



Sub.	Course Description – توصيف مقرر دراسي	الموضوع	 <b>كلية المعرفة</b> ALMAAREFA COLLEGE
Date		التاريخ	

Course Code & No	RSTH 441		رقم المقرر ورمزه
Course Name	Mechanical Ventilation		اسم المقرر
Credit Hours	4		عدد الساعات المعتمدة
Pre-requisite	RSTH 343- Respiratory Care Science III, RSTH 323- Pulmonary Function Methodology		المتطلب السابق


General Description	توصيف عام
Mechanical ventilation is the continuation of Respiratory Care Science III, providing advance knowledge and skills of mechanical ventilation, introducing new ventilators and modes of mechanical ventilation to function as professional respiratory therapist	

Course Objectives	أهداف المقرر
<b>Knowledge:</b> <ul style="list-style-type: none"> <li>List effective ways to wean patients requiring prolong mechanical ventilation.</li> <li>Describe the procedure of Tracheal gas insufflation, and the rationale.</li> <li>Describe mechanical ventilation strategies in neurological injured patients.</li> <li>Describe bronchoscopy assisting.</li> <li>Identify features of transport ventilators.</li> <li>Outline mechanically ventilating a patient who has a COPD exacerbation.</li> <li>State the strategies for mechanically ventilating patients who have closed head injury.</li> <li>Explain the complications of mechanical ventilation.</li> <li>Describe multidisciplinary approaches to improve patient outcome.</li> <li>Identify new modes of mechanical ventilation.</li> <li>Describe the role of Capnography in ICU patients.</li> <li>Identify different fluid compartments in the body.</li> <li>State the principle of operation of high frequency ventilation.</li> <li>Recognize different ventilator graphics.</li> <li>Describe at least 5 ventilator graphics.</li> <li>Define ventilator waveform.</li> <li>Recognize different pathology waveform representation in the ventilator graphics.</li> </ul> <b>Cognitive Skills:</b> <ul style="list-style-type: none"> <li>Interpret capnography data.</li> <li>Explain the function and operation of the Puritan-Bennett 840.</li> <li>Summarize the physiology of mechanical ventilation.</li> <li>Explain the operation principle of the Siemens Servoi ventilator.</li> <li>Analyse hemodynamic monitoring, of patient on Mechanical ventilation.</li> <li>Evaluate non-invasive positive pressure ventilation BiPAP Vison (NPPV).</li> <li>Develop methods used to improve patient oxygenation during mechanical ventilation.</li> <li>Write how to mechanically ventilate a patient who has obesity hypoventilation syndrome, pregnant, head injury</li> </ul>	

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<p>and burn patients.</p> <ul style="list-style-type: none"> <li>• Explain the operation principle of Respironics Vision ventilator.</li> <li>• Describe each knob function and effect of HFO.</li> <li>• Discuss the humidification during HFO.</li> <li>• Explain the potential side effect of HFO.</li> <li>• Explain how the chest wiggle factor (CWF) is influenced by HFOV settings.</li> <li>• Explain how the controls operate with the SensorMedics 3100B oscillator.</li> <li>• Recommend initial ventilator settings for an adult with the 3100B unit.</li> <li>• Discuss the differences of Neonatal and adult HFO.</li> <li>• Compare the HFO settings of neonatal and adult.</li> <li>• Evaluate patient ventilator synchrony utilizing ventilator graphics.</li> <li>• Evaluate patient ventilator interaction utilizing new mode of ventilation.</li> <li>• Explain at least 4 capnography waveforms.</li> <li>• Develop a clinical scenario include assessment and plan with appropriate mechanical ventilation management.</li> </ul> <p><b>Interpersonal Skills:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate Team work skills.</li> <li>• Show Leadership skills.</li> <li>• Develop skills to accommodate and absorb criticism.</li> <li>• Use different strategies to Avoid conflict.</li> <li>• Demonstrate patients' rights and safety.</li> </ul> <p><b>Communication, Information Technology, Numerical:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate the utilization of Proper communication channels.</li> <li>• Show Personal professional development skills.</li> <li>• Appraise different modern technologies and communications methods.</li> </ul> <p><b>Psychomotor:</b></p> <ul style="list-style-type: none"> <li>• Demonstrate different ventilators operation.</li> <li>• Assemble non-invasive ventilation.</li> <li>• Perform patient-ventilator system checks.</li> <li>• Show how to do ventilator circuits change.</li> <li>• Prepare initial settings for new mechanically ventilating a patient.</li> <li>• Setup High frequency oscillation for adult patient.</li> <li>• Calibrate Capnography for a patient.</li> <li>• Perform patient assessment on Mechanical ventilation.</li> </ul>
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Course Outlines	مفردات المقرر
<ol style="list-style-type: none"> <li>1. Review of Basic Mode</li> <li>2. Lab: Review of basic modes</li> <li>3. New Modes Ventilation- Part I</li> <li>4. Lab: New modes of mechanical ventilation <ol style="list-style-type: none"> <li>a. PRVC, VAPS</li> <li>b. APRV, Bi-Level</li> </ol> </li> <li>5. New Modes Ventilation- Part II</li> <li>6. Lab: New modes of mechanical ventilation <ol style="list-style-type: none"> <li>a. PAV, VS</li> <li>b. ASV, Auto-modes</li> </ol> </li> <li>7. Lecture: Non-Invasive MV</li> <li>8. Lab: Non-Invasive MV Setting NPPV</li> <li>9. Lecture: Lung Mechanics</li> <li>10. Lab: Non-Invasive MV Clinical scenarios and</li> </ol>	

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<p>applications</p> <ol style="list-style-type: none"> <li>11. Lecture: Ventilator Graphics- part</li> <li>12. Lab: Ventilator Graphics Waveforms</li> <li>13. Lecture: Ventilator Graphics- part II</li> <li>14. Lab: Ventilator Graphics Loops</li> <li>15. Lecture: High frequency Oscillation</li> <li>16. Lab: High Frequency Oscillation ventilation (HFOV) Principle of operation &amp; Initial setting</li> <li>17. Capnography</li> <li>18. Lab: High Frequency Oscillation ventilation (HFOV)</li> <li>19. Management &amp; troubleshooting</li> <li>20. Lecture: Special Cases ventilation</li> <li>21. Lab: Special Ventilation Lung recruitment maneuver</li> <li>22. Lecture: Heliox and Nitric Oxide therapies</li> <li>23. Lab: Special Ventilation One lung ventilation</li> <li>24. Lecture: adjunct to Mechanical Ventilation</li> <li>25. Lab: Different methods to improve:Oxygenation Ventilation</li> <li>26. Lecture: Fluid and Electrolyte monitoring of ICU patient</li> <li>27. Lab: Clinical scenarios and application</li> <li>28. Lecture: Clinical Scenario and case application</li> <li>29. Lab: Mechanical ventilation troubleshooting</li> <li>30. Review lecture</li> <li>31. Lab: Review</li> </ol>	
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<b>References</b>	<b>المراجع</b>
<p><b>Required Text</b></p> <ul style="list-style-type: none"> <li>• Neil R. Macintyre, Richard D. Branson; Mechanical Ventilation 2nd edition. /Saunders Elsevier</li> <li>• Cairo &amp; Pilbeam. Mosby=s Respiratory Care Equipment, 7th ed .</li> <li>• Wilkins, Sheldon, Krider, Eds. Clinical Assessment in Respiratory Care, 5th ed. Chicago, Mosby-Yearbook, 2005.</li> <li>• Cottrell GP, Surkin HB. Pharmacology for Respiratory Care Practitioners. Philadelphia, FA Davis, 1995.</li> <li>• Pilbeam S. Mechanical Ventilation, 4th ed. Chicago, Mosby-Yearbook, 2006</li> </ul> <p><b>Essential References</b></p> <ul style="list-style-type: none"> <li>• Wilkins et al, Eds. Egan's Fundamentals of Respiratory Care, 9th ed. Chicago, Mosby-Yearbook, 2009.</li> <li>• Taber=s Cyclopedic Medical Dictionary, FA Davis.</li> </ul> <p><b>Recommended Books and Reference Material (Journals, Reports, etc)</b></p> <ul style="list-style-type: none"> <li>• Electronic Materials, simulation CDs</li> <li>• Internet resources, as defined by the instructor</li> <li>• Other learning material such as computer-based programs/CD, professional standards/regulations</li> <li>• Clinical Practice Guidelines of the American Association for Respiratory Care (AARC) website</li> </ul>	

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