Bossier Parish Community College
Master Syllabus

Course Prefix and Number: PHAR 110 **Credit Hours:** 2

Course Title: Sterile Products

Course Prerequisite: Phar 101, Phar 102, Phar 102L, Phar 104

Course Co-requisite: Phar 120; Phar 110 Lab

Textbooks: Sterile Compounding & Aseptic Technique w/Cirrus Access Bundle, Edition: 2nd

Course Description:
This course is designed to provide an introduction to aseptic techniques, admixture preparation, incompatibility and stability, irrigation solutions, calculations for intravenous solutions, total parenteral nutrition and chemotherapy.

Learning Outcomes:
At the end of this course, the student will be able to:

A. Demonstrate ethical conduct (1.1)
B. Present an image appropriate for the profession of pharmacy in appearance and behavior. (1.2)
C. Communicate clearly and effectively, both verbally and in writing. (1.4)
D. Apply interpersonal skills, including negotiation skills, conflict resolution, customer service and teamwork. (1.7)
E. Demonstrate problem solving skills. (1.8)
F. Apply critical thinking skills, creativity, and innovation. (1.10)
G. Demonstrate the ability to effectively and professionally communicate with other heathcare professionals, payors and other individuals necessary to serve the needs of patients and practice. (1.12)
H. Explain the importance of maintaining competency through continuing education and continuing professional development. (2.1)
I. Demonstrate ability to maintain confidentiality of patient information, and understand applicable state and federal laws. (2.2)
J. Describe the pharmacy technician's role, pharmacist's role, and other occupations in the healthcare environment.(2.3)
K. Describe wellness promotion and disease prevention concepts.(2.4)
L. Demonstrate basic knowledge of anatomy, physiology and pharmacology, and medical terminology relevant to the pharmacy technician's role.(2.5)
M. Perform mathematical calculations essential to the duties of pharmacy technicians in a variety of settings.(2.6)
N. Explain the pharmacy technician's role in the medication-use process.(2.7)

O. Practice and adhere to effective infection control procedures.(2.8)
P. Describe further knowledge and skills required for achieving advanced competencies(2.10)
Q. Receive, process, and prepare prescriptions/medication orders for completeness, accuracy, and authenticity to ensure safety. (3.2)
R. Prepare patient-specific medications for distribution. (3.4)
S. Prepare non-patient-specific medications for distribution. (3.5)
T. Assist pharmacists in preparing, storing, and distributing medication products including those requiring special handling and documentation. (3.6)
U. Maintain pharmacy facilities and equipment. (3.8)
V. Use information from Safety Data Sheets (SDS), National Institute of Occupational Safety and Health (NIOSH) Hazardous Drug List, and the United State Pharmacopeia (USP) to identify, handle, dispense, and safely dispose of hazardous medications and materials. (3.9)
W. Describe Food and Drug Administration product tracking, tracing and handling requirements. (3.10)
X. Apply quality assurance practices to pharmaceuticals, durable and non-durable medical equipment, devices, and supplies. (3.11)
Y. Explain procedures and communication channels to use in the event of a product recall or shortage, a medication error, or identification of another problem. (3.12)
Z. Use current technology to ensure the safety and accuracy of medication dispensing. (3.13)
AA. Describe basic concepts related to preparation for sterile and non-sterile compounding. (3.15)
BB. Explain accepted procedures in inventory control of medications, equipment, and devices. (3.19)
CC. Explain accepted procedures utilized in identifying and disposing of expired medications. (3.20)
DD. Prepare, store and deliver medication products requiring special handling and documentation. (3.22)
EE. Prepare compounded sterile preparations per applicable, current USP Chapters. (3.23)
FF. Prepare or simulate chemotherapy/hazardous drug preparations per applicable, current USP Chapters. (3.25)
GG. Apply accepted procedures in inventory control of medications, equipment, and devices. (3.28)
HH. Apply patient- and medication-safety practices in aspects of the pharmacy technician's roles. (4.2)
II. Describe best practices regarding quality assurance measures according to leading quality organizations. (4.8)
JJ. Describe and apply state and federal laws pertaining to processing, handling and dispensing of medications including controlled substances. (5.1)
KK. Describe state and federal laws and regulations pertaining to pharmacy technicians. (5.2)

LL. Explain that differences exist between states regarding state regulations, pertaining to pharmacy technicians, and the processing, handling and dispensing of medications. (5.3)

MM. Describe the process and responsibilities required to obtain and maintain registration and/or licensure to work as a pharmacy technician. (5.4)

NN. Describe pharmacy compliance with professional standards and relevant legal, regulatory, formulary, contractual, and safety requirements.(5.5)

OO. Describe Occupational Safety and Health Administration (OSHA), National Institute of Occupational Safety and Health (NIOSH), and United State Pharmacopeia (USP) requirements for prevention and treatment of exposure to hazardous substances (e.g., risk assessment, personal protective equipment, eyewash, spill kit.) (5.6)

PP. Describe OSHA requirements for prevention and response to blood-borne pathogen exposure (e.g., accidental needle stick, post-exposure prophylaxis). (5.7)

QQ. Participate in pharmacy compliance with professional standards and relevant legal, regulatory, formulary, contractual, and, safety requirements. (5.9)

RR. Describe major trends, issues, goals, and initiatives taking place in the pharmacy profession. (5.10)

To achieve the learning outcomes, the student will:

Chapter 1

1. Gain awareness of the historical roots of pharmacy and sterile compounding.
2. Define sterile compounding and aseptic technique.
3. Describe the ways in which sterile compounding and aseptic technique processes may affect patient health and safety.
4. Define the objectives of USP Chapter <797>.
5. Understand the training requirements for pharmacy technicians who prepare sterile products and describe the process validation tool used for technique evaluation.
6. Recognize various quality assurance and end-product testing procedures.
7. Determine appropriate responses to medication safety questions.
8. Demonstrate an awareness of the ethical issues in pharmacy.

Chapter 2

1. Identify the origin of the pharmacy clean room and procedures for sterile compounding.
2. Describe anteroom and clean room setup and characteristics.
3. Understand the various ISO levels that are appropriate for sterile compounding.
4. Identify the different types of hoods used for sterile compounding.
5. Classify the four sterile compounding risk levels.
6. Recognize potential contaminants in the sterile compounding environment.

Chapter 3

1. Discover the origins of several sterile compounding supplies.
2. Identify a variety of supplies used for preparing sterile compounds.
3. Describe various components of the most frequently used sterile compounding supplies.
4. Understand the rationale for using particular supplies in specific compounding situations.
5. Identify the critical sites of commonly used sterile compounding supplies.

Chapter 4

1. Gain an awareness of the historical roots of prescriptions, the Rx symbol, and the signa.
2. Recognize the influence of early Greek and Roman healthcare practitioners on current medical terminology and abbreviations.
3. Understand the difference between a prescription and a medication order.
4. Understand common medical and pharmacy terminology, abbreviations, acronyms, and symbols.
5. Identify pharmacy directions written in signa language.
6. Recognize physician instructions and other pertinent information on a medication order.
7. Identify the various components of a compounded sterile preparation label.

Chapter 5

1. Explore the evolution of mathematical formulas used in sterile compounding.
2. Understand the principles of pharmacy dosage calculations.
3. Practice several types of pharmaceutical calculations using a basic formula, ratio and proportion, dimensional analysis, intravenous flow rates, intravenous drip rates, and alligations.
4. Determine the best method of solving pharmaceutical dosage questions based on the medication labeling and sterile compounding procedure required.

Chapter 6

1. Gain an awareness of the connections between early concepts of germ transmission and current procedures for aseptic garbing, hand washing, and gloving.
2. Understand the procedures for aseptic garbing, hand washing, and gloving according to USP Chapter <797> guidelines.
3. Identify ways that aseptic garbing, hand washing, and gloving protect the patient from infection.
4. Recognize and respond appropriately to actions that compromise asepsis during aseptic garbing, hand washing, and gloving procedures.
5. Demonstrate excellent technique in aseptic hand washing, garbing, and gloving.

Chapter 7

1. Gain an awareness of early cleanliness methods and disinfection practices.
2. Understand the rationale for using a hood when preparing sterile products.
3. Describe the components of the horizontal laminar airflow hood.
4. Explain the proper methods for cleaning the horizontal laminar airflow hood.
5. Demonstrate excellent technique in the cleaning of the horizontal laminar airflow hood.

Chapter 8

1. Gain an awareness of the historical roots of large-volume parenteral preparations.
2. Understand the physiology of fluid balance and the chemical properties of parenteral products.
3. Identify the risks associated with parenteral administration.
4. Describe the components and critical sites of various large-volume parenteral preparation supply items.
5. Identify the USP Chapter <797> procedures that must be performed prior to compounding large-volume parenteral preparations.
6. Demonstrate correct aseptic technique in preparing large-volume parenteral products.

Chapter 9

1. Recognize the origins of small-volume parenteral preparations—in particular, antibiotics.
2. Understand the USP Chapter <797> procedures that must be performed prior to sterile compounding procedures.
3. Identify the critical sites of various small-volume parenteral preparation supply items, and describe compounding situations in which certain supply items should be used.
4. Discover the USP Chapter <797> procedures that must be performed during small-volume parenteral preparation.
5. Demonstrate effective technique in the preparation of two small-volume compounded sterile preparations.

Chapter 10

1. Gain an awareness of the history of ampules.
2. Understand the identifying characteristics of ampules and their purpose in sterile compounding procedures.
3. Identify the USP Chapter <797> procedures that must be performed during the compounding of ampule-based preparations.
4. Demonstrate excellent aseptic technique in the compounding of ampule-based preparations.
5. Recognize the safety issues associated with the opening of ampules.

Chapter 11

1. Gain an awareness of the history of narcotic medications.
2. Understand the legal regulations and procedures that must be followed when preparing various controlled substances for parenteral administration.
3. Identify the USP Chapter <797> procedures that must be performed when preparing narcotic compounded sterile preparations (CSPs).
4. Demonstrate correct technique in the preparation of narcotic CSPs.

Chapter 12

1. Recognize the origins of pediatric medicine and pharmacy.
2. Identify the special situations and actions that must be considered when preparing medicine for pediatric use.
3. Identify the USP Chapter <797> procedures that must be performed when compounding pediatric preparations.
4. Demonstrate correct technique in preparing a pediatric special dilution.

Chapter 13

1. Recognize the origins of total parenteral nutrition.
2. Identify the special situations and actions that must be considered when preparing total parenteral nutrition.
3. Identify the risks associated with parenteral products.
4. Identify the USP Chapter <797> procedures that must be performed when compounding total parenteral nutrition.
5. Demonstrate correct technique in the preparation of a total parenteral nutrition solution.

Chapter 14

1. Gain an awareness of the historical roots of using chemotherapy to treat cancer.
2. Identify the special situations and actions that must be considered when preparing chemotherapy.
3. Identify the USP Chapter <797> procedures that must be performed when compounding chemotherapy.
4. Demonstrate correct technique in preparing chemotherapy CSPs.

Course Requirements: To earn a grade of "C" or higher the student must earn 70% of the total points for the course and meet <u>all</u> of the following course requirements.

- Demonstrate the ability to type 40 words per minute
- minimum average score of 70% on chapter tests
- minimum average of 70% on the comprehensive midterm and final tests
- minimum average of 70% overall in course

Course Grading Scale:

A- 90% or more of the total possible points and a minimum of 70% average on the midterm and final exams and minimum 70% average on chapter tests
B- 80% or more of the total possible points and a minimum of 70% average on the midterm and final exams and minimum 70% average on chapter tests
C- 70% or more of the total possible points and a minimum of 70% average on the midterm and final exams and minimum 70% average on chapter tests
D- 60% or more of the total possible points and a minimum of 70% average on the midterm and final exams and minimum 70% average on chapter tests
F.-less than 60% of the total possible points or less than 70% average on the midterm and final exams and minimum 70% average on chapter tests

Attendance Policy: The college attendance policy, which is available at http://www.bpcc.edu/catalog/current/academicpolicies.html, allows that "more restrictive attendance requirements may apply to some specialized classes such as laboratory, activity, and clinical courses because of the nature of those courses." The attendance policy of the Pharmacy Tech program is described in the Pharmacy Technician Handbook.

Nondiscrimination Statement
Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

COORDINATOR FOR SECTION 504 AND ADA
Angie Cao, Student and Disability Services Specialist
Disability Services, F254, 6220 East Texas Street, Bossier City, LA 71111
318-678-6511
acao@bpcc.edu
Hours: 8:00 a.m.-4:30 p.m. Monday - Friday, excluding holidays and weekends.

Equity/Compliance Coordinator
Teri Bashara, Director of Human Resources
Human Resources Office, A-105
6220 East Texas Street
Bossier City, LA 71111
Phone: 318-678-6056
Hours: 8:00 a.m.-4:30 p.m. Monday - Friday, excluding holidays and weekends.