Bossier Parish Community College  
Master Syllabus

**Course Prefix and Number:** STEC 121-101  
**Credit Hours:** 3

**Course Title:** Surgical Specialties and Review

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

**Clock Hours:** 45 hours lecture

**Time Increments:** semester

**Textbooks:** Fuller, J.; *Surgical Technology Principles and Practice*, 7th edition  

**Course Description:**  
This course introduces the student to laser and endoscopic surgeries, as well as the basic principles of computers, electricity, physics, and robotics, as applied in the surgical field. There will be an overall review of the curriculum, in preparation for taking the national certification exam.

**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.

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 Lange 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.

Title VI, Section 504, and ADA Coordinator
Sarah Culpepper, Coordinator
Disability Services, D-112
6220 East Texas Street
Bossier City, LA 71111
Phone: 318-678-6539
Email: sculpepper@bpcc.edu
Hours: 8:00 a.m.-4:30 p.m. Monday - Friday, excluding holidays and weekends.
Course Content Outline:

Chapter 18: 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
Chapter 17: 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
Chapter 37: 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
X. Managing the Sterile Field in Emergency Trauma
XI. Laparotomy with Staged Closure
XII. Orthopedic Trauma
XIII. Thoracic Injury
XIV. Major Peripheral Vascular Trauma
XV. Injuries of the Brain and Spinal Cord

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, January 2017