

**Bossier Parish Community College  
Master Syllabus**

**Course Prefix and Number:** STEC 121

**Credit Hours:** 3

**Course Title:** Surgical Specialties and Review

**Course Prerequisites:** STEC 110, STEC 111, STEC 112

**Course Corequisites:** STEC 120, STEC 122

**Clock Hours:** 45 hours lecture

**Time Increments:** semester

**Textbooks:** Fuller, J.; Surgical Technology Principles and Practice, 7<sup>th</sup> edition  
Allmers, N. and Verderamne, J.; Lange Q & A for the  
Surgical Technology Examination, 7<sup>th</sup> edition, George, Anbalagan and  
Charleman, Joseph E.; Surgical Technology Exam Review.

**Course Description:**

This course introduces the student to laser and endoscopic surgeries, as well as the basic principles of computers, electricity, and physics, as applied in the surgical field. Additionally, the student will learn the role of the surgical technologists in Emergency Trauma Surgery and Disaster Preparedness and response. There will be an overall review of the curriculum, in preparation for taking the national certification exam. Enrollment in the Surgical Technology Program courses is limited to those students who have been selected and admitted to the program. Program courses are sequenced by semester and must be taken as a group each semester per program requirements and policies.

**Methods of Teaching:** Lecture, discussions, textbooks, audio-visual, computer programs (Live-OR, Websurg), and group presentations and group workshops.

**Learning Outcomes:**

At the end of this course, the student will

- A. *integrate knowledge of computers and concepts of physics, electricity, lasers, and robotics with the preparation, set-up, care, and use of advanced technologies in the operating room; and*
- B. *integrate knowledge and skills in preparation for the National Surgical Technologist Certification Exam.*
- C. *Integrate knowledge as it applies to the roll of the surgical technologist in Emergency Trauma Surgery and Disaster Preparedness & Response*

At the end of this course, the student will

1. describe the characteristics of laser energy. (A)
2. describe the basic parts of the laser chamber. (A)
3. identify safety precautions followed in laser surgery. (A)
4. explain why safety precautions are needed for laser surgery. (A)
5. explain why personnel entering the OR suite during laser surgery must be monitored for compliance with safety precautions. (A)
6. describe the nature of eye injury caused by laser energy. (A)
7. compare the classification of lasers. (A)
8. describe how electricity flows. (A)
9. use proper terminology when discussing electricity. (A)
10. list the variables that affect the output of an electrosurgical unit (ESU). (A)
11. describe safe use of dispersive and active electrodes. (A)
12. explain the difference between impedance and resistance. (A)
13. describe how to set modes on the ESU properly. (A)
14. describe why it is important to recognize occurrences in which settings are too high on the ESU power unit. (A)
15. describe the preoperative preparation of room equipment for endoscopic. (A)
16. identify risks associated with patient positioning in endoscopic. (A)
17. describe how to achieve a pneumoperitoneum. (A)
18. describe how to set up and maintain the endoscopic light source. (A)
19. describe the basic setup of endoscopic instruments. (A)
20. properly care for endoscopic instruments and equipment. (A)
21. describe the performance of basic tasks associated with computerized video documentation. (A)
22. describe how to assist in basic endoscopic procedures in both the scrub and circulating roles. (A)
23. discuss the disinfection and sterilization procedures for flexible and rigid endoscopes. (A)
24. apply computer knowledge to safe patient care. (A)
25. identify basic components of a computer system. (A)
26. perform basic word processing functions. (A)
27. import graphics. (A)
28. perform print/save functions. (A)
29. understand the basic principles of electricity and their application in the OR. (A)
30. identify the different types of electrical equipment and their power sources in the OR. (A)
31. determine safety concerns related to electrical equipment and vaporized tissue plume. (A)
32. learn electrical safety precautions. (A)
33. define terms related to physics. (A)
34. apply the principles of physics to safe patient care practices in the OR. (A)
35. discuss the basic concepts related to robotics. (A)

36. describe the concepts of geometry that are used in the design of surgical robots. (A)
37. identify the basic components and mechanisms of the robotic system. (A)
38. list the clinical applications of robotics in the OR. (A)
39. apply the principles of robotics to safe patient care practices in the OR. (A)
40. complete a structured review of the entire surgical technology program. (B)

**Course Requirements:** To earn a grade of “C” or higher the student must earn 75% of the total points for the course and meet all of the following course requirements.

- minimum 75% average on test(s) with no test score less than 75%
- minimum average of 80% on mock certification tests from Lange Q & A
- achieve 70% score on CST practice exam
- complete the CST exam

**Outcome Assessment Methods:** Written exams and group presentations of the Lang Q&A, Surgical Technology Examination, utilizing a game delivery format.

#### **Course Grading Scale:**

- A- 90% or more of total possible points with no test score less than 75% and minimum average of 80% on mock certification exams
- B- 80% or more of total possible points with no test score less than 75% and minimum average of 80% on mock certification exams
- C- 70% or more of total possible points with no test score less than 75% and minimum average of 80% on mock certification exams
- D- 60% or more of total possible points with no test score less than 75% and minimum average of 80% on mock certification exams
- F- less than 60% of total possible points or one or more test scores less than 75% or less than 80% average on mock certification exams

**Attendance Policy:** The college attendance policy, which is available at <http://www.bpcc.edu/catalog/current/academicpolicies.html>, allows that “more restrictive attendance requirements may apply to some specialized classes such as laboratory, activity, and clinical courses because of the nature of those courses.” The attendance policy of the Surgical Technology program is described in the Surgical Technology Clinical Handbook.

#### **Nondiscrimination Statement**

Bossier Parish Community College does not discriminate on the basis of race, color, national origin, gender, age, religion, qualified disability, marital status, veteran's status, or sexual orientation in admission to its programs, services, or activities, in access to

them, in treatment of individuals, or in any aspect of its operations. Bossier Parish Community College does not discriminate in its hiring or employment practices.

COORDINATOR FOR SECTION 504 AND ADA

Angie Cao, Student and Disability Services Specialist

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318-678-6511

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Hours: 8:00 a.m.-4:30 p.m. Monday - Friday, excluding holidays and weekends.

Equity/Compliance Coordinator

Teri Bashara, Director of Human Resources

Human Resources Office, A-105

6220 East Texas Street

Bossier City, LA 71111

Phone: 318-678-6056

Hours: 8:00 a.m.-4:30 p.m. Monday - Friday, excluding holidays and weekends.

**Course Content Outline:**

Chapter 17: Energy Sources in Surgery

- I. Electrical Energy
  - A. review of Electricity
- II. Key concepts of Electrosurgery
- III. Uses of Electrosurgery
  - A. effects of Electrical Current on Tissue
- IV. Components of Electrosurgery
  - A. Power Unit (Generator)
  - B. Active Electrode
  - C. Controls
  - D. Patient Return Electrode (Monopolar Circuit Only)
- V. Monopolar Electrosurgery
  - A. Patient Return Electrode
- VI. Bipolar Electrosurgery
- VII. Electrosurgical Working Modes
  - A. Cutting
  - B. Coagulation
  - C. Fulguration
- VIII. Electrocautery
- IX. Radiofrequency Ablation
- X. Electrosurgical Vessel Sealing
- XI. Argon-Enhanced Electrosurgery
- XII. Electrosurgery Safety

- A. Generator Safety
- B. Active Electrode Safety
- XIII. Hazards in Minimally Invasive Surgery
  - A. Capacitive Coupling
  - B. Directing Coupling
  - C. Active electrode Monitoring
  - D. Return Electrode Monitoring
  - E. Patients with an Implanted Electronic Device
  - F. Smoke Plume
- XIV. Kinetic Energy
  - A. Ultrasonic Energy
  - B. Ultrasonic Ablation
- XV. Cold Thermal Energy
  - A. Cryosurgery
- XVI. Laser Energy
  - A. Laser Standards and Regulations
  - B. How Lasers Work
  - C. Laser Media
  - D. Laser Safety
  - E. Precautions and Guidelines

## Chapter 16: Physics and Information Technology

### Technology and Medicine

- I. Matter
  - A. Atomic structure
  - B. States of matter
- II. Motion
  - A. Elements of Motion
  - B. Circular and Projectile Motion
- III. Energy
  - A. Potential Energy
  - B. Gravitational Energy
  - C. Mechanical Energy
  - D. Chemical energy
  - E. Electromagnetic Energy
  - F. Waves
- IV. Electricity
  - A. Application in Surgery
  - B. Nature of Electricity
  - C. Magnetism and Electricity
  - D. Conductivity
  - E. Insulators
  - F. Static Electricity
  - G. Electric Generators
  - H. Electrical Circuits

- V. Light
  - A. Properties of Visible Light
  - B. Lenses
- VI. Heat
  - A. Heat Transfer
- VII. Sound
  - A. Properties of Sound
- VIII. Computer Technology
  - A. Computers in Perioperative Environment
  - B. Computer Learning Tools
  - C. How Computers Work
  - D. Computer Terms and Language
  - E. Hardware (Physical Components)
  - F. Computer Software
  - G. Basic Computer Use

#### Chapter 36: Emergency Trauma Surgery

- I. Trauma Systems
- II. Trauma Injuries
- III. Trauma Pathophysiology
- IV. ATLS Principles of Trauma Management
- V. Management of Forensic Evidence
- VI. Damage Control Surgery
- VII. Case Planning for Trauma Surgery
- VIII. Preoperative Care of the Patient
- IX. Opening a Case and Sterile Setup
- XI. Managing the Sterile Field in Emergency Trauma
- XII. Laparotomy with Staged Closure
- XIII. Orthopedic Trauma
- XIV. Thoracic Injury
- XV. Major Peripheral Vascular Trauma
- XVI. Injuries of the Brain and Spinal Cord

#### Chapter 37: Disaster Preparedness and Response

- I. Discuss different types of disasters.
- II. Discuss the common features of a disaster.
- III. Explain the role of government agencies during a disaster.
- IV. Define NIMS and explain its relationship to the state emergency response.
- V. Define the four phases of a disaster cycle.
- VI. Locate documents useful for making a home disaster plan.
- VII. Describe the main components and strategy used by communities to prepare their local disaster plan.
- VIII. Define Incident Command System and explain how it works.
- IX. Describe basic human needs in a disaster.

- X, List the primary components of a health care facility disaster plan.
- XI. Discuss ethical dilemmas that accompany disasters.
- XII. Explain the possible roles of the surgical technologist during a disaster.

Lange Q & A for the Surgical Technology Examination

I. Group Presentation

- A. Students are divided into three groups
- B. Each group presents their section (approximately 130 questions) utilizing a game show format.
- C. Upon completion of the three presentations, a written exam is given over the Material, (this is done for the entire book, 1267 total questions).

Reviewed by: A. Smith, April 6, 2021