# Surgical Technologist I

## 8351 36 weeks / 420 hours

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## Acknowledgments

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Office of Career, Technical, and Adult Education
Virginia Department of Education

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Course Description

Suggested Grade Level: 12
Students acquire knowledge and assisting-level skills to function in association with licensed nurses and surgeons/physicians, providing the best possible care of the surgical patient. Instruction emphasizes human anatomy, medical terminology, cleanliness, asepsis, safety, and efficiency in the operating room.

Recommended prerequisite(s): Introduction to Health and Medical Sciences 8302 or Nurse Aide I 8360

**Task Essentials Table**

- Tasks/competencies designated by plus icons (⊕) in the left-hand column(s) are essential
- Tasks/competencies designated by empty-circle icons (⊙) are optional
- Tasks/competencies designated by minus icons (⊖) are omitted
- Tasks marked with an asterisk (*) are sensitive.

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**Understanding Structures, Functions, and Surgical Pathologies of Body Systems**

| Identify the basic structural levels of body organization, anatomical structure, and body cavities. |
| Identify the structures and functions of the cell. |
| Identify the types and functions of tissues. |
| Identify the chemical components of the body. |
| Identify the structures, functions, and surgical pathologies of the integumentary system. |
| Identify structures, functions, and surgical pathologies of the skeletal system. |
| Identify the structures, functions, and surgical pathologies of the muscular system. |
| Identify the structures, functions, and surgical pathologies of blood. |
| Identify the structures, functions, and surgical pathologies of the heart. |
| Identify the structures, functions, and surgical pathologies of blood vessels and blood circulation. |
| Identify the structures, functions, and surgical pathologies of the lymphatic system, including immunity. |
| Identify the structures, functions, and surgical pathologies of the respiratory system. |
| Identify the structures, functions, and surgical pathologies of the gastrointestinal system. |
| Identify the structures, functions, and surgical pathologies of the endocrine system. |
| Identify the structures, functions, and surgical pathologies of the reproductive system. |
| Identify the structures, functions, and surgical pathologies of the nervous system. |
| Identify the structures, functions, and surgical pathologies of the urinary system. |
| Identify the structures, functions, and surgical pathologies of the sensory system. |

**Understanding Pharmacology**

| Calculate medication conversions and dosages. |
| Apply general terminology to medication use. |
| Handle medications and solutions. |

Legend: ✫Essential ☐Non-essential ☐Omitted

**Curriculum Framework**
Exploring the World of Surgical Technology

Task Number 39

Explain the role and responsibilities of a surgical technologist.

Definition

Explanation should include

- the role of a surgical technologist (an allied health professional who works under the supervision of a surgeon, circulating nurses, and other surgical staff to facilitate safe and effective practices throughout the surgical process)
- the responsibilities of a surgical technologist (to assist in the operating room and help provide a safe environment for the patient).

Process/Skill Questions

- In what basic ways does the surgical technologist assist in the operating room?
- How can the surgical technologist help provide a safe environment for the operating room patient?
- How can the surgical technologist help facilitate effective practices during the surgical process?

HOSA Competitive Events (High School)

Health Professions Events

- Clinical Specialty

Leadership Events

- Medical Photography

Teamwork Events

- Health Career Display
Task Number 40

Describe the roles of the various members of the surgical team.

Definition

Description should include the following members of the surgical team and their roles:

- Surgeon—Physician who performs the surgical procedure
- Surgeon assistant—Physician who works alongside the surgeon as needed to aid with the surgical procedure
- Circulating nurse—RN outside the sterile field who supervises the equipment, sponge count, personnel, supplies, and sterile field and also documents the procedure
- RN First Assistant—RN who plays a hands-on role in surgical procedures by controlling bleeding, suturing incisions and wounds and intervening if complications arise at the operating table
- Scrub nurse—RN/LPN at the operating table, part of the sterile field, who assists the surgeon and anticipates his/her needs
- Surgical technologist—An allied healthcare professional who functions as a scrub nurse but without administering medications
- Anesthesiologist/nurse anesthetist—Physician/nurse who administers anesthesia and monitors the patient throughout the surgical procedure
- OR aide—Aide who obtains equipment and supplies from outside the operating room, as needed
- Vendors—Outside agency staff that provide products, services, and/or equipment

Process/Skill Questions

- What are the educational and certification requirements for each member of the surgical team?
- How do the duties of surgical team members overlap? Why?
- In the operating room setting, how do the roles of the circulating nurse, the scrub nurse, and the surgical technologist differ?

HOSA Competitive Events (High School)

Health Professions Events

- Clinical Specialty

Leadership Events
Task Number 41

Describe potential career paths for surgical technologists.

Definition

Description should include potential career paths for surgical technologists who pursue further education or training, such as the following:

- Surgeon
- Surgeon assistant
- Physician assistant
- Registered nurse
- First assistant
- Special surgical technologist
- Central supply manager
- Sterile processing
- Insurance services
- Medical equipment and supplies sales/service
- Administration (perioperative)
- Education

Many websites offer career-exploration resources, including the Virginia Department of Education’s [Career Planning Guide](#) and [Explore Health Careers](#).

Process/Skill Questions

- What type of education and training would be needed for a surgical technologist to become a surgeon assistant? A physician’s assistant? A registered nurse? A surgeon?
- What types of specialties are available for special surgical technologists? What education and training are needed to qualify for these positions?
- What opportunities are available for a surgical technologist who wishes to pursue a career in insurance services? In medical equipment and supplies sales/service? What education and training are needed in these fields?

HOSA Competitive Events (High School)
Leadership Events

- Medical Photography

Teamwork Events

- Health Career Display

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**Task Number 42**

**Identify types of healthcare facilities that may employ surgical technologists.**

**Definition**

Identification should include

- private practice under the supervision of a physician
- private or public hospitals
- outpatient care facilities (e.g., urgent care, community clinics)
- ambulatory surgery centers
- correctional facilities
- travel employment
- consulting
- mental health facilities
- military hospitals
- nonprofit medical services
- home health services
- rehabilitation centers
- assisted-living facilities.

**Process/Skill Questions**

- What types of opportunities are available for surgical technologists in private practice under the supervision of a physician? In private or public hospitals? In outpatient care facilities?
- What types of opportunities are available for surgical technologists in mental health facilities? In rehabilitation centers?
- What types of opportunities are available for surgical technologists in nonprofit medical services? In home health services?

**HOSA Competitive Events (High School)**
Leadership Events
  o Job-Seeking Skills

Task Number 43

Describe how the operating room interacts with other hospital departments to provide continuity of patient care and safety.

Definition

Description should include

- the use of medical terminology
- the ability to provide continuing education
- the methods and importance of interdepartmental cooperation needed to meet the requirements of the Occupational Safety and Health Administration (OSHA), The Joint Commission (TJC), and other regulatory bodies
- the interactions of surgical technologists with other departments, such as admitting, medical laboratory, specimen collection and labeling, radiology, intensive care unit, post-anesthesia care unit, medical/surgical units, central supply, emergency room, same-day surgery units, specialty units (e.g., pediatrics, labor and delivery), pharmacy, and other hospital units.

Process/Skill Questions

- Why is departmental interaction essential for a hospital to successfully meet the requirements of OSHA? Of TJC?
- How does the operating room staff typically interact with other hospital departments to ensure the safety of the patient?
- How does the operating room staff provide continuity of patient care through interaction with radiology? With central supply? With the emergency room? With the pharmacy?
- How does effective communication help provide safe patient care? What are possible consequences of ineffective communication?
- How can the operating room team educate other departments about providing assistance in an emergency?

HOSA Competitive Events (High School)

  Health Science Events
Task Number 44

Describe professional organizations and credentialing in the field of surgical technology.

Definition

Description should include

- the responsibility of the National Board of Surgical Technology and Surgical Assisting (NBSTSA) in administering national certification
- the role of the Association of Surgical Technologists (AST) in the surgical technologist certification process
- the importance of the National Center for Competency Testing (NCCT)’s Tech in Surgery-Certified (TS-C) credential
- the role of Accreditation Review Council Surgical Technology/Surgical Assisting (ARC/STSA)
- the importance of the Commission on Accreditation of Allied Health Education Programs (CAAHEP) in surgical technology education
- the responsibility of the Association of periOperative Registered Nurses (AORN) in publishing the standards of recommended practice for operating-room procedures
- the difference between certification and licensure, and the importance of both in credentialing
- variations among states with regard to credentialing and credentialing bodies
- the influence of professional organizations and credentialing on the evolution of surgical technology as a profession
- the importance of professional development for surgical technologists.

Process/Skill Questions

- What national organizations are designed to meet the needs of the surgical technologist? In what ways do they meet these needs?
- How have professional organizations played a role in the evolution of surgical technology as a profession?
- How is AORN's publication, *Perioperative Standards and Recommended Practices*, important for surgical technologists?
- What are the benefits of belonging to a professional organization?
- What credentials are required for surgical technologists in the Commonwealth of Virginia? What opportunities for professional development do employers typically provide?
HOSA Competitive Events (High School)

Teamwork Events

- Health Career Display

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Task Number 45

Identify the means of and purpose for effective communication among operating room team members and between the surgical team and other hospital departments/other hospitals.

Definition

Identification should include

- the means of written communication, such as communication boards, reports, computerized record systems, patient charts, and pneumatic tubes
- the types of electronic communication, such as email, pager, smartphone, digital bracelet, electronic medical record (EMR), electronic health record, and patient portal (e.g., Healow)
- the types of verbal communication, such as meetings, phone calls, and one-on-one verbal exchange
- the importance of following the chain of command in communication, as appropriate to the situation.

Process/Skill Questions

- What types of information are communicated in the healthcare environment via communication boards? In e-mail? In patient charts?
- What types of information are communicated in the healthcare environment via meetings? Via phone calls or pagers? Via one-on-one verbal exchange?
- Why is it essential to follow the chain of command when communicating within the healthcare environment?

Task Number 46

Describe the layout of a local hospital, with attention to the purpose and arrangement of areas most related to surgery.
Definition

Description should be based on a visit to the hospital and should include

- the general layout of the hospital
- the purpose and arrangement of areas most related to surgery, such as the emergency room, radiology department, medical laboratory, labor and delivery, sterile processing, catheterization lab, intensive care unit (ICU), blood bank, pathology department, post-anesthesia care unit, and outpatient surgical unit.

Process/Skill Questions

- What is the relationship between the operating room and the emergency room?
- In what ways does the operating room depend on the services of the medical laboratory? Of the pathology department?
- What are the responsibilities of the post-anesthesia care unit? How does this unit interact with the operating room staff?

Task Number 47

Describe the operating room of a local hospital, noting the room arrangement, equipment, and areas used by the surgical technologist.

Definition

Description should be based on a visit to a hospital operating room and should include observations of the following areas, equipment, and duties related to the work of the surgical technologist:

- Activities/procedures
- Means of communication
- Surgical equipment
- Emergency equipment
- Dressing room
- Scrub sinks
- Outlets (e.g., electrical, suction, gas)
- Sterile vs. nonsterile areas
- Environmental controls (e.g., ventilation, temperature, humidity)
- Anesthesiology department
- Holding area

Process/Skill Questions
• What are the primary activities of the operating room staff? What typical procedures do they follow?
• What types of information need to be exchanged by members of the operating room team during surgery? How do members of the operating room team communicate?
• How are tools and equipment used in surgery different from emergency tools and equipment? Why are each important in the operating room?
• Why are there both sterile and nonsterile areas in an operating room? Who maintains the sterility of the sterile areas? How?

**Task Number 48**

**Identify restricted, semi-restricted, and nonrestricted areas of the operating room.**

**Definition**

Identification should include

- examples of restricted areas, such as sterile processing, medication room, operating room, and supply areas (where all personnel must wear scrubs and masks)
- examples of semi-restricted areas, such as a substerile room
- examples of nonrestricted areas, such as the hallway to the operating room, the entrance, waiting areas, and break rooms.

**Process/Skill Questions**

- What do markings on the floors of medical facilities represent?
- What can make an operating room unsterile?
- Why must medication areas of the operating room be restricted? Why must supply areas be restricted?
- What are the potential consequences of entering a restricted area without wearing scrubs and a mask?

**Task Number 49**

**Differentiate between sterile and nonsterile members of the surgical team.**

**Definition**

Differentiation should include a definition of sterile and nonsterile, as well as the following distinction:
• Sterile members of the surgical team are the surgeon, surgeon assistant, scrub nurse, and surgical technologist.
• Nonsterile members of the surgical team are the anesthesiologist, circulating nurse, vendors, and operation room (OR) aides.

Process/Skill Questions

• Why are the circulating nurse and OR aides not required to meet the requirements of sterility in the operating room?
• Why is the anesthesiologist not included as a sterile member of the surgical team?

Communicating in the Healthcare Workplace

Task Number 50

Describe how body language is used as a form of communication.

Definition

Description should include

• communicating with persons with special needs (e.g., hearing or visually impaired)
• examples of body language (e.g., eye contact, appropriate gestures, active listening position, attentive and positive facial expressions) and the message each conveys
• examples of the cultural differences in body language (e.g., acceptable duration of eye contact, variations in the meaning of hand gestures).

Process/Skill Questions

• What is typically communicated by a smile? By a firm handshake? By turning one’s back to another person? By shrugging one’s shoulders?
• How can a facial expression sometimes say more than words? How is this important in the surgical care environment?
• Why is it important to learn about cultural differences in body language?

HOSA Competitive Events (High School)

Health Science Events

○ Knowledge Test: Transcultural Health Care
Task Number 51

Explain zones of space in communication.

Definition

Explanation should include the effects of the following on zones of space in communication:

- Proximity
- Body position
- Familiarity
- Age
- Gender

Explanation should also consider the cultural differences in zones of space in communication.

Process/Skill Questions

- In what circumstances is physical proximity essential for effective communication in the surgical care environment? Why?
- How does physical proximity affect communication between people of different ages? People of different genders? People of different cultures?
- How can physical proximity be misinterpreted in the workplace? How can such misinterpretation be avoided?

Task Number 52

Describe the concept of professional standards of communication.

Definition

Description should include commentary on the following:

- Appearance and body language standards (e.g., dress, cleanliness, fragrances, jewelry, nail ornamentation, body piercings, tattoos, stance)
- Communication standards (e.g., word choice, correct grammar, use of medical vocabulary where needed, conversation topics, voice volume in speech and laughter)

Process/Skill Questions
• What is meant by professional behavior? Is it the same for every profession? Why, or why not?
• What is the relationship between professional behavior and communication?
• Why may certain body accessories (e.g., fragrances, body piercings) not be allowed in the surgical environment?
• Why is it important to avoid joking and/or boisterous conversation in the operating room, in family waiting areas, and in public hallways of the hospital?

HOSA Competitive Events (High School)

Leadership Events

  o Interviewing Skills
  o Job-Seeking Skills
  o Prepared Speaking
  o Researched Persuasive Speaking

Task Number 53

Apply basic communication skills in the healthcare workplace.

Definition

Application of basic communication skills should include the following:

  • Demonstrating effective teamwork strategies
  • Practicing conflict resolution
  • Demonstrating sensitivity in communicating and interacting with persons with disabilities
  • Communicating with persons who speak a different language
  • Demonstrating sensitivity to cultural differences in communicating among the healthcare team, patients, families, vendors, and others encountered in the workplace
  • Alerting other healthcare team members to any break in procedure
  • Filing a shift report, as appropriate
  • Practicing telephone/cellphone etiquette
  • Speaking up for safety

Process/Skill Questions

  • What are methods of acceptable verbal communication among the members of operating room team?
In what circumstances might a surgical technologist need to practice conflict-resolution skills? What strategies would be appropriate in those circumstances?

How might a surgical technologist demonstrate sensitivity in communicating with persons with disabilities? With persons of different cultural backgrounds?

What is a shift report? Why is it important?

What is telephone etiquette? What are the potential consequences of failing to use proper telephone etiquette?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Transcultural Health Care

Task Number 54

Identify biopsychosocial needs of the patient.

Definition

Identification should include biopsychosocial needs related to fear, anxiety, and spirituality, as well as needs across the lifespan (e.g., patients with disabilities, patients with mental health impairments, patients from a variety of cultural backgrounds). Identification should state the importance of providing support for each patient in accordance with Maslow’s hierarchy of needs, to include

- physiological and biological needs
- safety needs
- need for love and belonging
- need for self-esteem
- need for self-actualization.

Process/Skill Questions

- What are basic human physical needs? Why is it important for the surgical technologist to apply knowledge of basic human physical needs when working with patients?
- Why must medical professionals acknowledge the importance of a patient’s spiritual health?
- What is the role of the “healing touch” as it relates to the surgical team?

HOSA Competitive Events (High School)

Health Science Events
Knowledge Test: Human Growth and Development

Understanding Medical Ethics

Task Number 55

Describe the concepts and importance of confidentiality and patients’ rights and responsibilities.

Definition

Description should include the purpose of the Health Insurance Portability and Accountability Act (HIPAA) and its connection to patient confidentiality and the types of information that must be kept confidential.

Description should also include the patient’s basic rights, as established by the American Hospital Association’s Patient Care Partnership (formerly the Patients’ Bill of Rights), including the following patient expectations during a hospital stay:

- High-quality hospital care
- A clean and safe environment
- Involvement in his/her care
- Protection of medical privacy
- Help when leaving the hospital
- Help with billing claims

Description should also include the patient’s responsibility to:

- participate in their own care
- disclose medical information pertinent to their treatment
- adhere to the policies and procedures of the institution.

Process/Skill Questions

- How is the Patient Care Partnership applied in the surgical setting?
- What is the main point of HIPAA? Why do patients have a legal right to medical privacy?
- What can be the results for infringing medical personnel if patient information is not kept confidential? What can be the results for the hospital? For the patient?
HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Medical Law and Ethics

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**Task Number 56**

**Apply medical ethics and law.**

**Definition**

Application of medical ethics and law should include

- maintaining patient confidentiality
- working within the scope of practice
- honoring patients’ rights and laws protecting them
- following facility regulations and standard operating procedures
- adhering to local, state, and federal laws
- adhering to advance medical directives
- understanding the importance of and following guidelines for documentation
- reporting sentinel events.

**Process/Skill Questions**

- What is the difference between ethics and law? Do the two ever overlap? Do they ever conflict? Explain.
- What is meant by scope of practice? Why is it an important concept for surgical technologists?
- What are potential consequences for a medical professional who does not adhere to a patient’s advance medical directive? Why?
- What is the role of the ethics committee? How can one make a referral to the ethics committee?

**Common Career Technical Core**

**HL5**

Analyze the legal and ethical responsibilities, limitations and implications of actions within the healthcare workplace

**HL6**

Evaluate accepted ethical practices with respect to cultural, social and ethnic differences within the healthcare workplace.
Applying Safety Procedures

Task Number 57

Promote a safe, clean, comfortable environment for the patient.

Definition

Promotion of a safe, clean, and comfortable environment should include

- positioning the patient appropriately
- following facility policies concerning the operating room environment
- ensuring safety from electrical hazards, chemical spills, and bloodborne pathogen exposure
- avoiding harm resulting from infection, pharmaceutical errors, and misidentification
- maintaining uncluttered and hazard-free waiting areas
- ensuring restraint, wheelchair, and gurney safety
- maintaining equipment on a regular basis.

Process/Skill Questions

- How can a surgical technologist establish and maintain a safe environment for the patient?
- How can a surgical technologist establish and maintain a clean environment for the patient?
- What can the surgical technologist do to enhance the comfort of a patient in the surgical setting?
Task Number 58

Locate emergency equipment.

Definition

Location of emergency equipment in the operating room and surrounding environment should include

- fire alarms
- extinguishers
- gas cut-off valves
- exits
- difficult-airway carts
- malignant hyperthermia cart (MH)
- code carts.

Process/Skill Questions

- What types of emergency equipment are essential for a surgical setting? Why?
- What should be done if a hospital evacuation is mandated mid-surgery?
- How would a surgical technologist know the facility-specific procedures for common emergencies?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology

Task Number 59

Describe fire-safety procedures in the operating room.

Definition

Description should include
• the RACE (Rescue, Alarm, Contain, Extinguish/Evacuate) process
• the PASS (Pull the pin, Aim, Squeeze the trigger, Sweep it) process
• an overview of typical facility-specific emergency codes.

Process/Skill Questions

• What are the primary causes of fire in the operating room? Who is responsible for implementing fire-safety procedures in the operating room?
• How can the surgical technologist help to protect the patient in case of a fire emergency?
• What are some typical facility-specific emergency codes? Why are such codes used? How are they communicated? To whom?

HOSA Competitive Events (High School)

Health Science Events

○ Medical Terminology

Task Number 60

Demonstrate correct body mechanics.

Definition

Demonstration should include correct body mechanics for lifting, bending, pushing, pulling, and standing. It should also reflect the following precautions against injury:

• Size up the load and assess leverage requirements.
• Call for assistance, if needed.
• Use large muscles.
• Bend the legs.
• Avoid twisting when lifting.
• Prevent falls.
• Use transfer rollers, boards, or lifts.

Process/Skill Questions

• What occupational practices may place a surgical technologist at risk for physical injury?
• What constitutes proper body mechanics in the surgical setting?
• How can the surgical technologist’s use of proper body mechanics be beneficial to the patient?

HOSA Competitive Events (High School)
Task Number 61

Explain chemical hazards and procedures to follow in case of a chemical spill or contamination.

Definition

Explanation should include

- OSHA, manufacturer, and facility guidelines/procedures and the importance of each
- the content, location, and importance of safety data sheets (SDS) and ease of access to them.

Process/Skill Questions

- What is an SDS? What types of information does it contain?
- What potential chemical hazards exist in the operating room? What types of chemical contamination can occur in the operating room?
- In the case of a chemical spill or contamination, why is it essential to follow the procedures of OSHA, the manufacturer, and the facility? Who is responsible for implementing the correct procedure? Why?

Task Number 62

Identify other environmental safety and security hazards, prevention methods, and disaster plans.

Definition

Identification should include

- environmental hazards associated with noise, electricity, heat, lasers, gas, robots, ionizing radiation, and sharps
- security hazards associated with natural disasters, workplace violence, and bioterrorism
- the role of the surgical technologist in a disaster scenario.
**Process/Skill Questions**

- How can the operating room team prevent harmful incidents involving lasers? Heat? Gas?
- What operating room precautions typically must be taken in case of a natural disaster? In case of bioterrorism? In these situations, who would be in charge in the operating room? How can the staff work as a team to minimize harm to the patient and the staff?
- How can workplace violence be prevented? What procedures should typically be followed if workplace violence occurs in the operating room?
- How can staff know their role in the event of a disaster?

**HOSA Competitive Events (High School)**

**Emergency Preparedness Events**

- MRC Partnership

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**Understanding Principles of Asepsis**

**Task Number 63**

**Define the chain of infection.**

**Definition**

Definition should include the following and describe how to break the chain of infection:

- Infectious agent—any microorganism that can cause a disease (e.g., bacteria, virus, parasite, fungus)
- Reservoir—where the organism lives, thrives, and reproduces
- Portal of exit—where the organism leaves the reservoir (e.g., respiratory tract, intestinal tract)
- Mode of transmission—the means by which an organism moves from one host to another
- Portal of entry—the opening where an infection enters the host’s body
- Susceptible host—a person who is at risk of infection

**Process/Skill Questions**

- Whose role is it to break the chain of infection?
- What methods would be used to break the chain of infection?
• What patient populations would be most at risk for infection?
• What personal protective equipment (PPE) would a surgical technologist wear when performing a procedure?
• What are vectors and fomites?

HOSA Competitive Events (High School)

Teamwork Events

○ HOSA Bowl

Emergency Preparedness Events

○ Epidemiology

Task Number 64

Explain bloodborne pathogens and the exposure-control plan in the healthcare facility.

Definition

Explanation should include the roles of the following in the control of bloodborne pathogens:

• OSHA regulations/guidelines
• Centers for Disease Control and Prevention (CDC) regulations/guidelines
• PPE
• Regulations for hand washing and the proper disposal methods for sharps
• Types of information required in exposure-control plans
• Importance of both staff and patient protection from bloodborne pathogens

Process/Skill Questions

• What are bloodborne pathogens?
• What precautions and control measures can help reduce the spread of HIV and hepatitis B and C in the perioperative setting?
• What are the roles of OSHA and the CDC in bloodborne pathogen exposure control?

HOSA Competitive Events (High School)

Teamwork Events
Task Number 65

Implement Standard Precautions and infectious disease control measures.

Definition

Implementation should include

- an explanation of asepsis and Standard Precautions
- the use of proper hand hygiene, gloves, gown, eye protection, and face shields (depending on the anticipated exposure)
- safe injection practices
- safe handling of sharps
- precautions against contact, droplet, and airborne particles.

Process/Skill Questions

- Why are asepsis and Standard Precautions crucial in the operating room?
- What precautions be taken against contact, droplet, and airborne particles in the operating room?
- What are the different means of hand hygiene in the operating room?
- What types of PPE are essential in the operating room? What types of PPE may be needed, depending on the anticipated exposure?
- What are safe injection practices? Why are they essential?

HOSA Competitive Events (High School)

Teamwork Events

- HOSA Bowl

Emergency Preparedness Events

- Epidemiology
Task Number 66

Explain the basic concepts of microbiology.

Definition

Explanation should include

- the concepts of pathogenic and nonpathogenic organisms
- the chain of infection
- a brief history of asepsis.

Process/Skill Questions

- What is microbiology? How is a knowledge of basic microbiology important to a surgical technologist?
- How is a knowledge of the chain of infection important for all members of the operating room team?
- What is sepsis? Why is the concept of asepsis central to operating room procedures?

HOSA Competitive Events (High School)

Teamwork Events

- HOSA Bowl

Emergency Preparedness Events

- Epidemiology

Task Number 67

Explain the concept and principles of medical asepsis, to include sources of contamination.

Definition

Explanation should include
• a description of medical asepsis (i.e., a microorganism-controlled environment)
• differentiation among the concepts of sterile, clean, and contaminated
• sources of contamination (e.g., dust, moisture, body fluid, fecal material, jewelry, shoes, food, hair, nails, clothes, hands)
• channels of contamination (e.g., operating room team, patients, equipment, furniture, air).

Process/Skill Questions

• Why must operating room team members always keep their arms above their waist and their hands above their elbows?
• Why are operating room team members often reminded that, “Anything behind you is considered nonsterile”? 
• How do operating room team members minimize the risk of contamination from the patient?

HOSA Competitive Events (High School)

Teamwork Events

 o HOSA Bowl

Emergency Preparedness Events

 o Epidemiology

Task Number 68

Identify methods of environmental control of contamination.

Definition

Identification should include

• air handling systems
• traffic control
• plume evacuation
• physical barriers
• temperature control
• lack of windows
• humidity control
• scrubs
• drapes
• skin preparations.
Process/Skill Questions

- How is the risk of contamination in the operating room affected by air temperature? By humidity?
- What types of skin preps are most effective in minimizing contamination in the operating room?

HOSA Competitive Events (High School)

**Emergency Preparedness Events**

  - Epidemiology

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**Task Number 69**

**Describe surgical conscience as it relates to the principles of asepsis.**

**Definition**

Description should include the concept that each member of the surgical team must

- be aware of his or her location relative to the sterile field
- maintain the correct relationship to the sterile field at all times
- strictly adhere to the principles of asepsis and of sterile techniques.

**Process/Skill Questions**

- How can all surgical team members maintain asepsis throughout a lengthy operation?
- What is the role of the surgical technologist in maintaining asepsis in the operating room?
- How can the surgical technologist assist other members of the operating room team to practice sterile techniques?

**Task Number 70**

**Explain the difference between terminal cleaning, disinfection, and sterilization.**

**Definition**

Explanation should include the concepts that
• terminal cleaning eliminates only disease-causing organisms
• disinfection is the chemical reduction of the number of microorganisms
• sterilization eliminates all organisms, including spores.

Process/Skill Questions

• What are spores? What harm can they cause in the operating room?
• What is the difference between the techniques and products used to sterilize vs. the techniques and products used for terminal cleaning?
• When is only terminal cleaning needed? When is sterilization essential? Why?
• What is an example of new technology (i.e., robotics) in cleaning, disinfection, and sterilization?

HOSA Competitive Events (High School)

Teamwork Events

- HOSA Bowl

Applying Aseptic Technique and Surgical Asepsis

Task Number 71

Demonstrate the principles of aseptic technique during perioperative procedures.

Definition

Demonstration should include

• practicing hand hygiene
• practicing surgical scrub
• orienting to the sterile field
• preparing the patient for surgery
• donning correct sterile attire (e.g., mask, gown, shoe covers)
• opening packages and placing contents on the sterile field, as appropriate for preoperative, intraoperative, and postoperative events.
Process/Skill Questions

- What events typically occur in the preoperative phase? The intraoperative phase? The postoperative phase? How is the surgical technologist involved in each phase?
- How does the application of asepsis techniques differ from one stage of the operative procedure to another? Why?

Task Number 72

Demonstrate basic hand hygiene.

Definition

Demonstration should follow the standard procedure for hand washing:

- Use floor pedals (or use paper towel to turn faucet).
- Use liquid soap.
- Use friction for 30-60 seconds.
- Keep fingertips pointed downward.
- Remove moisture by holding arms up and drying from fingertips downward.

Process/Skill Questions

- Why should liquid rather than solid soap be used when washing hands for perioperative procedures?
- Why should fingertips be pointed downward throughout hand hygiene?
- Why should moisture be removed by holding arms up and drying from fingertips downward?
- What could be the consequences for the patient if a surgical team member did not properly follow the standard procedure for hand washing?

Task Number 73

Demonstrate surgical scrub and surgical rub.

Definition

Demonstration may include

- counted brush stroke method
- timed method
- waterless/brushless method.
Process/Skill Questions

- How is the surgical scrub similar to the standard procedure for hand washing? How is it different?
- What is the difference between surgical scrub and surgical rub?
- When should the facemask be donned? Why?

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Task Number 74

Demonstrate the steps for donning and doffing surgical attire.

Definition

Demonstration should include donning attire in the following order:

- Ensuring the mask, shoes, hair cover/surgical cap, and/or beard guard are already on
- Donning the surgical gown
- Donning gloves

Demonstration should also include doffing attire according to AORN recommended practices. Teacher resource: [Sequence for putting on and removing PPE](https://www.cdc.gov), CDC

Process/Skill Questions

- What is the correct order in which to don/doff surgical attire? Why?
- What are the possible consequences of doffing one’s surgical attire in the incorrect order?
- What should one do if one becomes contaminated?

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Task Number 75

Demonstrate donning and doffing surgical gloves.

Definition

Demonstration should include standard practice for donning and doffing surgical gloves, such as gloving by means of the open and closed methods and changing contaminated glove(s).

Process/Skill Questions
• How are the open method and closed method of gloving different? When is one selected over the over?
• What is the procedure for changing contaminated gloves? How would an operating room team member know when his/her gloves were contaminated?

Task Number 76

Demonstrate donning and doffing a surgical gown.

Definition
Demonstration should include the standard practice for donning and doffing a surgical gown.

Process/Skill Questions
• How should the folded sterile gown be handled prior to donning? Why?
• Why should sterile gloves be donned after rather than before donning a sterile gown?
• Why does it take a second person to assist when donning a sterile gown?

Task Number 77

Demonstrate gowning and gloving members of the surgical team.

Definition
Demonstration should include the standard practice for gowning and gloving members of the surgical team.

Process/Skill Questions
• What are the responsibilities of the gowner when gowning and gloving another person?
• When gowning and gloving another person, must the gowner always maintain sterility? Why, or why not?

Task Number 78
Demonstrate the procedure for opening sterile items and delivering them to the sterile field.

**Definition**

Demonstration should follow the standard practice for

- verifying the parameters of sterility and package integrity before the presentation of items to the sterile field
- opening sterile items and delivering them to the sterile field.

**Process/Skill Questions**

- When verifying parameters of sterility, why is it essential to check all materials/products for an expiration date? For tears and rips?
- When verifying parameters of sterility, why is it essential to check all materials/products for moisture or stains?

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**Maintaining Instruments**

**Task Number 79**

**Prepare contaminated instruments for transportation to sterile processing.**

**Definition**

Preparation should be done before removal of instruments from the point of use and should include

- removing scalpel blades and sharp items
- visual inspection of instruments for damage, hazards, or wear (e.g., diminished function or sharpness)
- removing (e.g., wiping, flushing, soaking) soil, debris, and bioburden
- opening and separating instruments
- spraying with enzymatic detergent or covering with moist towel
- covering or placing instruments in the appropriate container, according to industry standards and manufacturer guidelines
- loading and transporting instruments to the appropriate decontamination area.

**Process/Skill Questions**

- At what point should you remove bioburden from instruments?
- With what should you soak the instruments?
- What would you do if you found a broken instrument?
- Who is responsible for conducting an inventory of instruments before they leave the operating room? What does inventory control entail?
- What is the procedure for identifying missing or damaged instruments?
- Who would report damaged or broken instruments? And to whom?

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**Task Number 80**

**Describe the various methods for cleaning instruments.**

**Definition**

Description should include the steps for cleaning various instruments to remove bioburden, including manual washing and mechanical washing, and following manufacturer’s guidelines.

Teacher resource: [Association for the Advancement of Medical Instrumentation (AAMI)](https://www.aami.org)

**Process/Skill Questions**

- What are the primary types of cleaning methods?
- What is the difference between manual and mechanical cleaning methods?
- What types of chemicals are used in the cleaning process?
- What concentration of chemicals should be used for each process?
- What PPE should be worn during the cleaning process?

**HOSA Competitive Events (High School)**

- Emergency Preparedness Events
  - Epidemiology

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**Task Number 81**

**Explain the disinfection process.**
Definition

Explanation should include

- which instruments should undergo chemical disinfection
- which instruments should undergo thermal disinfection
- distinguishing between the disinfection processes.

Process/Skill Questions

- What are the differences between chemical and thermal disinfection?
- When is it appropriate to use thermal disinfection? Chemical disinfection?
- What are the three levels of disinfection?
- Which level would be appropriate to apply, based on the instrument and its usage?
- Why is disinfection required in addition to cleaning?

Task Number 82

Demonstrate the steps for assembly and inspection of instruments.

Definition

Demonstration should include

- inspecting for cleanliness
- confirming that the instrument functions when reassembled
- testing for sharpness
- placing the required instruments in the appropriate set
- placing the pack monitoring indicators in the appropriate set
- wrapping or sealing the container as appropriate
- identifying the set (naming the set).

Process/Skill Questions

- What is the purpose of the chemical indicators?
- How are instruments tested for functionality and sharpness?
- How should a set be assembled to prevent damage to the instruments?
- Which chemical indicators are used for each specific sterilization method?

Performing Sterilization Procedures
**Task Number 83**

**Sterilize instruments and supplies, using steam.**

**Definition**

Sterilization of instruments and supplies with steam (the primary method for sterilization in the operating room) should include the following:

- Understanding the process of steam sterilization (i.e., destruction of microorganisms using time, temperature, moisture, and pressure)
- Identifying which instruments and supplies can be sterilized with steam (e.g., those not heat-, moisture-, or temperature-sensitive)
- Ensuring that items are cleaned, disinfected, and wrapped before steam sterilization takes place
- Ensuring that time, temperature, moisture, and pressure are carefully controlled and documented during steam sterilization
- Ensuring that steam is able to penetrate the wrapping material
- Verifying the inclusion and color change of the chemical indicator

Demonstration should also include

- an explanation of immediate use steam sterilization (IUSS) (i.e., steaming with the item unwrapped)
- an explanation for when IUSS is done (i.e., in emergency situations, such as when an instrument has been dropped during an emergency procedure).

**Process/Skill Questions**

- Why is steam not an option for sterilizing certain surgical instruments and supplies?
- Why must instruments and supplies be clean, disinfected, and wrapped before they are steam sterilized?
- What safety precautions are needed when sterilizing with steam?
- When would one include a biological indicator?
- Why does one have to open/unclamp all surgical instruments?

**Task Number 84**

**Describe the process for low-temperature sterilization of instruments and supplies.**
**Definition**

Description should include the physical process of low-temperature sterilization and the concepts that:

- low-temperature sterilization is appropriate for heat- and moisture-sensitive materials
- low-temperature sterilization poses risk for employees
- low-temperature sterilization is more time consuming and expensive than other sterilization methods
- ethylene oxide gas used in low-temperature sterilization can penetrate wrapping material and does not corrode metal
- verifying the inclusion and color change of the chemical indicator.

**Process/Skill Questions**

- What makes low-temperature sterilization a time-consuming process?
- What makes ethylene oxide gas more lethal than other processes?
- Under what circumstances would ethylene oxide be used?
- What safety precautions are needed when sterilizing with gas?
- What other gases are used in low-temperature sterilization?

**Task Number 85**

Describe the process for cold sterilization of instruments and supplies.

**Definition**

Description should include the process for cold sterilization and the following concepts:

- Cold sterilization involves the use of a liquid chemical to sterilize instruments and supplies but can be too corrosive for some items (e.g., scalpels).
- The item must be cleaned before sterilization.
- Disassembly is required of instruments with multiple parts.
- The most common chemical used in cold sterilization is glutaraldehyde, which is not corrosive, but the odor can irritate eyes and mucous membranes, so sterilized items must be washed and thoroughly rinsed with sterile water before being used on patients.
- Glutaraldehyde can be used only with items that can be submerged in liquid (e.g., endoscopes)
- The surgical technologist must verify the inclusion and color change of the chemical indicator.

**Process/Skill Questions**
• What are the advantages and disadvantages of using cold sterilization for surgical instruments and supplies?
• What safety precautions should be taken when conducting cold sterilization?
• What factors affect sterilization with glutaraldehyde?
• What types of instruments would be used with the cold sterilization process?

**Task Number 86**

**Sterilize instruments and supplies using peracetic acid.**

**Definition**

Sterilization should include explanation and demonstration of the following:

• Peracetic acid must be used with a special machine.
• Peracetic acid is more expensive than steam but is useful for instruments that cannot be sterilized with steam.
• The sterilized item must be used immediately after the completion of the peracetic acid process.

**Process/Skill Questions**

• Why might a surgical unit opt to use peracetic acid over cold sterilization with glutaraldehyde?
• What types of instruments and supplies are typically sterilized using peracetic acid? Why?
• What safety precautions are needed when sterilizing with peracetic acid?
• What is the proper way to dispose of peracetic acid?

**Task Number 87**

**Distribute instruments for storage.**

**Definition**

Distribution should occur after the sterilization process and include

• allowing instruments to cool and dry when they first come out of the autoclave
• preserving the integrity of the sterile package using carriers and dust covers
• determining the proper location for storage and retrieval
• applying first-in, first-out (FIFO) principles.

**Process/Skill Questions**
To what temperature should instruments be cooled before they are stored?
What are the environmental requirements for the storage area?
How are instruments reprocessed when sterility has been compromised?
What is event-related sterility?

Performing Emergency Procedures

Task Number 88

Demonstrate CPR.

Definition

Demonstration should consist of earning a valid certification in Basic Life Support (BLS) for Healthcare Providers (American Heart Association).

Process/Skill Questions

• How has the procedure for CPR evolved in recent years? Why?
• When might it be advisable for a member of the surgical team be certified in both basic life support and CPR?

HOSA Competitive Events (High School)

Emergency Preparedness Events

o CPR/First Aid
o Life Support Skills

Task Number 89

Describe emergency equipment related to the operating room and the purpose of each.

Definition
Description should include equipment related to the surgical technologist’s role in emergencies, such as the following:

- Crash cart (medications, defibrillator, supplies)—To stabilize a respiratory or cardiac emergency
- Hyperthermia cart—To treat a potentially fatal reaction to anesthesia
- Tracheostomy tray—To maintain an emergency airway
- Jet ventilator—To assist with adult respiratory distress syndrome
- Suction apparatus—To remove fluid such as blood or respiratory secretions
- IV (intravenous) set-ups—To administer blood or IV fluids such as saline or lactated ringers

Process/Skill Questions

- In what emergency circumstances would the surgical technologist need to use a crash cart? A hyperthermia cart? A suction apparatus?
- What emergency situations in the operating room would call for the use of a tracheostomy tray? A jet ventilator?
- What is the role of the surgical technologist regarding IV setups? When might an IV setup be necessary?

HOSA Competitive Events (High School)

Emergency Preparedness Events

○ CPR/First Aid

Demonstrating Technical Knowledge

Task Number 90

Explain surgical conscience.

Definition

Explanation should include the following principles:

- a willingness to accept responsibility and be held accountable for one’s own actions
- a commitment to maintaining the confidentiality of patient information
- a commitment to nondiscriminatory treatment of all patients
• a commitment to cost control
• a commitment to the practice of sterile technique.

Process/Skill Questions

• What does surgical conscience mean?
• Why are these principles important?
• How does a surgical technologist know which supplies to open for a particular procedure?
• What steps should be taken if aseptic technique is not followed?

HOSA Competitive Events (High School)

Health Science Events

° Knowledge Test: Medical Law and Ethics

Task Number 91

Use medical terminology related to general medicine and the operating room environment.

Definition

Use of medical terminology should include incorporating terms, abbreviations, and acronyms related to general medicine, to surgery and surgical technology, and those used in the facility in which one is working. Terms should be used accurately in speech and writing addressed to co-workers, patients, and others (e.g., vendors). Use also includes adhering to “Do Not Use” terminology and abbreviations established by TJC.

Process/Skill Questions

• Why should healthcare workers know the common medical prefixes, suffixes, and roots?
• Why is it important to explain medical terms to the layperson?
• Why is it important to spell medical terms correctly?
• Why is it important to distinguish when uppercase and lowercase letters, abbreviations, or acronyms are used?

HOSA Competitive Events (High School)

Health Science Events
Task Number 92

Apply methods of reporting and preventing errors.

Definition

Application should include

- using safe procedure review/time-outs before the insertion of a scope or the initial incision
- verifying the patient/medication/surgical site
- ensuring proper identification of the affected extremity prior to surgery
- reporting errors, as needed
- explaining the importance of reporting errors in procedures, breaks in sterile technique, and other significant events.

Process/Skill Questions

- What is included in a time-out? Who can call the time-out? What is the intended result of a time-out?
- In what perioperative stages is verification of patient, medication, and surgical site necessary? How is verification implemented? What is the relationship between verification and quality perioperative care?
- Why is it mandatory to report perioperative errors in a timely manner? How are they reported?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Medical Law and Ethics

Task Number 93

Explain the relationship between basic principles of physics and the surgical environment.
Definition

Explanation should include

- the relationships between surgical equipment and principles of light, pressure, and electricity
- the application of these and other scientific principles in computers, robotics, lasers, and other products typically used in the surgical environment.

Process/Skill Questions

- How are the principles of light applied in surgical equipment?
- How are the principles of electricity applied in surgical equipment?
- What principles of physics are applied in robotics? In lasers?
- What is involved in laser safety?

Task Number 94

Identify basic surgical instruments and the purpose of each.

Definition

Identification should include the basic surgical instruments listed below, along with the purpose of each:

- Scalpel, blade, scissors, saw—for cutting and dissecting
- Forceps—for grasping or holding tissue
- Clamp—for occluding or constricting tissue
- Retractor—for holding tissue out of the way in order to view the surgical site
- Speculum, endoscope—for viewing the surgical site
- Probe—for dilating and exploring the surgical site
- Suctioning equipment—for removal of fluids
- Needle holders, staplers—for suturing tissue
- Electrosurgical equipment—for controlled cutting and hemostasis

Process/Skill Questions

- Why is it important for the surgical technologist to recognize basic surgical instruments?
- Why must the surgical technologist know the purpose for each surgical instrument?
- What safety precautions must be taken when handling surgical instruments?
- What types of fluids are removed using suction equipment?
- What types of electrosurgical equipment are used for hemostasis?

Task Number 95
Identify techniques for using, maintaining, and troubleshooting equipment in the operating room environment.

Definition

Identification should include operation, maintenance, and troubleshooting, as needed, of

- the surgical table
- electrical-surgical generator
- pneumatic tourniquets
- other ancillary equipment (e.g., light sources).

Process/Skill Questions

- How can a surgical technologist stay current with operation and maintenance techniques for the latest operating room equipment? What resources are useful when operating surgical equipment?
- What is the relationship between equipment maintenance and safety? Why is regular maintenance essential for operating room equipment?
- How can basic problem-solving techniques be applied in a variety of troubleshooting situations related to operating room equipment?
- What is the role of the biomedical department? When should they be notified?

Task Number 96

Measure vital signs.

Definition

Measurement should include

- vital signs
  - blood pressure
  - pulse
  - respiration
  - temperature
  - oxygen saturation
- normal ranges for each vital sign for a variety of patient types (e.g., pediatric, geriatric).

Process/Skill Questions
• What are appropriate methods for measuring heart rate? Why is measuring heart rate important in the perioperative setting?
• Why does a blood pressure reading include two numbers? Why is measuring blood pressure important in the perioperative setting?
• What are appropriate methods of measuring respiratory rate? Why is measuring respiratory rate important in the perioperative setting?
• What are the appropriate methods of assessing body temperature? Why is measuring body temperature important in the perioperative setting?
• When should one report abnormal readings and to whom?

HOSA Competitive Events (High School)

Health Professions Events

o Nursing Assisting

Task Number 97

Describe methods of hemostasis.

Definition

Description should include a definition of hemostasis and methods of hemostasis, such as the following:

• Mechanical (use of surgical instruments, such as clamps or ligatures, or other means, such as sponges or suctioning equipment)
• Thermal (use of heat, such as laser beams or electrosurgery procedures)
• Chemical (use of substances such as collagen, silver nitrate, epinephrine)

Process/Skill Questions

• What are some preexisting conditions that can cause a patient to bleed during surgery? Among preexisting conditions, what is the difference between a hemostatic defect and a hemostatic disorder? In these cases, what techniques may be used to accomplish hemostasis?
• What types of surgical situations typically call for hemostasis? How is hemostasis generally accomplished for each?
• What is the relationship between the patient’s preoperative hemoglobin and hematocrit and intraoperative hemostasis?
Health Science Events
  o Knowledge Test: Pathophysiology

Teamwork Events
  o HOSA Bowl

Understanding Structures, Functions, and Surgical Pathologies of Body Systems

Task Number 98

Identify the basic structural levels of body organization, anatomical structure, and body cavities.

Definition

Identification should include

- chemical components
- planes, quadrants, and regions
  o the organs located in each quadrant or region
- each body system and its general location
- each major organ and its general function
- the location of body cavities.

Process/Skill Questions

- Where on a body torso or a diagram are the body cavities, abdominal regions, and quadrants of the abdomen? Where on a body torso or a diagram are the subdivisions of the dorsal and ventral cavities?
- What are the planes of the body?
- What are the main directional terms for the body? How is each defined?
- Why is symmetry an important concept for the surgical technologist to understand?

HOSA Competitive Events (High School)
Task Number 99

Identify the structures and functions of the cell.

Definition

Identification should include

- the composition, location, and function of DNA in the cell
- the process of protein synthesis
- the relationship among cells, tissues, organs, and systems.

Process/Skill Questions

- What are the functions of each part of the cell, including organelles?
- What is DNA? Where is DNA located? What is the function of DNA?
- What are the processes by which solutes and solvents move through (exit/enter) cell membranes? How can these processes be compared and contrasted?
- What is the importance of fluid balance? What are the influencing factors?
- What is the relationship among cells, tissues, organs, and systems?

HOSA Competitive Events (High School)

Health Science Events

- Medical Terminology

Teamwork Events

- HOSA Bowl

Task Number 100
Identify the types and functions of tissues.

Definition

Identification should include the following types of tissues, their locations, and their characteristics:

- Connective tissue
- Epithelial tissue
- Muscle tissue
- Nervous tissue

Process/Skill Questions

- How are epithelial, connective, and muscle tissue similar? Different?
- Why is it important for the surgical technologist to have a basic understanding of tissue?
- What are the two major types of membranes? How are they similar? Different?
- What are the roles of membranes in the body? Why must they be kept moist? What are the surgical implications of this need for membranes to be kept moist?
- What are the two types of epithelial membranes? How are they similar? Different?
- What are the two types of glands? How are they similar? Different? Why is a knowledge of glands important for the surgical technologist?

HOSA Competitive Events (High School)

Health Science Events

- Medical Spelling
- Medical Terminology

Teamwork Events

- HOSA Bowl

Task Number 101

Identify the chemical components of the body.

Definition

Identification should include
• the structures of an atom and a molecule
• an explanation of ionic and covalent bonding
• elements, compounds, mixtures
• the periodic table
• the chemical symbols for major electrolytes and their charges
• the pH scale
• types of organic compounds
• composition and work of enzymes.

Process/Skill Questions

• What are the differences among elements, compounds, and mixtures? What are examples of each?
• What are the chemical elements of the body? How would one identify each by symbol alone?
• What are the major electrolytes of the body? What is their purpose?
• What are the building blocks of each of the three main types of organic compounds?
• How does the structure of the enzyme correlate to its function?
• Why is a basic knowledge of chemistry important to the surgical technologist?

HOSA Competitive Events (High School)

Health Science Events
  o Knowledge Test: Pathophysiology

Teamwork Events
  o HOSA Bowl

Task Number 102

Identify the structures, functions, and surgical pathologies of the integumentary system.

Definition

Identification should include

• names and descriptions of the layers of the skin
• functions of the skin
• classification of surgical wounds (e.g., clean, clean/contaminated, contaminated, dirty)
• stages of wound healing and factors affecting it (e.g., patient’s age, nutritional status, physical condition)
• pathologies (e.g., burns, grafts, infections, chronic wounds, trauma wounds).

Process/Skill Questions

• What are common surgical procedures used to treat conditions of this system?
• How does the degree of a burn (e.g., first-, second-, third-degree) affect surgical considerations? How does it affect wound healing?
• How is wound healing affected by a patient’s age? By a patient’s nutritional status?
• What are the implications of a surgical patient or surgical team member being positive for methicillin-resistant Staphylococcus aureus (MRSA), clostridium difficile (C-diff), or vancomycin resistant enterococcus (VRE)?

HOSA Competitive Events (High School)

  Health Science Events
  o Knowledge Test: Pathophysiology

  Teamwork Events
  o HOSA Bowl

Task Number 103

Identify structures, functions, and surgical pathologies of the skeletal system.

Definition

Identification should include

• the two divisions of the skeleton
• the types, structure, functions, and formations of bones
• the location and function of bone marrow, cranial sinuses, and cartilage
• the number of vertebrae in each segment of the vertebral column
• the difference between the male and female pelvis
• changes in the skeleton across the life span
• pathologies (e.g., fractures, joint replacement).

Process/Skill Questions
• What common surgical procedures are used to treat conditions of the skeletal system?
• What types of evidence demonstrate that age affects the human skeleton across the life span?
• What are ways to minimize the effects of aging on the human skeleton?
• Can surgery play a role in improving the quality of life of a patient with degenerative disc problems? With osteoporosis? With arthritis? Explain each.

**HOSA Competitive Events (High School)**

**Health Science Events**

  o Knowledge Test: Pathophysiology

**Teamwork Events**

  o HOSA Bowl

**Task Number 104**

**Identify the structures, functions, and surgical pathologies of the muscular system.**

**Definition**

Identification should include

• the structure of a basic unit of muscle tissue
• the three types of muscle tissue, their characteristics, location, and functions
• the way muscles are attached to bones
• the physiology and types of muscle contractions
• the effects of aging on muscles
• pathologies (e.g., muscle tears, strains).

**Process/Skill Questions**

• What is the difference between antagonistic muscles and synergistic muscles?
• What is the role of the nervous system in muscle function?
• What are the types of muscle contractions? What are the energy sources for muscle contractions?
• What is the simple equation of cellular respiration? What happens to each of the products of this equation?
• What are the body’s typical physiological responses to exercise? How does each response assist homeostasis?
• How can the effects of aging on the muscular system be minimized?

HOSA Competitive Events (High School)

Health Science Events
  o Knowledge Test: Pathophysiology

Teamwork Events
  o HOSA Bowl

Task Number 105

Identify the structures, functions, and surgical pathologies of blood.

Definition

Identification should include

• the normal constituents of blood
• the types of elements formed in blood
• the formation of blood cells
• the process and importance of blood clotting
• A, B, and O blood types
• the compatibility of blood, including the Rh factor
• pathologies (e.g., clotting, transfusion reactions).

Process/Skill Questions

• What is the relationship of plasma to the solvent ability of blood?
• What are the common laboratory tests performed on blood? What are considered normal ranges for each test?
• What is the difference between a thrombus and an embolus? In what types of surgery might each be encountered?
• What are the implications for the surgical team when operating on a patient with HIV? With sickle cell anemia? With hemophilia?

HOSA Competitive Events (High School)
Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

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**Task Number 106**

**Identify the structures, functions, and surgical pathologies of the heart.**

**Definition**

Identification should include

- the location, structures, and functions of the heart
- the process and paths of blood circulation
- the cardiac cycle
- the electrical conduction system
- coronary circulation
- the relationship of the autonomic nervous system and the heart
- pathologies (e.g., blockages, arrhythmias, pacemaker/defibrillator issues).

**Process/Skill Questions**

- In what ways is the heart similar to two pumps working side by side?
- What are the “lub-dup” heart sounds? How are they related to cardiac function?
- How is heart rate related to the size and activity level of the patient? What are the implications of this relationship for the surgical patient? For the surgical team?
- What is the relationship between the electrical condition system of the body and normal sinus rhythm?
- What is the underlying principle of a pacemaker? A defibrillator? How can each improve the quality of life for a patient?

**HOSA Competitive Events (High School)**

**Health Science Events**

- Knowledge Test: Pathophysiology
Task Number 107

Identify the structures, functions, and surgical pathologies of blood vessels and blood circulation.

Definition

Identification should include

- the types of vessels, structures, and functions
- oxygenated vs. unoxygenated blood
- the factors influencing blood flow
- the factors affecting pulse rate
- pathologies (e.g., hypertension, clots, varicose veins).

Process/Skill Questions

- What is blood pressure? How is blood pressure regulated by intrinsic mechanisms? By nervous mechanisms?
- What factors affect the pulse rate? How is pulse rate monitored during surgery? Why?
- What is shock? How is it related to the circulatory system? What are the implications for the surgical team if the patient is in shock?
- What is the relationship between blood pressure and pulse?
- How can the effects of aging on blood pressure and circulation affect surgery?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 108
Identify the structures, functions, and surgical pathologies of the lymphatic system, including immunity.

Definition

Identification should include

- the functions of the lymphatic system
- the structures of the lymphatic system
- the location of lymph nodes
- blood and lymphatic capillaries
- the circulation of lymphatic fluid
- the various forms of immunity
- pathologies (e.g., cancer, metastasis, compromised immunity).

Process/Skill Questions

- What are the differences and similarities between blood capillaries and lymphatic capillaries? How can the circulation of lymphatic fluid be described?
- What is the relationship between lymphatic fluid circulation and postoperative edema?
- What is immunity? How would one differentiate among the various forms of immunity (nonspecific and specific body defenses)?
- Where are the accessory organs of the immune response (e.g., spleen, tonsils, thymus) located?
- How can the development and function of T cells and B cells be described?
- What is the relationship of antibody responses to diseases such as measles or poliomyelitis?
- What is the relationship between allergies and the immune system?
- How does aging affect the immune system? What are the implications for surgery?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Emergency Preparedness Events

- Epidemiology
Task Number 109

Identify the structures, functions, and surgical pathologies of the respiratory system.

Definition

Identification should include

- the process of pulmonary ventilation
- external and internal respiration
- the structure and function of organs of the respiratory system
- the pathway of gases
- the transportation of oxygen and carbon dioxide in blood
- comparison of air pressures
- the production of carbonic acid
- pathologies (e.g., chronic obstructive pulmonary disease, cancer, asthma, tumors).

Process/Skill Questions

- How are oxygen and carbon dioxide transported in the blood? What is the role of each in respiration?
- What are the factors that regulate respiration? How do they work?
- How is carbonic acid produced and eliminated by the body? How is this process related to respiration? What are the implications for surgery?
- What is the relationship between respiration and acid-base balance?
- What is the relationship between measurements of lung volume and respiratory sufficiency?
- What is hyperventilation? How is it controlled?
- How does aging affect the respiratory system? How might the patient’s age affect a physician’s decisions during surgery?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
Task Number 110

Identify the structures, functions, and surgical pathologies of the gastrointestinal system.

Definition

Identification should include

- the organs of the digestive tract and their structures and functions
- associated structures of digestion
- the labeling of various ducts and their point of convergence
- the essential mechanical and chemical steps in digestion
- the factors of absorption
- the role of blood sugar
- the role of the hypothalamus
- the role of the basal metabolic rate in the digestive process
- pathologies (e.g., appendicitis, gastric bypasses, colostomies, hiatal hernia, hemorrhoids, tumors).

Process/Skill Questions

- How would one describe the essential mechanical and chemical steps in the digestion process?
- What is the process of absorption? What are the location and structure of villi? How do villi play a role in absorption?
- How does plasma protein level affect absorption?
- What are mechanisms that aid in the maintenance of blood sugar?
- What is the role of the hypothalamus in the regulation of food intake?
- What is the role of the liver in the digestion process?
- How can the digestive system be affected by surgery performed on another system?
- What effect does aging have on the digestive system? How can the age of the patient affect his or her care during and after gastrointestinal surgery?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl
Task Number 111

Identify the structures, functions, and surgical pathologies of the endocrine system.

Definition

Identification should include

- the distinction between the endocrine gland and the exocrine gland
- the functions of hormones
- pathologies of the endocrine system (e.g., diabetes, pancreatic and adrenal tumors, hyperthyroidism, hypothyroidism).

Process/Skill Questions

- How would one classify and describe the three groups of hormones based on differences in their chemical structures?
- What hormone(s) is secreted by each gland? What is each hormone’s homeostatic action in the human body?
- How would one explain the control of the hypothalamus over the anterior and posterior pituitary?
- How would one explain the endocrine system’s response to stress? What are the implications for surgery?
- What is the relationship between the endocrine system and the nervous system? How do they work together to control and coordinate the body?
- What are the causes and effects of hypoactivity of each hormone? Of hyperactivity? Can surgery improve the quality of life for patients with a hypoactive thyroid? A hyperactive thyroid? Explain.
- What causes diabetes? What special precautions should be taken by a surgical team operating on a patient with diabetes?
- What effect does aging have on the endocrine system? How might the patient’s age affect the physician’s decisions during surgery?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events
Task Number 112

Identify the structures, functions, and surgical pathologies of the reproductive system.

Definition

Identification should include

- the male and female reproductive systems
- the process of fertilization
- pathologies of the male and the female reproductive systems (e.g., prostate cancer, uterine cancer, mastectomy, C-section).

Process/Skill Questions

- How would one describe the menstrual cycle, including hormone regulation?
- What is the anatomy of the breast? How does each part function? How does the mechanism controlling lactation work?
- What are the secondary sex characteristics of males and females? What are the major hormones responsible?
- What changes typically occur in the climacteric phase of the male and female?
- What effect does aging have on the male and female reproductive systems? What are the implications for surgery?
- What gender-specific considerations are important for a surgical team operating on a male patient? On a female patient?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 113
Identify the structures, functions, and surgical pathologies of the nervous system.

Definition

Identification should include

- the location, functions, and differences between the central and peripheral systems
- the role of neurons
- the importance of nerve impulses
- the role of myelin
- the role of the spinal cord
- the role of the brain
- the causes and treatment of pain
- pathologies of the nervous system (e.g., hyperthermia, hypothermia, nerve damage, spinal cord injuries, brain tumors).

Process/Skill Questions

- How would one name, locate, and describe the different protecting structures of the brain and spinal cord?
- How can the surgical team avoid unnecessary damage to the nervous system during surgery?
- What special precautions should be taken by a surgical team when operating on a patient with a brain tumor?
- What effect does aging have on the nervous system? What are the implications for surgery?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 114
Identify the structures, functions, and surgical pathologies of the urinary system.

Definition

Identification should include

- the organs related to the urinary system
- the male and female urinary systems
- the role of the kidneys
- the constituents of urine
- pathologies of the urinary system (e.g., bladder tumors, cystitis, benign prostatic hypertrophy, nephrectomies, kidney transplants).

Process/Skill Questions

- What factors affect kidney function and urine formation? How do the kidneys regulate water balance? How would one describe the formation of urine, including flow through the kidneys?
- How would one explain the kidneys’ role in maintaining the body’s acid-base balance?
- How is rennin related to blood pressure?
- How does blood pressure affect red blood cell production?
- What lab tests are used to evaluate urine? What are the normal expected ranges of each test?
- Why is it essential to maintain kidney function throughout the perioperative process?
- What effects does aging have on the urinary system? What are the implications for surgery?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Task Number 115
Identify the structures, functions, and surgical pathologies of the sensory system.

Definition

Identification should include

- the special and general senses
- protective sensory mechanisms
- the role of the eyes in the sensory system
- the role of the ears in the sensory system
- pathologies of the sensory system (e.g., cataracts, otitis, loss of hearing, myopia).

Process/Skill Questions

- What is the physiology of taste, smell, touch, temperature, proprioception, and pain? In each case, how does information enter the body, reach the brain, and affect response?
- What is the role of the hypothalamus in the visceral sensations of hunger and thirst?
- How can the physiology of vision be explained? How is it similar to the functions of a camera?
- What are common types of eye surgery? Can other types of surgery affect a patient’s vision? Explain.
- Through what pathway do sound waves travel to the brain?
- What ear surgery would be typically performed on children? On older adults? What are the surgical considerations for each?
- How does aging affect the sensory system? What are the surgical implications?

HOSA Competitive Events (High School)

Health Science Events

- Knowledge Test: Pathophysiology

Teamwork Events

- HOSA Bowl

Understanding Pharmacology
Task Number 116

Calculate medication conversions and dosages.

Definition

Calculations should include

- temperature, measurement, and weight conversions
- the use of fractions, percentages, and formulas
- factors such as the age and weight of a patient.

Process/Skill Questions

- In what circumstances might a surgical technologist need to perform temperature conversion?
- When might a formula be needed to perform a conversion or dosage calculation?
- How do the age and weight of the patient affect dosage calculation?
- What potential consequences could result if a surgical technologist miscalculated a medication dosage?

HOSA Competitive Events (High School)

Health Science Events

- Medical Math

Task Number 117

Apply general terminology to medication use.

Definition

Application should include general medication-related terminology and abbreviations, such as

- topical
- intramuscular (IM)
- units of measurement, such as milliliter (ml) and milligram (mg)
- intravenous (IV).

Application should avoid handwritten abbreviations per TJC’s official “Do Not Use” list, as follows:
• Avoid U as an abbreviation; write “unit” instead.
• Avoid IU as an abbreviation; write “International Unit” instead.
• Avoid Q.D., QD, q.d., qd as an abbreviation; write “daily” instead.
• Avoid Q.O.D., QOD, q.o.d., qod as an abbreviation; write “every other day” instead.
• Avoid a trailing zero (X.0 mg); write “X mg” instead.
• Avoid the omission of a leading zero; write “0.X mg” instead.
• Avoid the abbreviations and formulas MS, MSO4, MgSO4; write “morphine sulfate” or “magnesium sulfate” instead, as appropriate.

Process/Skill Questions

• Why is it important to use medical terminology when referring to medications or related issues?
• When are abbreviations acceptable? When are they not acceptable?
• Why has TJC developed an official “Do Not Use” list for certain medication terminology abbreviations?
• What additional abbreviations, acronyms, and symbols are on the TJC’s list for possible future inclusion in the “Do Not Use” list? Why are they problematic for medical practitioners?

HOSA Competitive Events (High School)

Health Science Events

 o Medical Terminology

Task Number 118

Handle medications and solutions.

Definition

Handling of medications and solutions should include

• preparation based on the type of medication to be administered (e.g., topical vs. intravenous vs. nasogastric)
• checking for valid expiration dates, correct dosage, correct medication, correct documentation, correct patient, correct route, and correct time
• communicating with the nurse in reference to the amount of medication used
• labeling of medication on the sterile field
• working with sharps and medications safely
• drawing medication in a syringe
• disposing of medication.
Students must remember that a surgical technologist may not administer medications.

Process/Skill Questions

- What are the names of three drug reference books that provide easy access to information for surgical technologists? How are drugs selected for inclusion in a control schedule? What are examples of drugs in each schedule?
- Why is the safe handling and disposal of sharps so important in all medical settings? Why is verification an essential part of medication management?
- In what forms are drugs available? How does the form of the drug affect the way it is administered to the patient?
- Why are surgical technologists not allowed to administer medications? What are the potential consequences for a surgical technologist who administers medication to a patient?

HOSA Competitive Events (High School)

Health Science Events
- Knowledge Test: Pharmacology

Health Professions Events
- Clinical Specialty

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<td>Locate emergency equipment.</td>
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<tr>
<td>Describe fire-safety procedures in the operating room.</td>
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<tr>
<td>Demonstrate correct body mechanics.</td>
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<tr>
<td>Explain chemical hazards and procedures to follow in case of a chemical spill or contamination.</td>
<td>English: 12.5</td>
<td></td>
</tr>
<tr>
<td>Identify other environmental safety and security hazards, prevention methods, and disaster plans.</td>
<td>English: 12.3</td>
<td></td>
</tr>
<tr>
<td>Define the chain of infection.</td>
<td>English: 12.3</td>
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</tbody>
</table>
| Explain bloodborne pathogens and the exposure-control plan in the healthcare facility. | English: 12.5  
History and Social Science: VUS.14 |
| Implement Standard Precautions and infectious disease control measures. | English: 12.5 |
| Explain the basic concepts of microbiology. | English: 12.5  
Science: BIO.4 |
| Explain the concept and principles of medical asepsis, to include sources of contamination. | English: 12.3, 12.5 |
| Identify methods of environmental control of contamination. | English: 12.3  
History and Social Science: VUS.14, WHII.14 |
<p>| Describe surgical conscience as it relates to the principles of asepsis. | English: 12.5 |
| Explain the difference between terminal cleaning, disinfection, and sterilization. | English: 12.5 |
| Demonstrate the principles of aseptic technique during perioperative procedures. | Science: BIO.3 |
| Demonstrate basic hand hygiene. | |
| Demonstrate surgical scrub and surgical rub. | |
| Demonstrate the steps for donning and doffing surgical attire. | |
| Demonstrate donning and doffing surgical gloves. | |
| Demonstrate donning and doffing a surgical gown. | |
| Demonstrate gowning and gloving members of the surgical team. | |
| Demonstrate the procedure for opening sterile items and delivering them to the sterile field. | |
| Prepare contaminated instruments for transportation to sterile processing. | |
| Describe the various methods for cleaning instruments. | English: 12.5 |
| Explain the disinfection process. | English: 12.5 |
| Demonstrate the steps for assembly and inspection of instruments. | |
| Sterilize instruments and supplies, using steam. | English: 12.5 |
| Describe the process for low-temperature sterilization of instruments and supplies. | English: 12.5 |
| Describe the process for cold sterilization of instruments and supplies. | English: 12.5 |
| Sterilize instruments and supplies using peracetic acid. | English: 12.5 |
| Distribute instruments for storage. | |
| Demonstrate CPR. | |</p>
<table>
<thead>
<tr>
<th>Task</th>
<th>Language Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Describe emergency equipment related to the operating room and the purpose of each.</td>
<td>English: 12.5</td>
</tr>
<tr>
<td>Explain surgical conscience.</td>
<td>English: 12.5</td>
</tr>
<tr>
<td>Use medical terminology related to general medicine and the operating room environment.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Apply methods of reporting and preventing errors.</td>
<td>English: 12.5</td>
</tr>
<tr>
<td>Explain the relationship between basic principles of physics and the surgical environment.</td>
<td>English: 12.5</td>
</tr>
<tr>
<td>Identify basic surgical instruments and the purpose of each.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify techniques for using, maintaining, and troubleshooting equipment in the operating room environment.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Measure vital signs.</td>
<td>History and Social Science: WHI.4, Science: BIO.1, BIO.4</td>
</tr>
<tr>
<td>Describe methods of hemostasis.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the basic structural levels of body organization, anatomical structure, and body cavities.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures and functions of the cell.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the types and functions of tissues.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the chemical components of the body.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the integumentary system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify structures, functions, and surgical pathologies of the skeletal system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the muscular system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identification of Structures, Functions, and Surgical Pathologies</td>
<td>English: 12.3</td>
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<tr>
<td>Identify the structures, functions, and surgical pathologies of blood.</td>
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<tr>
<td>Identify the structures, functions, and surgical pathologies of the heart.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of blood vessels and blood circulation.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the lymphatic system, including immunity.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the respiratory system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the gastrointestinal system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the endocrine system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the reproductive system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the nervous system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the urinary system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Identify the structures, functions, and surgical pathologies of the sensory system.</td>
<td>English: 12.3</td>
</tr>
<tr>
<td>Calculate medication conversions and dosages.</td>
<td>Mathematics: A.1</td>
</tr>
<tr>
<td>Apply general terminology to medication use.</td>
<td></td>
</tr>
<tr>
<td>Handle medications and solutions.</td>
<td></td>
</tr>
</tbody>
</table>

**Teaching Resources**

- American Heart Association. [http://www.heart.org/HEARTORG/CPRAndECC/FindaCourse/Find-a-Course_UCM_303220_SubHomePage.jsp](http://www.heart.org/HEARTORG/CPRAndECC/FindaCourse/Find-a-Course_UCM_303220_SubHomePage.jsp). Offers information about the AHA certification in Basic Life Support (BLS) for Healthcare Providers.
- Centers for Disease Control and Prevention. [http://www.cdc.gov/](http://www.cdc.gov/). Provides extensive information on a variety of health and safety topics, including diseases and conditions, emergency preparedness and response, life stages and populations, and workplace safety and health.
- Interactive Periodic Table of the Elements. [http://www.chemicalelements.com/](http://www.chemicalelements.com/). Includes interactive paths to the chemical elements through chemical name, atomic number, atomic mass, electron configuration, boiling point, and other access points.
- Lesson Planet. [http://www.lessonplanet.com/lesson-plans/health](http://www.lessonplanet.com/lesson-plans/health). Contains numerous lesson plans related to health topics, such as anatomy, body systems, disease, medicine, safety, and others.
- National HOSA Interactive Human Body. [http://www.hosa.org/hosa102/Module2.htm](http://www.hosa.org/hosa102/Module2.htm). Includes lots of links to teaching resources from many areas of medical science.
- The University of Texas Health Science Center at San Antonio. [http://teachhealthk-12.uthscsa.edu/](http://teachhealthk-12.uthscsa.edu/). Provides links to anatomy, diseases, disorders, nutrition, and other health-related resources, including teaching activities.
- Virginia Career VIEW. [http://www.vaview.vt.edu/careers/career/29-2055.00](http://www.vaview.vt.edu/careers/career/29-2055.00). Provides Virginia-based information about the career of surgical technology, including duties; national, state, and regional earnings; education level; and other career topics.
Appendix: Credentials, Course Sequences, and Career Cluster Information

Industry Credentials: Only apply to 36-week courses

- Certified Surgical Technologist (CST) Examination
- College and Work Readiness Assessment (CWRA+)
- National Career Readiness Certificate Assessment
- Nationally Registered Certified Surgical Technician (NRCST) Examination
- Workplace Readiness Skills for the Commonwealth Examination

Concentration sequences: A combination of this course and those below, equivalent to two 36-week courses, is a concentration sequence. Students wishing to complete a specialization may take additional courses based on their career pathways. A program completer is a student who has met the requirements for a CTE concentration sequence and all other requirements for high school graduation or an approved alternative education program.

- Introduction to Health and Medical Sciences (8302/36 weeks)
- Surgical Technologist II (8352/36 weeks, 420 hours)

Career Cluster: Health Science

<table>
<thead>
<tr>
<th>Pathway</th>
<th>Occupations</th>
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<tbody>
<tr>
<td>Therapeutic Services</td>
<td>Surgical Technologist</td>
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</table>