



Western Technical College

## 10512129 Surgical Pharmacology

### Course Outcome Summary

#### Course Information

<b>Description</b>	Basic study of drug classifications, care, and handling of drugs and solutions, application of mathematical principles in dosage calculations, terminology related to pharmacology, anesthesia, and drugs used in surgery.
<b>Career Cluster</b>	Health Science
<b>Instructional Level</b>	Associate Degree Courses
<b>Total Credits</b>	2
<b>Total Hours</b>	36

#### Textbooks

*Surgical Technology for the Surgical Technologist: A Positive Care Approach*. 5th Edition. Copyright 2018. Association of Surgical Technologists. Publisher: Cengage Learning. **ISBN-13**: 978-1-305-95641-4. Required.

*Pharmacology for Surgical Technologist – with Access*. 5th Edition. Copyright 2021. Howe, Tiffany and Angela Burton. Publisher: Elsevier Science. **ISBN-13**: 978-0-323-66121-8. Required.

#### Success Abilities

1. Live Responsibly: Foster Accountability
2. Refine Professionalism: Act Ethically
3. Refine Professionalism: Improve Critical Thinking
4. Refine Professionalism: Participate Collaboratively
5. Refine Professionalism: Practice Effective Communication

#### Program Outcomes

1. Apply healthcare and technological science principles to the perioperative environment.
2. Maintain principles of sterile technique in the surgical environment.
3. Prepare the patient, operating room, and surgical team for the preoperative phase.

4. Perform intraoperative case management in the scrub role.

## Course Competencies

### 1. Apply general terminology associated with pharmacology.

#### Assessment Strategies

- 1.1. in an oral, written, or graphic assessment
- 1.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

#### Criteria

*You will know you are successful when*

- 1.1. you define the words and phrases.
- 1.2. you differentiate between volumes of pharmaceutical standards and reference sources for drugs.
- 1.3. you apply the fundamental principles of pharmacology.
- 1.4. you identify various pharmaceutical preparations.

#### Learning Objectives

- 1.a. Relate the similarities and differences between pharmacology, pharmacokinetic, and pharmacodynamic definitions.
- 1.b. Discover terminology for various drug categories or classifications.
- 1.c. Examine common hospital abbreviations.

### 2. Categorize drugs according to their classifications.

#### Assessment Strategies

- 2.1. in an oral, written, or graphic assessment
- 2.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

#### Criteria

*You will know you are successful when*

- 2.1. you compare groups of drugs that produce local effects to groups of drugs that produce systemic effects.
- 2.2. you cite examples of drugs that produce local and or systemic effects.
- 2.3. you identify factors that influence onset of action and amount of drug reaching a specific area of the body.
- 2.4. you identify common drug interactions.

#### Learning Objectives

- 2.a. Discover sources of medication and techniques to identify medication.
- 2.b. Differentiate the classifications of pharmacological agents.
- 2.c. Compare different techniques utilized to identify medications intraoperatively.

### 3. Describe the federal, state, and local laws and regulations governing medications.

#### Assessment Strategies

- 3.1. in an oral, written, or graphic assessment
- 3.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

#### Criteria

*You will know you are successful when*

- 3.1. you identify regulating bodies for drugs.
- 3.2. you illustrate the process for drug development.
- 3.3. you explain medication labeling.

#### Learning Objectives

- 3.a. Compare medication violations in relation to law, policies, and procedures.
- 3.b. Identify medication publications utilized within the hospital setting.

#### **4. Identify the surgical technologist's role in handling drugs and solutions.**

##### **Assessment Strategies**

- 4.1. in an oral, written, or graphic assessment
- 4.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

##### **Criteria**

*You will know you are successful when*

- 4.1. you explain safe practice in drug handling and transfer in a non-sterile area.
- 4.2. you explain safe practice in drug handling and transfer in a sterile area.
- 4.3. you explain the method for drug identification on the sterile field.
- 4.4. you describe the Surgical Technologist's role and responsibilities in handling drugs and solutions.

##### **Learning Objectives**

- 4.a. Distinguish medication information and ways to identify.
- 4.b. Handle various packaging, measurement and delivery systems used intraoperatively.
- 4.c. Explore ways to prepare medication intraoperatively.
- 4.d. Discuss the patient's six rights involving medication administration.

#### **5. Calculate medication conversions and dosages.**

##### **Assessment Strategies**

- 5.1. by performing calculations
- 5.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

##### **Criteria**

*You will know you are successful when*

- 5.1. you convert from one system to another.
- 5.2. you convert civilian time to military time.
- 5.3. you use fractions, decimals, ratios, proportions, and percentages in conversions and calculations.

##### **Learning Objectives**

- 5.a. Examine conversion and equivalent tables related to the metric and household systems.
- 5.b. Complete basic math concepts involving medications.
- 5.c. Compute dosage calculations involving medications.
- 5.d. Discover various ways to mix medications.

#### **6. Describe the action, uses, and modes of administration of pharmacologic agents for specific body systems relating to the surgical patient.**

##### **Assessment Strategies**

- 6.1. in an oral, written, or graphic assessment
- 6.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

##### **Criteria**

*You will know you are successful when*

- 6.1. you identify the chemical, generic, and brand names for each medication.
- 6.2. you identify drug classifications.
- 6.3. you describe the route of administration.
- 6.4. you describe medication actions on the human body - pharmacodynamics.
- 6.5. you relate the drug to its use on the sterile field.

##### **Learning Objectives**

- 6.a. Discuss basic medication nomenclature.
- 6.b. Classify pharmaceutical drug forms.
- 6.c. Detail various drug control classifications.
- 6.d. Contrast various routes of medication administration.

#### **7. Examine various types of anesthesia agents categorizing drugs as to the effects produced.**

### **Assessment Strategies**

- 7.1. in an oral, written, or graphic assessment
- 7.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

### **Criteria**

*You will know you are successful when*

- 7.1. you identify the purpose and role of preoperative drugs.
- 7.2. you identify factors influencing the selection of anesthetic agents.
- 7.3. you compare types of anesthesia that produce local, regional, or general action.
- 7.4. you summarize the events that occur in the induction phase of general anesthesia.
- 7.5. you describe the objectives during maintenance of general anesthesia.
- 7.6. you categorize various anesthetic agents as to the route of administration and function.
- 7.7. you summarize the action and adverse effects of skeletal muscle relaxants and antagonist agents.
- 7.8. you identify routes of administration of local anesthesia as topical application, local infiltration, regional application, spinal, caudal, or epidural anesthesia.
- 7.9. you state the use and route of administration of anesthesia-related drugs.
- 7.10. you identify potential complications during general anesthesia.
- 7.11. you relate the role of hypothermia as an anesthesia adjunct.

### **Learning Objectives**

- 7.a. Classify preoperative medications.
- 7.b. Contrast differing methods of medication administration.
- 7.c. Identify the specific categories of anesthetic medications.

## **8. Distinguish among various types of diagnostic agents.**

### **Assessment Strategies**

- 8.1. in an oral, written, or graphic assessment
- 8.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

### **Criteria**

*You will know you are successful when*

- 8.1. you compare contrast media, dyes, and stains.
- 8.2. you differentiate contrast media, dyes, and stains.
- 8.3. you relate the application of diagnostic agents in the surgical setting.

### **Learning Objectives**

- 8.a. Identify diagnostic agents for surgical procedures.
- 8.b. Identify the varying routes of administration for diagnostic agents.
- 8.c. Identify contra-indications related to the varying diagnostic agents used within the perioperative setting.

## **9. Differentiate between various coagulants and anticoagulants.**

### **Assessment Strategies**

- 9.1. in an oral, written, or graphic assessment
- 9.2. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)

### **Criteria**

*You will know you are successful when*

- 9.1. you differentiate the functions of coagulants and anticoagulants.
- 9.2. you outline the blood clotting process.
- 9.3. you state the function and route of administration of the coagulants and anticoagulants.
- 9.4. you identify antidotes to anticoagulants.

### **Learning Objectives**

- 9.a. Classify the various coagulants and anticoagulants used in surgical procedures.
- 9.b. Identify the varying routes of administration related to coagulants and anticoagulants.
- 9.c. Identify handling techniques related to varying coagulants and anticoagulants used within the surgical

- setting.  
9.d. Identify contra-indications related to coagulants and anticoagulants used within the perioperative setting.

## **10. Recognize medication related emergencies.**

### **Assessment Strategies**

- 10.1. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)  
10.2. in an oral, written, or graphic assessment

### **Criteria**

*You will know you are successful when*

- 10.1. you describe circulatory and respiratory conditions that may require emergency drugs.  
10.2. you categorize emergency drugs based on patient affect.  
10.3. you state the function and route of administration of the emergency drugs.  
10.4. you list clinical signs and protocol for malignant hyperthermia.

### **Learning Objectives**

- 10.a. Identify emergency medications utilized within medical emergencies.  
10.b. Identify the varying routes of administration for emergency medications.

## **11. Describe solutions used during surgical procedures.**

### **Assessment Strategies**

- 11.1. by answering questions that require you to apply knowledge about this competency (Your instructor may require several written exams as part of this course. You will be notified in advance.)  
11.2. in an oral, written, or graphic assessment

### **Criteria**

*You will know you are successful when*

- 11.1. you distinguish agents utilized in blood replacement and IV therapy.  
11.2. you indicate the uses for irrigants.  
11.3. you list solutions used in abdominal cavity, urinary bladder, uterus, joint, or exposed wound irrigants.

### **Learning Objectives**

- 11.a. Identify the solutions used for surgical procedures.  
11.b. Identify the varying routes of administration for solutions in surgical procedures.  
11.c. Identify contra-indications related to the varying solutions used within the perioperative setting.