

Introduction to Surgical Technology

Instructional/Task Analysis

Section A: Orientation to Surgical Technology

Module 1-A: Professional Responsibilities and Relations

Related information: What the student should know

1. State the primary goal of surgical intervention.
2. Match reasons for surgical intervention to their correct descriptions.
3. List the three main types of hospitals and describe each.
4. List facilities where surgery can be performed.
5. Describe a typical hospital organizational chart.
6. Describe a typical hospital organizational structure for surgical services.
7. List hospital departments on which the surgical suite depends to give continuity of patient care.
8. List the members of the surgical team.
9. Distinguish between sterile and unsterile surgical team members.
10. Match surgical team members to their functions.
11. List areas of employment for the surgical technologist.
12. List ways of receiving training as a surgical technologist.
13. Define and state the purpose of a job description for a surgical technologist.
14. Select job responsibilities and functions of the scrub role.
15. Select job responsibilities and functions of the circulator.
16. List limitations of the surgical technologist.

Application: What the student should be able to do

17. Draw an organizational chart of the OR suite for a typical hospital. (Assignment Sheet 1)
18. Distinguish among duties of the surgical team members. (Assignment Sheet 2)
19. Research professional health care associations and their magazines/journals. (Assignment Sheet 3)
20. Research organizations that provide health care support. (Assignment Sheet 4)

Module 2-A: Interpersonal Relationships and Communication Skills

Related information: What the student should know

1. Distinguish among types of relationships.
2. Select factors needed for good relationships.
3. Arrange in order Maslow's hierarchy of human needs.
4. List the causes of stress in the operating room, the impact of stress on the body, and methods of coping with stress.
5. Select true statements concerning psychosocial stress in the patient and within the surgical team.
6. List goals of communication.
7. Match means of communication to their correct descriptions.
8. State the purposes of communication among hospital team members.
9. List essential components of effective communication.
10. List effective listening skills utilizing components of communication.
11. Describe effective speaking skills.
12. Identify means of communication that enable other hospital departments to relate to the surgical suite and assure continuity of patient care and safety.
13. Select true statements concerning the importance of effective communication for the patient undergoing surgery.
14. Match techniques for therapeutic communication to their correct examples.
15. Match blocks to therapeutic communication to their correct examples.
16. Select communication requirements of the surgical team during surgery.

Application: What the student should be able to do

17. Evaluate your interpersonal relationship skills. (Assignment Sheet 1)
18. Evaluate your listening skills. (Assignment Sheet 2)
19. Apply effective communication skills in given situations. (Assignment Sheet 3)
20. Evaluate therapeutic communication skills in given situations. (Assignment Sheet 4)

Module 3-A: Legal and Ethical Responsibilities

Related information: What the student should know

1. Discuss accountability for personal actions and obligations.
2. Match common areas of legal responsibility in surgery affecting the surgical technologist to their correct definitions.
3. List incidents that could result in litigation.
4. Define criteria used to establish negligence in court cases involving the surgical team.
5. Match terms related to credentialing to their correct definitions.
6. Discuss surgical conscience.
7. Complete statements concerning ethics.
8. List ways of making ethical decisions as a surgical technologist.
9. List resources that may help a surgical technologist interpret and follow professional standards of conduct.
10. List items in the surgical technologist's code of ethics.
11. Complete statements concerning standards of professional practice.
12. Select true statements concerning the Patient's Bill of Rights.

Application: What the student should be able to do

13. Evaluate legal cases involving surgery. (Assignment Sheet 1)
14. Evaluate ethical issues involving medicine. (Assignment Sheet 2)

Module B: Safety

Module 1-B: Environmental Safety

Related information: What the student should know

1. Discuss ways of developing a good safety attitude.
 2. Complete statements concerning personal safety guidelines.
 3. List general steps/guidelines for reporting defective equipment.
 4. List expectations for a safe environment at school or work.
 5. State the purposes of a material safety data sheet (MSDS).
 6. Match MSDS sections to the information each section contains.
 7. Match hazard placard and label symbols to their hazards.
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8. Identify hazards using the NFPA 704 hazard triangle.
9. Match methods by which a hazardous material can enter the body to their correct descriptions.
10. Complete statements concerning the principles of body mechanics.
11. List basic types of emergencies.
12. Discuss severe weather safety guidelines.
13. Arrange in order the steps to follow on receiving a bomb threat.
14. Complete guidelines for general evacuation procedures in a fire emergency.
15. Describe the disabled person's fire evacuation responsibilities.
16. Identify the components of fire by labeling the sides of a fire tetrahedron.
17. Match fire classifications to their fuel sources.
18. Match fire extinguisher symbol shapes to fire classification letters.
19. Match extinguisher pictographs to the extinguisher's intended applications.
20. List the characteristics of fires appropriate for handling with a portable fire extinguisher.
21. Arrange in order the basic steps in using a fire extinguisher.
22. List fire prevention guidelines.
23. Complete statements concerning electrical safety.
24. Select true statements concerning basic equipment safety.

Application: What the student should be able to do

25. Subscribe to a safety pledge. (Assignment Sheet 1)
26. Complete an accident report form. (Assignment Sheet 2)
27. Interpret material safety data sheets. (Assignment Sheet 3)
28. Analyze severe weather scenarios. (Assignment Sheet 4)
29. Analyze fire emergency scenarios. (Assignment Sheet 5)
30. Apply safety principles to the school and workplace. (Assignment Sheet 6)
31. Use proper body mechanics in standing, sitting, moving, and lifting. (Job Sheet 1)
32. Operate a portable fire extinguisher. (Job Sheet 2)

Module 2-B: Workplace Safety

Related information: What the student should know

1. Describe OSHA regulations required of employers.
2. Complete statements concerning OSHA and its role in workplace health and safety.
3. Complete statements concerning OSHA risk factors for violence to health care workers.
4. Name the four main components to any effective safety and health program that also apply to preventing workplace violence.
5. List responsibilities of management in creating an effective workplace violence prevention program.
6. List responsibilities of employees in creating an effective workplace violence prevention program.
7. Complete statements concerning OSHA-recommended engineering controls and workplace adaptation that can effectively prevent or control workplace violence hazards.
8. Complete statements concerning OSHA-recommended administrative and work practice controls to help prevent workplace violence.
9. List records that are important to the success of a workplace violence prevention program.
10. Select true statements concerning hazard communications.
11. Select true statements concerning information on a chemical label.
12. Complete basic health care workplace safety guidelines.
13. Match personal protective equipment (PPE) to their protective requirements.
14. Match major types of reactions to latex to their characteristics.
15. List ways of preventing latex allergy.
16. Complete statements concerning bloodborne pathogens.
17. Select true statements concerning the five different types of hepatitis.
18. Select true statements concerning bloodborne pathogens and their concern to operating room professionals.
19. Complete a chart comparing HIV and HBV.
20. List examples of devices that can cause sharps injuries.
21. List common causes of suture needle and scalpel injuries.
22. Complete guidelines for handling sharps and sharps boxes.
23. Match blunt needle categories to their selection guidelines.
24. Complete guidelines for safe blunt suturing techniques.

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25. Explain the differences between Universal Precautions and Standard Precautions.
26. Complete statements concerning Standard Precautions.
27. Identify substances included in Standard Precautions that require hand protection (gloves).
28. List instances that require hand washing.
29. List CDC guidelines for proper hand washing.
30. Select true statements concerning guidelines for personal hygiene in the workplace.
31. Complete statements concerning the characteristics of radiation.
32. Match the three types of ionizing radiation to their characteristics.
33. Describe radiation safety practices.
34. State conditions that require immediate notification of the health care facility radiation safety officer.
35. Match compressed gases to their traditional U.S. cylinder colors.
36. List flammable anesthetic gases.
37. Select from a list common fire ignition sources in the operating room.
38. Match types of burns to their descriptions.
39. Discuss possible health-care related causes of patient thermal burns.
40. Select true statements concerning static electricity.
41. Complete statements concerning grounding operating room electrical equipment.
42. Discuss safeguards for preventing electrical and fire hazards in the operating room.
43. Match laser classes to their characteristics.
44. Distinguish between specular and diffuse laser beam reflections.
45. Match laser viewing hazards to their descriptions.
46. Complete statements concerning laser beam hazards to the eyes and skin.
47. Discuss precautions for using lasers safely.

Application: What the student should be able to do

48. Maneuver a wheelchair safely. (Job Sheet 1)
49. Maneuver a stretcher safely. (Job Sheet 2)
50. Demonstrate effective hand washing procedure. (Job Sheet 3)

Module C: Microbiology

Module 1-C: Introduction to Microbiology

Related information: What the student should know

1. Arrange in order the levels of the taxonomy system for classifying organisms.
2. Select major classes of microorganisms.
3. Describe the classes of microorganisms.
4. Match the types of microbial relationships to their correct descriptions.
5. Distinguish among normal flora, resident flora, and transient flora.
6. Describe the purpose of a gram stain.
7. Select true statements concerning characteristics of bacteria.
8. Label types of bacteria according to their shape.
9. Match specialized structures of bacteria to their correct descriptions.
10. Distinguish between types of toxins produced by bacteria.
11. Select true statements concerning growth requirements of bacteria.
12. Match pathogenic bacteria to the correct diseases they cause.
13. Distinguish between characteristics of fungi and algae.
14. Distinguish between characteristics of yeasts and molds.
15. Select true statements concerning characteristics of protozoa.
16. Match protozoan diseases to their correct causes and characteristics.
17. Complete statements concerning the characteristics of rickettsiae.
18. List diseases caused by rickettsiae.
19. Select true statements concerning characteristics of helminths.
20. List common parasites that afflict humans.
21. Complete statements concerning characteristics of viruses.
22. List viral diseases according to type.

Application: What the student should be able to do

23. Research the causes and prevention of a human disease. (Assignment Sheet 1)

Module 2-C: Infection and Immunology

Related information: What the student should know

1. Define the term *infection*.
2. Select true statements concerning human portals of entry.
3. List human portals of exit.
4. Select factors influencing the occurrence of infection.
5. Match types of infections to their correct descriptions.
6. Match the stages of an acute infection to their correct descriptions.
7. Distinguish between direct and indirect contact in the transmission of pathogens.
8. Describe means of controlling the transmission of infections.
9. Complete statements concerning the effects of infection on a human host.
10. List factors that contribute to the spread of nosocomial infections.
11. Match organisms that cause common nosocomial infections to the infections they cause.
12. List the factors that influence the virulence of a pathogen in a host's body.
13. Complete statements concerning the body's defenses against diseases.
14. Select the correct purposes of inflammation.
15. List the symptoms of acute inflammatory response.
16. Select true statements concerning the treatment of acute inflammation.
17. Define the term *immunology*.
18. Distinguish between the types of immune responses.
19. Distinguish between a T cell and a B cell.
20. Match types of T cells and B cells to their correct functions.
21. Describe the types of cellular and tissue defense-mechanism processes the body uses against disease and infection.
22. Describe the phases of the antibody-production cycle that follows the body's exposure to an antigen.
23. Match types of white blood cells to their correct descriptions.
24. Select true statements concerning the types of immunity.
25. Match types of acquired immunity to their correct descriptions.

26. List types of vaccines.
27. Complete statements concerning the allergic response.
28. Complete statements concerning the characteristics of anaphylaxis.
29. Select true statements concerning the rejection syndrome.

Application: What the student should be able to do

30. Determine human portals of entry and exit for various diseases and infections. (Assignment Sheet 1)
31. Complete a personal immunity survey. (Assignment Sheet 2)
32. Practice critical thinking: complete a case study on immunity and infection. (Assignment Sheet 3)

Module 3-C: Wound Healing

Related information: What the student should know

1. Match the types of injuries that can cause tissue damage to their correct description.
2. Distinguish among the basic types of wounds.
3. Distinguish among types of wound healing.
4. Complete statements concerning the phases of first intention wound healing.
5. Match classes of traumatic wounds to their correct descriptions.
6. Identify types of traumatic wounds.
7. Match classes of surgical (operative) wounds with their correct descriptions.
8. Select factors affecting the wound healing process.
9. Describe factors that present possible complications to the wound-healing process.
10. Complete statements concerning the effects of operative technique on wound healing.
11. Distinguish among types of wound disruption.
12. Complete statements concerning characteristics of wound disruption.

Application: What the student should be able to do

13. Classify surgical and traumatic wounds. (Assignment Sheet 1)
14. Determine types of traumatic wounds. (Assignment Sheet 2)
15. Distinguish between positive and negative effects on wound healing. (Assignment Sheet 3)

Instructional/Task Analysis

Module D: Pharmacology

Module 1-D: Basic Math

Related information: What the student should know

1. Match terms associated with math and measuring to their correct definitions.
2. Match symbols used in basic math with their names.
3. Label the place values of a whole number.
4. Add whole numbers to solve problems.
5. Subtract whole numbers to solve problems.
6. Multiply whole numbers to solve problems.
7. Divide whole numbers to solve problems.
8. Distinguish among types of fractions.
9. Reduce fractions to lowest terms.
10. Convert fractions and mixed numbers.
11. Add fractions to solve problems.
12. Subtract fractions to solve problems.
13. Multiply fractions to solve problems.
14. Label place values in a decimal number.
15. Add decimal numbers to solve problems.
16. Subtract decimal numbers to solve problems.
17. Multiply decimal numbers to solve problems.
18. Divide decimal numbers to solve problems.
19. Convert fractions and percentages.
20. Solve percentage problems.
21. Convert Roman numerals to Arabic numerals.

Application: What the student should be able to do

22. Add whole numbers. (Assignment Sheet 1)
 23. Subtract whole numbers. (Assignment Sheet 2)
 24. Multiply whole numbers. (Assignment Sheet 3)
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25. Divide whole numbers. (Assignment Sheet 4)
26. Reduce fractions to lowest terms. (Assignment Sheet 5)
27. Convert fractions to mixed numbers. (Assignment Sheet 6)
28. Add fractions. (Assignment Sheet 7)
29. Subtract fractions. (Assignment Sheet 8)
30. Multiply fractions. (Assignment Sheet 9)
31. Add decimal numbers. (Assignment Sheet 10)
32. Subtract decimal numbers. (Assignment Sheet 11)
33. Multiply decimal numbers. (Assignment Sheet 12)
34. Divide decimal numbers. (Assignment Sheet 13)
35. Convert fractions and percentages. (Assignment Sheet 14)
36. Solve percentage problems. (Assignment Sheet 15)
37. Convert Roman numerals to Arabic numerals. (Assignment Sheet 16)
38. Read a U.S. customary rule. (Assignment Sheet 17)

Module 2-D: Weights and Measures

Related information: What the student should know

1. Select true statements concerning the metric system of measurement.
2. Match metric prefixes with their correct amounts.
3. State metric equivalents of weight, capacity, and length.
4. List advantages of the metric system.
5. State abbreviations for metric weights and measures.
6. Distinguish between systems for measuring temperature.
7. Write the correct abbreviations pertaining to the handling of medications.

Application: What the student should be able to do

8. Solve problems concerning metric equivalents. (Assignment Sheet 1)
9. Use abbreviations for metric weight and measures. (Assignment Sheet 2)

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Module 3-D: Syringes and Hypodermic Needles

Related information: What the student should know

1. Discuss uses for syringes in the operating room.
2. Select the true statements concerning the characteristics of syringes.
3. Identify the parts of a syringe.
4. Complete statements concerning types of syringes used for irrigating.
5. Identify the types of syringes used for injecting and aspirating.
6. Distinguish between the types of syringe tips used for injecting and aspirating.
7. Select true statements concerning the characteristics of hypodermic needles.
8. Identify the parts of a hypodermic needle.
9. Complete statements concerning the care and handling of syringes and hypodermic needles.
10. Select true statements concerning the Occupational Safety and Health Administration (OSHA) regulations concerning the care and handling of sharps.

Application: What the student should be able to do

11. Read syringe calibrations. (Assignment Sheet 1)
12. Fill an irrigating syringe. (Job Sheet 1)
13. Draw up medication held by circulator. (Job Sheet 2)

Module 4-D: Pharmacologic Agents

Related information: What the student should know

1. Define *pharmacology*, *pharmacodynamics*, and *pharmacokinetics*.
2. List purposes of drugs.
3. List the types of drug preparations with their correct descriptions.
4. List primary sources of drugs.
5. Distinguish among the types of names that a drug may have.
6. Select common sources of information concerning drugs.
7. Distinguish between the types of drug effects on the human body.
8. Complete statements concerning the route of administration of drugs.
9. Match classifications of common drugs used in surgery with their actions.

10. Select true statements concerning the characteristics of anticoagulants.
11. Complete statements concerning the characteristics of hemostatic agents.
12. Select true statements concerning the characteristics of antibiotic/anti-infectives commonly used in surgery.
13. Complete statements concerning narcotic analgesics.
14. Match drugs used for ophthalmic surgery with their correct uses.
15. Select true statements concerning characteristics of diuretics.
16. Select true statements concerning characteristics of steroids.
17. Complete statements concerning characteristics of hormones.
18. Complete statements concerning characteristics of contrast media.
19. Match common dyes used in surgery with their correct descriptions.
20. Complete statements concerning characteristics of intravenous solutions.
21. Complete statements concerning blood replacements, blood components, and blood substitutes.
22. Match miscellaneous drugs used in surgery for emergency situations with their correct descriptions.
23. Select true statements concerning the care and handling of medications.
24. Complete statements concerning the procedure for the surgical technologist to accept medication from the circulator.

Application: What the student should be able to do

25. Classify various drugs according to type. (Assignment Sheet 1)
26. Use a drug information reference. (Assignment Sheet 2)
27. Receive medication onto the sterile field. (Job Sheet 1)

Module 5-D: Anesthesia

Related information: What the student should know

1. Complete statements concerning the ideal anesthetic agent used in anesthesiology.
2. Complete statements concerning the preanesthetic preparation of the patient.
3. Select purposes of preoperative medications.
4. Complete statements concerning the selection of preoperative medications.
5. Complete statements concerning classifications of premedications.
6. Select true statements concerning anesthesia.

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7. Identify sites involved in the pathway of pain.
8. Distinguish among types of anesthetics.
9. Distinguish between methods of administering a general anesthetic.
10. List agents used for general anesthesia.
11. List the four phases of general anesthesia.
12. Match stages of general anesthesia with their correct descriptions.
13. Match types of local or regional anesthetics with their correct descriptions.
14. List agents used for local or regional anesthesia.
15. Match other anesthetic techniques occasionally used with their correct descriptions.
16. Complete statements concerning the characteristics of muscle relaxant drugs.
17. Distinguish between types of muscle relaxants.
18. List supplemental agents used in conjunction with oxygen to accomplish complete anesthesia.
19. List narcotic antagonists used intraoperatively.
20. Discuss the care of the anesthetized patient.
21. Discuss circulator and scrub personnel roles during administration of anesthesia.
22. List possible complications of anesthesia.
23. Select true statements concerning malignant hyperpyrexia—malignant hyperthermia syndrome.
24. Complete statements concerning hemolytic reactions.
25. Complete statements concerning anaphylactic reactions.
26. Distinguish among actions of the surgical team if cardiac arrest occurs on the operating room table.
27. Match OR anesthesia equipment used for delivering anesthetics and/or monitoring the patient with their correct descriptions.
28. Match equipment used as adjuncts to anesthesia with their uses.
29. List types of thermoregulatory devices used in the operating room.
30. Complete statements concerning hemostasis and blood replacement.

Module E: Biomedical Science

Module 1-E: Computer Skills

Related information: What the student should know

1. List the uses of computers in the surgical suite.
2. Identify the basic components of a computer system.
3. Match types of input devices to their correct uses.
4. Complete statements concerning output devices.
5. Select true statements concerning computer memory.
6. Match computer storage devices to their correct descriptions.
7. Distinguish between basic computer operating systems.
8. Match terms related to the computer desktop to their correct descriptions.
9. List the characteristics of word-processing software.
10. Match basic word-processing software text-tool operations to their correct functions.
11. Match page-setup features to their correct descriptions.
12. Identify the primary functions of the icons located on a word-processing toolbar.
13. Match the primary functions on a word-processing toolbar to their icons.
14. Complete statements concerning the basics of using the Internet.
15. Select true statements concerning e-mail.

Application: What the student should be able to do

16. Examine computer operating manual(s) for basic operating procedures. (Assignment Sheet 1)
17. Examine word-processing software manual for basic operations. (Assignment Sheet 2)
18. Start/boot the computer. (Job Sheet 1)
19. Open and close a program. (Job Sheet 2)
20. Create a word-processed document. (Job Sheet 3)
21. Practice using the formatting toolbar. (Job Sheet 4)
22. Insert graphic and footnote/endnote in word-processed document. (Job Sheet 5)
23. Search the Internet. (Job Sheet 6)
24. Use e-mail. (Job Sheet 7)

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Module 2-E: Electricity

Related information: What the student should know

1. Define *electricity*.
2. Complete statements concerning the structure of matter.
3. Select true statements concerning the principles of electron flow.
4. Complete statements concerning the basic sources of electrical generation.
5. Select true statements concerning magnetism.
6. Complete statements concerning electromagnetism.
7. Match terms related to electrical current with their correct descriptions.
8. Select true statements concerning measuring electricity.
9. State Ohm's law.
10. State the formula for Ohm's law.
11. List the uses of Ohm's law.
12. Match the wires contained in an electrical receptacle with their correct descriptions.
13. Complete statements concerning wall outlets and plugs commonly used in the operating room.
14. List the primary equipment used in surgery that requires electricity to function.
15. List the major causes of electrical accidents.
16. Complete statements concerning facts about electrical shock.
17. Select true statements concerning static electricity.
18. Complete statements concerning grounding operating room electrical equipment.
19. Identify the components of an electrosurgery system.
20. Match electrosurgery components to their correct descriptions.
21. Distinguish between types of electrosurgery units.
22. Complete statements concerning safeguards for using electrosurgery units.

Application: What the student should be able to do

23. Evaluate surgical applications of electricity. (Assignment Sheet 1)
24. Position grounding pad and connect electrosurgical unit. (Job Sheet 1)

Module 3-E: Applied Physics

Related information: What the student should know

1. Distinguish among gravitational, magnetic, and electrical forces.
2. Complete statements concerning pressure.
3. Match Newton's three laws of motion to their correct descriptions.
4. Explain why blood separates in a centrifuge.
5. Select true statements concerning types of simple machines.
6. Explain center of gravity and its effect on posture and occupational safety.
7. Complete statements concerning the modes of motion.
8. Select true statements concerning the composition of matter.
9. Select true statements concerning matter's three changes of state.
10. Complete statements concerning heat transfer.
11. Explain cryosurgery and its advantages.
12. Complete statements concerning waveforms.
13. Describe how ultrasound scans work.
14. Explain how doppler ultrasounds work.
15. Complete statements concerning the dual nature of light.
16. Match the electromagnetic spectrum types to their correct uses.
17. Complete statements concerning magnetism characteristics.
18. Distinguish between static and dynamic electricity.
19. Complete statements concerning electricity and electric current.
20. List the physical and biological effects of electric current that prove helpful in medicine.
21. Complete statements concerning fiber optics.
22. Describe how optical fiber is used in endoscopic surgeries.
23. Complete statements concerning the use of lasers in surgery.
24. Match laser types to their correct descriptions.
25. Select true statements concerning the use of nuclear medicine in surgery.
26. Complete statements concerning CT scans.

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27. Explain the importance of setting irradiation and measuring dosage.
28. List methods for protecting against occupational irradiation.

Application: What the student should be able to do

29. Apply motion and leverage to the workplace. (Assignment Sheet 1)
30. Evaluate states of matter. (Assignment Sheet 2)
31. Apply electromagnetic waveforms to medicine. (Assignment Sheet 3)
32. Research lasers. (Assignment Sheet 4)
33. Visit a hospital to view radiation from preparation to disposal. (Assignment Sheet 5)
34. Recognize the implications of using nuclear medicine. (Assignment Sheet 6)
35. Test atmospheric pressure. (Job Sheet 1)
36. Create waveform polarization. (Job Sheet 2)

Module 4-E: Robotics

Related information: What the student should know

1. Complete statements concerning the trend towards minimally invasive surgery.
2. List the four drawbacks of minimally invasive surgery.
3. Complete statements concerning surgical categories more easily adapted to MIS techniques.
4. List the fundamental impacts digital information has had on MIS technologies.
5. List the conditions which make the use of a robot instead of a human attractive.
6. Match the robotic characteristics that promote their use in surgical procedures to their correct descriptions.
7. Arrange in order the steps for integrating robotics into surgical procedures.
8. Describe the benefits of using robotics in MIS.
9. Identify the types of surgery where robotics can play a significant role.
10. List the pre-operative benefits of using robotics.
11. Complete statements concerning the inter-operative benefits of using robotics.
12. Select true statements concerning the post-operative benefits of using robotics.
13. Complete statements contrasting open incisions and MIS incisions.
14. Complete statements concerning key events in the invention of medical scope technology.
15. Match the two key scope types developed for endoscopic surgery since its advent in the late 1970's to their correct descriptions.

16. Select true statements concerning the difference in surgical stance when using flexible vs. rigid extenders.
17. List the primary issues in minimally invasive surgery.
18. Compare surgical technique in MIS with and without robotics.
19. Describe the four basic types of surgical robots.
20. Describe latency and its impact on telesurgery.
21. List the primary serial robotic components.
22. Identify each of the components in a telesurgical interaction.
23. Describe the functions of sensors and actuators.
24. Match sensor types to their correct descriptions.
25. Describe the function of the robotic components in the articulated mechanical system (AMS).
26. Match means of driving robotic arms to their correct descriptions.
27. Describe the sequence of events leading to robotic manipulation.
28. List the four basic types of movement.
29. Define *yaw*, *pitch*, and *roll*.
30. Match the degrees of freedom in the human arm to their correct motions.
31. Complete statements comparing degrees of freedom in a rigid endoscope and a flexible endoscope.
32. Complete statements concerning the degrees of freedom in the jointed medical robotic arm.
33. Complete statements concerning the four possible robotic control modes.
34. Identify components of robotic control.
35. List the options available for the user interface control and for monitoring surgical process.
36. List sensate options that should be available for an optimal haptics interface design.
37. Select true statements concerning the use of landmarks with robotics.
38. Identify each of the primary players during surgery.
39. List the four basic imaging tools used during an MIS procedure.
40. List the surgical tools potentially used during an MIS procedure.
41. Arrange in order the four basic preparatory steps for MIS or robotic procedures.
42. Arrange in order the steps to properly prepare and position robotic systems.
43. Complete statements concerning issues that must be addressed for integrating robotics into OR.

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Application: What the student should be able to do

44. Evaluate MIS procedures. (Assignment Sheet 1)
45. Compare surgical robotics equipment. (Assignment Sheet 2)
46. Identify robotics components. (Assignment Sheet 3)
47. Identify robotic motion. (Assignment Sheet 4)
48. Explore clinical applications for robotics. (Assignment Sheet 5)
49. Demonstrate degrees of freedom in the human arm. (Job Sheet 1)