|  |  |
| --- | --- |
| **PROFESSOR:**  Ray Lenius | **PHONE NUMBER:**  239-985-3492 |
| **OFFICE LOCATION:**  A-122 | **E-MAIL:**  rclenius@fsw.edu |
| **OFFICE HOURS:**  By appointment | **SEMESTER:**  Fall 2017 |

1. **COURSE NUMBER AND TITLE, CATALOG DESCRIPTION, CREDITS:**

**RET 4445 Cardiopulmonary Diagnostics (3 CREDITS)**

Advanced invasive and non-invasive Cardiac and Pulmonary diagnostic procedures to include but not be limited to: cardiac catheterization, electrophysiology, echocardiography, stress testing, pulmonary studies and sleep disorders, explored in depth to enhance the knowledge of Respiratory Care professionals. Cardiovascular professionals will have the option to extend their expertise through advanced study of cardiac catheterization lab procedures, intravascular interventions, and related chemical and mechanical devices for Cardiopulmonary intervention.

1. **PREREQUISITES FOR THIS COURSE:**

**Admission into the BAS Cardiopulmonary Sciences Program; Prior to enrolling in any upper level course (course number beginning with a 3 or 4), students must complete the following courses with a grade of “C” or better: ENC 1101 English Composition I, ENC 1102 English Composition II, and three semester hours of college level mathematics; or permission from the appropriate academic dean.**

**CO-REQUISITES FOR THIS COURSE:**

None

1. **GENERAL COURSE INFORMATION:** Topic Outline.

At the completion of this course the RCIS/RDMS student will be thoroughly familiar with the following topics:

* Percutaneous aortic and pulmonary valve replacement
* Percutaneous mitral valve repair
* Percutaneous mitral valve annulus repair
* Abdominal aortic aneurysm (AAA) repair
* Stem cell research and applications
* Ventricular assist device (VAD)
* Ventricle remodeling
* Fetal cardiac invasive procedures
* Percutaneous occlusion of the left atrial appendage
* Percutaneous repair of atrial and ventricular septal defects
* Percutaneous repair of patent foramen ovale
* Alcohol septal ablation
* Atrial fibrillation ablation
* Left main stenting
* Diagnostic right, left and complete cardiac catheterization
* Electrophysiology study (EPS)
* Coronary CT angiography (CTA)
* Positron Emission Tomography (PET)
* Single Photon Emission Computed Tomography (SPECT)
* Magnetic Resonance Angiogram (MRA)
* Echocardiogram
* Bubble echocardiogram study
* Fetal echocardiogram
* Stress echocardiogram
* Transesophageal Echocardiogram (TEE)
* Exercise stress test
* 12 lead EKG
* Ambulatory cardiac monitoring
* Tilt table
* MUGA scan
* VEST scan
* Spirometry
* Gas diffusion
* Plethysmography
* Pulmonary function test (PFT)
* Computed tomography scan
* Culture of microorganisms
* Bronchoscopy Biopsy
* Ventilation - perfusion scan (V/Q)
* Ultrasound scanning /RDMS

1. **All courses at Florida SouthWestern State College contribute to the general education program by meeting one or more of the following general education competencies:**

**C**ommunicate clearly in a variety of modes and media.

**R**esearch and examine academic and non-academic information, resources, and evidence.

**E**valuate and utilize mathematical principles, technology, scientific and quantitative data.

**A**nalyze and create individual and collaborative works of art, literature, and performance.

**T**hink critically about questions to yield meaning and value.

**I**nvestigate and engage in the transdisciplinary applications of research, learning, and knowledge.

**V**isualize and engage the world from different historical, social, religious, and cultural approaches.

**E**ngage meanings of active citizenship in one’s community, nation, and the world.

**A.**  **General Education Competencies and Course Outcomes**

1. Listed here are the course outcomes/objectives assessed in this course which play an integral part in contributing to the student’s general education along with the general education competency it supports.

General Education Competency: **Think**

Course Outcomes or Objectives Supporting the General Education Competency Selected:

* List and discuss the different procedures for fetal cardiac diagnostic and intervention
* List and discuss the different procedures for pediatric cardiac diagnostic and intervention
* Describe the mechanism of action of balloons and stents used in a coronary angioplasty
* Compare and contrast spirometry, gas diffusion in the lungs, plethysmography, and pulmonary function testing

General Education Competency: **Investigate**

Course Outcomes or Objectives Supporting the General Education Competency Selected:

* Compare and contrast the normal and abnormal results of an electrophysiology study
* List and explain the treatment option for patients based on the findings from SPECT and MRA scans
* Compare and contrast virtual diagnostic procedure to traditional methods
* Compare and contrast the immune system's response to autologous transplant and allogeneic transplant

1. **DISTRICT-WIDE POLICIES:**

**Programs for Students with Disabilities**

Florida SouthWestern State College, in accordance with the Americans with Disabilities Act and the College’s guiding principles, offers students with documented disabilities programs to equalize access to the educational process. Students needing to request an accommodation in this class due to a disability, or who suspect that their academic performance is affected by a disability should contact the Office of Adaptive Services at the nearest campus. The office locations and telephone numbers for the Office of Adaptive Services at each campus can be found at <http://www.fsw.edu/adaptiveservices>.

**REPORTING TITLE IX VIOLATIONS**

Florida SouthWestern State College, in accordance with Title IX and the Violence Against Women Act, has established a set of procedures for reporting and investigating Title IX violations including sexual misconduct.  Students who need to report an incident or need to receive support regarding an incident should contact the Equity Officer at [equity@fsw.edu](mailto:equity@fsw.edu).  Incoming students are encouraged to participate in the Sexual Violence Prevention training offered online.  Additional information and resources can be found on the College’s website at <http://www.fsw.edu/sexualassault>.

1. **REQUIREMENTS FOR THE STUDENTS:**

This course is presented in a web-based format.

Students will be responsible for completing and submitting all assignments listed in each lesson by the stated deadline. Discussion will take place through the use of discussion forum postings, e-mail, and telephone (if necessary).

Discussion forums are simply computerized versions of the cork bulletin boards with which we're all familiar. Just as with traditional message boards, users of electronic discussion forums may post new messages, read others' messages, and respond to others' messages. The CANVAS Discussion will be used in class for electronic discussions. Students are required to participate in class electronic discussions. In other words, they are required to post messages and reply to messages on the discussion forum.

Course Emails: All course emails must be sent through the CANVAS system only. Emails regarding questions about the course sent through Eagle mail will be returned requesting that the email be resent through CANVAS email.

**Upon satisfactory completion of this course, the student will be able to:**

* Define and discuss the indications for a right and left heart catheterization
* List and explain the equipment used in a right and left heart catheterization
* List and explain the steps in a right and left heart catheterization
* Compare and contrast the normal and abnormal results of a right and left heart catheterization
* List and explain the treatment option for a patient based on an abnormal right and left heart catheterization
* Define and discuss the indications for an electrophysiology study
* List and explain the equipment used in an electrophysiology study
* List and explain the steps taken in an electrophysiology study
* Compare and contrast the normal and abnormal results of an electrophysiology study
* List and explain the treatment option for a patient based on an abnormal electrophysiology study
* Define and discuss intracardiac echocardiography for electrophysiology
* List and explain the views seen during intracardiac echocardiography for electrophysiology
* Define and discuss the radiofrequency ablation
* Define and discuss the indication for radiofrequency ablation
* List and explain the equipment used during radiofrequency ablation
* Define and discuss the indications for a cardiac and lung PET scan
* List and explain cardiac and lung PET scans
* Define and discuss the indications for a cardiac and lung CTA scan
* List and explain cardiac and lung CTA scans
* Compare and contrast PET and CTA scans
* List and explain the treatment option for patients based on the findings from PET and CTA scans
* List and explain how a PET scans works
* List and explain how a CTA scans works
* Define and discuss the indications for a lung and cardiac SPECT scan
* List and explain cardiac and lung SPECT scans
* List and explain cardiac and lung MRA scans
* Compare and contrast SPECT and MRA scans
* List and explain the treatment option for patients based on the findings from SPECT and MRA scans
* List and explain how a SPECT scans works
* List and explain how a MRA scans works
* Define and discuss the indications for a bubble study
* Define and discuss a bubble study
* Define and discuss the indications for a contrast echocardiogram
* Define and discuss a contrast echocardiogram
* Compare and contrast a bubble study and contrast echo
* Define and discuss the indications for a fetal echocardiogram
* Define and discuss a fetal echocardiogram
* Define and discuss the indications for a transesophageal echocardiogram
* Define and discuss a transesophageal echocardiogram
* Compare and contrast a fetal and transesophageal echocardiogram
* List and explain the conduction system of the heart
* List and explain an action potential
* Define and discuss the P, QRS, and T waveforms
* Compare and contrast basic cardiac arrhythmias
* List and explain the treatments for each cardiac arrhythmia
* Define and discuss bundle branch blocks
* Define and discuss recognition of and a STEMI on a 12 lead EKG
* List and explain axis deviation
* List and explain R wave progression
* Define and discuss the electrolytes used in an action potential
* Compare and contrast the 12 lead EKG changes in disease states
* List and explain the placement of 12 lead EKG patches
* List and explain the what each lead in a 12 lead EKG looks at
* Define and discuss the indications for a pacemaker
* Define and discuss the indications for an implantable cardioverter defibrillator
* Define and discuss the indications for a bi-ventricular pacemaker
* Define and discuss the indications for a bi-ventricular/ implantable cardioverter defibrillator
* Compare and contrast the types of pacemakers and implantable cardioverter defibrillator
* List and explain the indication for a stress test
* List and explain the contraindications of a stress test
* Define and discuss a stress test
* Define and discuss a nuclear stress test
* Define and discuss a pharmacological stress test
* Compare and contrast the types of stress test
* Compare and contrast the radioisotopes used in a nuclear stress test
* List and explain the treatments for a positive stress test
* Define and discuss the indications for a stress echocardiogram
* Define and discuss a stress echocardiogram
* List and explain the indication for a tilt table test
* Define and discuss the treatment for a positive tilt table test
* List and explain the steps in a tilt table test
* List and explain the indication for a Holter monitor
* Compare and contrast the types Holter monitors
* Define and discuss the treatment for a positive Holter monitor scan
* Define and discuss the indications for a MUGA scan
* List and explain MUGA scans
* Define and discuss the indications for a VEST scan
* List and explain VEST scans
* Compare and contrast MUGA and VEST scans
* List and explain the treatment option for patients based on the findings from MUGA and VEST scans
* List and explain how a MUGA scans works
* List and explain how a VEST scans works
* Define and discuss spirometry
* Define and discuss gas diffusion in the lungs
* Define and discuss plethysmography
* Define and discuss pulmonary function testing
* Compare and contrast spirometry, gas diffusion in the lungs, plethysmography, and pulmonary function testing
* List and explain treatments based on Compare and contrast spirometry, gas diffusion in the lungs, plethysmography test, and pulmonary function testing
* Define and discuss indications for a CAT scan of the lungs
* List and explain CAT of lungs
* List and explain spiral CAT of the lungs
* List and explain treatment options after a positive CAT scan of the lungs
* Compare and contrast a CAT and a spiral CAT scan
* Define and discuss microorganisms found in the heart
* Define and discuss microorganisms found in the lungs
* Define and discuss test used to detect microorganisms in the lungs and heart
* List and explain treatment options for treating microorganisms in the heart or lungs
* Compare and contrast the microorganisms in the heart and lungs
* Define and discuss indications for bronchoscopy biopsy
* List and explain bronchoscopy biopsy
* List and explain treatment options for a positive result from a bronchoscopy biopsy
* Compare and contrast the different types of bronchoscopy biopsy
* Define and discuss indications for Ventilation/Perfusion(VQ) scan
* List and explain the components of a Ventilation/Perfusion(VQ) scan
* List and explain treatment options a positive result from a Ventilation/Perfusion(VQ) scan
* Compare and contrast the different between the ventilation scan and the perfusion scan
* Define and discuss ultrasound imaging of the lungs
* Define and discuss the uses of lung ultrasound
* Define and discuss the use of ultrasound in fetuses
* Compare and contrast ultrasound imaging for lung cancer versus other methods

1. **ATTENDANCE POLICY:**

This course is an on-line course. All of the work will be done on-line. There will be assignments and discussion boards' postings due for specific modules throughout the semester. Each question on the discussion boards will relate to that week's topic. The assignments and postings must be submitted or made by the due date for each module, unless prior arrangements have been made with the professors. Each assignment will consist of multiple-choice or short answer questions. These questions will come from the reading assignments for that particular module. Each module assignment is to be completed on an individual basis. You are expected to complete the module assignment on your own without the assistance of others. Evidence of collaboration with other individuals will result in a grade of zero plus further sanctions for breach of academic honesty, which may result in suspension or expulsion.

**Attendance**— Attendance Verification: The student must complete all of the listed activities by 4:30 on the last day of the drop/add period, in order to have your attendance verified. If your attendance is NOT verified, this will affect your financial aid. Specifically, the three activities you MUST complete are as follows:

1. View the plagiarism tutorial and take the quiz.

2. Participate in the Introductory Discussion Board

3. View the APA format help page.

Students will be responsible for completing all assignments listed in each module and submitting them by the stated deadline. Discussion will take place through the use of discussion forum postings, e-mail, and telephone (if necessary).  Technology is not an excuse for late submission of assignments or postings to the discussion forum.

**Vacations:**  Students choosing to go on vacation during the semester are responsible for submitting all assignments, discussion forum postings, projects, and examinations by the stated due dates.  Lack of Internet access is not an excuse for late submission.

All work is to be completed solely and independently by the student. Inclusion of facts, ideas, quotes, or other materials from outside sources **must be cited and referenced** in all work. Failure to cite references may constitute plagiarism. Evidence of cheating and plagiarism are cause for disciplinary action by Florida Southwestern State College. According to Florida Southwestern State College, plagiarism and cheating refer to the use of unauthorized books, notes, using the copy and paste function, or otherwise securing help in a test; copying tests, assignments, reports, or term papers; representing the work of another person as one's own; collaborating without authority with another student during an examination or in preparing academic work, or otherwise practicing academic dishonesty.

**All work submitted must be original and not used in any previous classes at Florida Southwestern State College. Any work that is submitted and does not follow this policy will be considered plagiarized and as a result, there may be consequences as stated in the above paragraph. Using Wikipedia as a resource is not allowed. Any paper submitted using this source will be returned to the student to be fixed and resubmitted. If this causes the paper to be late, the student's grade will be reduced by the amount indicated in the instructions for that assignment.**

Students agree by taking the course all required papers may be subject to submission for textual similarity review to Turnitin.com for the detection of plagiarism.  All submitted papers will be included as source documents in the Turnitin.com reference database solely for the purpose of detecting plagiarism of such papers.  Use of the Turnitin.com service is subject to the Terms and Conditions of Use posted on the Turnitin.com site.

  Zero-Tolerance Policy:  Florida Southwestern State College maintains a zero tolerance policy for academic dishonesty.  Any student found in violation of academic honesty will subject to sanctions, which may include up to receiving a grade of "F" in this course.  Any School of Health Profession student that receives a grade of "F" for academic dishonesty in any course may be permanently dismissed from the program they are enrolled.

Essay assignments will be graded as they are submitted. The student‘s paper will be graded within 48 hours after submission. If there is going to be a delay, the instructor will notify student of the delay within the 48 hour window. Unless a student has prior permission from the professor, each assignment is to be submitted to the professor by stated due date.  Any assignment submitted after the deadline will lose the amount of points stated in each assignment's directions. No assignment will be accepted that is more than four (4) days late. After that time, a zero (0) will be given for that assignment.

1. **GRADING POLICY:**

Include below is the numerical ranges for each letter grade and the weights for each category.

**90 - 100 = A**

**80 - 89 = B**

**70 - 79 = C (Passing for this class)**

**60 - 69 = D**

**Below 60 = F**

**Discussions - 10%  
Module quizzes - 15%  
Essays - 25%  
Case Study - 15%  
Formal paper parts - 25%  
Formal paper final - 10 %**

**Students have one (1) week to make up written test with prior permission of the instructor. Any exam not made up within one week will result in a grade of “0” for the exam. No make up exams will be provided without prior permission of the instructor.**

**(Note: The “incomplete” grade [“I”] should be given only when unusual circumstances warrant. An “incomplete” is not a substitute for a “D,” “F,” or “W.” Refer to the policy on “incomplete grades.)**

1. **REQUIRED COURSE MATERIALS:**

These is not any textbooks for this class

1. **RESERVED MATERIALS FOR THE COURSE:**

None

Each module goes from Monday to Monday. Unless you have prior permission from the professor, each assignment is to be submitted to the professor by stated due date.  Any assignment submitted after the deadline will lose the amount of points stated in each assignment's directions. No assignment will be accepted that is more than 72 hours late late. After that time, a zero (0) will be given for that assignment.

This class has modules that are specific to the cardiovascular students and some specific to the respiratory students. In addition, there are modules that all students will participate in. For the cardiovascular students the words "Cardiovascular" will be in parenthesis following the subject of the module. For the respiratory students the words "Respiratory" will be in parenthesis following the subject of the module, and the words "All students" will be in parenthesis following the subject of the module. Any student can view the information in any module; however, the assignments and essays will be group specific.

For this class there will be one case study due. See module 7 for details. In addition, there will be a formal paper due in Module 15. This paper will be broken down into 2 parts. Each part will be due in different modules. Each part will be graded and returned. You will be required to make the changes suggested by the instructor and then put both parts together (copy and paste). The final paper will be graded based on the percentage of changes the student incorporated into the final paper.

Module 1 - Pulmonary Function Test, Spirometry, and Plethysmography - (Cardiovascular)

Module 1 - Basic Catheterization and Electrophysiology - (Respiratory)

Module 2 - Computed Tomography and Positron Emission Tomography - (All students)

Module 3 - SPECT and MRA - (Cardiovascular)

Module 3 - Fetal echocardiogram and TEE - (Respiratory)

Module 4 - Bronchoscopy and Biopsy - (Cardiovascular)

Module 4 - Echocardiograms - (Respiratory)

Module 5 - Chest CT scans and MRIs - (Cardiovascular)

Module 5 - 12 Lead EKG and Stress Test - (Respiratory)

Module 6 - Ventilation/Perfusion scans - (Cardiovascular)

Module 6 - Holter monitor - (Respiratory)

Module 7 - Mid-term Case Study - (All students)

Module 8 Pulmonary Intervention and Nanocarriers - (Cardiovascular)

Module 8 Cath Lab Intervention/Left Main stenting/CTO - (Respiratory)

Module 9 Stem Cells - (All students)

Module 10 Structural heart repair part 1 - (All students)

Module 11 Structural heart repair part 2 - (All students)

Module 12 Left Ventricular Assist Device and Cardiac Nanotechnology - (All students)

Module 13 Fetal/Pediatrics intervention - (All students)

Module 14 Cardiac Resynchronization Therapy/case study - (All students)

Module 15 - Ultrasound scan/formal paper - (All students)

1. **CLASS SCHEDULE:**
2. **ANY OTHER INFORMATION OR CLASS PROCEDURES OR POLICIES:**

None