



Technical College of the Lowcountry
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AHS130
Surgical Environment for Health Professionals
Fall 2017

Course Description

AHS 130 Surgical Environment for Health Professionals
Lec. 3 Lab. 0 Cr. 3

This course offers a comprehensive introduction to the surgical team, basic instruction in the protocols of the operating room and aseptic techniques.

Prerequisite: Acceptance into Surgical Technology Program.

Corequisite: SUR 101 & SUR 110. AHS 103, CPT 101 or CPT 170, BIO 112,

Course Focus

This course offers a comprehensive introduction to the surgical team, basic instruction in the protocols of the operating room and aseptic techniques.

Text and References

1. Surgical Technology for the Surgical Technologist, A Positive Approach, 5th Edition, Association of Surgical Technologists.
2. Surgical Technology Principles and Practice, 7th Edition, Elsevier/Saunders.
3. Workbook to accompany Surgical Technology Principles and Practice, 7th Edition, Elsevier/Saunders.

Course Goals

Course Outcomes: Upon successful completion of this course, the student will be able to:

1. Trace the historical development of microbiology
2. Identify basic cell structure
3. Understand the functioning component of the cell.
4. Understand basic cellular theory.
5. Comprehend basic microbial function.
6. Identify microbial function and the relationship to aseptic technique.
7. Understand human and pathogen relationships.
8. Understand the infectious process and how that relates to the OR.
9. Comprehend blood borne pathogens.
10. Identify defense microorganisms.
11. Demonstrate how infection control affects the OR and patients.
12. Identify the principles of microbial control and destruction.
13. Discuss the importance of microbial control and destruction as it relates to patients in the OR.
14. Identify members of the surgical team and their roles in the OR.
15. Demonstrate understanding of aseptic technique.
16. Define the term "sterilization"
17. Understand sterilization processes.
18. Identify precautions and parameters of the various sterilization techniques.
19. Understand proper sterilization preparation techniques.
20. Compare the relationship between pathogenic microorganisms and sterilization.

The following list of course goals will be addressed in the course. (*designates a CRUCIAL goal)

1. discuss operating room microbial destruction*
2. compare chemical and thermal sterilization methods
3. trace microbiology history*
4. discuss microorganisms growth factors*
5. apply aseptic technique protocols
6. comprehend OR instruction protocols
7. demonstrate aseptic technique*
8. comprehend surgical team roles
9. identify key terms and concepts
10. analyze patient microbial environment
11. contrast chemical and thermal sterilization methods*
12. explain microbial destruction principles*
13. illustrate patient infection control*
14. demonstrate OR infection control
15. appreciate blood borne pathogens*
16. relate OR infectious process
17. recognize human and pathogen relationships
18. describe microbial function

19. distinguish blood borne pathogens*
21. classify pathogenic viruses*
22. discern basic cellular theory*
23. distinguish surgical team members*
24. construct pathogenic microorganisms portal entry*
25. illustrate key concepts
26. discuss key terms and concepts
27. define key terms and concepts
28. discuss aseptic principles
29. demonstrate sterile technique practices*
30. define asepsis terms
31. consider gram-negative bacterial implications*
32. clarify contamination and infection differences
33. critique bacterial invasion factors*
34. apply chemical and sterilization methods*
35. consider pathogenic microorganisms transmission methods*
36. contrast key terms and concepts*
37. compare key terms and concepts
38. adapt surgical conscience concept
39. learn surgical conscience concept*
40. describe OR sterile technique
41. evaluate disinfectant types*
42. explain key terms and concepts
43. apply chemical indicators*
44. identify chemical sterilization indicators
45. identify bacterial growth phases*

Student Contributions

Classes are designed to employ a variety of teaching techniques. In order to maximize learning, required readings and Web enhanced sections should be done prior to class. If a student is falling behind in clinical performance and/or academic achievement, it is imperative to seek immediate assistance from the instructor.

Course Evaluation

3 Unit Tests	30%
Final Exam	20%
6 Quizzes	30%
Project/Presentation	<u>20%</u>
	100

Course Schedule

Lecture: Class - Monday 9:00am - 12:00am

ADA Statement

The Technical College of the Lowcountry provides access, equal opportunity and reasonable accommodation in its services, programs, activities, education and employment for individuals with disabilities. To request disability accommodation, contact the counselor for students with disabilities at (843) 525-8228 during the first ten business days of the academic term.

Attendance

1. The College's statement of policy indicates that students must attend ninety percent of total class hours or they will be in violation of the attendance policy.
2. Students not physically attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
3. Students taking an online/internet class must sign in **and** communicate with the instructor within the first ten calendar days from the start of the semester to indicate attendance in the class. Students not attending class during the first ten calendar days from the start of the semester must be dropped from the class for NOT ATTENDING.
4. Reinstatement requires the signature of the division Dean.
 - a. In the event it becomes necessary for a student to withdraw from the course **OR if a student stops attending class, it is the student's responsibility to initiate and complete the necessary paperwork.** Withdrawing from class may have consequences associated with financial aid and time to completion. Students are strongly encouraged to consult with Financial Aid prior to withdrawing from any class, particularly if the student is currently on a warning or probation status.
 - b. When a student exceeds the allowed absences, the student is in violation of the attendance policy. The instructor **MUST** withdrawal the student with a grade of "W", "WP", or "WF" depending on the date the student exceeded the allowed absences and the student's progress up to the last date of attendance

or
 - c. Under extenuating circumstances and at the discretion of the faculty member teaching the class, allow the student to continue in the class and make-up the work. This exception must be documented at the time the allowed absences are exceeded.
 - d. Absences are counted from the first day of class. There are no "excused" absences. All absences are counted, regardless of the reason for the absence.
5. A student must take the final exam or be excused from the final exam in order to earn a non-withdrawal grade.

6. Students are expected to be in class *on time*. Arrival to class after the scheduled start time or leaving class prior to dismissal counts as a tardy. Three tardies and/or early departures are considered as one absence unless stated otherwise.
7. It is the student's responsibility to sign the roll/verify attendance with instructor upon entering the classroom. Failure to sign the roll/verify attendance results in a recorded absence. In the event of tardiness, it is the student's responsibility to insure that attendance is marked. **The student is responsible** for all material/announcements presented, whether present or absent.
8. Continuity of classroom and laboratory (which includes clinical experiences) is essential to the student's progress in providing safe and competent patient care. Students are expected to use appropriate judgment for participating in clinical activities.
To evaluate the student's knowledge and skills, it is necessary for the student to be present for all clinical experiences.
If an absence does occur, the designated clinical site, in addition to the Division of Health Sciences Administrative Assistant, must be notified by telephone no later than 30 minutes prior to the start of the clinical experience.
The Division of Health Sciences telephone number is 843-525-8267.

A copy of TCL's STATEMENT OF POLICY NUMBER: 3-1-307 CLASS ATTENDANCE (WITHDRAWAL) is on file in the Division Office and in the Learning Resources Center.

Hazardous Weather

In case weather conditions are so severe that operation of the College may clearly pose a hardship on students and staff traveling to the College, notification of closing will be made through the following radio and television stations: WYKZ 98.7, WGCO 98.3, WGZO 103.1, WFXH 106.1, WWVV 106.9, WLOW 107.9, WGZR 104.9, WFXH 1130 AM, WLVA 101.1, WSOK 1230 AM, WAEV 97.3, WTOC TV, WTGS TV, WJWJ TV, and WSAV TV. Students, faculty and staff are highly encouraged to opt in to the Emergency Text Message Alert System. www.tcl.edu/textalert.asp

Academic Misconduct

There is no tolerance at TCL for academic dishonesty and misconduct. The College expects all students to conduct themselves with dignity and to maintain high standards of responsible citizenship.

It is the student's responsibility to address any questions regarding what might constitute academic misconduct to the course instructor for further clarification.

The College adheres to the Student Code for the South Carolina Technical College System. Copies of the Student Code and Grievance Procedure are provided in the *TCL Student Handbook*, the Division Office, and the Learning Resources Center.

Health care professionals hold the public trust. Academic misconduct by health science students calls that trust into question and academic integrity is expected.

It is a fundamental requirement that any work presented by students will be their own.

Examples of academic misconduct include (but are not limited to):

1. copying the work of another student or allowing another student to copy working papers, printed output, electronic files, quizzes, tests, or assignments.
2. completing the work of another student or allowing another student to complete or contribute to working papers, printed output, electronic files, quizzes, tests, or assignments.
3. viewing another student's computer screen during a quiz or examinations.
4. talking or communicating with another student during a test.
5. violating procedures prescribed by the instructor to protect the integrity of a quiz, test, or assignment.
6. plagiarism in any form, including, but not limited to: copying/pasting from a website, textbook, previously submitted student work, or any instructor-prepared class material; obvious violation of any copyright-protected materials.
7. knowingly aiding a person involved in academic misconduct.
8. providing false information to staff and/or faculty.
9. entering an office unaccompanied by faculty or staff.
10. misuse of electronic devices.

Grading Scale

Grading scale	
90% - 100% A	W withdraw
82% - 89% B	WP withdraw with passing grade
75% - 81% C	WF withdraw with failing grade
70% - 74% D	I Incomplete
Below 70% F	

Grading Methodology.

The final grade must be 75.000 or more in order to pass the course and progress in the program. Students absent from an examination or presentation will receive a “0” grade for the examination unless other arrangements are made with the individual instructor prior to the examination or presentation day or on the examination or presentation day before the test/presentation is scheduled to be given.

It is the responsibility of the student to contact the appropriate instructor to arrange to make up the examination. Arrangements may be completed by telephone. If the instructor is not available, a message should be left on the instructor’s voice mail AND with another member of the faculty or administrative assistant. The instructor will decide the time and method of make-up examinations on an individual basis. Messages sent by other students are unacceptable. The student is responsible for notifying the instructor of the reason for the absence.

Course Policies and Procedures

1. It is clearly to the advantage of the student to attend class regularly. Test materials are weighted heavily in favor of lecture materials.
2. **All watches must be removed prior to examinations and kept with the students belongings.**
3. **All cell phones and pagers must be turned off during class (lecture and laboratory periods).** No pagers or phones are allowed in the clinical area. No exceptions are made to this rule.
4. Students are held accountable for content in the **Surgical Technology** program student handbook.
5. Instructors will excuse a student from class who disrupts the class.
6. No course grades are posted in public areas. Grades are available through WebAdvisor. The student must go to the college’s website www.tcl.edu Select current student then select TCL WebAdvisor and find: (1) the directions and a demonstration on how to log in to WebAdvisor, and (2) how to access grades. For questions, contact the TCL Help Desk at 525-8344 or the Registrar’s office at 525-8210.

Course Coordinator: JoLane Collins, CST, ATC, MA Ed., FAST
Surgical Technology Program Director

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Office Phone: 843-470-8415

Office Hours: Posted outside office, Bldg. 4, room 202

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Addendum to AHS 130, “Principles and Practices in the OR” Syllabus

Microbiology

To assist in meeting the student learning outcomes, the learner will:

1. Correlate the impact of microbiology in relationship to the practice of sterile technique and infection control in the operative setting.
2. Identify the name and function of various parts of the compound microscope.
3. Compare and contrast the structure and characteristics of different microorganisms.
4. Analyze the various immune responses that occur in the body as defenses against invasion by pathogens.
5. Relate the infectious process to surgical practice.

Content:

- I. Introduction to microbiology
 - A. History of microbiology
 - B. Microbiology today
 - C. Basic chemistry of life
- II. Cell
 - A. Classification
 1. Eukaryotic
 2. Prokaryotic
 - B. Structure of eukaryotic cells
 - C. Structure of prokaryotic cells
 1. Capsule
 2. Slime layer
 3. Cell wall
 4. Cytoplasmic membrane
 5. Cytoplasm
 - a. Ectoplasm
 - b. Endoplasm
 6. Flagella
 7. Pili and fimbriae
 8. Nucleoid
 9. Plasmids
 10. Ribosomes
 - D. Transport across the cytoplasmic membrane
 1. Passive transport
 - a. Diffusion
 - b. Osmosis
 - c. Filtration
 2. Active transport
 - a. Endocytosis
 - (1) Pinocytosis
 - (2) Phagocytosis
 - b. Exocytosis

- III.** Introduction to microscopy
 - A. Types of microscopes
 - B. Parts of a microscope
 - C. Use of a microscope
- IV.** Staining methods
 - A. Simple stains
 - B. Different stains
 - a. Gram stain
 - b. Acid-fast stain
 - c. Endospore stain
 - d. Capsule stain
- V.** Culture media
 - A. General culture media
 - 1. Defined
 - 2. Complex
 - 3. Selective
 - 4. Differential
 - 5. Anaerobic
 - 6. Transport
 - B. Special culture techniques
 - 1. Cell
 - 2. Animal
 - 3. Low-oxygen
 - 4. Enrichment
 - C. Preserving cultures
- VI.** Nomenclature of microbiology
 - A. Taxonomy
 - 1. Species
 - 2. Genus
 - 3. Family
 - 4. Order
 - 5. Class
 - 6. Phylum
 - 7. Kingdoms
 - 8. Domains
 - a. Archaea
 - b. Bacteria
 - c. Eukarya
 - B. Binomial nomenclature
- VII.** Host-microbe relationships
 - A. Symbiosis
 - 1. Mutualism
 - 2. Commensalism
 - 3. Parasitism
 - B. Normal flora

VIII. Types of microorganisms**A. Bacteria**

1. Morphology
 - a. Cocci
 - b. Spiral
 - c. Bacilli
2. Arrangement
 - a. Diplococi
 - b. Streptococci
 - c. Staphylococci
3. Endospores
4. Classification
5. Pathogenicity
6. Growth requirements
 - a. Nutrients
 - b. Oxygen requirements
 - c. Environmental requirements
7. Biofilms
8. Reproduction
9. Healthcare concerns
10. Significance

B. Protozoa

1. General characteristics

C. Fungi

1. General characteristics

D. Algae

1. General characteristics

E. Viruses

1. Morphology
2. Classification
3. Pathogenicity
4. Environmental requirements
5. Bacteriophages
6. Viral replication
 - a. Lytic
 - b. Lysogenic
7. Transmission
8. Role in cancer
9. Healthcare concerns
10. Significance

F. Viroids

1. General characteristics

G. Prions

1. Morphology
2. Pathogenicity
3. Environmental requirements

4. Healthcare concerns
5. Significance
- IX.** Common causative agents
 - A. Affecting the skin and wounds
 1. Bacteria
 - a. *Acinetobacter*
 - b. *Bacillus anthracis*
 - c. *Clostridium perfringens*
 - d. *Pseudomonas aeruginosa*
 - e. *Rickettsia rickettsia*
 - f. *Staphylococcus aureus*
 - g. *Staphylococcus epidermidis*
 - h. *Streptococcus pyogenes*
 - i. MRSA
 - j. MRSE
 - k. VRSA
 - l. VRE
 2. Viruses
 - a. Cytomegalovirus
 - b. Herpes simplex virus-1
 - c. Herpes simplex virus-2
 - d. Human herpes virus 4 (HHV-4 or Epstein-Barr virus (EBV))
 - e. Human papillomavirus
 - f. Morbillivirus (measles virus)
 - g. Rubella virus
 - h. Varicella-Zoster virus
 - i. Variola virus
 - B. Affecting the nervous system
 1. Bacteria
 - a. *Clostridium botulinum*
 - b. *Clostridium tetani*
 - c. *Escherichia coli*
 - d. *Haemophilus influenza*
 - e. *Klebsiella pneumonia*
 - f. *Listeria monocytogenes*
 - g. *Mycobacterium leprae*
 - h. *Nisseria meningitides*
 - i. *Staphylococcus*
 - j. *Streptococcus agalactiae*
 - k. *Streptococcus pneumonia*
 - l. *Streptococcus pyogenes*
 2. Viruses
 - a. Enteroviruses (Polio virus)
 - b. Lyssavirus (Rabies virus)
 3. Prions
 - a. New variant Creutzfeldt-Jacob Disease (nvCJD)

- C. Affecting the eyes
 - 1. Bacteria
 - a. *Chlamydia trachomatis*
 - b. *Haemophilus influenza*
 - c. *Neisseria gonorrhoeae*
 - d. *Staphylococcus aureus*
- D. Affecting the cardiovascular system
 - 1. Bacteria
 - a. Bacteroides
 - b. Bartonella
 - c. Enterococcus
 - d. *Escherichia coli*
 - e. Mycobacterium
 - f. Mycoplasma
 - g. *Neisseria meningitides*
 - h. *Pseudomonas aeruginosa*
 - i. Salmonella
 - j. *Staphylococcus aureus*
 - k. *Staphylococcus epidermidis*
 - l. *Streptococcus pneumonia*
 - m. *Streptococcus pyogenes*
 - n. VRE
- E. Affecting the respiratory system
 - 1. Bacteria
 - a. *Bacillus anthracis*
 - b. *Bordetella pertussis*
 - c. *Corynebacterium diphtheria*
 - d. *Haemophilus influenza*
 - e. *Klebsiella pneumonia*
 - f. *Legionella pneumophila*
 - g. *Moraxellacatarrhalis*
 - h. *Mycobacterium tuberculosis*
 - i. *Staphylococcus aureus*
 - j. *Streptococcus pneumonia*
 - k. *Streptococcus pyogenes*
 - 2. Fungi
 - a. *Blastomyces dermatitidis*
 - b. *Coccidioides*
 - c. *Histoplasma capsulatum*
 - d. *Pneumocystis jiroveci*
- F. Affecting the digestive system
 - 1. Bacteria
 - a. *Clostridium difficile*
 - b. *Campylobacter jejuni*
 - c. *Escherichia coli*
 - d. *Helicobacter pylori*

- e. *Lactobacillus*
- f. *Porphyromonas gingivalis*
- g. *Salmonella enterica*
- h. *Staphylococcus aureus*
- i. *Streptococcus mutans*
- j. *Vibrio cholera*
- 2. Viruses
 - a. Hepatitis A (HAV)
 - b. Hepatitis B (HBV)
 - c. Hepatitis C (HCV)
 - d. Hepatitis D (HDV)
 - e. Hepatitis E (HEV)
- G. Affecting the urinary and reproductive systems
 - 1. Bacteria
 - a. *A Streptococcus*
 - b. *Chlamydia trachomatis*
 - c. *Escherichia coli*
 - d. *Gardnerella vaginalis*
 - e. *Klebsiella*
 - f. *Mycoplasma hominis*
 - g. *Neisseria gonorrhoeae*
 - h. *Proteus*
 - i. *Pseudomonas*
 - j. *Treponema pallidum*
 - 2. Viruses
 - a. HSV-1
 - b. HSV-2
 - c. Human papillomaviruses
 - 3. Protozoa
 - a. *Trichomonas vaginalis*
 - 4. Fungi
 - a. *Candida albicans*
- H. Affecting the immunological system
 - 1. Human immunodeficiency virus
- X. Immunology
 - A. Innate immunology
 - 1. First line of defense
 - 2. Second line of defense
 - B. Acquired immunity
 - 1. Components
 - 2. Immune response
 - a. Cell-mediated
 - b. Humoral
 - 3. types of acquired immunity

- C. Immunization
 - 1. Active immunization
 - a. Attenuated vaccines
 - b. Inactivated vaccines
 - c. Toxoid vaccines
 - d. Recombinant gene technology vaccines
 - 2. Passive immunization
 - D. Immune disorders
 - 1. Hypersensitivities
 - a. Type I
 - b. Type II
 - c. Type III
 - d. Type IV
 - 2. Autoimmune diseases
 - a. Single-organ autoimmune disease
 - b. Systemic autoimmune disease
 - 3. Immunodeficiency diseases
 - a. Primary immunodeficiency diseases
 - b. Acquired immunodeficiency diseases
- XI. Process of infection**
- A. Symbiotic relationship between microbes and their hosts
 - 1. Normal microbiota
 - a. Resident
 - b. Transient
 - 2. Opportunistic pathogens
 - B. reservoirs of infectious pathogens
 - 1. animal
 - 2. human
 - 3. non-living
 - C. infection
 - 1. contamination
 - 2. portal of entry
 - 3. portal of exit
 - 4. modes of transmission
 - a. direct
 - b. indirect
 - 5. classification of infectious disease
 - D. Nature of infectious disease
 - 1. Symptoms, signs and syndromes
 - 2. Etiology
 - 3. Virulence
 - 4. Stages of infectious disease
 - a. Incubation
 - b. Prodromal
 - c. Illness
 - d. Decline

- e. Convalescence
- E. Epidemiology
 1. Frequency of disease
 2. Epidemiological studies
 3. Health care facility epidemiology
 4. Public health
 - a. Epidemic
 - b. Pandemic
 - c. Endemic

METHODS OF DISINFECTION AND STERILIZATION

Objectives: The learner will:

1. Define terms related to the terminal disinfection/sterilization process.
2. Identify the methods of processing items during terminal disinfection and/or sterilization.
3. Identify the concepts of microbial barriers.
4. Compare and contrast the materials used for creating microbial barriers.
5. List the methods for sealing microbial barriers.
6. List the process for preparing items for sterilization.
7. Identify variables related to the sterilization process and the materials to be processed.
8. Compare and contrast methods of sterilization.
9. Identify process monitoring devices and methods.

Content:

- I. Definitions
 - A. Bioburden
 - B. Disinfection
 1. Terminal disinfection
 - C. Sterilization
 1. Terminal sterilization
 2. Final sterilization
 - D. Event related sterility
- II. Terminal disinfection and sterilization
 - A. Concepts
 1. Reduce bioburden
 2. Reduce risk of transmission of pathogens
 - B. Considerations
 1. Submersible vs. non-submersible instruments
 2. Heat sensitive vs. non-heat sensitive instruments
 3. Lumens
 - C. Concepts of disinfection
 1. Factors affecting disinfectant efficiency
 2. Levels of disinfection
 - a. High
 - b. Intermediate
 - c. Low
 3. Categories of items to be disinfected or sterilized

- a. Critical
- b. Semi-critical
- c. Non-critical
- 4. Actions of disinfecting agents
 - a. Chelation
 - b. Enzymatic
 - c. Emulsification
 - d. Solubilization
- D. Methods
 - 1. Manual washing and disinfection
 - a. Process
 - b. Types of chemical cleaners
 - c. Considerations
 - 2. Washer-decontaminator
 - a. Process
 - b. Types of chemical cleaner
 - c. Considerations
 - 3. Washer-sterilizer
 - a. Process
 - b. Types of chemical cleaner
 - c. Considerations
 - 4. Ultrasonic cleaner
 - a. Process
 - b. Types of chemical cleaner
 - c. Considerations
- III. Instrument preparation and wrapping**
 - A. Process
 - 1. Instrument inspection
 - 2. Instrument preparation
 - a. Instrument assembly or disassembly
 - b. Contents protection
 - (1) Tip protectors
 - c. Placement of instruments in tray
 - d. Internal chemical indicator
 - 3. Packaging methods
 - a. Performance standards of wrapping material
 - (1) Maintain sterility of items
 - (2) Easy removal of items
 - (3) Sterilizing agent reach all surfaces
 - b. Performance characteristics of wrapping material
 - (1) Efficiency
 - (2) Ease of opening
 - (3) Sterilization suitability
 - (4) Strength
 - (5) Support impermeability
 - (6) Seal integrity

- (7) Safety
 - (8) Sterility maintenance
 - c. Wrapping material
 - (1) Woven textiles
 - (a) Concepts
 - (b) Advantages
 - (c) Disadvantages
 - (2) Nonwoven material
 - (a) Concepts
 - (b) Advantages
 - (c) Disadvantages
 - (3) Wrapper application
 - (a) Envelope fold
 - (b) Square fold
 - (4) Sealing method
 - (a) Chemical tape (external monitor)
 - d. Pouches
 - (1) Paper/plastic combination
 - (a) Concepts of use
 - (2) Tyvek/plastic combination
 - (a) Concepts of use
 - (3) Sealing methods
 - (a) Heat seal
 - (b) Adhesive seal
 - e. Sterilization trays and cases
 - (1) Concepts
 - (2) Advantages
 - (3) Disadvantages
 - (4) Case locking devices
 - 4. Labeling package
 - a. Package contents
 - b. Date of sterilization
 - c. Identification of the sterilizer used
 - d. Cycle number
 - e. Lot control number
 - f. Initials of employee
 - g. Department to receive package
 - 5. Concepts of loading packages on sterilizer cart
- IV. Sterilization**
- A. Considerations
 - 1. Related to the items to be sterilized
 - a. Bioburden
 - b. Bioresistance
 - c. Bioshedding of the packaging material
 - d. Biostate
 - e. Density of the packaging

- f. Heat sensitive vs. non-heat sensitive instruments
- g. Nutritional status of the microbe(s)
- h. Submersible vs. non-submersible instruments
- i. Presence of lumens
- 2. Related to the sterilization process
 - a. Mechanical process indicators
 - (1) Temperature
 - (2) Time
 - (3) Humidity
 - (a) Saturation
 - (4) Pressure
 - b. Purity of the agent
 - c. Purity of the air
 - d. Penetration of the agent
 - e. Capacity of the autoclave
 - f. Cost
- B. Sterilization Agents
 - 1. Steam under pressure
 - a. Microbial destruction
 - (1) Denaturation of cellular protein
 - b. Gravity displacement
 - (1) Uses
 - (2) Parameters
 - (3) Advantages
 - (4) Disadvantages
 - c. Pre-vacuum
 - (1) Uses
 - (2) Parameters
 - (3) Advantages
 - (4) Disadvantages
 - d. Flash
 - (1) Uses
 - (2) Parameters
 - (3) Advantages
 - (4) Disadvantages
 - e. Biological monitor
 - (1) *Geobacillus stearothermophilus*
 - (2) Types of test packs
 - (3) Placement in autoclave
 - (4) Incubation and reading results
 - (5) Frequency of BI monitoring
 - (6) Implantables
 - 2. Chemical
 - a. Ethylene oxide (EtO)
 - (1) Microbial destruction
 - (a) Interferes with protein metabolism

- (2) Uses
- (3) Parameters
- (4) Advantages
- (5) Disadvantages
- (6) Biological monitor
 - (a) *Bacillus atropheous*
 - (b) Types of test packs
 - (c) Placement in autoclave
 - (d) Incubation and reading results
 - (e) Frequency of BI monitoring
 - (f) Implantables
- b. Glutaraldehyde
 - (1) Microbial destruction
 - (a) Denaturation of cellular protein
 - (2) Uses
 - (3) Parameters
 - (4) Advantages
 - (5) Disadvantages
- c. Peracetic and acetic acid
 - (1) Microbial destruction
 - (a) Reacts with cellular systems
 - (2) Uses
 - (3) Parameters
 - (4) Advantages
 - (5) Disadvantages
- d. Hydrogen peroxide plasma
 - (1) Microbial destruction
 - (a) Interferes with cell membrane, enzymes, nucleic acid
 - (2) Uses
 - (3) Parameters
 - (4) Advantages
 - (5) Disadvantages
- e. Ozone gas
 - (1) Microbial destruction
 - (a) Oxidizes bacteria
 - (2) Uses
 - (3) Parameters
 - (4) Advantages
 - (5) Disadvantages
- f. Chlorine dioxide gas
 - (1) Microbial destruction
 - (a) Interferes with cellular processes
 - (2) Uses
 - (3) Parameters
 - (4) Advantages
 - (5) Disadvantages

3. Ionizing radiation
 - (a) Microbial radiation
 - (1) Microbial destruction
 - (b) Uses
 - (c) Parameter
 - (d) Advantages
 - (e) Disadvantages

STERILE STORAGE AND DISTRIBUTION

Objective: The learner will:

1. Identify systems used for sterile storage.
2. Apply principles of sterile storage to handling of sterile supplies.
3. Compare and contrast shelf life and event related sterility.
4. Assess distribution systems used by sterile processing departments.
5. Demonstrate proper techniques in storing, handling, and distributing sterile supplies.
6. Demonstrate awareness of improper handling and use of sterile supplies.

Content:

- I. Sterile storage
 - A. Systems
 - B. Parameters
 - C. Shelf life
 - D. Event related sterility
 - E. Handling
 1. Stock rotation
 2. Inspection
 3. Transport
 4. Out dates
- II. Distribution
 - A. Systems
 - B. Selection of inventory
 - C. Delivery
 - D. Patient charging methods
 - E. Record keeping
 - F. Safety practices

ENVIRONMENTAL DISINFECTION OF THE OR

Objective: The learner will:

1. Perform decontamination of the OR environment.
2. Analyze the factors and variable of disinfecting agents.
3. Compare and contrast disinfecting agents.

Content:

1. Purposes of environmental decontamination
 - A. Reduce bioburden
 - B. Prevent cross-contamination
 - C. Prevent nosocomial infection
 - D. Prevent employee exposure
2. Procedure
 - A. Intraoperative decontamination
 - B. Decontamination between procedures
 - C. Terminal cleaning
3. Disinfection
 - A. Factors for choosing an agent
 1. Microbial resistance to chemicals
 - a. Low-level
 - b. Intermediate-level
 - c. High-level
 2. Mechanism of destruction
 - a. Coagulate cell protein
 - b. Denature cell protein
 - c. Oxidase enzymes
 - d. Bind enzymes
 - e. Alter cell membranes
 3. Nature of microbial contamination
 - a. Normal flora
 - b. Organic soil
 4. Kill time
 5. Methods of application
 6. Porosity of surface
 7. Requirements of cleaning agents
 8. Surface tension
 9. Temperature of agent
 - B. Types of disinfectants
 1. Halogens and halogen compounds
 - a. Chlorine compounds
 - (1) Chlorinated lime
 - (2) Sodium hypochlorite
 - b. Iodine-based compounds
 2. Phenols and derivatives
 - a. Hexachlorophene

- b. Carboic acid (phenol)
- 3. Alcohols
 - a. Ethyl
 - b. Isopropyl
- 4. Glutaraldehyde
- 5. Ortho-Phthaldehyde (Cidex OPA)

ALL-HAZARDS PREPARATION

Objectives: The learner will:

1. Describe disasters or public health emergencies that impact public health including the different types (e.g. natural, unintentional, and terrorist events) along with the general health, safety and security risks.
2. Describe the all-hazards framework.
3. Explain key components of personal, family, institutional, community and regional disaster preparation and planning as related to the following:
 - a. Available informational resources
 - b. Special needs of individuals
 - c. Precautions and actions for protection
 - d. Detection
 - e. Immediate response
 - f. Short Term Interventions
 - g. Long Term Interventions
4. Describe communication strategies and procedures used in a disaster including barriers to communicating and disseminating health information, reporting systems and procedures for contacting family, coworkers, and local authorities.
5. Describe the purpose and relevance of disaster support services including rationale for integration and coordination of all systems:
 - a. National Response Framework (NRF)
 - b. National Incident Management Systems (NIMS)
 - c. Hospital Incident Command System (HICS)
6. Describe the potential impact of mass casualties on the clinical and public health resources including infection control precautions, personal protective equipment, and decontamination procedures.
7. Explain the role of triage as a basis for prioritizing or rationing health care services for victims.
8. Describe the possible medical and mental health consequences, interventions, and solutions for managing those affected including the psychological, emotional, cultural, religious, and forensic considerations for management of mass fatalities and the resources, supplies and services available.
 - a. Immediate care
 - b. Mass fatality management
 - c. Mass evacuation
 - d. Mass sheltering

- e. Prolonged sheltering
- 9. Explain both the basic life-saving and life-support principles and procedures that can be used at a disaster scene.
- 10. Describe issues relevant to the management of individuals of all ages, populations, and communities affected by a disaster or public health emergency:
 - a. Moral
 - b. Ethical
 - c. Legal
 - d. Regulatory
- 11. Describe the support roles of the surgical technologist in a disaster.

Content:

- I. General indicators and epidemiological clues of a disaster
 - A. Natural disasters
 - 1. Avalanche
 - 2. Earthquake
 - 3. Emerging infectious disease
 - a. Epidemic
 - b. Pandemic
 - 4. Flood
 - 5. Heat wave
 - 6. Hurricane
 - 7. Storms
 - a. Tropical
 - b. Winter
 - 8. Tornado
 - 9. Tsunami
 - 10. Volcano
 - 11. Wildfires
 - B. Manmade disasters
 - 1. Chemical release
 - 2. Explosion
 - 3. Infrastructure incidents
 - 4. Radiation release
 - 5. Transportation accident
 - 6. Terrorism
 - C. Combination disaster
 - 1. Natural disaster – manmade disaster
- II. Disaster planning: Personal, healthcare facility, LEMA
 - A. Family and personal protection
 - 1. Research recommended procedures for local emergencies
 - 2. Create family plans for each type of emergency
 - 3. Communication
 - a. No technology available
 - b. Designate meeting places
 - c. Out-of-town relatives as “communication center”

- d. Emergency contact information available
 - (1) Wallet
 - 4. Go bag
 - 5. Essential supplies in home
 - 6. Provisions for pet(s)
 - B. National Incident Management System (NIMS)
 - 1. Local emergency operations plan (EOP)
 - 2. All-hazards plan
 - C. Incident Command System (ICS)
 - 1. Incident commander
 - 2. Unified command
 - 3. Chain of command
 - 4. ICS organization
 - a. Command group
 - (1) Four reporting groups
 - (a) Operations
 - (b) Planning
 - (c) Logistics
 - (d) Finance and administration
- D. Hospital emergency operations plans
 - 1. Components of plan
 - a. Scalable
 - (1) Patient surge
 - b. Mitigation
 - c. Preparedness
 - d. Response
 - e. Recovery
 - 2. Evacuating a medical facility
 - a. Evacuation plans
 - b. Moving patients
 - c. Medical records
 - d. Refrigerated medical supplies
 - 3. Hospital Incident Command System (HICS)
 - a. Clarify roles and responsibilities
 - b. Job action sheets
 - 4. Healthcare worker responsibilities
 - a. Personal responsibilities
 - b. Department role
 - c. Chain of command
 - d. Knowledge of hospital signals/codes during emergency
 - e. Procedures for communication
- E. Medical office and stand-alone out-patient surgery centers
 - 1. Procedures for communication
 - 2. Evacuation procedures
 - a. Central meeting place
 - b. Methods for accounting for all personnel

3. Methods for protecting patient health records
4. Coordinate plan with local and regional health department
5. Coordinate plan with local and regional hospitals
6. Procedures to expand operations
 - a. Care for non-routine patients
 - b. High volume of patients
 - c. Provide beds/stretchers
- F. Local Emergency Management Agencies (LEMA)
 1. Lead coordinating responsibilities
 2. Emergency operations center (EOC)
- III. National disaster planning
 - A. Federal Emergency Management Agency (FEMA)
 - B. National Response Framework (NRF)
 - C. National Disaster Medical System (NDMS)
 1. Disaster Medical Assistance Teams (DMAT)
 2. Disaster Mortuary Operations Response Team (DMORT)
 3. National Pharmacy Response Teams (NPRT)
- IV. Immediate response to an all-hazards event
 - A. Mitigation
 1. Reduce potential for casualties
 - a. Electrical hazards
 - b. Chemical hazards
 - c. Fire and explosive hazards
 - d. Infrastructure hazards
 - e. Biological hazards
 - f. Radiological hazards
 2. Create safe zones
 3. Evacuation orders
 4. Storage of potentially hazardous items
 5. Communication with LEMA
 6. Law enforcement
 - a. Mandates, e.g. curfew orders, no entry to hazardous zone/area
 7. Security of family
 - B. Response
 1. Set up incident command site
 2. Establish methods for communication
 3. Set up triage area
 4. Set up decontamination area
 5. Prepare for special needs patients
 6. Point of Distribution Site (POD)
 - a. Strategic National Stockpile (SNS)
 - (1) Pus packs
 - C. Risk communication with public
 1. Strategies for disseminating health information to populations
 2. Barriers to communication with populations

- V. Infection control precautions
 - A. Controlling contamination
 - 1. Standard precautions
 - 2. Personal protective equipment
 - a. Protective clothing
 - b. Eye and face protection
 - c. Hand protection
 - d. Medical masks
 - e. Respirators
 - f. Hand washing without water
 - B. Decontamination patient procedures
- VI. Triage
 - A. Triage procedures
 - 1. Simple Triage and Rapid Treatment (START)
 - 2. Surgical technologist in supporting role
 - a. Basic life saving procedures
 - b. First aid
 - c. Transport patients
- VII. Issues during a disaster
 - A. Relevant moral and ethical issues
 - B. Availability of health services for all populations during a disaster
 - C. Legal issues
 - D. Regulatory issues
- VIII. Support roles of the surgical technologist during a disaster
 - A. DMAT
 - B. Evacuation teams
 - C. Specialty surgical teams, e.g. burn team
 - D. Support triage role (See VIII)
 - E. Transport patients
 - F. Volunteer
 - 1. Preregistration
 - a. Emergency System for the Advance Registration of Volunteer Health Professionals (ESAR-VHP)
 - 2. Community Emergency Response Team (CERT)

