

## COURSE INFORMATION

COURSE PREFIX NO.: SUR 130  
COURSE TITLE: Biomedical Science for the Surgical Technologist  
LECTURE HRS/WK: 1.0  
LAB/HRS/WK: 0.0  
CREDITS HRS/SEMESTER 1.0  
[DL ATTENDANCE/VA STATEMENT](#)    [TEXTBOOK INFORMATION](#)  
SU2005

## COURSE DESCRIPTION

This course includes basis principles of electricity, physics and robotics as they relate to safe patient care practices in the operating room.

### Course competencies

#### MODULE I: **Electricity**

1. Understand basic concepts of electricity as related to operating room equipment.
2. Demonstrate basic concepts of electricity as related to operating room equipment.

#### MODULE II: **Physics**

1. Understand basic concepts of physics as related to various aspects of the operating room.
2. Demonstrate basic concepts of physics as related to various aspects of the operating room.

#### MODULE III: **Robotics**

1. Understand basic concepts of function, operation and maintenance of the surgical robot in the operating room.
2. Demonstrate basic concepts of function, operation and maintenance of the surgical robot in the operating room.

#### MODULE IV: **Computers**

1. Understand computers as related but not limited to electricity, physics and robotics.
2. Demonstrate computers as related but not limited to electricity, physics and robotics.

ENTRY LEVEL SKILLS

A student entering SUR 130 should have appropriate entrance scores for the Surgical Technology Program.

PREREQUISITIES

None

COREQUISITIES

SUR 101  
SUR 102

Methods of Instruction

The class instruction includes lectures, class discussion and participation, video, power point, assignment sheets, CAI lab assignments and competency based tests.

Grading Procedures

Grades will be based on performance on written competency-bases test, class work and Assignments. Exam material will come from text book, lecture material and handouts.

<u>GRADE</u>	<u>SCORE</u>	Competency Based Test = 75%
A	93-100	Homework/Pop Quizzes= 25%
B	85-92	
C	80-84	
D	75-79	
F	BELOW 75	

**\*\*SUR 130 FINAL GRADE MUST BE A “C” (MINIMUM OF EIGHTY) TO PASS\*\***

One point is deducted from final grade for each unexcused tardy to class or lab. An unexcused absence will result in a zero for scheduled exam and/or assignment or class work.

## COURSE REQUIREMENTS

Surgical Technology student are responsible for academic integrity and honesty. Any student caught cheating will be automatically withdrawn from program. Students are also responsible for attaining competencies through completion of the following course requirements.

- Attending classes and labs
- Participation in class discussion and activities
- Completing assigned class activities, homework, CAI lab assignments and competency based tests.

## ATTENDANCE

Attendance is required on test days unless approved by the instructor. If the student will be absent on the test day, arrangements should be made with the instructor to take the test. Students are expected to take tests on the first day back after an absence.

Unexcused absence results in a zero (0).

Students are not allowed to miss more than two days. After that a counsel form will be issued. Withdrawal is left to the discretion of the instructor. Homework and/or pop quizzes will be turned in or taken on the 1<sup>st</sup> day back. It is the student's responsibility to arrange this.

\*\*\*\*\*NO CELL PHONES OR PAGERS ON AUDIO IN CLASSROOM OR LABS\*\*\*\*

\*\*\*\*\*NO CELL PHONES ARE ALLOWED IN THE CLINICAL SETTING\*\*\*\*\*

SUR 130: TOPIC OUTLINE

**MODULE I: BASIC COMPUTER KNOWLEDGE**

- A. SURGICAL APPLICATION OF COMPUTERS
- B. COMPUTER HARDWARE
- C. USING A COMPUTER
- D. COMPUTER SOFTWARE
- E. GRAPHICS
- F. INTERNET BASICS
- G. CASE STUDIES

**Learning Objectives:**

1. Apply computer knowledge to safe patient care
2. Identify basic components of a computer system
3. Perform basic word processing functions
4. Import graphics
5. Perform print/save functions

**MODULE II: ELECTRICITY FOR THE SURGICAL TECHNOLOGIST**

- A. SURGICAL APPLICATION OF ELECTRICITY
- B. BASIC PRINCIPLES OF ELECTRICITY
- C. MAGNETISM AND ELECTRICITY
- D. CURRENT, VOLTY, OHM'S LAW AND OTHER TERMS
- E. ELECTROSURGERY
- F. CASE STUDIES

**Learning Objectives**

1. Understand the basic principles of electricity and their application in the operating room
2. Identify the different types of electrical equipment and their power sources in the operating room
3. Determine safety concerns related to electrical equipment and vaporized tissue plume
4. Learn electrical safety precautions

**MODULE III: PHYSICS FOR THE SURGICAL TECHNOLOGIST**

- A. MEDICAL AND SURGICAL APPLICATIONS
- B. MECHANICS
- C. ENERGY AND WORK
- D. PROPERIES OF MATTER
- E. HEAT
- F. WAVES, VIBRATIONS, AND SOUND
- G. LIGHT
- H. NUCLEAR PHYSICS
- I. CASE STUDIES

**LEARNING OBJECTIVES:**

1. Define terms related to physics.
2. Apply the principles of physics to safe patient care practices in the OR.

**MODULE IV: ROBOTICS FOR THE SURGICAL TECHNOLOGIST**

- A. SURGICAL ROBOTS
- B. TERMINOLOGY
- C. DESIGN
- D. DECONTAMINATION AND STERILIZATION OF ROBOTIC COMPONENTS
- E. CLINICAL APPLICATIONS
- F. THE OPERATING ROOM FUTURE
- G. CASE STUDIES

**Learning Objectives**

1. Discuss the basic concepts related to robotics.
2. Describe the concepts of geometry that are used in the design of surgical robots.
3. Identify the basic components and mechanisms of the robotic system.
4. List the clinical applications of robotics in the OR.
5. Apply the principles of robotics to safe patient care practices in the OR.