

# PHT 52B: ASEPTIC TECHNIQUE & IV PREPARATION

## Foothill College Course Outline of Record

Heading	Value
Effective Term:	Summer 2021
Units:	4
Hours:	3 lecture, 3 laboratory per week (72 total per quarter)
Prerequisite:	PHT 52A.
Degree & Credit Status:	Degree-Applicable Credit Course
Foothill GE:	Non-GE
Transferable:	CSU
Grade Type:	Letter Grade Only
Repeatability:	Not Repeatable

## Student Learning Outcomes

- Describe factors affecting the survival of bacteria, the main components of the infection cycle and explain various methods of preventing the spread of micro-organisms and contaminants.
- Prepare sterile compounds proficiently, demonstrating full compliance with aseptic compounding principles, techniques, precautions, and regulatory guidelines.

## Description

This course provides technician-focused instruction and training for the successful production of sterile parenteral preparations, a major responsibility of the pharmacy technician in hospitals, long-term care facilities, and home healthcare. This important work requires the mastery of aseptic technique: the procedures that avoid introducing pathogens into sterile products, ensure patient safety, and maintain product consistency. Intended for students in the Pharmacy Technician Program; enrollment is limited to students accepted in the program.

## Course Objectives

The student will be able to:

- Identify the ethical and legal obligations of sterile compounding personnel, including training and assessment requirements.
- Identify supply items used in sterile compounding and describe appropriate technique to maintain the sterility of their critical sites.
- Perform the calculations required for dosage determination and solution preparation.
- Utilize various documentation in quality assurance; including process validation testing and identifying risk levels associated with CSPs.
- Identify common pharmaceuticals that are administered parenterally and describe the characteristics, stability, incompatibilities, and patient complications of sterile compounded parenterals.
- Perform sterile compounding procedures to prepare various vial-based, and ampule based large-volume and small-volume parenteral preparations.
- Prepare specialty admixtures such as narcotic preparations and pediatric CSPs.
- Display appropriate technique in the compounding of a TPN preparation.

- Identify common chemotherapy agents, their uses, and procedures for handling hazardous CSP materials (chemotherapy).
- Exhibit excellent aseptic technique during process validation testing for compounding a variety of sterile products.

## Course Content

- Sterile compounding as a pharmacy technician
  - Roles and responsibilities of IV technicians
  - Effects of aseptic technique on patient health and safety
    - Patient complications related to compounding of sterile products
  - The United States Pharmacopeia (USP)
    - USP 797
  - Training and testing requirements
  - Process validation
  - Quality assurance
- Sterile compounding supplies
  - Correcting opening and placement of supplies
  - Needles and specialty needles
  - Syringes
  - IV base solutions
  - IVPB solutions
  - Premixed parenteral products
  - Vials
  - Ampules
  - IPA swabs, vented dispensing pins, IVA seals and sharps containers
  - Sterile IV tubing
  - Repeater pumps
  - Miscellaneous sterile compounding supplies
- Calculations for sterile compounding
  - Calculations as part of anteroom protocol
  - Dosage calculations
  - Special considerations
  - Basic formula calculations
  - IV flow rate and drip rate calculations
  - Calculation skills in the sterile compounding environment
- Quality control
  - In-process tests and inspections of personnel performance, equipment, facilities and product
  - Risk level considerations for CSP
    - Immediate Use CSP risk level
    - Low Risk Level CSP with 12 hour or less BUD
    - Low Risk Level CSP
    - Medium Risk Level CSP
    - High Risk Level CSP
  - Documentation
  - Batch record requirements
- Compounding sterile products
  - Products commonly used in parenteral preparations
  - Characteristics of sterile products
  - Particulate matter and prevention of particulate matter
  - Pyrogens
  - Incompatibilities affecting sterile products
  - Stability and other factors affecting sterile products
- Parenteral preparations
  - Compounding large volume parenterals (LVP)
    - Essential supplies
    - Compounding procedure
  - Compounding small volume parenterals (IVPB)
    - Essential supplies
    - Compounding procedure
  - Ampule-based preparations

- a. Properties of ampule medications
- b. Administration of ampule based preparations
- c. Compounding procedures
  - 1) Opening of ampules
  - 2) Contents of ampules
- d. Essential supplies
- 4. Vial based reconstitution
  - a. Proper reconstitution procedure
- G. Specialty admixtures
  - 1. Narcotic preparations
    - a. Properties of narcotic CSPs
    - b. Patient controlled analgesia
    - c. Controlled substance storage and record keeping
    - d. Compounding narcotic CSPs
      - 1) Essential supplies
      - 2) Compounding procedure
  - 2. Pediatric preparations
    - a. Pediatric CSPs
    - b. Pediatric dosing
    - c. Pediatric formulations
    - d. Administration of pediatric CSP
    - e. Compounding pediatric CSPs
      - 1) Essential supplies
      - 2) Compounding procedure
- H. Sterile parenteral nutrition solutions
  - 1. Types of parenteral nutrition
  - 2. Indications for TPN
  - 3. Formulation of TPN solutions
  - 4. Administration of TPN solutions
  - 5. Cleaning and calibration of the ACD
  - 6. Premixed TPN solutions
  - 7. Special considerations for preparing TPNs
  - 8. Compounding of TPN solutions
    - a. Additives
      - 1) Incompatibilities of additives
      - b. Nutritional requirements
    - c. Standard mixing protocols for TPN preparations
    - d. Labeling and storage
  - I. Chemotherapy products and procedures
    - 1. Common chemotherapy drug categories
    - 2. Properties of chemotherapy CSPs
    - 3. Compounding of chemotherapy CSPs
    - 4. Handling risks for chemotherapy
    - 5. Training for chemotherapy preparers
    - 6. Administration of chemotherapy CSPs
    - 7. USP 797 guidelines for chemotherapy preparations
    - 5. Hazardous drug spills
  - J. Process validation testing for the following CSPs
    - 1. Large volume parenteral
    - 2. Small volume parenteral
    - 3. Additives to CSPs
      - a. Powder reconstitution
      - b. Ampules
    - 4. Narcotic CSP
    - 5. Pediatric dilution
    - 6. TPN

## Lab Content

- A. Large volume CSP production, labeling, and documentation
- B. Small volume CSP production, labeling, and documentation
- C. Reconstitution of drug product

- D. Ampule manipulation and transfer
- E. Narcotic CSP (narcotic PCA syringe) production, labeling, and documentation
- F. Pediatric special dilution production, labeling, and documentation
- G. Adult parenteral nutrition preparation, labeling and documentation
- H. Chemotherapy theory and demonstration

## Special Facilities and/or Equipment

- A. Laboratory supplied with water and electricity, laminar flow hood, materials necessary for aseptic preparation of parenteral products and hazardous substances, admixture pump, hazardous substances/sharps disposal equipment, hazardous substances spill kit, labels.
- B. Textbooks, overhead, video tapes, multimedia cart, and charts.

## Method(s) of Evaluation

Methods of Evaluation may include but are not limited to the following:

- Objective exams
- Process validation checklists
- Lab practical exams
- Quizzes
- Homework assignments

## Method(s) of Instruction

Methods of Instruction may include but are not limited to the following:

- Lecture presentations and classroom discussion regarding topics
- Small group recitation sessions to discuss concepts

## Representative Text(s) and Other Materials

McCartney, Lisa. [Sterile Compounding and Aseptic Technique: Concepts, Training and Assessment for Pharmacy Technicians, 2nd ed.](#) 2018.

Ballington, Don, and Robert Anderson. [Pharmacy Practice for Technicians, 6th ed.](#) 2017.

## Types and/or Examples of Required Reading, Writing, and Outside of Class Assignments

Self-evaluation of experiential competency

## Discipline(s)

Pharmacy Technology