After completing this section, the student should be able to:

1. Define and calculate following cardiac physiology concepts:
   a. cardiac output
   b. stroke volume
   c. cardiac index
   d. systemic vascular resistance
   e. pulmonary vascular resistance

2. Understand what determines cardiac output, including preload, afterload, and myocardial contractility.

3. Describe components of a pressure monitoring system, set-up, and general complications involved with a system.

4. Discuss the physiologic significance of hemodynamic monitoring and be able to interpret the pressure values obtained.

5. Describe the catheter insertion technique for the Swan-Ganz catheter, A-line, and CVP.

6. List possible complications of having a A-line, CVP, or Swan-Ganz catheter in place.

7. Know how to measure cardiac output using the thermodilution and dye dilution technique.

8. Describe the spectrophotometry technique of measuring $S\overline{V}O_2$ and be able to interpret the $S\overline{V}O_2$ and $C(a - \overline{V})O_2$ values obtained from mixed venous blood gas samples.

9. Discuss the operation of the Intra-Aortic Balloon Pump (IABP).