Bergen Community College
Division of Health Professions
Respiratory Care Program
RSP-119 INTRODUCTION TO RESPIRATORY CARE

Course Information

Semester and Year:

Course and Section Number: RSP-119-00x

Meeting Times and Locations:

Instructor:

Office Location:

Phone:

Departmental Secretary:

Office Hours:

Course Description

Introduction to Respiratory Therapy is a study of the respiratory therapist's role as a member of the medical team. Gas laws, physics, physiology, medical equipment terminology are taught. In addition, it provides the student with an in depth understanding of medical gas administration, humidity and aerosol therapy, safety systems, airway management and infection control. Students will also learn the mechanical devices utilized to maintain patent airways and the various utilities in the treatment of respiratory and cardiac arrest. Laboratory exercises provide students with an opportunity to develop skills in the application of all equipment modalities, and to demonstrate their skills in resuscitation and airway management.

Credits: 4 credits (3 lectures hours, 3 laboratory hours)

Co-requisites: RSP-110, RSP-121

Student Learning Outcomes

As a result of meeting the requirements in this course the student will:

1. Differentiate airway management equipment, operational use and maintenance of the patent airway.
2. Interpret normal vital signs, history and physical exam and patient clinical signs and symptoms.
3. Evaluate the effectiveness of oxygen devices and apply these to various patient scenarios.
4. Demonstrate the fundamental cardiopulmonary resuscitation and airway management sequences in an adult, child, and infant patient.

5. Identify and describe the sequence of events and factors governing the transmission of pathogenic microorganisms and summarize the various barrier methods for infection prevention.
6. Summarize humidity and aerosol devices and justify the relationship between humidity therapy and normal lung function.

Means of Assessments

A student in this course is assessed through:

- Four (4) quizzes that contain multiple choice, short answer, or calculation questions that will be used to assess competency.
- Two lab practical exams to assess competency in the affective, cognitive, and psychomotor domains.
- Successful completion of AHA basic life support skills and exam.

Course Content

Unit Learning Outcomes

Unit 1 – Introduction

1. Define Respiratory Care.
2. Describe the history of Respiratory Care and how it began.
3. Describe the major respiratory care educational, credentialing, and professional organizations.
4. Describe the development of respiratory care education.

Unit 2 – Quality and Evidence-Based Respiratory Care

1. Describe the elements that constitute quality respiratory care.
2. Explain methods used for monitoring the quality of respiratory care that is provided.
3. Explain how respiratory care protocols enhance the quality of respiratory care services.
4. Define disease management.
5. Describe evidence-based medicine.

Unit 3 – Communication, Patient Safety and Recordkeeping and Ethical/Legal Implications of Practice

1. Define a professional-patient relationship, professional-professional relationships, and patient-family relationships.
2. Describe how professional codes of ethics apply to ethical decision making.
3. Summarize the basic elements of the Health Insurance Portability and Accountability Act of 1996 (HIPAA).
4. Summarize the AARC Code of Ethics via the AARC website.

Unit 4 – Infection Control

1. Identify and describe the sequence of events and factors governing the transmission of pathogenic microorganisms:
    a. describe the sources and give examples of major pathogens found in the hospital environment.
    b. identify adaptive or protective mechanisms of microorganisms.
    c. define nosocomial infections and state how often they occur.
    d. identify and describe three elements that must be present for transmission of infection within a healthcare setting.
    e. list the factors associated with an increased risk of a patient acquiring a nosocomial infection.
    f. state when to use general protective barrier measures during patient care.
2. Differentiate between the various methods utilized to prevent or minimize nosocomial infections in hospitals:
    a. disinfection/sterilization
    b. isolation techniques
3. Compare and contrast the rationale, action, advantages, limiting factors, hazards, methods of application, use, disinfection, or sterilization:
    a. pasteurization
    b. steam autoclave
    c. liquid chemical
    d. gas chemical
4. Identify and describe the rationale, goals, and methods of a contamination surveillance program for:
    a. patients undergoing respiratory care
    b. respiratory therapy equipment
    c. equipment processing techniques
    d. home care equipment
5. Incorporate ventilator-associated pneumonia protocols.
6. Implement infectious disease protocols such as: Avian flu, SARS, CoVID-19, Tuberculosis transmission prevention.

Unit 5 – Physics, Gases and The Gas Laws

1. Define Dalton's Law of Partial Pressure and illustrate with an example.
2. Explain conditions needed to achieve 100% body humidity.
3. Define and calculate humidity deficit.
4. Interpret the following gas laws- Boyle's Law, Charles' Law, Gay-Lussac's Law, and Henry’s law and calculate gas law problems.

Unit 6 – Gas Cylinders with Pressure and Flow Regulating Devices

1. Identify the regulating agencies involved with compressed gasses.
2. Describe the regulation specifications pertaining to cylinder construction, markings, labels, storage, transportation use, and color codes.
3. Compare and contrast the three index systems for large and small cylinders.

4. Distinguish various size cylinders and identify their contents.
5. Demonstrate safety and caution in the transportation and use of cylinders.
6. Interpret the meaning of cylinder markings.
7. Discuss clinical applications for medical gas use.
8. Describe how to assemble, check for proper function, and identify malfunctions in gas delivery equipment.
9. Determine the duration of the gas remaining in a cylinder, utilizing the cylinder duration formula.
10. Describe the parts of the bulk oxygen system.
11. Distinguish between those flowmeters that are Bourdon and Thorpe-tube flowmeters.
12. Explain back-pressure compensated flowmeters, needle valve placement in regards to both, and the effect restriction to flow would have on both.
13. Discuss what to do if the bulk oxygen system fails.
14. Describe the characteristics, regulating, testing, and labeling of medical gasses/gas cylinders.
15. Describe safe handling and storage procedures for medical gas cylinders (including safety systems).
16. Differentiate between safety systems that apply to various equipment connections.
17. Summarize the rationale, physiological effects, clinical indications, methods of administration, monitoring, and hazards of oxygen/helium therapy, hyperbaric oxygen therapy, and nitric oxide therapy.
18. Describe the principles of operation, design characteristics, clinical use, limitations and safety features of the following oxygen controlling devices:
    a. Entrainment systems
19. Describe the principles of operation, design characteristics, clinical use, limitations, and safety features of the following noninvasive oxygen monitoring devices:
    a. pulse oximeter
20. Select the appropriate devices to regulate gas pressures and/or control flow during various clinical settings.
21. Describe how to assemble, check for proper function, and identify malfunctions in gas delivery equipment.

Unit 7 – Oxygen Delivery Devices, Oxygen Therapy, Indications for Oxygen Therapy, and Hazards of Oxygen Therapy

1. Assess the need for oxygen therapy.
2. The student will differentiate low flow devices from high flow devices.
3. Describe the correct placement, performance, advantages, disadvantages, appropriate liter flow, and potentially achievable oxygen concentrations of the various oxygen delivery devices: nasal cannula, non-rebreather mask, venturi mask.
4. Summarize the hazards and complications associated with oxygen therapy.
5. Calculate Total Liter Flow (TLF) of the venturi oxygen mask.
6. Summarize the importance of the relationship of Total Liter Flow (TLF) and Volume Inspired (Vinsp) or Peak Inspiratory Flow (PIF).
7. Demonstrate proper assembly, application, and maintenance of various oxygen delivery devices on a mannequin for adults.

8. Differentiate between the concepts of high flow, low flow, and reservoir delivery systems as they apply to the functional capabilities of the above devices.
9. Select an oxygen delivery system appropriate for the respiratory care plan.
10. Describe how to check for proper function and to identify and correct malfunctions of oxygen delivery systems.
11. Describe how to evaluate, monitor, and document a patient's response to oxygen therapy.
12. Describe hypoxic drive, hypercarbic drive, and simple respiratory gas exchange.
13. Describe how to modify or recommend modification of oxygen therapy based on patient response.
14. Describe how to implement therapist driven protocol-based oxygen therapy.

Unit 8 – Gas Exchange and Transport

1. Explain how oxygen is carried in the blood both chemically and physically.
2. Calculate the total oxygen content of the blood given the values.
3. Explain the normal oxygen content percentage and to recognize abnormal levels.
4. Describe the factors that impair oxygen delivery to the tissues and how to distinguish them.

Unit 9 – Humidity and Aerosol Therapy

1. Describe how airway heat and moisture exchange normally occurs.
2. State when to humidify and warm inspired gas.
3. Explain how to identify and resolve common problems with humidification systems.
4. State when to apply bland aerosol therapy.
5. Differentiate between the principles of operation, functional, characteristics, clinical applications, indications and troubleshooting for the following categories of aerosols:
    a. metered dose inhalers
    b. jet nebulizer: small volume (medication) large volume / high output
6. State how to select the appropriate therapy to condition a patient's inspired gas.
7. Describe how to assess patient response to bronchodilator therapy at the point of care.

Unit 10 – Lung Expansion Therapy

1. Define Incentive Spirometry and PEP therapy and the clinical indications for administration.
2. Demonstrate the correct procedure for administering Incentive Spirometry, and PEP therapy.
3. Discuss the major therapeutic goals and hazards of Incentive Spirometry, and PEP therapy.
4. Identify the clinical findings seen in atelectasis.

Unit 11 – Airway Clearance Therapy

1. Describe how normal airway clearance mechanisms work and the factors that can impair their function.
2. State the clinical indications and contraindications for airway clearance therapy.

3. Describe the various means of airway clearance therapies and proper operation of the devices.
4. Explain how to modify bronchial hygiene therapies based on the patient response.

Unit 12 – Airway Management

1. Identify equipment utilized for airway care, be able to describe the functions of various pieces of equipment and demonstrate proficiency in equipment use.
2. Explain the importance of a patent airway, describe the procedures for maintaining a patent airway, and demonstrate proficiency in the maintenance of a patent airway.
3. Describe and demonstrate the steps of an intubation procedure
4. Discuss the indications, hazards and side effects, important anatomical features, patient monitoring techniques, and methods for evaluating the adequacy of the established airway.
5. Discuss the significance of cuff pressure and demonstrate proper cuff inflation techniques.
6. Demonstrate the procedure for tracheostomy care.
7. Demonstrate the procedure of tracheobronchial/nasotracheal aspiration, including indications, patient preparation, equipment preparation, sterile technique, patient monitoring techniques, important time intervals, hazards/side effects and special problem situations.
8. Demonstrate proficiency in ventilation via mask and ET tube.
9. Discuss the oropharyngeal airway, nasopharyngeal and list the indications and contraindications and demonstrate proper insertion on the manikin.
10. List the equipment required for endotracheal and nasotracheal intubation.
11. Demonstrate the proper procedure for intubation and extubation on the manikin.
12. Describe how to use alternative airway devices: LMA, King tube, EOA.
13. Describe how to properly obtain sputum samples.
14. List the advantages, hazards, and surgical complications (early/late) of tracheostomy.
15. Assess the need for and select an artificial airway.
16. Describe how to assist a physician in setting up and performing a bronchoscopy.

Unit 13 – Cardiopulmonary Rehabilitation

1. Identify the goals of pulmonary rehabilitation programs.
2. Define pulmonary rehabilitation program design including format and content.
3. Describe the outcome measures that can be used to evaluate pulmonary rehabilitation programs.

Unit 14 – Respiratory Care in Alternative Settings

1. Describe alternative care settings in which respiratory care is performed.
2. List the CMS standards that apply to the delivery of oxygen therapy at home.
3. Describe how to formulate an effective discharge plan.
4. List factors to evaluate when assessing alternative care sites and support.

Unit 15 – Emergency Cardiovascular Life Support

1. List the causes of sudden cardiac arrest.
2. List the signs of sudden cardiac arrest, heart attack, stroke, and foreign-body airway obstruction.
3. Demonstrate how to perform cardiopulmonary resuscitation (CPR) skills on adults, children and infants.
4. Explain how to operate the automated external defibrillator (AED).
5. Demonstrate how to evaluate the quality and effectiveness of CPR.
6. List the complications that can occur during CPR.
7. State when not to initiate CPR.

Unit 16 – Bedside Assessment of the Patient

1. Identify and perform all normal adult vital signs and state the proper values versus the abnormal values: HR, RR, temperature, B/P and pulse oximetry.
2. Identify and perform all skills of complete patient assessment including inspection, palpation, auscultation, and percussion.
3. Identify breathing patterns associated with lung disease.
4. Identify normal versus abnormal lung sounds.

Unit 17 – Interpreting Clinical and Laboratory Data

1. Describe a critical laboratory value and its importance in clinical practice.
2. Define anemia, polycythemia, leukocytosis, leucopenia, and thrombocytopenia.
3. Identify which abnormal electrolyte disturbances interfere with normal respiratory function.
4. Describe the clinical tests used to identify cardiac stress and myocardial infarction.
5. Describe how the sputum gram stain and culture are used to diagnose pulmonary infections.

Course Texts and Assessment Materials

- Egan's Fundamentals of Respiratory Care, Kacmarek, Stoller, Heuer 12th Ed. Mosby 2021. ISBN978-0-323-51112-4
- Clinical Trac Internet System: purchased individually.
- American Heart Association Basic Life Support study guide

Quiz and Laboratory Exam Requirements

- The course will have four (4) quizzes covering the units presented. Quizzes consist of multiple-choice and matching questions.
- American Heart Association Basic Life Support course material and exam is used to demonstrate knowledge and skills in cardiopulmonary resuscitation and emergency airway management.
- The laboratory exams will be a practical evaluation that requires higher-level critical thinking skills.

Grading Policy

Lecture examinations / short answer / multiple choice (4 @ 10% each)	40%
Laboratory practical exams: synthesis / evaluation (2 @ 30% each)	60%
	100%

Grading Scheme

A	93 – 100 %
B+	88 – 92.9 %
B	83 – 87.9 %
C+	78 – 82.9 %
C	Not acknowledged
D	Not acknowledged
F	Below 78%
W	Official course withdrawal
E	Unofficial course withdrawal

Late work or Assignments:

Make-up examinations and course work will be the exception and only sparingly approved by the instructor. If, in the instructor's judgment, the student has presented a good excuse for missing the examination or work, the instructor may approve a make-up examination with the exam penalized. If the student does any late work, they will be penalized, and their grade will be no greater than 78%. Makeup exams and quizzes will be completed at the end of the semester.

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 every scheduled meeting of each course for which they are registered. Attendance and lateness policies and sanctions are to be determined by the

instructor for each section of each course. These will be established in writing on the individual course outline. Attendance is maintained by the instructor for administrative and counseling purposes.

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.
- 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.

Lecture – Assignment / Exam Schedule is subject to change as needed.

Date	Topic	Reading Assignments
Week 1	Orientation / Review Course Syllabus History of Resp. Care Charting / Communication Patient Safety / Positioning / Ethical Issues	PowerPoint Week 1 Professionalism PP Egan: 1, 2, 3, 5
Week 1	Infection Control / Sterilization / Disinfection / Equipment Processing	Egan: 4 Infection Control PP/ AARCTimes September article 2010 pp. 28-30
Week 2	Infection control / Bedside Assessment PP	Questions / problems Egan 16
Week 2	Vital Signs / Physical Assessment continued Lab Values PP	Egan: 17
Week 3	Medical Gases PP Physical Assessment PBL Cases	Egan: 41
Week 3	Quiz # 1 Chapter 4	Egan: 4
Week 4	Physical Assessment PBL Cases Classmate clinical simulations	Egan: 16, 17 Pulse ox: Egan 384-388, 1146-1148. Questions / problems
Week 4	Oxygen Delivery/ O2 Dysfunction	Egan: 42 Oxygen Delivery Devices PP, Oxygen Therapy PP O2 Dysfunction PP
Week 5	Gas Exchange / O2 Transport O2 Content Formula	Handout Egan: 12 (252-267)
Week 5	CO / Heli-Ox / Hyperbaric O2	Egan: 42 Oxygen Delivery Devices
Week 6	Nitric Oxide Home Care / Oxygen Concentrators/LTAC's	Egan: 42 Oxygen Delivery Devices PP, Egan: 57 / 1285-1287 Problems
Week 6	Quiz #2 Chapter 16, 17	Egan: chapters 16, 17
Week 7	O2 Problems	O2 Patient Cases
Week 7	Aerosol / CPT / Flutter valves / PEP therapy Aerosol PP / Airway Clearance PP	Egan: Ch. 39, 40, 43, 44
Week 8	**Lab practical exam #1**	**Lab practical exam # 1**
Week 8	**Lab practical exam #1**	**Lab Practical Exam # 1**
Week 9	Airway Care / Trachs, ET tubes / Suctioning	Egan: 37 Airway Management PP

	Airway Management	
Week 9	Airway Care / Trachs, ET tubes / Suctioning Airway Management	Egan: 37 Airway Management PP
Week 10	Intubation / Extubation	Egan: 37 PP Intubation PP
Week 10	Bronchoscopy	Egan: 22 Bronchoscopy PP
Week 11	Pulmonary Rehab / Patient Education	Egan: 55, 56 Pulmonary Rehab PP
Week 11	Quiz #3 Chapter 39, 40, 42, 43 Humidity Therapy, SVN, MDI, Aerosol Therapy, Oxygen Therapy/IS	Egan: 39, 40, 42, 43
Week 12	**School Closed Thanksgiving Recess**	
Week 13	Airway Management	Egan: 37
Week 13	**Review, practice problems**	**Egan: 37**
Week 14	**Lab Practical Exam 2**	**Egan: 37**
Week 15	**Quiz #4 Chapter 22, 37**	Egan: 22, 37

Lab – Assignment / Exam Schedule

All Laboratory exercises will be performed during the scheduled laboratory times and will be reviewed on a weekly basis. You may work with a partner (s).

Date	Topic	Reading Assignments
Week 1	Isolation / Infection Control / Sterilization	Egan: Ch. 4 Exercises
Week 2	Isolation / Infection Control Patient Assessment / Pulse Ox / Vital Signs / Interpretation of Lab Data	Egan: Ch. 16,17 Lab Data PP
Week 3	Patient Assessment Pulse Ox / Flowmeters, O2 tanks	Egan: Ch. 16,17 Chest and Lungs Assessment
Week 4	Oxygen Tanks / Devices / Gases / Therapy / Physics / Gases / Gas Laws	Egan: Ch. 6, 41,42 Physics & Gas Laws PP
Week 5	CPR O2 Devices / SVN / MDI / Peak Flow	BLS book Egan: Ch. 39,40,41,42
Week 6	O2 Devices / High Flow NC Oxygen Analyzer Aerosol Therapy / Humidity Therapy O2 PCE's	Egan: 39,40,42 Humidity Therapy PP Humidity Therapy / Aerosol Therapy
Week 7	Bronchial Hygiene Therapy / Lung Expansion Therapy / Incentive Spirometry PEP therapy, flutter valves	Airway Clearance PP Ch. 43,44
Week 8	**Lab practical Exam**	**Lab Practical Exam**
Week 9	Suctioning / Trach care	Ch. 37
Week 10	Suctioning / Trach care Intubation / Extubation	Ch. 37
Week 11	Intubation / Extubation	Ch. 37
Week 12	**Thanksgiving Recess**	
Week 13	Intubation / Extubation	Ch. 37
Week 14	Intubation / Extubation	Ch. 37
Week 15	**Lab Practical Exams**	

RSP-119 LABORATORY COMPETENCY RECORD

STUDENT NAME: _____

The instructor's initials and the date of accomplishment should be completed only by the instructor. These indicate successful completion of the evaluation and certification for the specified procedure. All competencies must be entered into the Clinical Trac system by the lab instructor.

Procedure	***Due By Week***
F.01 Isolation	1
F0.4 Hand washing	1
F.11 Vital Signs	3
F.10 Patient assessment	4
B.01 Pulse oximetry	4
F.03 Transport with O2	4
A.28 Nasal cannula	7
A.31 Non-rebreather	7
A.05 Nebulized Medication Therapy	7
A.06 MDI instruction-patient teaching	7
A.07 Dry Powder Inhalers	7
C.17 High Flow Nasal Cannula	8
A.30 Air Entrainment Mask	8
A.03 Continuous Bland Aerosol Therapy	8
A.17 Peak Expiratory Flow	9
A.11 Vibratory PEP (via Acapella®, EzPAP®, Vest, et al)	9
A.08 Incentive Spirometry	9
A.21 Vest Therapy	9
C.13 Manual Ventilation Mask / Endotracheal Tube	12
A.20 Tracheostomy Care	12
A.13 Airway Suctioning (Exposed Catheter Technique)	12
A.19 Artificial Airway Suction (Closed Suction System)	12
C.11 Secure Endotracheal Tube	13
A.14 Cuff Management (Artificial Airways)	13
C.14 Intubation Assist	13
C.10 Extubation	13

Note to Students: This Course Outline and Calendar is tentative and subject to change, depending upon the progress of the class.