Bergen Community College

Division of Health Professions

Respiratory Care Program

RSP-240 Diagnostic Monitoring and Patient Assessment

Course Information

Semester and Year:

Course and Section Number: RSP-240-00x

Meeting Times and Locations:

Instructor:

Office Location:

Departmental Secretary:

Office Hours:

Contact information:

Course Description

This course provides the student with an understanding of logical therapeutic interventions based upon pulmonary and hemodynamic procedures utilized in the collection, analysis, and the interpretation of this data in diagnosis and evaluation of treatment of the patient. Attention is given to fundamental physiological concept because these concepts provide a foundation for discussion of cardiopulmonary pathophysiology and common cardiopulmonary abnormalities that occur in patients.

Credits: 4 (3 lectures hours; 3 laboratory hours)

Prerequisites: RSP-226

Corequisites: RSP-231 and RSP-250

Student Learning Outcomes: As a result of meeting the requirements in this course, the student will

1. Analyze and interpret arterial blood gas results and make recommendations regarding patient care.
2. Interpret PFT results and determine the type of pulmonary impairment.
3. Evaluate different radiologic studies and determine an appropriate interpretation.
4. Analyze hemodynamic results and suggest appropriate interventions.

Means of Assessment

A student in this course is assessed through:

- Laboratory exams are used to assess the psychomotor competency.

- Five (5) quizzes that contain multiple choice, short answer, or calculation questions that will be used to assess competency.
- Oral presentation is used to assess affective and cognitive domains.

Course Content

1. Discuss the rationale for arterial puncture.
2. Recognize the proper sites and techniques for arterial puncture.
3. Identify the Henderson-Hasselbach equation and the ratio needed to maintain pH.
4. Define simple and mixed acid-base abnormalities.
5. Identify the compensation mechanisms which maintain acid-base status.
6. Given the results of an ABG, interpret the acid-base and oxygenation status of the patient.
7. Relate acid-base abnormalities to specific alterations or disease states.
8. Given appropriate values, calculate the anion gap.
9. Discuss treatment for various acid-base abnormalities.
10. Identify essential elements of carbon dioxide monitoring.
11. Identify the general method of how x-rays are produced.
12. Identify terminology used in the interpretation of CXRs.
13. Identify the technique and indications for various CXR views.
14. Describe CXR markings of various disease patterns.
15. Recognize the role of CT scans, MRI, and PET scans in the diagnosis of chest diseases.
16. Describe the role of ultrasound in patient diagnosis.
17. Discuss the rationale for pulmonary function testing.
18. Define terms and abbreviations used in pulmonary function testing.
19. State approximate normal values for lung volumes and capacities.
20. Identify the relationship of ATPS, BTPS and STPD to pulmonary function testing.
21. Describe tests of volume, flow, and gas exchange.
22. Describe special pulmonary function tests.
23. Identify the theory and methods used to measure FRC and RV.
24. State normal ranges for pulmonary function test results Interpret a PF report to identify patterns of disease.
25. Recognize the primary abnormalities associated with restrictive and obstructive disease Identify standard equipment found in a PFT lab and describe its basic use.
26. Recognize normal values and significance of hematologic and chemistry lab tests.
27. Recognize the significance of microbiological lab tests; urinalysis; histologic and cytologic exams.
28. Identify and define the following hemodynamic values:
    a. arterial blood pressure; mean arterial pressure; pulse pressure cardiac output; cardiac index,
    b. pre-load; after-load; contractility; stroke volume; ejection fraction,
    c. drugs which affect the contractility of the heart (inotropes and chronotropes),
    d. central venous pressure, pulmonary artery pressure; pulmonary capillary wedge (occluding) pressure pulmonary vascular resistance; systemic vascular resistance,
    e. arterial-venous oxygen content.
29. Discuss arterial cannulation regarding indications, sites, complications and waveforms.
30. Describe the pulmonary artery catheter.
31. Given appropriate data, calculate hemodynamic variables.
32. Recognize variations in measurements associated with ventilation.

33. Relate alterations in hemodynamic measurements to various disease states.

Course Texts

Required

- Kacmarek R. Egan's Fundamentals of Respiratory Care, 12th ed. Elsevier, 2021. ISBN: 9780323811217

Recommended

- Clinical Manifestations and Assessment of Respiratory Diseases, 8th Ed. Des Jardins, T., Burton, G., ISBN-978-0-323-55369-8

Exams, Laboratory, and Presentation Requirements

Quizzes

Five quizzes that may consist of multiple-choice questions, fill-in, or true-false questions based on selected modules, readings, and class presentations.

Presentation

Each student will prepare and present both an oral (PowerPoint Presentation) and written summary outline on an assigned disease, disorder, trauma, etc. topic. Dates for the presentation will follow the course schedule.

Laboratory

The laboratory exams will be a practical evaluation that requires higher-level critical thinking skills. These grades will be calculated as part of the course points.

Grading Policy

Assessments	
Exams (5)	50%
Case Study Presentation	10%
Laboratory	40%
Total points	**100%**

Grade Scheme

Letter	**Description**	**% Range**
A	The student must show superior theoretical knowledge.	93 – 100
B+	The student must merit high-quality classroom work and theoretical knowledge.	88 – 92.9
B	The student must show above-average knowledge.	83 – 87.9
C+	The student meets the standard of achievement with reasonable knowledge.	78 – 82.9

F	The student fails to meet minimum course standards.	<78

Missed Quizzes and Late Work

Late work and make-up examinations will be penalized with a grade being no greater than 78%. Late work must be submitted as soon as possible. 10% will be deducted from the total grade for every day assignment is not turned in. Make-up examinations will be completed during the last week of the semester, or at the discretion of the professor.

Academic Integrity Policy and Attendance Policy

Academic Integrity

Academic dishonesty is a serious violation of BCC policy and personal ethics and will be treated as such if the reason for suspicion should arise. Students should be careful to avoid plagiarism, falsification, and compliance. Academic integrity is vital to an academic community and for fair evaluation of student assessments. All assessments submitted must be your own, completed in accordance with the college's academic policies and the student code of conduct. You may not engage in unauthorized collaboration or make use of any artificial intelligence (AI) composition systems. Academic dishonesty also includes cheating on examinations. Refer to the BCC student code of conduct, student handbook for additional information, and the statement on plagiarism (https://catalog.bergen.edu/content.php?catoid=4&navoid=163#academic-dishonesty).

BCC Attendance Policy

All students are expected to attend punctually every scheduled meeting of each course in which they are registered. Attendance and lateness policies and sanctions are to be determined by the instructor or program policy. The instructor will keep attendance for administrative and counseling purposes. Class attendance and student participation are essential to the successful completion of this course.

Course Attendance Policy

Attendance and punctuality in all class sessions is required. Attendance for lectures is factored into the total grade for the course. Two (2) points are deducted for every absence. One (1) point is deducted if the student arrives after the attendance is recorded. If you are late, be sure to see the professor in that class so the absence can be corrected to a lateness.

Departmental Policy Statements

- Acceptable quality of work and mature behavior is always expected from every student. Students are regarded as professionals and are expected to conduct themselves accordingly.
- High standards of professional performance demand that students maintain good academic progress throughout their course of study in the program.
- Students demonstrating chronic tardiness or absenteeism will be placed on academic warning or probation and may be subjected to termination from the program.
- Absence from a class during a scheduled exam will be subject to the policy of the instructor for that specific course. If the student is going to miss a scheduled exam, it is expected that the student will contact the instructor ahead of time by email or phone to the department office.
- All students are required to adhere to the policies and procedures of the school as outlined in the college catalog.

- Additional department policies are in the Student Policies and Procedures Manual.
- Remediation
    - The program's defined process for addressing deficiencies in a student's knowledge, skills, professional behavior, and competencies so that the correction of these deficiencies can be ascertained and documented. The program must conduct these evaluations equitably and with sufficient frequency to facilitate prompt identification of learning deficiencies and the development of a means for their remediation within a suitable time frame.
    - The remediation process is initiated by faculty when any student is at risk of failing a course due to difficulty accomplishing course objectives and / or requirements. At risk behaviors include academic deficiency (non-passing quiz, examination, laboratory competency), lack of clinical competency (not abiding by policy and procedures, unsafe behavior), and lapses in professional conduct.

Support Services

- The program faculty maintains office hours for counseling and is available to provide tutorial assistance to students.
- Students must make appointments in advance to meet with the respective instructors.
- Students may also obtain assistance from the College Tutoring Center. Appointments must be made in advance through this center.
- The College has a personal counseling center for those students who may need personal assistance. Appointments are made directly through this center.
- Any problems, concerns, or questions should be directed to the course instructor or the student's advisor.
- Statement on Civility
    - Refer to the Standards of Conduct Subsection found in the Student Judicial Affairs Policies & Procedures Section found in the Student Handbook.
- Academic Integrity
    - Refer to the Academic Integrity Subsection; found in the Academic Regulations.
- Other possible College, Divisional, or Departmental Policy Statements to be referenced.
    - ADA statement.
        - Students with documented disabilities who require accommodations by the American with Disabilities Act (ADA) can request support services from the Office of Specialized Service of Bergen Community College located in room L-115 of the Pitkin Learning Center. (www.bergen.edu/oss)
    - Sexual Harassment statement.
    - Statement on acceptable use of BCC technology.
- Support Services
    - Writing Center
    - Math Lab
    - Online Writing Lab (OWL)
    - Office of Specialized Services
- BCC Library

- The Sidney Silverman Library is committed to providing a quiet, welcoming, respectful atmosphere conducive to study and research in an environment that is comfortable, clean, and safe. The use of the library will be beneficial in providing resources on researching topic information, citation styles, and finding current articles among many other media services available.

Course Schedule

Week	Topic / Activity	Reading Assignments
1	Course overview; Patient assessment	Egan Ch. 16
2	Patient assessment; DNR status; Patient advance directive Review for exam 1	Egan Ch. 16
3	**Exam 1** Acid-base imbalances	Egan Ch. 14
4	Patient diagnostics – Arterial line sampling and arterial pressure monitoring; Essentials of capnography; Co-oximetry, Transcutaneous monitoring	Egan Ch. 19
5	Patient Diagnostics – Thoracic imaging Review for exam 2	Egan Ch. 21
6	**Exam 2** Intro to pulmonary function testing	Egan Ch. 20
7	PFT lung volumes and capacities; Relationship to various disease states	Egan Ch. 20
8	Relationship of temp and pH to PFT testing equip, infection control of equipment Review for exam 3	
9	**Exam 3** Clinical lab data	Egan Ch. 17
10	Clinical lab data and patient diagnosis; Intro to polysomnography	Egan Ch. 34
11	Polysomnography (cont.) and sleep-related breathing disorders Review for exam 4	Egan Ch. 34
12	**Exam 4** Intro to hemodynamic monitoring	
13	Clinical application to hemodynamic monitoring and interventions	
14	Apnea testing for brain death; Intracranial pressure monitoring Review for exam 5	
15	**Exam 5**	

Note to Students: This course schedule is subject to change depending upon the progress of the course. All material will be covered, and students are responsible for the content.

Competency Topics from Clinical Trac

These competencies are required to be completed or reevaluated this semester. It is the responsibility of each student to complete the competencies listed below.

Competency	
B.02 Arterial Puncture	

B.03 Arterial Line Draw ABG	
D.01 CBG - Capillary Blood Gas	
B.23 6-Minute Walk Test	
B.00 PFT Quality Assurance	
B.08 PFTs: Basic Lab Performance	
A.35 Bedside Spirometry	