

COURSE OUTLINE

CARD-203

Medical Instrumentation

2 Semester Hours

HOWARD COMMUNITY COLLEGE

Description

This course is intended to introduce the student to the various types of medical instrumentation. The student will learn to prepare, calibrate, operate equipment and record and measure bioelectric signals. Preventive maintenance, inspection, performance testing and trouble shooting are covered, with emphasis on electrical safety. Prerequisite: CARD-108 (1 hour lecture, 3 hours lab)

Overall Course Objectives

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

1. State and practice the basic principles of electrical safety in a hospital environment.
2. Explain and demonstrate the operation of the oscilloscope.
3. Calibrate, operate and troubleshoot hemodynamic recorders.
4. Describe the indications, complications, and method of insertion and programming for pacemakers.
5. Describe the indications, complications, and method of insertion and programming for automatic implantable defibrillators.
6. Explain the components and operation of the intra-aortic balloon pump.
7. Summarize the concepts of measurement theory and the standards of accuracy and precision required in the operation of specified medical electronic instruments.
8. Explain the calibration, operation and maintenance of oxygen saturation machines, blood gas analysis machines and ACT machines.
9. Demonstrate operation and troubleshooting of the Vanguard cine viewer.
10. Demonstrate competency in use of C-clamp and Femstop Femoral artery compression devices.

Major Topics

1. Hospital equipment safety
2. Clinical indications for equipment use
3. Operation, maintenance and troubleshooting of equipment in the cardiovascular lab setting
4. Cardiac Output Equipment
 - A. Electrical Resistance
 - B. Thermistors
5. Pressure Recorders
6. Pacemakers
7. Defibrillators
8. Transducers
9. Injectors
10. Intra Aortic Balloon Pump
11. Quality Control
 - A. Sterile Technique and Sterilization
 - B. Catheterization
 1. Imaging Equipment
 2. Recording Equipment
 3. Cardiac Output Equipment
 - C. Electrical Safety
12. Filming Techniques

Course Requirements

Grading/Exams:

Grading procedures will be determined by the individual faculty member, but will include the following:

Final grades will be calculated on the basis of exams, class participation, and a class presentation. Specific writing assignments will be determined by the faculty member, but will include at least 1,000 words.

Other Course Requirements

This course is a Cardiovascular core course. Successful completion of this course requires that the student maintain a C grade or better to remain in the program.