

OAKLAND UNIVERSITY
SCHOOL OF HEALTH SCIENCE
PHYSICAL THERAPY PROGRAM

<u>COURSE TITLE AND NUMBER:</u>	PT 7550 Cardiopulmonary Interventions
<u>COURSE CREDIT:</u>	3 credits
<u>SEMESTER/YEAR</u>	Winter 2018
<u>COURSE LOCATION/ TIME:</u>	1:00pm-4:00pm 5002/5035 HHB (Mondays) 5036/5035(Wednesdays) Please check Syllabus and Moodle for pre-scheduled changes
<u>COURSE INSTRUCTOR:</u>	Sara Arena PT, DScPT
<u>OFFICE HOURS:</u>	3152 HHB 30 minutes before and after scheduled class time and by appointment
<u>CONTACT INFORMATION:</u>	Cell phone 586-212-8117 Fax phone 248-364-8660 E-mail- arena@oakland.edu
<u>COURSE PREREQUISITES:</u>	PT 7522, PT 7271, PT7420, PT 7510, PT7520

COURSE DESCRIPTION:

This course focuses on normal physiology, pathophysiology, tests and measures, screening, examination, evaluation, diagnosis, prognosis, plan of care and interventions of the cardiac and pulmonary systems. Cardiopulmonary considerations in a variety of diseases will be included. Lecture and laboratory sessions will emphasize clinical application and problem solving.

TEACHING METHODS AND LEARNING EXPERIENCES:

A traditional and system based curriculum model will be used and incorporates a combination of lecture, laboratory (inclusive of simulation labs), reading assignments, topic presentations for course instruction. Learning outcomes and experiences will focus on entry level cardiovascular and pulmonary specific examinations, intervention skills, clinical applications, problem solving and plan of care development throughout the continuum of care in a variety of clinical practice settings.

Course Objectives

Upon completion of the course the student will be able to:

(numbers and letters in bold and italics prior to a stated objective identify required elements for accreditation of physical therapists education programs, bold letters after the objective indicate which course required assignments measure if the objective has been achieved)

1. ***7A*** Describe key cardiovascular and pulmonary anatomical and physiological factors necessary for entry level practice. **A**
2. ***7C*** Evaluate an age appropriate cardiovascular and pulmonary condition inclusive of both medical and surgical related diagnosis that guides future patient/client management across the lifespan. **A,B,D**

3. **7C** Create an outline for an age appropriate cardiovascular and pulmonary examination inclusive of both medical and surgical related diagnosis that includes possible evaluation findings for the created scenario. **D**
4. **7D9** Access and critically analyze scientific literature and health informatics relevant to cardiovascular and pulmonary impairments and diagnosis, inclusive of critical and acute care practice settings and associated risk factors and sequelae. **B,C,E**
5. **7D10, 7D11** Apply principles of best practices for energy conservation, fiscal prioritization, physiologic limitations while considering the perspectives, the environment and the available resources of patients/clients with cardiovascular and pulmonary disease. **B,D**
6. **7D16** Determine through a screening, when examination or consultation by a physical therapist or referral to another health professionals is warranted to provide the patient/client and/or caregiver realistic, culturally competent and patient centered service that is consistent with contemporary practice. **B,C,D**
7. Develop and perform an examination, evaluation and diagnosis of patients/clients with cardiovascular and pulmonary disorders through the following;
 - a. **7D17** Obtain a complete history and relevant information from the patient/client and from other sources **B,C,D**
 - b. **7D18** Performs a cardiovascular and pulmonary system review. **B,C,D**
 - c. **7D19 a,e,h,w,r** Selects and competently administers tests and measures appropriate to the patient/clients age, diagnosis and health status including those that assess: **A,B,C,D (in additional to in laboratory activities)**
 - i. Maximal and submaximal aerobic capacity and endurance testing
 - ii. Circulation(arterial and venous)
 - iii. Environmental, home and work considerations and barriers
 - iv. Postures and their relationship to breathing patterns
 - v. Ventilation and respiration or gas exchange consideration
 - vi. Self-care and home management activities that promote energy conservation strategies
 - vii. Baseline and exercising vital sign measurements including but not limited to heart rate, blood pressure, respiratory rate, rate perceived exertion and dyspnea
 - b. **7D20** Perform and evaluate the results of a multisystem examination including history, health record, and tests and measures to make clinical judgements in regards to safe and effective cardiovascular and pulmonary patient/client management and to serve as a foundation for future care planning. **B,C,D**
 - c. **7D22** Determine a diagnosis that guides future patient/client management. **A,D**
 - d. **7D21** Use the International Classification of Function (ICF) to describe a patient/client's cardiovascular and pulmonary impairments, activity and participation limitations. **A,B,C,D**
8. Determine a patient/client prognosis and design a plan of care through the following:
 - a. **7D23** Determine goals and expected outcomes within available resources and specify expected length of time to achieve the cardiovascular and pulmonary goals and outcomes. **B,C,D**
 - b. **7D24** Create a cardiovascular and pulmonary focused plan of care that that is constructed to be safe, effective, patient centered and inclusive of appropriate stakeholders including caregivers, payors and other professionals. **D**
 - c. **7D** Provides patients with cardiovascular and pulmonary care that meets professional obligations for the practice environment inclusive of the intensive care unit and acute care practice setting. **C,D**
 - d. Selects , justifies and analyzes outcome measures that take into account practice settings, cultural and societal factors. Selection reflects efficient, valid and reliably tools, and use of health informatics. **C,D**

9. **7D27 a,d,h,i** Competently performs, creates, manages and demonstrates cardiovascular and pulmonary interventions to achieve established goals and outcomes. These interventions include but are not limited to; **D (in additional to in laboratory activities)**
 - a. **a** Airway clearance techniques including deep breathing, percussion, shaking, vibration, positioning, therapeutic breathing exercises, coughing and functional activities.
 - b. **d** Functional training for work, community, social and civic life activities that incorporate energy conservation principles
 - c. **d** Functional training in self-care, domestic and educational life activities that incorporate energy conservation principles
 - d. **i** Therapeutic exercise with associated modification and physiologic monitor for cardiovascular and pulmonary disorders
 - e. **h, 7D12** Design and implement cardiovascular and pulmonary education and instructional materials and experience that meet the learning needs of the patient/client, caregiver, peers and other health care professionals.
10. **7D30** Performs assessment/reassessment of each intervention in a plan of care with timely adjustment in response to patient/client status. **B,C,D**
11. **7D31** Assess patient outcomes, including the use of appropriate standardized tests and measures that address cardiovascular and pulmonary impairments, functional status and participation. **A,B,C,D**
12. **7D32** Demonstrates ability to complete accurate cardiovascular and pulmonary related documentation following guidelines and documentation formats required by state practice and in a variety of practice settings with a focus on acute care. **B,D**
13. **7D33** Respond effectively to principles of risk management in the area of cardiovascular and pulmonary medical emergencies including, but not limited, to universal precautions, cardiopulmonary resuscitation, high and low glucose levels, suspected cerebral vascular accident, using evidenced based parameters for when to withhold intervention and initiating emergency services in multiple practice settings. **A,D(in additional to in laboratory activities)**
14. **7D34** Provide physical therapy services that address primary, secondary and tertiary prevention inclusive of modifiable and non-modifiable healthy lifestyle choices that have an impact on cardiovascular and pulmonary prevention, wellness and quality of life consistent with contemporary practice for patient/clients with both primary and secondary cardiovascular and pulmonary disorders. **A,B,C,D**

Student completion of these goals will be measured using the evaluation and grading standards established for this course.

Evaluation and Grading

A. Test 1	10%
A. Test 2	10%
A. Test 3	10%
B. Video Case Summaries	15%
C. Topic Presentation	15%
D. Laboratory Practical	30%
E. Article review	10%

Grading scale:

GP Numerical	Letter	Percent	GP Numerical	Letter	Percent	GP Numerical	Letter	Percent
4.0	A	100 - 96	2.9	C	79	1.9	D	69
3.9	A	95	2.8	C	78	1.8	D	68
3.8	A	94	2.7	C	77	1.7	D	67
3.7	A	93 - 92	2.6	C	76	1.6	D	66
3.6	A	91 - 90	2.5	C	75	1.5	D	65
3.5	B	89	2.4	C	74	1.4	D	64
3.4	B	88	2.3	C	73	1.3	D	63
3.3	B	87 - 86	2.2	C	72	1.2	D	62
3.2	B	85 - 84	2.1	C	71	1.1	D	61
3.1	B	83 - 82	2.0	C	70	1.0	D	60
3.0	B	80-81				0.0	E	59 and below

Accommodations /Disability support services statement:

Any student with a documented disability needing academic accommodations is required to speak with the Office of Disability Support Services to make arrangements. The office is located in room 106 North Foundation Hall. For information or to make an appointment call 248-370-3266.

Academic conduct statement

Students are expected to adhere to the procedures for Academic Conduct described in the University Graduate Catalog. Please read and refer to the University Graduate Catalog, Policy on Academic Conduct. This policy states that "All members of the academic community . . . are expected to practice and uphold standards of academic integrity and honesty. Academic integrity means representing oneself and ones work honestly. Misrepresentation is cheating since it means students are claiming credit for ideas or work not actually theirs and are thereby seeking a grade that is not actually earned." Examples of cheating include "cheating on exams, using books and/or notes when not authorized to do so, copying from someone else's work or ideas without giving that person credit . . . Both direct quotations and paraphrases must be documented. Even if students rephrase, condense, or select from another person's work, the ideas are still the other person's and failure to give credit constitutes plagiarism of another's idea." This policy will be applied in this and all courses in the Program in Physical Therapy. Students found guilty of academic misconduct by the university will be subject university sanctions and to sanctions from the program by the Physical Therapy Promotion and Honors Committee including probation, suspension or dismissal.

Emergency Preparedness:

All students are encouraged to become familiar with the Oakland University Emergency Preparedness Website, Policies and Procedures.

See: <http://www4.oakland.edu/?id=5410&sid=188> In particular, students are strongly encouraged to:

1) Take the 15-minute *Violence Prevention Training Course* available on the site

2) Sign up to receive text message alerts in the event of a major campus emergency by visiting the **Emergency Notification** Web site (Grizz ID and valid OU e-mail address required)

3) Know how to contact the OUPD in the event of an emergency:

- Call **911** from any campus phone
- Call (248) 370-3333 from a cell phone
- Text the dispatch office at **911@oakland.edu**
- E-mail the dispatch office at **911@oakland.edu**

4) Know how to **submit anonymous tips** online in non-emergency situations.

Attendance:

The attendance and tardiness policy as published in the “Physical Therapy Student Handbook” will be in effect for this course. In the event a student must be absent or tardy, that student must notify the department or instructor prior to the start of that class to be eligible for an excused absence. Students will be allowed two absences and/or tardiness events. Greater than two events will result in a 2/10 of a point (.2) lowering of the final course grade.

Recommended Equipment

Blood Pressure Cuff and Stethoscope

REFERENCES:

Required Reading:

Hillegass, E. Essentials of Cardiopulmonary Physical Therapy, fourth edition. Elsevier 2017.

Massery, M. What’s Positioning Got to Do with It? Neurology Report.1994. Volume 18; Number 3; p.11-14.

ATS Statement: Guidelines for the Six-Minute Walk Test. American Thoracic Society. *Am J Respir Crit Care Med* 2002;166; 111-117.

Exercise Evaluations in the Physical Therapy Clinic: The Submaximal Clinical Exercise Tolerance Test to Establish Safe Exercise Prescription Parameters for Patients with Chronic Disease and Disability. Gappmaier, E *Cardiopulmonary Physical Therapy Journal*. Vol 23; No 2; June 2012;19-29

Recommended Readings:

Durstine and Moore. ACSM’s Exercise Management for Persons with Chronic Diseases and Disabilities. Third Edition. Human Kinetics, Campaign, IL 2009

ACSM’s Guidelines for Exercise Testing and Prescription. 9th Ed. American College of Sports Medicine. Lippincott Williams & Wilkins. 2013.

American Heart Association. BCLS Course Manual (most current version at time of course offering will be utilized)

TESTS

Multiple choice, matching and true false examinations will be used for test scoring. In addition, homework assignments from laboratory experiences including case studies and documentation of interventional choices will count in test scoring.

3 tests scores each worth 10% of total course grade

VIDEO CASE SUMMARIES

This assignment involves viewing a course instructor selected intervention video and then creating a written review/critique of the intervention observed. The video will focus on an area of cardiovascular and pulmonary care discussed within this course. Each student is required to watch two videos and will independently write a summary of both patient cases as follows:

1. State type of practice setting
2. Describe common cardiopulmonary diagnoses and/or practice patterns commonly evaluated by physical therapy in this practice setting (minimum of 10).
3. State cardiopulmonary evaluation tools (or tests and measures) commonly used by physical therapists in this practice setting. (minimum of 10)
4. Describe cardiopulmonary interventions used by physical therapists in this practice setting. (minimum of 8 different interventions)
5. Describe the patient observed in the video
6. Describe evaluation tools (tests and measures) used in the video
7. Describe all interventions observed in the video
8. Identify and provide a brief description of the purpose of any equipment being used with the patient in the video (ECG, monitors, oxygen, treadmill)
9. Discuss anything you observed that was different from what you expected or different from class discussion.
10. Create a written document formatted as if you were writing a SOAP note for the observed intervention. Make sure you include tests and measures performed (i.e. vital signs) as objective measures.
11. Create at least 3 short term goals (impairment related) and 3 long term goals (function related) for the observed patient.

A detailed rubric is available on Moodle.

Assignment will be worth 15% of total course grade

ARTICLE REVIEW

Each student will select one evidenced based article used as a reference in their topic presentation (different article for each student in the topic presentation group. A two page typed article review and critique will be created. Students may select any format they choose to review or abstract the article. It is strongly recommended students have a draft reviewed and critiqued by a peer (partner from topic presentation) using the grading rubric prior to submitting final copy to course instructor via Moodle.

1. Article relates to cardiovascular or pulmonary topic presented
2. Format, correct grammar, and writing skills
3. Students ability to describe relevance to physical therapy practice
4. Insightful description and critique of article reviewed

A detailed rubric is available on Moodle. **Worth 10% of course grade**

TOPIC PRESENTATION

Students will be required to investigate and present a topic pertinent to cardiopulmonary and/or cardiovascular physical therapy interventions. Students may work in groups of 2 for this assignment.

Requirements:

1. Presentations Must be 20-30 minutes in length and focus on the cardiopulmonary or cardiovascular aspects of each topic. Presentations less than 20 minutes will result in a reduced grade.
2. An outline or PowerPoint presentation will be created and posted to the Moodle forum at least 24 hours prior to the in class presentation. Late postings will result in a reduced grade.
3. Presentations should be based on a minimum of 3-5 references that are current as of 2007. Use of current health informatics should be considered. All references must be cited in the outline/PowerPoint.
4. The presentation must include a real or student generated patient case. Include a brief description of examination, tests and measures, prognosis, diagnosis, and plan of care. You may use PTNow, research articles, practicing clinicians and textbooks to assist you in creating the case for presentation.
5. Three to five multiple choice questions of examination quality must be e-mailed to the course instructor (with answers please) by the day of the presentation. Some of the questions gathered will be used for course testing purposes. DO NOT INCLUDE THE QUESTIONS DIRECTLY IN YOUR PPT.
6. Grading of your presentation will be done by your classmates with final approval by the course instructor. Each presentation will be graded on the following areas:
 - a. Clarity and organization of materials, quality of outline and visual aids
 - b. Accuracy, knowledge and depth of information
 - c. Clinical relevance and cardiovascular and pulmonary application
 - d. Case study relevance and clarity
7. For each topic you might consider...
 - a. Pathophysiology of condition with focus on cardiopulmonary issues of the disease
 - b. Normal medical intervention: lifestyle change, surgery, pharmacology
 - c. PT evaluation and treatment protocols

Assignment will be worth 15% of total course grade

Laboratory Practical

Students will be given 4 cases prior to the laboratory practical date. The cases will have a primary and/or secondary cardiopulmonary condition, impairment or problem. Students will turn in a written assessment and plan of care, hard copies only. While it is acceptable to work with classmates on the written aspect of this assignment, names of all students working in a group need to be acknowledged on the submitted paper.

Each of the 4 case written evaluations will include; examination, evaluation, diagnosis, prognosis, plan of care, short (impairment related) and long (functional (activity and participation) related) term goals and expected outcomes as outlined on the grading rubric. One of the 4 cases will be selected by the proctor when arriving for the laboratory practical. Students

will demonstrate the first treatment session after the evaluation visit with the “patient” using the findings and plan of care determined in the self-created evaluation.

Practical Format

Students are expected to wear appropriate clinic attire. Prior to beginning the lab practical, each student will have 5 minutes to re-examine the case assigned for testing; no papers/books can be brought into the test area; a blank piece of paper will be provided to students upon entering the testing area. Students will be given 30 minutes to complete a treatment session including re-assessments (ie. vital signs, lung or heart sounds). It is possible a standardized patient will be used when available; otherwise students will reverse the role as patient/PT for testing purposes.

Examination and Evaluation Specifics

Students will have a written examination/evaluation paper for all 4 of the cases to turn prior to the start of the practical. It cannot be used by the student during the practical exam. See the grading rubric for specific details of written assignment.

Intervention Specifics

The student will be expected to be efficient yet effective in treating the known or expected involvement of the cardiovascular and pulmonary systems. Students will be required to observe any contraindications to specified examination or intervention techniques, and explain accurately the rationale for each decision or action they perform. Students must be proficient, accurate and efficient in physically performing heart/ lung sounds, manual percussion techniques, blood pressure and pulse assessment, and basic breathing frequency or volume assessments in addition to any other clinically relevant tests and measures. The student MUST demonstrate universal precautions and all aspects of safety throughout the treatment or remediation will be required. Lab proctors will expect the student to know physiologic responses of cardiovascular and pulmonary medications during intervention and the effects on outcomes and may ask the student to state them. Proctors may ask the student to describe and demonstrate what their response would be to an emergency situation (i.e. sign and symptoms of stroke, myocardial infarction, choking or basic cardiac life support) if encountered in the clinical setting.

Students must be prepared to demonstrate or explain to “patients” any positions, exercise, functional task etc. that are deemed appropriate. Although, accuracy is expected, students will not be graded on orthopedic or neurological techniques, but must demonstrate safety at all times.

“In the PT program all students must pass the lab practical examinations with a score of 80% or higher in order to successfully pass the course. In addition, students must perform safely in order to pass the practical examination, as well as scoring 80% or higher.” Refer to the PT Student Handbook regarding the policy on practical examinations.

Assignment will be worth 30% of total course grade

Tentative Class Schedule

<u>Date</u>	<u>Topic</u>	<u>Assignment</u>	<u>Reading</u>
1-3	Course Intro Cardiopulmonary Anatomy & Physiology	Physiology Case Studies	Chapters 1 & 2
1-8	Cardiac Pathophysiology Heart Sounds Lab	Heart Sounds Worksheet	Chapter 3 & 4 Page 522-524
1-10	Pulmonary Pathophysiology Lung CA Case Presentation		Chapter 5 & 6
1-15	NO CLASS- MLK Day		
1-17	Electrocardiogram Interpretation	ECG worksheet/practice application	Chapter 9
1-22	Vital Sign Assessment	Vital Sign Community assessment Vital Sign "Check-off" part 1 (in class) & 2 (validator) Vital Sign Cases	
1-24	Pharmacology Cardiac Testing		Chapter 14 & 15
1-29	Pulmonary Function Testing 1-2pm Exercise Testing <i>Lindsay Brandt DPT</i> 2-4pm	Pharmacology Worksheet	Chapter 8 & 10
1-31	Thoracic Surgery Emergency Preparedness	Emergency Preparedness Cases	Chapter 11 & 12
2-5	Exercise Testing Lab Day -6 MWT <i>Lori Boright PT</i> -Cardiac Treadmill Test <i>Lindsay Brandt, DPT</i> -Functional Submaximal Exercise Testing Metabolic Lab/5001/5035 HHB		-Guidelines for 6 minute walk test -Submaximal Exercise clinical exercise test
2-7	Cardiac Rehabilitation Video Case Presentation		Chapter 18
2-12	Lung Sounds Deep Breathing Lab <i>Jacqueline Scully</i>		Page 515-522
2-14	Test 1		
2-26	Chest Physical Therapy	CPT Cases	What's Positioning

			<i>Got to do With It?</i>
2-28	Pulmonary Rehabilitation Evaluation	Tentative check off date for BP/HR validator check off 3-1 and 3-9 12-2pm 4021 HHB	Chapter 16, 19 & 22
3-5	Acute Care/ICU Considerations <i>Jacqueline Scully PT</i>	VIDEO CASE SUMMARIES DUE	Chapter 13 & 17
3-7	ICU Simulation Lab Multiple Tubes and Lines Transfer Planning D/C Planning	Discharge Planning Assignment	
3-12	Topic Presentations - <i>Asthma</i> - <i>Idiopathic Pulmonary Fibrosis</i> - <i>Sleep Apnea</i> Acute Respiratory Failure Case Presentation		Chapter 7
3-14	Test 2		
3-19	Class 9am-12pm (Room 5035) Topic Presentations - <i>Nutrition and Anti-Oxidants for cardiac health</i> - <i>Metabolic Syndrome</i> - <i>Smoking Cessation</i> - <i>Hypercholesterolemia</i> CABG/MVR Case Presentation		
3-21	Class 9am-12pm (Room 5035) Topic Presentations - <i>Pacemakers and Implantable Defibrillators</i> - <i>Lung Transplantation</i> - <i>Heart Transplantation</i> - <i>Deep Vein Thrombosis/ Pulmonary Embolism</i> Pneumonectomy Case Presentation		
3-26	Class 9am-12pm (Room 5035) Topic Presentations - <i>Cultural Issues in Cardiac and Pulmonary disease</i> - <i>Obesity epidemic in children</i> - <i>POTS</i> Lab Practical Demonstration		

3-28	Class 1:00-4:00 (Room 5035) Topic Presentations - <i>Acyanotic heart defects in children</i> - <i>Cyanotic heart defects in children</i> - <i>Muscular Dystrophy (focus on Duchenne)</i> - <i>Cystic Fibrosis</i> Femoral Bypass Case Presentation	ARTICLE REVIEW DUE	
4-2	Class 9-11:30am (5001/5035) Cardiopulmonary Considerations in Pediatrics 9-10:15am <i>Melodie Kondratek PT, OMPT, DScPT</i> Pediatric Lab 10:30-11:30am	Pediatric Worksheets	Chapter 20
4-4	Open Lab for Lab Practical Practice Test 3- distributed for take home exam		
4-9	Lab Practical 9am-12pm 5001 and 5035		
4-11	Test 3 due to Sara Arena Mailbox by 12:00pm. Lab Practical Remediation date TBD		