

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

Course Code & No	RSTH343		رقم المقرر ورمزه
Course Name	Respiratory Care Science III,		اسم المقرر
Credit Hours	4		عدد الساعات المعتمدة
Pre-requisite	RSTH 342- Respiratory Care Science II		المتطلب السابق

General Description	توصيف عام
The Respiratory Care Science III; focus on core knowledge and skills needed for basic principles of Mechanical ventilation as application, initiation and weaning patients from mechanical ventilation as well as principles of management of the mechanically ventilated patients.	

Course Objectives	أهداف المقرر
<b>Knowledge</b> <ul style="list-style-type: none"> <li>• Knowledge; Description of the knowledge to be acquired</li> <li>• By the end of this course the student should be able to :</li> <li>• Classify mechanical ventilators.</li> <li>• Identify indications for mechanical ventilation.</li> <li>• Explain the complications of mechanical ventilation.</li> <li>• Identify the components of external circuit</li> <li>• List the basic type of power source for Mechanical ventilation</li> <li>• Give 2 examples for each type of power sources</li> <li>• Explain the difference between positive and negative pressure ventilation.</li> <li>• Distinguish between open loop and closed loop system.</li> <li>• Define user interface.</li> <li>• Describe the ventilator internal and external circuit.</li> <li>• Give two other names for pressure ventilation and volume ventilation</li> <li>• Identify the patient trigger variable that require the least patient effort on mechanical ventilation.</li> <li>• Name the two commonly used patient trigger variables .</li> <li>• State all respiratory medications, effect, side effect and dosage.</li> <li>• Classify cardiac medication and their different effects.</li> <li>• Write all weaning criteria with their normal and critical ranges.</li> <li>• Describe how different ventilators cycle off.</li> </ul> <b>Cognitive skills:</b> <ul style="list-style-type: none"> <li>• Discuss the difference between single and double circuit ventilators</li> <li>• Explain the difference between positive and negative pressure ventilation</li> <li>• Compare pressure, volume and flow delivery during pressure control breath and volume control breath ventilation</li> <li>• Explain the effect on the volume delivered and on the inspiratory time if the patient reach maximum inspiratory pressure on the ventilator</li> <li>• Explain the difference between negative and positive pressure ventilation</li> <li>• Recognize the effect of critical leak on pressure/volume ventilation.</li> <li>• Discuss the utilization of PEEP and CPAP.</li> <li>• Explain SIMV and IMV.</li> </ul>	

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<ul style="list-style-type: none"> <li>• Explain the operation principle of Puritan Bennet 840 ventilator.</li> <li>• Manage cases on different MV mode.</li> <li>• Explain PSV and VSV.</li> <li>• Discuss MV mode selection for different pathology.</li> <li>• Explain normal adult and pediatric MV ranges for breathing.</li> <li>• Explain normal adult and pediatric volumes.</li> <li>• Explain methods used to improve patient oxygenation during mechanical ventilation.</li> <li>• Evaluate patient ventilator interaction.</li> <li>• Explain VCV and PCV effect on patient.</li> <li>• Evaluate patient respiratory and cardiac status on mechanical ventilation.</li> <li>• Differentiate between (analgesics, sedation and paralysis medication).</li> <li>• Explain the effect of each cardiac medication.</li> <li>• Develop a clinical scenario include assessment and plan with appropriate mechanical ventilation management.</li> </ul> <p><b>Interpersonal Skills &amp; Responsibilities:</b></p> <ul style="list-style-type: none"> <li>• Show how to interact with patients and others in professional manner.</li> <li>• Demonstrate effective verbal and nonverbal communication.</li> </ul> <p><b>Communication, Information Technology, Numerical</b></p> <ul style="list-style-type: none"> <li>• Illustrate oral and written communication.</li> <li>• Illustrate the use of information technology, basic mathematics and statistics in context of patient assessment &amp; management.</li> </ul> <p><b>Psychomotor</b></p> <ul style="list-style-type: none"> <li>• Demonstrate different ventilators operation principles</li> <li>• Establish initial ventilator setting for adult and pediatric.</li> <li>•</li> <li>• Perform patient-ventilator system checks.</li> <li>• Perform patient assessment on Mechanical ventilation.</li> <li>• Prepare initial settings for new mechanically ventilating a patient .</li> <li>• Demonstrate different ventilators operation.</li> <li>• Operate the machine in different MV modes.</li> <li>• Perform at least 3 weaning parameters on the MV.</li> <li>• Perform cardiac assessment condition on Mechanical ventilation.</li> <li>• Perform ventilator weaning and extubation.</li> </ul>
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Course Outlines	مفردات المقرر
.1 Lecture: Introduction to Mechanical Ventilation-Part I filter....etc(.	Lab: Introduction to MV (machine, circuits,
.2 Lecture : Introduction to Mechanical Ventilation-Part II	Lab: Standard safety self-test
.3 Lecture: How ventilators work principle of operation	Lab: Different machines with different
.4 Lecture: How a breath is delivered during MV	Lab: Mechanics of breath delivery
.5 Lecture: Establishing the Need for MV	Lab: Basic Mode of MV PC vs VC
.6 Lecture: Basic Mode of MV- part I	Lab: Basic Mode of MV CM VAC
.7 Lecture: Basic Modes of MV- part II	Lab: Basic Mode of MV,SIMV & PSV
.8 Lecture: Initiation of MV	Lab: Initial ventilator settings- part I
.9 Lecture: Weaning of MV	Lab: Initial ventilator settings- part II
.10 Lecture: Complication of MV and VAP	Lab: Weaning of mechanical ventilation-part I
.11 Lecture: Hemodynamic Monitoring	Lab: weaning of mechanical ventilation-part II

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.12	Lecture: Physiological Effects of MV	Lab: Ventilator alarms settings
.13	Lecture : Monitoring during MV	Lab: Complications of mechanical ventilation
.14	Lecture: ICU pharmacology	Lab: clinical scenarios and applications
.15	Revision Week	Lab: Clinical scenarios and applications

References	المراجع
<p><b>Required Text:</b></p> <ul style="list-style-type: none"> <li>• Cairo &amp; Pilbeam's, Mechanical Ventilation, Physiological and Clinical Application, 5th ed. J.M. Cairo Elsevier .</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>• clinical Practice Guidelines of the American Association for Respiratory Care -</li> </ul> <p><b>Recommended Books and Reference Material (Journals, Reports, etc):</b></p> <ul style="list-style-type: none"> <li>• Pilbeam S. Mechanical Ventilation, 4th ed. Chicago, Mosby-Yearbook, 2006 .</li> </ul> <p><b>Electronic Materials, simulation CDs:</b></p> <ul style="list-style-type: none"> <li>• Internet resources ‘</li> <li>• Other learning material such as computer-based programs/CD, professional standards/regulations</li> </ul> <p><b>Clinical Practice Guidelines of the American Association for Respiratory Care (AARC) website</b></p>	