

**UNIVERSITY OF SOUTH ALABAMA
COLLEGE OF ALLIED HEALTH PROFESSIONS
CARDIORESPIRATORY CARE**

(Revised 1/9/12)

CRC 345 - Intensive Cardiorespiratory Care Practicum **5 semester hours**
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DESCRIPTION: Clinical experiences will involve patients who receive intermittent and intensive respiratory care modalities and diagnostic procedures discussed in CRC 332 and CRC 335. Note: This course extends through the spring and summer semesters for clinical rotations in the hospitals- designated "P" for "In Progress". Final grades will be posted at the end of the summer semester.

COURSE GOALS: Following this course the students will be able to clinically perform and/or work with the following procedures and/or equipment:

- 1) Sampling arterial or mixed venous blood subsequent blood gas analysis and interpretation
- 2) Pulmonary function testing
- 3) Mechanical ventilator initiation, monitoring, discontinuation
- 4) Suctioning
- 5) Intubation and artificial airways

In addition, the students will be able to write and present a case report.

COURSE CONTENT: Module I - Sampling Arterial and Mixed Venous Blood
Module II - Blood gas Analysis and Interpretation
Module III - Ventilator Monitoring
Module IV - Suctioning
Module V – Intubation and artificial airways
Module VI - Pulmonary Function Testing
Module VII –Case Report

EVALUATION: Each procedure will be evaluated via a checklist. The student must perform each activity according to the degree of accuracy stated on each checklist. Grades will be assigned at the end of the summer semester. The grade for this course will be determined by:

- 50% Checklists
- 15% Affective Assessments
- 10% Case report*
- 25% Final examination

* This will be due Fri. July 6th by 4:00 PM. Submit one copy and one email attachment.

REFERENCES: Procedure manuals at clinical affiliates.
Wilkins, et al., Egan's Fundamentals of Respiratory Care, 9th ed.
White, Basic Clinical Lab Competencies for Respiratory Care, 4th ed.
Wilkins, et al, Clinical Assessment in Respiratory Care, 6th ed.

Taber's Cyclopedic Medical Dictionary
Beachey, Respiratory Care Anatomy & Physiology Foundations of Clinical Practice 2nd ed
Colbert, Integrated Cardiopulmonary Pharmacology 2nd ed.
Ruppel, Manual of Pulmonary Function Testing, 9th ed.
DesJardins, Clinical Manifestation and Assessment of Respiratory Disease. 6th ed.
Cairo and Pilbeam, Respiratory Care Equipment, 8th ed

CLINICAL ATTENDANCE POLICY:

1. Students are expected to be present for each scheduled clinical day. Because of the nature of clinical experiences, any loss of time will result in a diminished experience for the student in terms of exposure to clinical situations, practice of clinical procedures, and opportunities for review of charts, x-rays, and other relevant information.
2. Perfect attendance, while desirable, is not always possible. Therefore, students may miss clinical time for illness, family emergency, or similar extenuating circumstances. However, any absence, unless it is made up, will carry a grade penalty.
3. All absences must be reported both to the clinical site and to our office. Clinical instructors at the designated clinical sites should be notified as soon as possible when an absence is anticipated. This notification must be made within 15 minutes of the scheduled arrival time. The USA Department of Cardiorespiratory Care **MUST** be notified within two hours of the scheduled arrival time.
4. Within three days of returning from an absence, the student must schedule an appointment with the Course Master or the Director of Clinical Education to review reasons for the absence. The student may bring any documentation that is felt to be necessary. Based on this review, the absence will be classified as an excused or unexcused absence. Each day of unexcused absence will result in a lowering of the final clinical course grade by 2 percentage points. Only 2 days of excused absences will be allowed without penalty at the discretion of the DCE and Program chair.
5. Failure to abide by the reporting mechanism above is considered a serious breach of academic conduct. Any absence that is not reported in accordance with this policy will result in a lowering of the final grade by 10 percentage points. An unreported absence is automatically classified as an unexcused absence.
6. If students, who have excessive absences because of extended illness, frequent illness, or other extenuating circumstances, are concerned about adverse effects of absences on their course grade, they may request the scheduling of make-up days. If this entails scheduling past the normal end of the semester, the student may be granted an "I" until the make-up clinical time is completed. University policies as related to the grade of "I" will apply in these circumstances.
7. Make-up time will only be arranged upon a request initiated by the student to the Course Master or Director of Clinical Education. In some instances, it may not be possible to schedule make-up clinical time.
8. Students should report to the clinical site promptly as scheduled. If a student must be late due to unusual or unforeseen circumstances, the student should contact both the clinical site and the USA Department of Cardiorespiratory Care in the same time frame as for an absence (see item #3). Tardiness in excess of 30 minutes will be classified as an absence and the clinical instructor/preceptor may at his/her discretion elect to send the student home. Chronic tardiness may also result in a grade penalty. Each reported instance of chronic tardiness will result in the lowering of the clinical grade by 2 percentage points.

POLICY ON EARLY DISMISSAL OF STUDENTS FROM CLINICAL ACTIVITIES:

1. Students shall remain at their assigned clinical site for the entire time scheduled. Clinical schedules are distributed at the beginning of each semester to the students and clinical preceptors.
2. Changes in clinical scheduling must be approved by the Director of Clinical Education (DCE) or other program faculty.
3. Students may leave the clinical site for pursuits directly related to their current clinical rotation (example: neonatal transport to a referring hospital).
4. Students should not use clinical time to study for exams or to use the library for study related to regular class work. Clinical preceptors may assign students to go to on-site libraries for the purpose of research related to clinical activities. These library visits should be of short duration (30 minutes) and the students should report back to the preceptor at the conclusion of the visit.
5. Students may only leave clinical activities early for compelling reasons (illness, family emergency, etc.). In these circumstances, the student must first get approval from the DCE or other program faculty before leaving the clinical site. The DCE or other faculty must inform the clinical preceptor of this approval. In certain rotations, hours may have to be adjusted because of availability of clinical preceptors or changes in hours of operation. The student is required to report such changes to the Course Master of Director of Clinical Education.
6. A single violation of this policy will result in a decrease of the clinical grade by five (5) percentage points. A second violation will result in a decrease of the clinical grade by an additional ten (10) percentage points. Subsequent violations will carry similar grade penalties and would usually lead to a failing grade in the clinical course.
7. Students may be dismissed early for disciplinary reasons if their behavior or dress is seen as disruptive by the clinical preceptor. Penalties for this type of dismissal will be as specified in #6.

Cell phones are to be left in the department or your car. Do not carry a cell phone into any patient care areas. Making/receiving calls should be limited to emergencies. Checking and sending text messages, etc. are **ALLOWED ONLY DURING A BREAK OR MEAL TIME**. Clinical sites may dismiss a student from a clinical day for abuse of this policy and this will be counted as an unexcused absence.

MAKE-UP EXAMINATION POLICY:

Make-up examination will be scheduled for extenuating circumstances only and as determined by the instructor.

OFFICE HOURS: Tuesday and Thursday, 3:00-4:30 p.m.; other times by appointment

STUDENTS WITH DISABILITIES:

If you have a specific disability that qualifies you for academic accommodations, please notify the instructor and provide certification from Disability Services in the Office of Special Student Services. The Office of Special Student Services is located in Room 270 of the Student Center (460-7212).

CRC 345 - Intensive Cardiorespiratory Care Practicum

OBJECTIVES

Through oral and performance assessment the student will be able to:

Module I - Sampling Arterial & Mixed Venous Blood

- I. Discuss hazards and complications associated with the arterial puncture procedure.
- II. Describe the precautions needed to minimize the occurrence of hazards and complications of this procedure.
- III. Demonstrate the arterial puncture procedure.
- IV. State alternate sites for arterial blood
- V. Discuss why the radial site is the most performed site.
- VI. Explain why the femoral site is the best location for arterial blood sampling during cardiopulmonary resuscitation.
- VII. Demonstrate the arterial line blood sampling procedure.
- VIII. Discuss drawing a mixed venous blood sample from a pulmonary artery catheter.

Module II - Blood Gas Analysis and Interpretation

- I. Demonstrate the ability to interpret various blood gas results.
- II. Given a clinical situation, explain the possible acid-base disturbance.
- III. Discuss the methods for correcting abnormal blood gas results.
- IV. Discuss the differences and the rationale between classic blood gas interpretation and clinical blood gas interpretation.
- V. Discuss factors which can contribute to inaccurate blood gas results.
- VI. Discuss the rationale for removing air bubbles and for icing an arterial blood gas sample.
- VII. Discuss the technique of preparing a blood sample for analysis.
- VIII. Discuss the function and principles of operation for the O₂, CO₂, and pH electrodes.
- IX. Demonstrate the routine maintenance of a blood gas analyzer.
- X. Demonstrate the technique of blood gas analysis.

XI. Demonstrate calibration and quality control methods for a blood gas analyzer.

XII. Demonstrate the reporting and recording of blood gas data.

Module III - Ventilator Management and Monitoring

I. Discuss the indications for long term continuous ventilation.

II. Prepare a mechanical ventilator for patient use.

III. Demonstrate ventilator monitoring.

IV. Select parameter settings appropriate for various clinical situations (blood gases, patient diagnosis, I:E ratios, etc.)

V. Discuss the significance of compliance in the patient-ventilator system.

VI. Perform a compliance measurement.

VII. Change ventilator tubing circuits while the ventilator is clinically in use.

VIII. Demonstrate the application of the following ventilation modifications:

a. positive end expiratory pressure (PEEP)

b. synchronized intermittent mechanical ventilation (SIMV)

c. continuous positive airway pressure (CPAP)

d. pressure support ventilation (PSV)

e. non-invasive positive pressure ventilation (NPPV)

f. other modes such as pressure regulated volume-control (PRVC)

IX. Discuss the clinical indications, hazards, and rationale for the ventilation modifications listed in Objective VIII.

X. Demonstrate the proper technique for obtaining the V_T , VC, MIP, f and V_E from a patient with an artificial airway.

XI. Discuss the significance of spontaneous ventilatory parameters in the process of weaning the patient from mechanical ventilation.

XII. Demonstrate the steps for discontinuing mechanical ventilation, including disconnection from the patient, cleaning, set-up with new circuit, and testing procedures for operational verification.

Module IV - Suctioning

I. State the precautions and hazards of suctioning.

II. Teach the patient how to cooperate during suctioning.

III. Select the equipment necessary for oral and nasal tracheobronchial suctioning.

- IV. Select the appropriate sized catheter for a given endotracheal or tracheostomy tube.
- V. Perform the suctioning procedure via oral, nasal and artificial airway routes.

Module V – Intubation and artificial airways

- I. Discuss the indications for the use of oral and nasal airways.
- II. Demonstrate the insertion of oral and nasal airway.
- III. Cite the criteria used when selecting the appropriate size nasal and oral airways.
- IV. Discuss the indications and hazards associated with the use of endotracheal and tracheostomy tubes.
- V. Demonstrate cuff inflation and deflation.
- VI. Demonstrate the intubation procedure
- VII. Evaluate the patient before and after intubation.
- VIII. Demonstrate the extubation procedure.
- IX. Evaluate the patient before and after extubation.

Module VI -Pulmonary Function

- I. Define all the lung volumes and capacities.
- II. Describe the obstructive and restrictive parameters obtained from pulmonary function studies.
- III. Explain the significance of performing an MVV.
- IV. Demonstrate the procedure of performing a forced FVC, slow VC, and an MVV.
- V. Derive FEV_1 , FVC, $FEF_{25-75\%}$, $FEF_{200-1200}$, PF and $FEV_1\%$ from the FVC tracing.
- VI. Recognize the significance of abnormal values in above parameters as indicators of restrictive and/or obstructive disease.
- VII. Discuss the findings of pre/post bronchodilator studies in relationship to response to the medication and to restrictive and/or obstructive disease
- VIII. Given a tidal volume, vital capacity, and functional residual capacity, derive all of the other lung volumes and capacities.
- IX. Discuss measurement of lung volumes by nitrogen washout and by plethysmography.

- X. Discuss the significance of abnormal values in the measurement of lung volumes as indicators of restrictive and/or obstructive disease.
- XI. Demonstrate the procedure for measurement of the diffusion capacity of the lung by single-breath DLCO.
- XII. Discuss the significance of abnormal values in the measurement of diffusion capacity as indicators of restrictive and/or obstructive disease, including differentiation of emphysema and bronchitis.

Module VII – Case Report (Also - see Case Report Guidelines)

- I. Write a case report covering a critically-ill patient to include diagnosis on admission, past medical and social history, presenting signs and symptoms, laboratory and test results, medications, respiratory therapy, procedures/surgeries, and a chronological review of the case. Submitted by one hard copy and one email copy.
- II. Discuss significant findings in the case with in-depth analysis of issues dealing with the pulmonary system.
- III. Discuss the respiratory management paying close attention to adherence to the current guidelines for care.
- IV. Incorporate an article from a peer-reviewed journal dealing with some aspect of the case.
- V. (Optional) Present the case to the class; be prepared to answer questions regarding the presentation and be evaluated on the quality of the presentation.