requirements, prescription file storage, cleanliness, reference materials, storage of radiopharmaceuticals). 9. Knowledge of professional standards (for example, JCAHO) for personnel, facilities, equipment, and supplies. 10. Knowledge of quality improvement standards and guidelines. 11. Knowledge of state board of pharmacy regulations. 12. Knowledge of storage requirements and expiration dates for equipment and supplies (for example, first-aid items, fire extinguishers). 13. Knowledge of storage and handling requirements for hazardous substances (for example, chemotherapeutics, radiopharmaceuticals). 14. Knowledge of hazardous waste disposal requirements. 15. Knowledge of procedures for the treatment of exposure to hazardous substances (for example, eyewash). 16. Knowledge of security systems for the protection of employees, customers, and property. 17. Knowledge of laminar flow hood maintenance requirements. 18. Knowledge of infection control policies and procedures. 19. Knowledge of sanitation requirements (for example, handwashing, cleaning counting trays, countertop, and equipment). 20. Knowledge of equipment calibration and maintenance procedures. 21. Knowledge of supply procurement procedures. 22. Knowledge of technology used in the preparation, delivery, and administration of medications (for example, robotics, Baker cells, automated TPN equipment, Pyxis, infusion pumps). 23. Knowledge of purpose and function of pharmacy equipment.  24. Knowledge of documentation requirements for routine sanitation, maintenance, and equipment calibration. 25. Knowledge of the Americans with Disabilities Act requirements (for example, physical accessibility). 26. Knowledge of manual and computer-based systems for storing, retrieving, and using pharmacy-related pharmacy information (for example, drug interactions, patient profiles, generating labels). 27. Knowledge of security procedures related to data integrity, security, and confidentiality. 28. Knowledge of downtime emergency policies and procedures. 29. Knowledge of backup and archiving procedures for stored data and documentation 30. Knowledge of legal requirements regarding archiving. 31. Knowledge of third-party reimbursement systems. 32. Knowledge of healthcare reimbursement systems (for example, home health, respiratory medications, eligibility and reimbursement). 33. Knowledge of billing and accounting policies and procedures. 34. Knowledge of information sources used to obtain data in a quality improvement system (for example, the patient's chart, patient profile, computerized information systems, medication administration record). 35. Knowledge of procedures to document occurrences such as medication errors, adverse effects, and product integrity (for example, FDA Med Watch Program). 36. Knowledge of staff training techniques. 37. Knowledge of employee performance evaluation techniques. 38. Knowledge of employee performance feedback techniques.  **[Course Title](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html)**  [Pharmacy Technician Internship](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html)  **[Course Hours](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html)**  [60 Hours](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html)  **[Course Description](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html)**  [This course provides students with work-based learning experiences. Students will practice under the supervision of a pharmacist or simulate the clinical experience in a laboratory setting.](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html)  **[Knowledge & Skills](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html)**  [The following tasks may be performed as part of the Pharmacy Technician Internship:  -Retrieve prescriptions or files as necessary  -Clerical tasks such as data entry, typing labels and maintaining patient profiles  -Secretarial tasks such as telephoning, filing, and typing  -Accounting tasks such as record keeping, maintaining accounts receivables, third party billing and posting  -Inventory control tasks including monitoring, pricing, dating, invoicing, stocking pharmacy, and preparation of purchase orders  -Help maintain a clean and orderly pharmacy  The following tasks may be performed under the supervision of a pharmacist in a Clinical Training Internship:  -Count and/or pour medications  -Prepackage (e.g. unit dose) and properly label medications  -Affix the prescription label to the proper container  -Affix auxiliary labels to the container as directed by the pharmacist  -Reconstitution of medications (i.e. liquid antibiotics)  -Bulk compounding, including such items as non-sterile topical compounds, sterile bulk solutions for small volume injectables, sterile irrigation solutions and products prepared in relatively large volume for internal or external use  -Functions involving reconstitution of single dose units of parenteral products that are to be administered to a given patient as a unit, and functions involving the addition of one manufacturer's prepared unit (whole or in part) to another manufacturer's prepared unit if the unit is to be administered as one dose to a patient  -Any duties auxiliary personnel are allowed to perform  -Assist the pharmacist in the annual CDS inventory](http://www.okcareertech.org/okcareerclusters/releases/2008/10/20081001/courses/853600a8db44c6be173c75d91a0557a7.html) |

**Instructional Procedures**

Student will be expected to complete the following three projects

1. Read each chapter in all textbooks and complete respective questions in workbook or textbook chapters. There will be a test at the end of each chapter.
2. Demonstrate for the class how to process the prescription/mediation orders and prepare and deliver medication to patients.
3. Research and prepare a brief written report on legal issues and patient safety in the field of pharmacy and present information to the class through a PowerPoint presentation.

**Project outlines**

**Project one**

Student will be expected to complete workbook or textbook questions with an 80 % pass rate.

Book 1, Pharmacy Practice for Technicians complete chapter review questions in 11 chapters including:

A.  The Pharmacy Technician

Roles of pharmacists and technicians, education and licensing requirements, and health care systems

            B.  Pharmacy Law, Standards, and Ethics for Technicians

            C.   Pharmaceutical Terminology and Abbreviations

           D.   Drugs, Dosage Forms, and Delivery Systems

            E.   Routes of Drug Administration

            F.   Basic Pharmaceutical Measurements and Calculations

            G.    Dispensing, Billing, and Inventory Management

            H.  Extemporaneous Compounding

            I.      Human Relations and Communications

            J.    Hospital and Institutional Pharmacy Practice

            K.    Your Future in Pharmacy Practice

Book 2, Pharmacology for Technicians complete workbook sheets on chapters 4 through 18 included in the following 6 units

            A.        The Science of Pharmacology

                        1.   The evolution of medicinal drugs

                        2.   Introduction to pharmacology

                        3.   Administration of pharmacologic agents

            B.         Anti-Infectives and Drugs for the Common Cold

                        1.   Antibiotics

                        2.   Antivirals, antiretrovirals, and antifungals

                        3.   Antihistamines, decongestants, antitussives, and expectorants

            C.        Narcotic Pain Relievers and other Nervous System Drugs

                        1.   Anesthetics, analgesics, and narcotics

                        2.   Antidepressants, antipsychotics, and antianxiety agents

                        3.   Anticonvulsants and drugs to treat other CNS disorders

            D.        Respiratory, GI, Renal, and Cardiac Drugs

                        1.   Respiratory Drugs

                        2.   Gastrointestinal Drugs

                        3.   Urinary System Drugs

                        4.   Cardiovascular Drugs

E.         Nonnarcotic Analgesics, Muscle Relaxants, Hormones, and Topicals

1.   Muscle relaxants, nonnarcotic analgesics, and drugs for arthritis

                        2.   Hormones

                        3.   Topicals, ophthalmics, and otics

            F.         Chemotherapy, Herbs, and Miscellaneous Drugs

                        1.   Combinant drugs and chemotherapy

2.   Vitamins, nutritional supplements, natural supplements, antidotes, and CODE Blue emergencies

Book 3, Pharmacy Calculations Complete chapter questions for the following 9 chapters

            A.        Understanding Number Systems and Subdivisions of Numbers

            B.         Using Ratios, Percents, and Proportions in Dosage Equations

            C.        Applying Metric Measurements in Ratios and Proportions

            D.        Converting Household and Metric Pharmacy Measurements

            E.         Preparing Pharmaceutical Solutions

            F.         Measuring Fluids and Converting Temperatures

            G.        Preparing Drugs for Intravenous Administration

            H.        Using Business Math in the Pharmacy

1. Understanding the Apothecary System

Book 4, Pharmacy Labs for Technicians Complete chapter questions

**Evaluation**

Each assignment will be graded on a 100% grading scale

**Project two**

This will be a group project in which the Pharmacy Tech students will develop a demonstration or skit that includes;

1. The steps to processing the prescription/mediation orders and
2. Preparing and delivering medication to patients.

The students will act out the proper procedures in a clear and concise manor that follows appropriate competency for the pharmacy technician.

**Evaluation**

The grade will be based on 25% presentations and 75% content. The audience will grade for presentation using an evaluation sheet and the instructor will grade on content. The audience grades will be averaged together than averaged with the instructor’s grade. If the students do not obtain an 80% or better they will be allowed to readjust the demonstration and present a second time.

**Audience evaluation Sheet**

On a scale of 1 to 5 rate the group performance

1 poor, 2 below average, 3 averages, 4 good, 5 excellent

1. All members participated \_\_\_\_\_
2. The presentation was clear\_\_\_\_\_\_
3. The presentation was creative\_\_\_\_\_
4. I learned something about pharmacy tech skills\_\_\_\_\_

**Project 3**

Upon completion of this research project the student will

1. Turn in a two page double spaced typed report on legal issues and patient safety in the field of pharmacy
2. Present information to the class through a PowerPoint presentation.

**Criteria for slide presentation**

1. At least 20 slides 20 points
2. No more than 5 words to a slide 20 points
3. During presentation the student will use the slides to present key points then elaborate with more verbal information 20 points

**Evaluation**

PowerPoint is worth 60 points and research paper is worth 40 points.

**Curriculum Resources**

            Pharmacy Practice for Technicians, 4th Ed., Ballington & Anderson, St. Paul, MN, Paradigm, 2010.

Pharmacology for Technicians, 4th Ed., Ballington & Laughlin, St. Paul, MN, Paradigm, 2010.

Pharmacy Calculations for Technicians, 4th Ed., Ballington & Green, St. Paul, MN, Paradigm, 2010.

Pharmacy Labs for Technicians, 4th Ed. Sparks & McCartney, St Paul, MN, Paradigm, 2010.

**Evaluation**

For the purpose of evaluations, points will be earned in the following areas; weighted by

percentages shown:

A. Attendance/Work Ethic 25% of overall grade

B. Written assignments 15%

C. Quizzes 20%

D. Projects/presentations 15%

E. Tests 25%

**Students will be required to maintain 90% class attendance for the preceding 9 week session to be eligible for clinical assignment. In addition, 90% clinical attendance must be maintained for a passing clinical evaluation.**

Clinical skills must be completed at competency level prior to progressing to the next section.

Clinical evaluations will be entered as a test grade for each occupational area.

Final grades will be assigned on the following scale:

90-100%=A Incomplete=I

80-89%=B No Grade=NG

70-79%=C Withdraw Passing=W/P

60-69%=D Withdraw Failing=W/F

Students will be kept informed of their grades and notified when examinations are scheduled. Quizzes will be unannounced. Students are encouraged to make an appointment with the instructor (before or after class, during break times and/or during lunch break) if he/she does not understand or disagrees with the grade earned. The rationale for scheduling an appointment is so the student and instructor may have a one-on-one discussion without unnecessary interruptions. The instructor will critique tests