

**Virginia Western Community College**  
**SUR 250**  
**Surgical Pharmacology**

**Prerequisites**

SUR 140

**Course Description**

Introduces pharmacology as it relates to surgical intervention in the operating room. Includes medication calculations, measurements, administration, terminology and handling and a review of certain drug classifications as they relate to surgical patients. (Note: Previously listed as HLT 250, General Pharmacology).

**Semester Credits: 2****Lecture Hours: 2****Lab/Clinical/Internship Hours: 0****Required Materials****Textbook:**

<b>Title</b>	<b>Author</b>	<b>Edition</b>
Surgical Technology for the Surgical Technologist ISBN-10: 9781305956414	AST/Cengage	5 <sup>th</sup>
Pharmacology for the Surgical Technologist ISBN: 978-0-323-34083-0	Katherine C. Snyder and Chris Keegan	4 <sup>th</sup>
LANGE Q&A Surgical Technology Examination ISBN: 978-125958811-2	Sherman, Carolan, Chmielewski, Mary	8 <sup>th</sup>
Pearson's Surgical Technology Exam Review ISBN: 978-0-13-521342-1	Rogers, Emily M., McGuiness Leary, Ann M.	4 <sup>th</sup>

**Other Required Materials:**

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**Course Outcomes**

<b>Course Learning Objectives/Learning Outcomes – Upon completion of the course, students will be able to:</b>
Describe the principles of pharmacokinetics, pharmacodynamics, and different drug categories and give examples of drugs in each category.
Apply the correct protocol for receiving drugs on the sterile field, labeling, discuss ways to prevent drug errors, how to correctly identify and interpret the components of a drug label by adhering to the use of the seven rights of the medication process.
List and describe the different drug delivery devices, role of the surgical technologist in handling drugs.
Explain important anesthesia concepts, anesthesia evaluation, and anesthesia selection process.

Explain the preparation of the patient.
Define general anesthesia, describe induction, maintenance and emergence.
Discuss the difference between dissociative anesthesia and conscious sedation, regional anesthesia, and concepts of airway management.
Define the role of the surgical technologist during the use of anesthesia.

### **Topical Description**

1. Basic Pharmacology
  - a. Principles of anesthesia administration
  - b. Define terms related to pharmacology
  - c. Drug sources & examples of each
  - d. Drug distribution systems
  - e. Types of drug forms
  - f. Drug administration routes
  - g. Pharmacokinetics & Pharmacodynamics
2. Medication Development, Regulation, and Resources
  - a. History & definition of pharmacology
  - b. Laws, policies, and procedures
  - c. Medication publications
  - d. Medication/Solution Violations
3. Pharmacology Mathematics
  - a. Terminology, abbreviations, symbols, and measurement
  - b. Civilian to military time
  - c. Decimal placement, fractions, percentages, ratios, converting temperatures
  - d. Metric system
  - e. Symbols of measurement
4. Medication Administration
  - a. ST role in med administration
  - b. Five "Rights"
  - c. Med identification, delivery to sterile field, labeling, handling, supplies, sharps safety
5. Antibiotics
  - a. Terms/abbreviations related to antibiotics
  - b. Antimicrobial and category of agents
  - c. Discuss HAIs and SSIs
  - d. Antibiotic resistance
  - e. Antibiotics used in surgery with examples
6. Diagnostic Agents
  - a. Explanation of contrast media in surgery
  - b. Use of dyes in surgery
  - c. Use of staining agents in surgery

7. Diuretics
  - a. Purpose of diuretics
  - b. Renal process of blood filtration
  - c. Nephrons
  - d. Long-term diuretic therapy
  
8. Hormones
  - a. Discuss Endocrine Glands
  - b. Classifications of Hormones
  - c. Thyroid/Parathyroid Glands
  - d. Calcium levels
  - e. Hyperparathyroidism vs. Hypoparathyroidism
  
9. Medications that Affect Coagulation
  - a. Physiology of blood clot formation
  - b. Categories of coagulants
  - c. Various hemostatic that affect coagulation
  
10. Ophthalmic Agents
  - a. Eye anatomy
  - b. Categories of ophthalmic agents
  - c. Topical, Intraoperative & Postoperative Medications
  
11. Fluids & Irrigation Solutions
  - a. Terminology/abbreviations related to fluids/irrigations
  - b. Physiology of fluid loss to surgical patient
  - c. Functions and blood types
  - d. Process for blood replacement during surgery
  - e. Irrigation fluid & related equipment
  
12. Anti-neoplastic
  - a. Chemotherapy Agents
  - b. 7 basic warning signs of cancer
  - c. Abnormal cell growth
  - d. Targeted cancer therapy
  - e. BRMS
  
13. Preoperative Medications
  - a. Pre-operative anesthesia evaluation
  - b. Preoperative Medications
  - c. Medications in surgical setting
  
14. Patient monitoring & Local and Regional Anesthesia
  - a. Equipment and devices
  - b. Patient Monitoring
  - c. MAC and levels of sedation

- d. Local & regional, blocks
  - e. Epinephrine
  - f. Complications
15. General Anesthesia
- a. Equipment and devices
  - b. Indications for general anesthesia
  - c. Phases of general anesthesia
  - d. Airway management
  - e. Emergence phase and extubating
  - f. Reversal Agents
  - g. Categories of anesthesia medications
  - h. Analgesics
  - i. Inhalation agents
  - j. Depolarizing and nondepolarizing muscle relaxants
  - k. Complications
16. Emergency Situations
- a. Identifying emergent situations associated to anesthesia
  - b. Medication and respiratory emergencies
  - c. Transfusion reactions
  - d. Bronchospasm and Laryngospasm
  - e. Role of surgical technologist during cardiac arrest
  - f. Drugs for cardiac resuscitation
  - g. Treatment for MH
  - h. Role of CST during MH crisis