North Central State College

MASTER SYLLABUS	2025-2026

A. Academic Division: Health Sciences

B. Discipline: Respiratory Care

C. Course Number and Title: RESP1250 Cardiopulmonary Anatomy & Physiology

D. Assistant Dean Heidi Kreglow, PT

E. Credit Hours: 4

F. Prerequisites: BIOL1730, RESP1110, RESP1130, RESP1190
Co-requisite(s): RESP1220, RESP1270

G. Last Course/Curriculum Revision Date: Fall 2023 Origin date: 12/22/2010

H. Textbook(s) Title:

Cardiopulmonary Anatomy & Physiology
- Author: Terry Des Jardins
- Copyright Year: 2018
- Edition: 7th
- ISBN #: 9780840022585

Egan's Fundamentals of Respiratory Care
- Authors: Kacmarek, Stoller, and Heuer
- Copyright Year: 2024
- Edition: 13th
- ISBN #: 9780323931991

I. Workbook(s) and/or Lab Manual: None

J. Course Description: This course is a study of the physic principles as they apply to cardio-pulmonary physiology, anatomy of the lungs and heart, the mechanics of ventilation and pulmonary circulation, airway resistance, hemodynamics, lung compliance, and the non-uniform distribution of ventilation and perfusion. Gas laws and other mathematical equations will be studied and applied to the cardiopulmonary system. Oxygen transport and carbon dioxide transport are also covered in detail.

K. College-Wide Learning Outcomes:

College-Wide Learning Outcome	Assessments - - How it is met & When it is met
Communication – Written	
Communication – Speech	
Intercultural Knowledge and Competence	
Critical Thinking	
Information Literacy	
Quantitative Literacy	

L. Course Outcomes and Assessment Methods:

Upon successful completion of this course, the student shall:

Outcomes	Assessments – How it is met & When it is met
1. Apply basic laws of physics dealing with phases of matter, work, energy, gas laws, temperature, the atmosphere and pressure, electricity and magnetism	Quiz week 4, Midterm Exam week 8
2. Locate the anatomical structures of the cardio-respiratory system and describe their physiologic function	Quiz week 2, Midterm Exam week 8
3. Apply the laws of physics and how they relate to the anatomy and physiology of the respiratory system with emphasis on the mechanics of ventilation and its relationships with airway resistance and compliance	Quiz week 4, Midterm Exam week 8
4. Apply the laws of physics as they relate to gas exchange and diffusion in the respiratory system with emphasis on the diffusion of oxygen and carbon dioxide	Quiz week 5, Midterm Exam week 8
5. Identify lung volumes and capacities and explain how they relate to one another	Quiz week 4, Midterm Exam week 8
6. Describe cardiopulmonary circulation including normal blood flow and distribution through the circulatory system and understand the variables that will affect the flow and distribution of blood	Quiz week 6, Midterm Exam week 8
7. Diagram normal hemodynamic pressures of the circulatory system and explain their relationship to pathology	Quiz week 14, Final Exam week 16
8. Explain the distribution of ventilation and perfusion with the relationship to normal lung anatomy and in certain pathologies	Quiz week 10, Final Exam week 16
9. Explain solutions, body fluids, and electrolytes as they apply to body fluid homeostasis. Explain the regulation and control of the following electrolytes: a. sodium b. chloride c. potassium d. bicarbonate	Midterm exam week 8, Final Exam week 16
10. Describe fetal lung development and circulation development and circulation	Quiz week 11, Final Exam week 16
11. Explain normal chemical electrophysiology of the heart and explain the five phases of the cardiac cell action potential. Interpret basic ECG rhythms	EKG Homework assignment, Quiz week 12 & 13, Final Exam week 16
12. Explain neuro regulation of ventilation focusing on the respiratory centers in the brain and peripheral chemoreceptors	Quiz week 10, Final Exam week 16

M. Recommended Grading Scale:

NUMERIC	GRADE	POINTS	DEFINITION
93–100	A	4.00	Superior
90–92	A-	3.67	Superior
87–89	B+	3.33	Above Average
83–86	B	3.00	Above Average
80–82	B-	2.67	Above Average
77–79	C+	2.33	Average
73–76	C	2.00	Average
70-72	C-	1.67	Below Average
67–69	D+	1.33	Below Average
63-66	D	1.00	Below Average
60-62	D-	0.67	Poor
00-59	F	0.00	Failure

N. College Procedures/Policies:

North Central State College believes that every student is a valued and equal member of the community.* Every student brings different experiences to the College, and all are important in enriching academic life and developing greater understanding and appreciation of one another. Therefore, NC State College creates an inclusive culture in which students feel comfortable sharing their experiences. Discrimination and prejudice have no place on the campus, and the College takes any complaint in this regard seriously. Students encountering aspects of the instruction that result in barriers to their sense of being included and respected should contact the instructor, assistant dean, or dean without fear of reprisal.

* *Inclusive of race, color, religion, gender, gender identity or expression, national origin (ancestry), military status (past, present or future), disability, age (40 years or older), status as a parent during pregnancy and immediately after the birth of a child, status as a parent of a young child, status as a foster parent, genetic information, or sexual orientation*

Important information regarding College Procedures and Policies can be found on the syllabus supplement located at
https://ncstatecollege.edu/documents/President/PoliciesProcedures/PolicyManual/Final%20PDFs/14-081b.pdf

North Central State College

SYLLABUS ADDENDUM

Academic Division:	Health Sciences	**Discipline:**	Respiratory Care
Course Coordinator:	Randee Frangella BSRT, RRT/RCP		
Course Number:	RESP 1250-01	**Course Title:**	Cardio-Pulmonary Anatomy & Physiology
Semester / Session:	Spring 2026	**Start / End Date:**	01/12/2026 thru 05/08/2026

Instructor Information

Name:	Randee Frangella	**Credentials:**	BSRT, RRT/RCP
Phone Number:	419-755-4849	**E-Mail Address:**	rfrangella@ncstatecollege.edu
Office Location:	HS-324	**Office Hours:**	Monday & Wednesday 10a-12p, Tuesday 12p-1p

I. Topical Timeline / Course Calendar (Subject to Change):

Weeks	Topics	Assignment	Due Date
1	Ch 1- Anatomy & Physiology of the Respiratory System	Week 1/Day 1 activity Ch 1 case study	1/21/26
2	Chapter 2- Ventilation	Ch 1 Activity- path of a breath, labeling structures Quiz Ch 1	1/25/26
3	Finish Chapter 2 Chapter 3- PFT's	PFT practice	2/1/26
4	Chapter 4- Pulmonary Gas Diffusion	Oxygen content math Quiz ch 2&3	2/8/26
5	Chapter 5- Circulatory System	Ch 5- flow chart Quiz Chapter 4	2/15/26
6	Chapter 6- O2 & CO2 Transport Exam #1 Ch 1-5	Oxygen transport practice equations Quiz Chapter 5	2/22/26
7	Chapter 7- Acid-Base Balance	H-H equation practice Quiz Chapter 6	3/1/26
8	Chapter 8- Ventilation/Perfusion Chapter 9- Control of Ventilation	Quiz Chapter 7	3/15/26
9	Chapter 10- Fetal Development	Fetal circulation flow chart Quiz Chapter 8 & 9	3/22/26
10	Monday- Exam II review Wednesday- Exam II (Ch6-10)	Quiz Chapter 10	3/29/26
11	Chapter 12- Electrophysiology of the Heart	EP conduction flow chart	4/5/26
12	Chapter 13- EKGs Chapter 14- EKG Interpretation	Rhythm Strip practice homework Quiz Chapter 12 & 13	4/12/26
13	Finish EKG's Chapter Fifteen: Hemodynamics	More EKG practice Quiz Chapter 14	4/19/26
14	Finish Hemodynamics Chapter 16- Kidneys and Affect	Hemodynamics worksheet	4/26/26
15	Exam Review/ Catch up	Final review questions	5/3/26
16	Final Exam		

II. Grading and Testing Guidelines:

Final Grade Calculation

Activity	Qty	Points	Percentage
Attendance	1	100	20%
Homework & Activities	20	345	40%
Quizzes & Exams	14	477	40%

III. Examination Policy:

1. Exams will be scheduled and proctored by the instructor, they will be given in the classroom.
2. If you cannot attend your scheduled exam time, you must notify me prior to the exam so that accommodations can be made.
   a. Failure to do so will result in an automatic 10% deduction of the exam grade.
   b. Make-up exams MUST be taken within one week of original exam date.

IV. Class Attendance and Homework Make-Up Policy:

1. Attendance to all face to face (classroom) sessions are mandatory as understanding of the topics covered are essential to your success this semester in this class.

2. **New for Spring 2025**: This semester will offered entirely face-to-face in the classroom, there will be no Zoom sessions.

3. Homework is due by the date/time posted in Canvas. Assignments that cannot be submitted by the posted due date will be accepted for 3 calendar days following the due date with a 20% reduction in grade earned. Following the 3-day grace period, work submitted late will receive 0 points.

4. Students who do not attend classes may be administratively withdrawn from those classes. However, failure to attend classes does not constitute withdrawal, and students are expected to process a formal withdrawal though the Student Records Office

V. Classroom Expectations:

1. All students are expected to conduct themselves in a professional and respectful manner with any interaction between student and staff/instructor. This applies to interaction in the classroom, lab, clinical, and online environment as well as your interactions outside of a formal setting while performing work and discussions.