St. Petersburg College

SPC

APPROVED COURSE OUTLINE

Credit(s) 3.00
Contact Hours 47.00
Effective Term: Fall 2015 (505)

ETS 2424C
Biomedical Electronics
Engineering and Building Arts Department

Requisites:
None

Course Description:
This course teaches basic concepts of a wide array biomedical equipment including ultrasound and x-ray device operation, basic troubleshooting techniques, and the use of appropriate test equipment.

Course Topics:

- None

Learning Outcomes and Objectives:

1. Students will be able to identify, classify and describe basic biomedical principles, sensors, transducers and instrumentation by:
a. identifying and comparing basic electrical biomedical systems in specialty units.
b. recognizing and describing uses of biomedical sensors and transducers.
c. identifying, analyzing and comparing specified biomedical instrumentation.

2. Students will be able to demonstrate proficiency in the operation of electro-surgical generators and related biomedical technology for specialty units by:
a. identifying functions and demonstrating the operation of selected biomedical instrumentation.
b. recognizing functions and demonstrating operation of electro-surgical generators and related biomedical technology for specialty units.

3. Students will be able to recognize, describe and be proficient in the operation of ventilators, pumps, and related biomedical technology for specialty units by:
a. identifying functions of, and operating biomedical pneumatic valves and regulators.
b. recognizing and using fluidic and pneumatic signals.
c. identifying and demonstrating uses and operation of biomedical fluid valves.

4. Students will be able to identify, describe and be proficient in the maintenance and calibration of ventilators, pumps, and related biomedical technology for specialty units by:
a. recognizing, analyzing and reading fluidic and pneumatic diagrams.
b. analyzing and troubleshooting basic mechanical, fluidic, and pneumatic systems.
c. analyzing and calibrating basic mechanical, fluidic, and pneumatic systems.
d. examining and maintaining basic mechanical, fluidic, and pneumatic systems.

5. Students will be able to demonstrate proficiency in testing, troubleshooting, calibrating and maintaining electro-surgical generators by:
a. diagnosing and testing electro-surgical generators.
b. analyzing and calibrating electro-surgical instrumentation.
c. troubleshooting and repairing electro-surgical generators.
d. analyzing and maintaining electro-surgical generators.

Criteria Performance Standard:
Upon successful completion of the course the student will, with a minimum of 70% accuracy, demonstrate mastery of each of the stated objectives through classroom measures developed by individual course instructors.

Representative Textbooks:

- Textbook(s):

1. **Recommended** - Prince, Jerry. *Medical Imaging Signals and Systems*, 2nd ed. Prentice Hall, 2005

2. **Recommended** - Street, Laurence. *Introduction to Biomedical Engineering Technology*, 2nd ed. CRC Press, 2008

Relevant Dates:
C&I Approval: , BOT Approval: , Effective Term: Fall 2015 (505)

History of Changes:

C&I Approval: , BOT Approval: , Effective Term: Fall 2015 (505)

Related Programs:

1. Engineering Technology Associate in Science (ENG-AS) (505) (Active)
2. Engineering Technology Associate in Science (ENG-AS) (520) (Pending)

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