MOHAWK VALLEY COMMUNITY COLLEGE, UTICA-ROME, NY

COURSE OUTLINE

1. COURSE DESCRIPTION:

**RC214 Acid-Base Physiology** C-2, Cr-2

This course covers the concepts of fluid and electrolyte balance, and the implications of the cardiopulmonary/ renal systems on acid-base homeostasis in the body. Focus is placed on the application of acid-base physiology in the clinical arena and its impact on patient management. Emphasis is placed on interpretation of fluid and electrolyte imbalance, and their interrelationships.

**Prerequisites:** BI217 Human Anatomy & Physiology 2 or instructor consent. Minimum grade of “C” required.

**Corequisites:** None.

1. STUDENT LEARNING OUTCOMES

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

1. Describe and discuss the process of oxygenation and external respiration and the factors which influence both.
2. Describe and discuss the details of oxygen transport and internal respiration and the factors which influence both.
3. Explain the basic concepts of acid-base physiology.
4. Describe and discuss the role of the respiratory system in acid-based homeostasis.
5. Describe and discuss the role of the kidneys in acid-based homeostasis.
6. List and describe the basic acid base abnormalities.
7. Distinguish between acidosis, acidemia, alkalosis and alkalemia.
8. Distinguish between simple and mixed/complex acid-base disorders.
9. Discuss the various buffering mechanisms that are helpful in restoring homeostasis in the presence of an acid-base disorder.
10. Define and discuss the process of acid-based compensation.
11. List and discuss the various causes of the primary acid-base disorders.
12. Describe the primary and secondary changes that occur with each of the primary acid-base disorders.
13. Describe and discuss the compensatory mechanisms for each of the primary acid-base disorders.
14. Discuss the interrelationships between oxygenation status and acid-base status.
15. Describe and discuss the interrelationship between acid-base status and electrolyte chemistry of extracellular fluid.
16. Describe and discuss the use of venous electrolytes in acid-base data interpretation.
17. Correctly and accurately analyze selected acid-base data and arrive at valid, correct interpretations.
18. Describe the typical laboratory presentations for common acid-base disorders.
19. Discuss the basic treatment regimen for each of the four primary acid-base disorders.
20. Discuss the possible adverse sequelae of treatment for each of the four primary acid-base disorders.
21. Discuss quality control procedures applicable to arterial blood gas analysis.
22. Select the instrumentation required for arterial blood gas analysis.
23. Trouble shoot potential problems associated with analysis.
24. Describe the instrumentation calibration process for analysis.
25. Discuss the types of electrodes utilized for analyzations of arterial blood gases.
26. Identify different types of capnography sampling devices, listing advantages and disadvantages of each.
27. Given various abnormal capnography tracings, correctly interpret results.
28. Identify conditions associated with changes in PETCO2.
29. Calculate VD/VT with appropriate data, and correctly interpret results.
30. MAJOR TOPICS:
31. Introduction to Blood gases
32. Technical Issues in Blood Gas Analysis
33. Basic Physiology
34. Clinical Oxygenation
35. Fluid and Electrolyte Balance
36. Clinical Acid-Base
37. Noninvasive Techniques and Case Studies