

**Health Science Career Cluster
Pharmacy Operations and Fundamentals
Course Number: 25.45300**

Course Description:

This course is an introduction to pharmacy technology professions, employment opportunities, and basic pre-pharmacy technician skills which may be utilized in either clinical or community settings such as retail, home health care, and ambulatory care pharmacies. Intensive pharmacy specific safety and security training are provided including potential drug addiction and abuse issues relative to pharmaceutical care such as robberies and identification of forgeries. Students are required to adhere to Federal Regulatory Agencies and Acts guidelines including Food, Drug, and Cosmetic Act, Controlled Substances Act (CSA), Joint Commission on Accreditation of Healthcare Organizations (JCAHO), Drug Enforcement Administration (DEA) in addition to the pharmacy regulatory agencies within the state of Georgia. This course is recommended for students planning on pursuing careers in the healthcare industry, which may require basic pharmaceutical knowledge, common healthcare mathematical applications, and/or technical proficiency in the administration medications. An overview of prescription and nonprescription medications, classifications, actions, and interactions is provided while critical thinking skills are developed throughout the course from initial calculations/conversions of drug dosage forms to the simulation of regulating IV infusion rates. Technical skills in the preparation and administration of medications are practiced in simulated clinical labs. Students must demonstrate the utilization of all professional and safety guidelines as designated by applicable Federal and State regulatory agencies and acts such as the Drug Enforcement Administration (DEA) and the Controlled Substance Act while performing simulations. The impact of pharmaceuticals on the provision of healthcare and the importance of client education are integrated throughout the course. Clinical experience is recommended to help prepare a student to potentially take the Pharmacy Technician exam when they are eligible. An internship course under the supervision of a Registered Pharmacist may also be utilized for this experience. After the completion of this course, students may be eligible to take the Pharmacy Technician Certification Exam (PTCE) through the Pharmacy Technician Certification Board (PTCB). The prerequisites for the course are Introduction to Healthcare Science and Essentials of Healthcare.

Course Standard 1

HS-POF-1

The following standard is included in all CTAE courses adopted for the Career Cluster/Pathways. Teachers should incorporate the elements of this standard into lesson plans during the course. The topics listed for each element of the standard may be addressed in differentiated instruction matching the content of each course. These elements may also be addressed with specific lessons from a variety of resources. This content is not to be treated as a unit or separate body of knowledge but rather integrated into class activities as applications of the concept.

Standard: Demonstrate employability skills required by business and industry.

The following elements should be integrated throughout the content of this course.

1.1 Communicate effectively through writing, speaking, listening, reading, and interpersonal abilities.

| Person-to-Person Etiquette | Telephone and Email Etiquette | Cell Phone and Internet Etiquette | Communicating At Work | Listening |
|-------------------------------|---------------------------------|-----------------------------------|--------------------------------|---------------------------------|
| Interacting with Your Boss | Telephone Conversations | Using Blogs | Improving Communication Skills | Reasons, Benefits, and Barriers |
| Interacting with Subordinates | Barriers to Phone conversations | Using Social Media | Effective Oral Communication | Listening Strategies |

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|-----------------------------|----------------------------|--|---------------------------------|---------------------------------|
| Interacting with Co-workers | Making and Returning Calls | | Effective Written Communication | Ways We Filter What We Hear |
| Interacting with Suppliers | Making Cold Calls | | Effective Nonverbal Skills | Developing a Listening Attitude |
| | Handling Conference Calls | | Effective Word Use | Show You Are Listening |
| | Handling Unsolicited Calls | | Giving and Receiving Feedback | Asking Questions |
| | | | | Obtaining Feedback |
| | | | | Getting Others to Listen |

| Nonverbal Communication | Written Communication | Speaking | Applications and Effective Résumés |
|---|-----------------------------------|---------------------------|------------------------------------|
| Communicating Nonverbally | Writing Documents | Using Language Carefully | Completing a Job Application |
| Reading Body Language and mixed Messages | Constructive Criticism in Writing | One-on-One Conversations | Writing a Cover Letter |
| Matching Verbal and Nonverbal communication | | Small Group Communication | Things to Include in a Résumé |
| Improving Nonverbal Indicators | | Large Group Communication | Selling Yourself in a Résumé |
| Nonverbal Feedback | | Making Speeches | Terms to Use in a Résumé |
| Showing Confidence Nonverbally | | Involving the Audience | Describing Your Job Strengths |
| Showing Assertiveness | | Answering Questions | Organizing Your Résumé |
| | | Visual and Media Aids | Writing an Electronic Résumé |
| | | Errors in Presentation | Dressing Up Your Résumé |

1.2 Demonstrate creativity by asking challenging questions and applying innovative procedures and methods.

| Teamwork and Problem Solving | Meeting Etiquette |
|------------------------------|---|
| Thinking Creatively | Preparation and Participation in Meetings |
| Taking Risks | Conducting Two-Person or Large Group Meetings |
| Building Team Communication | Inviting and Introducing Speakers |
| | Facilitating Discussions and Closing |
| | Preparing Visual Aids |
| | Virtual Meetings |

1.3 Exhibit critical thinking and problem solving skills to locate, analyze and apply information in career planning and employment situations.

| Problem Solving | Customer Service | The Application Process | Interviewing Skills | Finding the Right Job |
|-----------------------------|--|---|---|------------------------------|
| Transferable Job Skills | Gaining Trust and Interacting with Customers | Providing Information, Accuracy and Double Checking | Preparing for an Interview | Locating Jobs and Networking |
| Becoming a Problem Solver | Learning and Giving Customers What They Want | Online Application Process | Questions to Ask in an Interview | Job Shopping Online |
| Identifying a Problem | Keeping Customers Coming Back | Following Up After Submitting an Application | Things to Include in a Career Portfolio | Job Search Websites |
| Becoming a Critical Thinker | Seeing the Customer's Point | Effective Résumés: | Traits Employers are Seeking | Participation in Job Fairs |

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| Managing | Selling Yourself and the Company | Matching Your Talents to a Job | Considerations Before Taking a Job | Searching the Classified Ads |
| | Handling Customer Complaints | When a Résumé Should be Used | | Using Employment Agencies |
| | Strategies for Customer Service | | | Landing an Internship |
| | | | | Staying Motivated to Search |

1.4 Model work readiness traits required for success in the workplace including integrity, honesty, accountability, punctuality, time management, and respect for diversity.

| Workplace Ethics | Personal Characteristics | Employer Expectations | Business Etiquette | Communicating at Work |
|-------------------------------|-------------------------------|-----------------------------|----------------------------------|----------------------------------|
| Demonstrating Good Work Ethic | Demonstrating a Good Attitude | Behaviors Employers Expect | Language and Behavior | Handling Anger |
| Behaving Appropriately | Gaining and Showing Respect | Objectionable Behaviors | Keeping Information Confidential | Dealing with Difficult Coworkers |
| Maintaining Honesty | Demonstrating Responsibility | Establishing Credibility | Avoiding Gossip | Dealing with a Difficult Boss |
| Playing Fair | Showing Dependability | Demonstrating Your Skills | Appropriate Work Email | Dealing with Difficult Customers |
| Using Ethical Language | Being Courteous | Building Work Relationships | Cell Phone Etiquette | Dealing with Conflict |
| Showing Responsibility | Gaining Coworkers' Trust | | Appropriate Work Texting | |
| Reducing Harassment | Persevering | | Understanding Copyright | |
| Respecting Diversity | Handling Criticism | | Social Networking | |
| Making Truthfulness a Habit | Showing Professionalism | | | |
| Leaving a Job Ethically | | | | |

1.5 Apply the appropriate skill sets to be productive in a changing, technological, diverse workplace to be able to work independently and apply team work skills.

| Expected Work Traits | Teamwork | Time Management |
|-----------------------------------|---|-------------------------------------|
| Demonstrating Responsibility | Teamwork Skills | Managing Time |
| Dealing with Information Overload | Reasons Companies Use Teams | Putting First Things First |
| Transferable Job Skills | Decisions Teams Make | Juggling Many Priorities |
| Managing Change | Team Responsibilities | Overcoming Procrastination |
| Adopting a New Technology | Problems That Affect Teams | Organizing Workspace and Tasks |
| | Expressing Yourself on a Team | Staying Organized |
| | Giving and Receiving Constructive Criticism | Finding More Time |
| | | Managing Projects |
| | | Prioritizing Personal and Work Life |

1.6 Present a professional image through appearance, behavior and language.

| On-the-Job Etiquette | Person-to-Person Etiquette | Communication Etiquette | Presenting Yourself |
|----------------------------|-----------------------------------|----------------------------------|----------------------|
| Using Professional Manners | Meeting Business Acquaintances | Creating a Good Impression | Looking Professional |
| Introducing People | Meeting People for the First Time | Keeping Phone Calls Professional | Dressing for Success |

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|--------------------------|--------------------|--------------------------|-----------------------------------|
| Appropriate Dress | Showing Politeness | Proper Use of Work Email | Showing a Professional Attitude |
| Business Meal Functions | | Proper Use of Cell Phone | Using Good Posture |
| Behavior at Work Parties | | Proper Use in Texting | Presenting Yourself to Associates |
| Behavior at Conventions | | | Accepting Criticism |
| International Etiquette | | | Demonstrating Leadership |
| Cross-Cultural Etiquette | | | |
| Working in a Cubicle | | | |

Support of CTAE Foundation Course Standards and Georgia Standards of Excellence L9-10RST 1-10 and L9-10WHST 1-10:

Georgia Standards of Excellence ELA/Literacy standards have been written specifically for technical subjects and have been adopted as part of the official standards for all CTAE courses.

Course Standard 2

HS-POF-2

Trace the different types of pharmacies, identify the team members needed, and define terminology used in a pharmaceutical setting.

- 2.1 Differentiate the types of pharmacy practices found in community and hospital settings.
- 2.2 Discover pre-employment educational requirements, current employment options, and formulate a career path necessary for one option.
- 2.3 Distinguish members of the pharmacy team; differentiate between roles and responsibilities of team members, and designate all members in appropriate positions on the organizational chart.
- 2.4 Exhibit the appropriate use of pharmacology nomenclature to include terminology related to drug effects.
- 2.5 Demonstrate knowledge and skills in these areas of science relevant to the pharmacy technician role, including anatomy/physiology, pharmacology and basic pharmaceutical chemistry.
- 2.6 Explain the differentiation between the following concepts: pharmacokinetics and pharmacodynamics, drug and medication, customer and patient, efficacy and safety.
- 2.7 Identify natural sources of drugs and discuss how drugs are chemically produced or altered in laboratories.

Course Standard 3

HS-POF-3

Support and explain the need for safety and proper infection control in the pharmacy and demonstrate precautions to prevent medication errors.

- 3.1 Establish secured areas within the pharmacy and the personnel permitted in those areas.
- 3.2 Apply appropriate infection control techniques set forth by OSHA guidelines.
- 3.3 Perform Basic Life Support procedures.
- 3.4 Demonstrate proper aseptic techniques.
- 3.5 Demonstrate the Pharmacy Assistant's role in contamination control and emergency situations.
- 3.6 Connect drug abuse, addiction, and treatment modalities.
- 3.7 Demonstrate techniques for handling and disposing of hazardous agents.
- 3.8 Identify opportunities for medication errors and explain the effect of medical errors on patient health and safety.

Course Standard 4

HS-POF-4

Summarize the history of government actions within the pharmaceutical industry including pharmacy law, practice, regulations, and standards.

- 4.1 Identify and deliberate legal aspects of administering medications of State and Federal Regulatory Agencies and Acts affecting pharmacy practice, including but not limited to the Controlled Substances Act (CSA), the Joint Commission on Accreditation of Healthcare Organizations (JCAHO), and the Drug Enforcement Administration (DEA).
- 4.2 Review the duties of the Georgia State Board of Pharmacy.
- 4.3 Conceptualize and discuss the components of the Georgia Pharmacy Practice Act that apply to regulate dispensing of drugs.
- 4.4 Categorize the five schedules of controlled substances.
- 4.5 Recall the important details of the Health Insurance Portability and Accountability Act regulations.
- 4.6 Maintain confidentiality of all client/patient information.
- 4.7 Examine the importance of protecting patient privacy in the pharmacy.

Course Standard 5

HS-POF-5

Utilize medical and pharmaceutical terms, abbreviations, symbols, and classifications.

- 5.1 Combine the elements to determine medical and pharmaceutical nomenclature.
- 5.2 Identify and define organ system terminology.
- 5.3 Define and describe different types of diseases and disorders connected with each organ system.
- 5.4 Identify and define abbreviations/symbols associated with drug administration.
- 5.5 Identify the different classifications of drugs and explain the unique properties.
- 5.6 Categorize common drugs by their therapeutic classifications and specify the mechanism of action (MOA), adverse reactions, and other special considerations.
- 5.7 Translate generic and brand names for common medications.

Course Standard 6

HS-POF-6

Interpret parts of a prescription and identify dosage forms, delivery systems and the routes of drug administration.

- 6.1 Locate pharmacy reference sources for: translating a brand name to a generic name; available drug packaging; dosage forms; correct spelling or definition of a medical term/drug; drug costs; locating the National Drug Code number for a drug; correct schedule and/or drug classification.
- 6.2 Differentiate between over-the-counter and legend or prescription drugs.
- 6.3 State the parts of a National Drug Code.
- 6.4 Explicate the uses of drugs as therapeutic, pharmacodynamics, diagnostic, prophylactic, and destructive agents.
- 6.5 Differentiate between therapeutic effects, side effects, an allergic response, and toxic effects and emphasize why the healthcare provider should identify each before administering any medication.
- 6.5 Compare major dosage forms and delivery systems and itemize advantages and disadvantages associated with these terms.
- 6.6 List the major routes of administration and the advantages and disadvantages associated with each dose form.
- 6.7 Identify and describe the factors that can influence the route of administration.

- 6.8 Discuss correct techniques for administration of oral, topical, and parenteral dose forms.
- 6.9 Locate the specific routes of administration (on manikin when necessary) and explain the advantages and disadvantages of each.
- 6.10 Define the terms local use and systemic use, differentiate between systemic and local drug absorption, and explain how these uses are considered when a prescriber selects a drug for a particular patient.

Course Standard 7

HS-POF-7

Formulate, calculate, and demonstrate proper drug doses to prepare medicine for dispensing for patient use.

- 7.1 Identify and explain when math skills may be needed by pharmacy professionals.
- 7.2 Describe four systems of measurement commonly used in pharmacy and convert units from one system to another.
- 7.3 Demonstrate calculations, conversions, and proper articulation of fractions, decimals, and percentages in healthcare operations.
- 7.4 Demonstrate conversions between Roman and Arabic numerals; US Standard time and military time (24 hour clock); Celsius and Fahrenheit.
- 7.5 Calculate percentage of error and evaluate measurements using percentage of error.
- 7.6 Identify ratios that express: a drug's therapeutic index, a solution's strength, and a solution's rate.
- 7.7 Demonstrate computations with proportions including solving for an unknown term in a proportion and converting measurements units using proportions.
- 7.8 Compute correct dosages from doctor orders.
- 7.9 Demonstrate the number of tablets/capsules/or volume of liquid necessary to deliver a prescribed dose.
- 7.10 Reconstitute oral liquids for dispensing into amber bottles.
- 7.11 Calculate parental drug dosages and flow rates when given a supply dosage and a drug order using ratio and proportion equations.
- 7.12 Calculate the correct pediatric dosage based on weight recommendation using proportion and the Body Surface Area (BSA) method from the nomogram.

Course Standard 8

HS-POF-8

Compare and contrast the differences when dealing with pediatric and geriatric pharmacology including administration, dosage, compliance and complications.

- 8.1 Define the basic principles for administering medications for geriatric and pediatric patients.
- 8.2 Specify the effects of nutrition and age-related diseases on therapeutic drug responses.
- 8.3 Explain why the elderly may have problems with drug compliance and polypharmacy and discuss possible solutions.
- 8.4 Investigate special drug considerations involved in administering medications to pediatric patients including the fetal period during pregnancy, the drug exposure during nursing, and the drug interactions/toxicity.

Course Standard 9

HS-POF-9

Perform necessary skills needed to prepare medication for patient use including: prescription processing, packaging, labeling, and dispensing.

- 9.1 Identify and discuss all elements necessary for a complete and legal prescription or medication order.

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- 9.2 Identify and explain the “6 Rights” for processing a prescribed prescription or medication order.
- 9.3 Interpret and transcribe prescription and medication orders.
- 9.4 Demonstrate process for obtaining patient/customer information such as: use of other medications, such as vitamins or nutrients allergies or adverse reactions.
- 9.5 Medical conditions or disabilities reimbursement procedure address, telephone number, date of birth, and other relevant patient/customer information.
- 9.6 Demonstrate process for obtaining patient/customer information from prescriber or other healthcare professions regarding the patient’s diagnosis or desired therapeutic outcome physical disability medication use, Allergies adverse reactions medical history other relevant patient information.
- 9.7 Update patient/customer profile to reflect any changes in medical history, such as increase or decrease in drug dosage, drug interactions, or allergies.
- 9.8 Assess prescriptions and medication orders for authenticity and completeness.
- 9.9 Calculate and enter prescription or medication order information into the system.
- 9.10 Measure, Count, and Calculate medications for dispensing.
- 9.11 Demonstrate different types of drug packaging (single dose, multiple dose, aerosols/ sprays, etc.) and placement in dispensing systems (automated and unit dose).
- 9.12 Identify the required elements of a prescription label and choose the correct auxiliary label.
- 9.13 Demonstrate appropriate verification procedures of the completed measurements, preparation, and/or packaging of medications.
- 9.14 Demonstrate delivery of medication to patient-care unit, nursing station stock, crash carts, and document distribution of prescription medication and controlled substances.
- 9.15 Discuss specific Georgia Pharmacy Laws regarding receiving or placing calls to a physician authorizing prescriptions and/or prescription refills in the community and hospital setting and discuss the role of the Pharmacy assistant.

Course Standard 10

HS-POF-10

Calculate and demonstrate through simulation proper IV set up and simulated administration.

- 10.1 Identify and simulate the correct protocol for administration of I.V. fluids and medications.
- 10.2 Convert milliliters per hour to a flow rate expressed in drops per minute.
- 10.3 Calculate IV fluid rates, total infusion amounts, and IV fluid intake for 24 hours.
- 10.4 Demonstrate appropriate technique for regulating an IV fluid rate manually and per pump programming.
- 10.5 Simulate proper technique for flushing a heparin lock.

Course Standard 11

HS-POF-11

Calculate and demonstrate proper compounding techniques and measurements through simulation.

- 11.1 Research extemporaneous compounding and describe common situations in which compounding is necessary.
- 11.2 Evaluate the equipment used for weighing, measuring and compounding of pharmaceuticals.
- 11.3 Demonstrate proper techniques for weighing pharmaceutical ingredients and measuring liquid volumes.

- 11.4 Prepare solutions, suspensions, ointments, creams, powders, suppositories, and capsules and demonstrate the methods used for compounding and blending of pharmaceutical ingredients.

Course Standard 12

HS-POF-12

Demonstrate appropriate documentation, reports, billing procedures, and other office skills that may be utilized in a pharmacy.

- 12.1 Demonstrate the use of both manual and computer-based information systems to perform job-related activities including generate prescription labels, update supply codes, and produce reports.
- 12.2 Coordinate written, electronic, and oral communications throughout the pharmacy practice setting.
- 12.3 Identify and describe types of prescription program sponsors including Medicaid, Medicare, HMO, and PPO.
- 12.4 Explain third-party billing procedures and transactions including co-pays, deductibles, rejected claims, and prior authorizations.
- 12.5 Demonstrate the process of sales transactions.
- 12.6 Collect productivity information as directed by the pharmacist.
- 12.7 Demonstrate basic office skills including filing chronologically, maintaining accurate logs, and composing letters and memos.
- 12.8 Define necessary disciplinary actions that may be utilized by the employer.

Course Standard 13

HS-POF-13

Demonstrate necessary education of patients/caregivers to promote health and wellness and to prevent problems including patient non-compliance, drug interactions, and abuse and addiction.

- 13.1 Analyze society's focus on health and wellness vs. treatment of disease signs and symptoms and the impact on the provision of pharmacy care.
- 13.2 Explain adverse interactions that may occur through combining vitamins, minerals, nutrients, over-the-counter (OTC) drugs, and prescription drugs.
- 13.3 Hypothesize why patients/customers may not communicate to the pharmacist about poly-pharmacy or non-prescription medications that they are taking and the possible ramifications of their lack of communication.
- 13.4 Identify why a patient/client may be non-compliant with his/her medication regime.
- 13.5 Educate the client/patient regarding potential abuse and addiction of certain therapeutic classes of medications.
- 13.6 Provide supplemental drug/nutrient/product education information to patient/advocate/family.