Respiratory Therapy (RESP)

Courses

RESP 1010. Introduction to Respiratory Therapy and Medical Terminology. 2 Hours.
First semester course. Introduces respiratory care profession, including professional organizations, credentialing, and licensing agencies. Also provides an overview of medical ethics, medicolegal issues of health care, regulations such as HIPPA, and selected OSHA standards, as well as an introduction to medical terminology and patient-care documentation. FA.

RESP 2020. Cardiopulmonary Anatomy and Physiology. 3 Hours.
First semester course. Expands on basic human anatomy and physiology, concentrating on the cardiopulmonary system. Covers selected gas laws and physical principles associated with respiration and gas exchange, ventilation, pulmonary mechanics, circulation, and hemodynamics. Introduces fetal and newborn anatomy and physiology and basic cardiac and renal function. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Describe and define the function of the anatomic and histologic structures of the pulmonary system. 2. Describe the physiology of ventilation, including the associated muscles, gas laws, minute volumes and airway, lung, and chest wall dynamics. 3. Describe normal and abnormal breathing patterns. 4. Define and describe diffusion of gases into and from the lungs, including associated gas laws. 5. Describe and define the function of the anatomic and histologic functions of the cardiovascular system. 6. Define oxygen transport and discuss all factors associated with abnormal delivery of oxygen to the tissues. 7. Define acid-base balance and be able to appropriately interpret a blood gas. 8. Describe V/Q relationships and describe clinical implications of V/Q imbalances and their associated pathologies. 9. Describe the physiologic mechanisms of ventilatory control (neurologic and chemical, central and peripheral). Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.

RESP 2030. Introduction to Pathophysiology. 3 Hours.
First semester course. Introduction to human diseases, injuries, conditions, and disorders. Review of the hematologic, gastrointestinal, musculoskeletal, integumentary, endocrine, urinary, neurological, cardiac, and pulmonary systems, including fluid and electrolyte and acid-base balance. Integration of general pathologies as they relate to the scope of respiratory therapy practice. Pathologies associated with genetic traits or abnormalities and carcinogenesis are also covered, as are specific clinical application of respiratory care diagnostics. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Identify the fluid compartments of the body and describe how intracellular and extracellular edema may occur. 2. Describe and define normal blood cells (RBCs, WBCs, and platelets), their functions and normal [laboratory] values. Define Leukemia, lymphoma, and multiple myeloma. 3. Define immunity (innate v. adaptive), inflammation, and hypersensitivities. 4. Describe the infectious process, types of infections and microbes, and terminology associated with infections and infectivity. 5. Describe alterations in neurologic function (i.e. levels of consciousness, seizures, brain death v. cerebral death, cognitive disorders, increased intracranial pressure. 6. Define and describe brain injuries (focal v. diffuse, concussion, coup-contrecoup, intra and extradural hematomas), strokes, aneurysms, infections [meningitis], degenerative diseases [Parkinson’s, MS, ALS, Guillain-Barre], 7. Describe endocrine disorders (i.e. forms of Diabetes, thyroid disorders, Cushingism, ). 8. Describe and define GI disorders (i.e. ulcers, ulcerative colitis and Crohn’s disease, hepatitis, cirrhosis, diverticulosis, cholecystitis, pancreatitis). 9. Describe muscle and bone disorders (i.e. fractures, osteoporosis, osteomalacia, osteomyelitis, osteoarthritis and rheumatoid arthritis, gout, kyphoscoliosis, muscular dystrophies). 10. Describe the causes and types of renal failure and the associated signs and symptoms. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.

RESP 2040. Respiratory Care Therapeutics I. 3 Hours.
First semester course. Theory and clinical applications of a wide range of respiratory therapy modalities, including medical gases (including cylinders, regulators, flowmetering devices, and liquid oxygen), aerosols, humidity, hyperinflation techniques, chest physiotherapy, and airway clearance techniques. Clinical Practice Guidelines [CPGs] are introduced, and students must master clinical indications, contraindications, side-effects, and desired therapeutic outcomes. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Describe the medical gases used by respiratory therapists in the clinical setting including applicable gas laws and physical principles. 2. Demonstrate an understanding of the use of cylinders, regulators, flow-metering devices and liquid oxygen. 3. Compare the differences, advantages and disadvantages of oxygen delivery systems and devices. 4. Understand the clinical application for use of humidity and aerosol therapy and describe the steps for the proper setup and evaluation of this equipment. 5. Compare the various products and techniques used to produce therapeutic hyperinflation and the rationale for its application. 6. Demonstrate an understanding of chest physiotherapy, including patient positioning for postural drainage, and be able to contrast the advantages and disadvantages of various techniques available. 7. Explain the criteria for and process of airway clearance techniques. 8. Be able to explain the clinical indications, contra-indications, side-effects, and desired outcomes of the above therapies (items 1-7). Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.

RESP 2041. Laboratory Practice/Therapeutics I. 2 Hours.
First semester course. Introduction to patient care, including body mechanics, patient interactions, and documentation. Practice in the selection, use, and trouble-shooting of equipment associated with providing medical gases, aerosol and humidity, hyperinflation techniques, IPPB, and airway clearance. Introduction to respiratory pharmacology and devices used to administer and monitor aerosolized medications. Lab fee required. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.
RESP 2050. Introduction to Respiratory Care Pharmacology. 3 Hours.
Second semester course. Introduction to principles of pharmacology associated with treatment of infectious diseases and disorders of the hematologic, cardiovascular, pulmonary, endocrine, renal, GI, and neurologic systems, including administration routes and dosage calculation of selected medications. Sedation management, anesthesia, analgesia, chemotherapeutic agents, specific application of principles associated with aerosolized medications, and topical absorption are also included. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Identify administration routes and perform dosage calculations for the selected medications. 2. Demonstrate an understanding of the pharmacology associated with treatment of infectious diseases and disorders of the hematologic, cardiovascular, pulmonary, endocrine, renal, GI and neurologic systems. 3. Describe the concepts of pharmacologic management of sedation, anesthesia, analgesia, and chemotherapeutic agents. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SP.

RESP 2060. Patient Assessment. 2 Hours.
Second semester course. Introduction to basic patient assessment techniques, including physical assessment and integration of laboratory and diagnostic findings associated with specific diagnoses. Covers physical findings; radiologic findings and other imaging studies; laboratory tests such as electrolytes, bacteriology, hematologic, and metabolic studies; acid-base balance and blood gas analysis; basic pulmonary function; and hemodynamic values. Emphasis is on the integration of patient presentation and associated pathology. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Describe the elements and process involved in conducting an initial patient interview. 2. Describe the elements of physical examination of a patient (i.e. vital signs, breath sounds and respiratory patterns, chest assessment [palpation, percussion, inspection], cough and sputum, abnormal extremity findings [edema, clubbing, cyanosis, venous distention]) and the physiologic basis for these findings and/or symptoms. 3. Describe basic pulmonary function assessments [spirometry, expiratory flow measurements, flow-volume loops]. 4. Appropriately interpret arterial blood gas values and associated causes of blood-gas abnormalities. 5. Assess patient oxygenation and describe associated clinical indices used to assess and improve oxygenation. 6. Describe basic cardiovascular and hemodynamic assessment including ECGs, selected dysrhythmias, CVP, and PCWP. 7. Recognize the significance and normal values of laboratory tests, i.e. CBC and differential, electrolytes, blood chemistry. 8. Describe the indications and clinical significance of procedures such as bronchoscopy, sputum C & S, skin tests, and other endoscopies. 9. Describe imaging techniques utilized for chest assessment, i.e. radiography, CT scans, MRI scans, PET scans, V/Q scans, fluoroscopy and bronchography. 10. Interpret the significance and clinical manifestations of various abnormal chest imaging findings. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SP.

RESP 2065. Cardiopulmonary Pathophysiology. 3 Hours.
Second semester course. Expands on RESP 2030 with an emphasis on cardiopulmonary and renal injuries, diseases, disorders, and conditions, using a case-based method that integrates the etiology, presentation, pathophysiology, diagnosis, treatment, and prognosis of cardiopulmonary, hemodynamic, and renal dysfunction. Also explores neonatal and pediatric pathologies of the renal and cardiopulmonary systems, including congenital and structural defects. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Describe cardiovascular diseases (i.e. atherosclerosis, CHF, hypertension, orthostatic hypotension, right- and left-sided heart failure). 2. Describe and define pulmonary disorders, including COPD, CF, pneumonia, croup, epiglottitis, bronchiolitis (RSV), pulmonary edema, pulmonary embolism, interstitial lung disease, neuromuscular disorders affecting breathing, ARDS, IRDS, respiratory failure, lung cancer, atelectasis, sleep apnea, near-drowning, smoke inhalation, traumatic chest injuries, and disorders of the pleura and chest wall. 3. Describe the physical findings and manifestations of the disorders listed above. 4. Describe diagnosis, appropriate therapy and prognosis of the above disorders. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SP.

RESP 2070. Respiratory Care Therapeutics II. 3 Hours.
Second semester course. Provides theory and clinical applications of respiratory therapy modalities, including airway management (intubation, extubation, tracheostomy care); manual ventilation; introduction to concepts of artificial ventilation (CPAP, BIPAP, positive and negative pressure ventilators); blood gas sampling, analysis, and quality control; noninvasive monitoring (oximetry, capnography, pulmonary mechanics); and equipment decontamination. Associated CPGs are introduced. Mastery of the clinical indications, contraindications, side-effects, and desired outcomes of therapies is required. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Describe the clinical indications, contraindications, side-effects, and goals of: Airway management: oral and nasal intubation of adults and children, and selection of appropriate equipment (including ET tubes, laryngeal masks/tubes, EOAs); Extubation; Tracheostomies; Manual ventilation; Mechanical ventilation; Blood gas sampling and analysis, including arterial, capillary, and indwelling arterial catheter samples; and Noninvasive monitoring. 2. Compare and contrast the use of direct sampling vs. noninvasive monitoring of blood gas data. 3. Describe the process of calibrating and maintaining quality control systems for blood gas analyzers. 4. Compare and contrast the use of different methods of artificial ventilation (manual ventilation, CPAP, Bi-Level CPAP, positive and negative pressure ventilators). Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SP.

RESP 2071. Laboratory Practice/Therapeutics II. 2 Hours.
Laboratory portion of RESP 2070. Requires students to master artificial airway management skills including endotracheal intubation and bag-valve-mask ventilation. Also provides practice in blood gas sampling, noninvasive monitoring, basic ventilatory support, basic pulmonary function assessments and bedside spirometry. Lab fee required. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SP.

RESP 2100. Clinical Practice I. 5 Hours.
Second semester course. Introduction to the hospital setting in order to practice clinical application of all skills mastered in RESP 2041 and RESP 2071 while developing interaction skills with patients and other members of the health care team. Proficiency must be demonstrated in providing therapies, monitoring and documenting care, and prioritizing to develop time management skills, while students participate in clinical care conferences and in evaluation of the appropriateness of care with respect to CPGs. 225 clinical hours. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SP.
RESP 2200. Cardiopulmonary Diagnostics. 3 Hours.
Third semester course. In-depth review of pulmonary function studies such as spirometry, lung volumes and diffusing capacities, bronchial provocation testing, and bronchodilator response studies as well as blood gas analysis and interpretation of arterial, capillary, and mixed venous blood gases, with an emphasis on case-based learning and application of diagnostic findings to initiating or modifying patient care. Introduction of cardiac assessments and interventions (EKGs, echocardiography, IABP support, and hemodynamics including Swann-Ganz and arterial catheters).

**COURSE LEARNING OUTCOMES (CLOs)** At the successful conclusion of this course, students will be able to:
1. Describe how obstructive and restrictive lung diseases are interpreted on simple spirometry and identify diseases or conditions that cause obstructive or restrictive patterns.  
2. Define flow-volume loops and differentiate between normal, obstructive, and restrictive patterns.  
3. Describe methods used to measure lung volumes and total lung capacity.  
4. Define DLCO (diffusing capacity) and recognize normal values and the clinical implications of abnormal diffusing capacity.  
5. Define bronchial provocation testing and pre- and post-dilator spirometry and the interpretation of test results (including "reversibility").  
6. Quality control of PFT and ABG equipment and criteria for acceptability of pulmonary function studies.  
7. Define normal fluid balance.  
8. Define hemodynamic measurements, including normal values and clinical implications of abnormal values for the following parameters: systemic and pulmonary vascular resistance, MAP, CVP, PAP and PCWP, preload and afterload.  
9. Recognize the following ECG rhythms and their associated clinical manifestations and treatments: Atrial fibrillation, Atrial flutter, Ventricular fibrillation, Ventricular tachycardia, PVCs (unifocal and multifocal), Asystole, Sinus rhythm (including NSR, bradycardia and tachycardia), Atioventricular block (including 1st, 2nd, and 3rd degree blocks, PEA (pulseless electrical activity), also referred to as EMD [electro-mechanical dissociation]. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SU.

RESP 2300. Introduction to Mechanical Ventilation. 3 Hours.
Third semester course. Theory and clinical indications of all modes of ventilatory support, emphasizing mastery of understanding the indications for initiation and continuation of ventilatory support, assessing and monitoring patients on life-support, integrating patient response to therapy with recommendations for modifying ventilator support, and determining the appropriate time and method for weaning from mechanical ventilation. Includes application of CPAP, BiPAP, negative pressure ventilation, and positive pressure ventilation, and introduces ventilators used in extended care or home care.  
**COURSE LEARNING OUTCOMES (CLOs)** At the successful conclusion of this course, students will be able to:
1. Appropriately select patients in need of mechanical ventilation.  
2. Initiate mechanical ventilation in appropriate mode with appropriate settings.  
3. Manage the patient on the ventilator.  
Knows how to make appropriate changes to achieve desirable ABGs.  
4. Wean patient from the ventilator. Use weaning parameters for decision making.  
5. Analyze waveforms for patient-ventilator system assessment.  
6. Know all contra-indications and hazards of mechanical ventilation.  
7. Know and practice current strategies of mechanical ventilation. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SU.

RESP 2301. Laboratory/Adult Mechanical Ventilation. 2 Hours.
Lab portion of RESP 2300. Case-based practice in selecting appropriate mode of mechanical ventilation from a wide range of ventilation modes based on patient situations; then initiating, monitoring, assessing, and recommending changes to ventilatory support; and weaning from mechanical ventilation. A wide range of ventilation modes and applications is mastered through a case-based format. **COURSE LEARNING OUTCOMES (CLOs)** At the successful conclusion of this course, students will be able to:
1. Initiate continuous mechanical ventilation.  
2. Monitor continuous mechanical ventilation.  
3. Perform ventilator management.  
4. Perform ventilator weaning.  
5. Choose appropriate ventilator modes.  
6. Analyze wave forms.  
7. Practice current ventilator strategies.  
Course fee required. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SU.

RESP 2310. Clinical Practice II. 5 Hours.
Third semester course. Clinical experience course emphasizing the provision of mechanical ventilation and assessment of patients in the emergency and intensive care settings. 225 clinical hours. A $100 Respiratory Therapy Program fee applies to this course. **COURSE LEARNING OUTCOMES (CLOs)** At the successful conclusion of this course, students will be able to:
1. Initiate NPPV.  
2. Initiate continuous mechanical ventilation.  
3. Monitoring of continuous mechanical ventilation.  
5. Spontaneous ventilator parameters.  
6. PEEP, CPAP, IMV, and pressure support modes.  
7. Static and dynamic pressure-volume curves.  
8. Wave form analysis.  
9. Participate as part of the interdisciplinary team.  
Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SU.

RESP 2400. Alternative Site and Subacute Respiratory Care. 1 Hour.
Fourth semester course. Introduces practice of respiratory care in a home care/DME setting, pulmonary rehabilitation, patient education, smoking cessation, asthma management, and sleep disorders including sleep apnea. **COURSE LEARNING OUTCOMES (CLOs)** At the successful conclusion of this course, students will be able to:
1. Define the goals of a pulmonary rehabilitation program and describe the essential educational topics included in such a program.  
2. Describe patient and family education and care of a pulmonary patient in the home.  
3. Describe the specific patient education needs for patients with asthma, including medication administration and types of medications, self-monitoring, and asthma management.  
4. Discuss the primary work responsibilities of a respiratory therapist employed in the home care/DME industry.  
5. Describe several methods of smoking cessation and specifically describe the use of nicotine-replacement therapies.  
6. Describe the types of sleep disorders and specifically note the criteria required for a diagnosis of sleep apnea based on polysomnography studies.  
7. Discuss the care of patients in a LTAC setting.  
8. Discuss a respiratory therapists role on the Life Flight team.  
9. Acquire job seeking skills such as applications, resume writing, and job interviewing.  
Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.

RESP 3005. Critical Care/ACLS. 3 Hours.
Third semester course. Expands basic skills acquired in previous respiratory therapy courses and focuses on the presentation and management of patients in the ICU and emergency settings, emphasizing patient assessment and procedures involved in resuscitation including current practices in advanced life support. **COURSE LEARNING OUTCOMES (CLOs)** At the successful conclusion of this course, students will be able to:
1. Apply ACLS algorithms to clinical situations.  
2. Describe the principles of monitoring the respiratory system (and other critical systems) of patients in the ICU.  
Prerequisite: Admission to the Dixie State University Respiratory Therapy program. SU.
RESP 3020. Neonatal/Pediatric Respiratory Care. 2 Hours.
Fourth semester course. Introduces theory and practice of pediatric and neonatal respiratory care, including specific anatomy, physiology and pathophysiology associated with neonates and children. Includes assessment, management, ventilatory techniques and equipment specific to infants and children as well as pharmacology, with medications and dosages specific to infants and children, and ventilatory modes such as HFJV and oscillation ventilation. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Describe the appropriate assessment of newborn and pediatric patients. 2. Describe neonatal resuscitation and the specific role of the respiratory therapist in this process. 3. Describe the indications, contraindications, and hazards of oxygen therapy, CPAP and High Flow for neonates. 4. Describe the procedure for administering surfactant, and other respiratory medications to infants and pediatric patients. 5. Describe the techniques of intubation of the infant and pediatric patient. 6. Describe the ability to set up infant and pediatric ventilator circuits, and the appropriate ventilator settings for delivery of ventilation. 7. Describe the concept of nitric oxide therapy and define acceptable doses within therapeutic ranges. 8. Describe the various forms of non-invasive monitoring of relevant respiratory parameters, and how to attach them and maintain accurate values. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.
RESP 3021. Laboratory Practice/Neonatal Care. 2 Hours.
Fourth semester course. Laboratory practice of techniques associated with airway management, ventilatory support, and resuscitation of infants and children. Case-based learning emphasizes patient assessment and initiation of appropriate respiratory support for infants and children. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Demonstrate the ability to appropriately use oxygen delivery equipment and apply it safely. 2. Demonstrate an understanding of the NeoPuff and be able to use it to provide CPAP, or resuscitation on newborn infants. 3. Demonstrate the ability to set up and adjust CPAP and High Flow systems. 4. Describe the procedure for administering surfactant, and other respiratory medications to neonates, infants, and pediatric patients. 5. Demonstrate the techniques of intubation of the infant and pediatric patient. 6. Demonstrate ability to set up infant and pediatric ventilator circuits, and determine appropriate ventilator settings for delivery of ventilation. 7. Demonstrate knowledge of nitric oxide therapy and define acceptable doses within therapeutic ranges. 8. Describe the various forms of non-invasive monitoring of relevant respiratory parameters, and how to attach them and maintain accurate values. 9. Demonstrate competence in selection and application of all therapeutic modalities included in RESP 3021, 2301, 2071, and 2041. Course fee required. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.
RESP 3100. Clinical Practice III. 5 Hours.
Fourth semester course. Capstone clinical practice course includes experience in neonatal intensive care as well as demonstrating continuing competency in adult intensive care, emergency care, and general respiratory care. Clinical rotations include experience in the home care setting and sleep laboratory. 300 clinical hours. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Demonstrate competence of appropriate assessment of newborn and pediatric patients. 2. Demonstrate competence in neonatal resuscitation and the specific role of the respiratory therapist in this process. 3. Demonstrate knowledge of the indications, contraindications, and hazards of oxygen therapy, CPAP and High Flow for neonates. 4. Demonstrate competency of knowledge and procedure for administering surfactant, and other respiratory medications to infants and pediatric patients. 5. Demonstrate knowledge of the techniques of intubation of the infant and pediatric patient. 6. Demonstrate competence in the ability to set up infant and pediatric ventilator circuits, and the appropriate ventilator settings for delivery of ventilation. 7. Demonstrate knowledge of nitric oxide therapy and define acceptable doses within therapeutic ranges. 8. Demonstrate competence in the various forms of non-invasive monitoring of relevant respiratory parameters, and how to attach them and maintain accurate values. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.
RESP 3150. Critical Thinking Seminar/NBRC Review. 2 Hours.
Fourth semester course. Comprehensive curriculum review based on NRBC credentialing exams. Case-based clinical simulations require students to integrate all concepts learned throughout the curriculum and clinical practice courses and apply this knowledge to branching-logic scenarios. **COURSE LEARNING OUTCOMES (CLOs) At the successful conclusion of this course, students will be able to: 1. Describe the NBRC examination matrices for the TMC, and Clinical Simulation examinations, including recognizing the distribution of examination content and the cognitive level of questions in each content area. 2. Interpret his/her individual NBRC score report to determine curricular strengths and weaknesses. 3. Develop an appropriate study strategy, based on the NBRC SAE reports, to prepare for the successful completion of licensure and credentialing examinations (following program completion). 4. Define the procedures to apply to the NBRC for completion of their credentialing process, including fees and documents required. 5. Demonstrate mastery of selected physiologic assessment and monitoring parameters, i.e. oxygen and ventilation parameters, hematologic findings, blood chemistry, enzymes, and electrolytes; cardiac and hemodynamic measurements, pulmonary function assessment. 6. Demonstrate mastery of basic mathematical skills required for successful completion of the NBRC examinations, i.e. multiplication, division, use of simple algebraic formulas without benefit of electronic calculator. 7. Demonstrate mastery of pharmacologic therapies utilized in respiratory care, i.e. indications and contraindications for medications used in treating cardiac, pulmonary, and renal disorders and in managing patients receiving mechanical ventilation. 8. Pass the Secure Comprehensive TMC Self-Assessment examination administered at the conclusion of this course. Prerequisite: Admission to the Dixie State University Respiratory Therapy program. FA.