

Midland College
Master Syllabus
RSPT 2353
Neonatal/Pediatric Cardiopulmonary Care
Lecture/Lab

Course Description

A study of neonatal and pediatric cardiopulmonary care.

End-of-Course-Outcomes

Describe fetal development and transition to extrauterine life; assess maternal and fetal history; modify therapy to neonatal/pediatric patients; describe the etiology, pathophysiology, clinical manifestations and management of neonatal/pediatric disorders; and analyze, interpret and apply patient data in selective patient care settings.

Text References and Supplies

Walsh, Brian K. “Neonatal and Pediatric Respiratory Care.” 5th Edition. Elsevier. 2019.

Des Jardins, “Clinical Manifestations and Assessment of Respiratory Disease.” 8th Edition, Elsevier. 2020.

Students MUST actively participate by completing an academic assignment required by the instructor by the official census date. Students who do not actively participate in an academically-related activity will be reported as never attended and dropped from the course.

Disclaimer

The instructor reserves the right to make modifications to this course throughout the semester.

Course Goals/Objectives

- I. Describe and explain ways to establish and maintain a patent airway to include manual ventilation for neonatal and pediatric patients.
 - A. Identify the indications, procedure, and complications of artificial airway access.
 - B. Describe and explain the procedure for suctioning in the neonatal and pediatric patient.
 - C. Identify the criteria and procedure for extubation and decannulation.
 - D. Describe and explain the process of manual ventilation for a neonatal and pediatric patient
- II. Describe the use of high frequency ventilation.
 - A. Describe the types of HFV.
 - B. Describe the advantages of using HFV.
 - C. Describe the indications, clinical uses and hazards of HFV.
 - D. Define and describe the ventilators associated with HFV
 - E. Describe indications for HFV
 - F. Explain initial settings and adjustments for the most common types of HFV
 - G. Explain monitoring and adjustments made during HFV.
 - H. Describe indications and complications of weaning HFV
- III. Explain and understand the noninvasive monitoring available in the neonatal and

- pediatric realm. Review and interpret basic radiographic results in the neonatal and pediatric realm.
- A. Describe the principles of operation, application, and disadvantages of pulse oximetry.
 - B. Describe the principles of operation, application and disadvantages of transcutaneous monitoring.
 - C. Describe the principles of operation of capnometry. Interpret various capnograms and detect and correct ventilation problems.
 - D. Describe the principles of operation, application, and disadvantages of impedance pneumography.
 - E. Determine placements of lines and tubes on radiographic imaging
 - F. Identify differential diagnostic findings on radiographic imaging for different neonatal and pediatric processes/diseases
- IV. Describe and explain the process of sampling, analysis, and interpretation of arterial, capillary blood along with cardiovascular monitoring.
- A. Describe indications, complications, and procedure used to obtain various blood gas samples.
 - B. Interpret a complete hemodynamic profile including blood gas information of a patient.
 - C. Illustrate and describe the different catheters and measurements used for cardiovascular monitoring.
- V. Identify and explain the embryologic development of the pulmonary system.
- A. Identify the five periods of embryonic lung growth and describe the features of each period.
 - B. Explain/describe roles of surfactant and application to alveolar mechanics.
 - C. Describe the role and function of fetal lung fluid.
 - D. Explain the function of amniotic fluid.
- VI. Identify and explain the embryologic development of the cardiovascular system and the changes that occur after birth.
- A. Describe the embryologic development of the heart.
 - B. Describe and explain fetal circulation and the three fetal shunts that are encountered.
 - C. Identify the anatomical structures of the placenta and umbilical cord.
 - D. Review and describe the physiological changes that occur to fetal circulation during the first breath of life and post-delivery.
- VII. Explain and describe the essentials of antenatal assessment and management of high-risk conditions with pre-term through post-term delivery.
- A. Identify various high-risk conditions and their adverse effects on pregnancy.
 - B. Describe current methods used for antenatal and intrapartum assessment of fetal well-being.
 - C. Explain preterm labor and post term pregnancy evaluation and management.
 - D. Recommend techniques for taking care of the newborn during the neonatal period.
- VIII. Identify and distinguish the significant information that can be found while assessing a neonatal infant and pediatric patient.
- A. Determine approximate gestational age using physical assessment findings.
 - B. Explain normal and abnormal findings during the assessment of a neonatal infant.
 - C. Differentiate laboratory values and their significance in the overall determination of assessment of a neonate.
 - D. Identify and use historical and physical findings to develop a differential diagnosis of a child's respiratory condition.
 - E. Determine the severity of a child's respiratory condition.

- F. Assist in planning and executing evaluation and management.
- IX. Extend the knowledge of basic respiratory pharmacology with the most commonly used medications for the neonatal and pediatric realm.
 - A. Define and describe the most common medications in the following categories including the names, indications, and clinical use:
 1. Sympathomimetic
 2. Parasympatholytic
 3. Xanthines
 4. Mucolytics
 5. Anti-asthmatic agents
 6. Corticosteroids (inhaled and systemic)
 7. Aerosolized antibiotics
 8. Antiviral agent
 9. Magnesium Sulfate & Ketamine
- X. Extend the knowledge of basic respiratory care procedures as it pertains to the neonatal and pediatric realm.
 - A. Describe indications, complications, and hazards of oxygen therapy including the role of oxygen delivery devices.
 - B. Discuss the advantages and disadvantages of SVN, MDI and DPI therapy.
 - C. Describe the indications, contraindications and techniques used in airway clearance therapy.
- XI. Describe and discuss the different neonatal and pediatric disorders and complications of respiratory care.
 - A. Describe the pathophysiology, diagnosis, clinical signs, and treatment of the following disorders:
 1. RDS
 2. BPD
 3. TTN
 4. RSV
 5. Meconium Aspiration Syndrome
 6. Air Leak Syndrome
 7. Neonatal apnea
 8. Choanal Atresia
 9. TE Fistula
 10. Abdominal Wall Defects
 11. CDH
 12. Pediatric Sleep Disordered Breathing
 13. Epiglottitis
 14. Croup
 15. Foreign Body Aspiration
- XII. For each of the following cardiac anomalies, identify the defect and describe the diagnosis and treatment.
 - A. Patent ductus arteriosus (PPHN), (L-R shunt)
 - B. Tetralogy of Fallot
 - C. Coarctation of the Aorta (pre-ductal), (post-ductal)
 - D. Complete Transposition of the great vessels
 - E. Atrial septal defect
 - F. Ventricular septal defect

- XIII. Define and describe all aspects of mechanical ventilation of the neonatal and pediatric patient including the following:
- A. Volume and pressure control ventilation
 - B. Indications for ventilatory support
 - C. Modes of ventilation
 - D. Setting initial ventilator parameters
 - E. Monitoring mechanical ventilation
 - F. Hazards & complications
 - G. Weaning mechanical ventilation
- XIV. Define and describe all aspects of continuous positive airway pressure and non-invasive ventilation including the following:
- A. Indications and uses
 - B. Types of devices
 - C. Types of interfaces
 - D. Complications
 - E. Contraindications
 - F. Hazards

Evaluation Method:

Attendance 5%

Exams 50%

- Exam 1
- Exam 2
- Exam 3
- Exam 4
- Exam 5
- Exam 6

Quizzes 10%

- Quiz 1
- Quiz 2
- Quiz 3
- Quiz 4
- Quiz 5
- Quiz 6

Lab and Worksheets 10%

- CPAP Lab
- TCPL/ PC Lab
- VC Lab
- Airway/Suctioning Lab
- HFOV/HFJV Lab
- CXR/Non-Invasive Monitoring Lab
- ABG Lab
- Stages of Lung Development Lab
- APGAR Lab
- Pharmacology Lab
- Oxygen/Medication Delivery Lab
- Airway Clearance Lab

Sims/Abstracts:

- RDS - sim
- BPD/TTN - abstract
- MAS/Air Leak Syndrome - abstract
- Choanal Atresia – sim
- Epiglottitis vs. Croup – abstract
- RSV-sim

Competency **5%**

- Neonatal Ventilator Setup Competency
- Neonatal Routine Ventilator Check
- NRP (NRP certification is a component of this course, you will need to complete the online portion and the check off portion will be during lab)

The above competencies must have three “Assisted” or “Performed” documented in Trajecsyst, prior to the instructor evaluation for competency. During the instructor evaluation the student must satisfactorily PASS the competency evaluation items, including core components. At that time APPROVE will be documented in Trajecsyst and the student will receive a 100% for the competency evaluation. If the student does not satisfactorily PASS the competency evaluation items, including core components, the competency will be documented as NOT APPROVED in Trajecsyst, the student will receive a 50% for that attempt, and may have one attempt at re-evaluation after approved remediation. Upon re-evaluation, the student must satisfactorily PASS the competency evaluation items, including core components; however an average of the two attempts (75%) will be recorded in the grade book. If the student is unsuccessful on the re-evaluation, they will be removed from the course.

Final Examination **20%**

A written final examination will be administered during the scheduled finals week. It will be comprehensive for the entire semester classes.

Each student is expected to take exams as scheduled. If an exam is missed for any reason, the student must take the exam on the student’s first day back on campus or a grade of “0” will be recorded for the missed exam. Ten percent will automatically be deducted from the make-up exam score. No more than two exams per semester may be made-up (for each course). Exams may not be taken early in any class.

Final exams must be taken at the scheduled time without exception.

All final exams must be taken to proceed within the respiratory care program.

Grading Standards:

<u>A</u>	<u>90-100%</u>
<u>B</u>	<u>80-89%</u>
<u>C</u>	<u>70-79%</u>
<u>D</u>	<u><70%</u>

Student Contributions and Class Policies

Each student will spend at least 6 hours per week preparing for class. Attendance is critical in this class. The college attendance policy will be followed.

All classroom performance and behavior will be considered academic.

Advising

Any student that scores below a 70 on an exam is responsible for emailing the instructor and scheduling an advising session within 24 hours of the exam review.

Make Up exam Policy

Each student is expected to take exams as scheduled. If an exam is missed for any reason, the student must take the exam on the student's first day back on campus or a grade of "0" will be recorded for the missed exam. Ten percent will automatically be deducted from the make-up exam score. No more than two exams per semester may be made-up (for each course). Exams may not be taken early in any class. Final exams must be taken at the scheduled time without exception.

All personal communication devices are to be placed on silence/vibrate during class time. If you must answer your device, please leave the immediate area.

No personal communication devices allowed in testing areas.

Scholastic Dishonesty and Academic Misconduct

The Midland College Policy will be followed.

Student Contributions, Responsibilities and Class Policies:

Each student will spend at least 4 hours per week preparing for class. Attendance is critical in this class. The college attendance policy will be followed.

Course Schedule:

The class meets for 3 lecture hours and 2 lab hours (Tues 1:00 – 2:50, Thurs 1:00 – 2:50/2:50 – 4:50 Lab)

Division Information:

Division Chairman: Miranda Poage, PhD

Division Office Location and Telephone: 208, 685-4600

AMERICANS WITH DISABILITIES ACT (ADA) Statement:

Midland College provides services for students with disabilities through Student Services. In order to receive accommodations, students must visit www.midland.edu/accommodation and complete the Application for Accommodation Services located under the Apply for Accommodations tab. Services or accommodations are not automatic, each student must apply and be approved to receive them. All documentation submitted will be reviewed and a "Notice of Accommodations" letter will be sent to instructors outlining any reasonable accommodations.

NON-DISCRIMINATION STATEMENT:

Midland College does not discriminate on the basis of race, color, national origin, sex, disability or age in its program and activities. The following individuals have been designated to handle inquiries regarding the non-discrimination policies:

Wendy A. Kane

Dean of Student Life

Midland College

Title IX Coordinator/Compliance Officer

3600 N. Garfield, SSC 131

Midland, TX 79705

(432) 685-4781

Title9@midland.edu

For further information on notice of non-discrimination, visit the ED.gov Office of Civil Rights website, or call 1 (800) 421-3481.

Licensure Eligibility Notification

Completion of Midland College degrees and/or certificates does not guarantee eligibility to take a certification/registry/licensure examination. The eligibility of each person is determined on an individual basis by the regulatory body of the specific discipline. If you have a conviction of a crime other than a minor traffic violation, physical or mental disability/illness, hospitalization/treatment for chemical dependency within the past five years, current intemperate use of drugs or alcohol or a previous denial of a licensure or action by a licensing authority, you will need to contact the specific regulatory body for an individual ruling. Some programs require a criminal background check and urine and drug screen.

