2020-21 Respiratory Care
Annual Institutional Assessment
Report
On-Campus Respiratory Care Baccalaureate Program and
Degree Completion Bachelor of Science Program (On Line)

Mission, Objectives & Learning Outcomes Oregon Tech Mission:

Oregon Institute of Technology, an Oregon public university, offers innovative and rigorous applied degree completion programs in the areas of engineering, engineering technologies, health technologies, management, and the arts and sciences. To foster student and graduate success, the university provides an intimate, hands-on learning environment, focusing on application of theory to practice. Oregon Tech offers statewide educational opportunities for the emerging needs of Oregonians and provides information and technical expertise to state, national and international constituents.

On Campus Program Goals:

The Bachelor of Science Degree in Respiratory Care from Oregon Tech integrates therapeutic and diagnostic procedures and a general education core with course work in scientific and leadership principles. Registered Respiratory Therapists are physician extenders who, under medical direction, administer cardiopulmonary care, evaluate and assess pulmonary patients, and administer medications and diagnostic tests when appropriate. Their duties involve the use of the many latest advances in medical arts, sciences and technology. We assure a variety of educational experiences at Oregon Institute of Technology to not only graduate active working respiratory therapists, but to graduate professional leaders as well. This program is supported and accredited by Commission of Accreditation for Respiratory Care (CoARC) and the Northwest Regional Accreditation Agency.

On Line Program Goals:

The goals for on-line education for respiratory care are in line with the CoARC ambition of elevating currently working licensed and credentialed therapists to obtain a bachelor's degree. CoARC's specific 2020 goal is to recruit 80% of now working Associate Degree Respiratory Therapists into a Baccalaureate working therapist to assure equal opportunities as with other health care providers who have elevated

their practices with higher education. Here are our commitments to our students who choose to move forward obtaining each individuals degree completion goals:

- Provide an excellent experience in obtaining a bachelor degree offering extra credentials given by the NBRC and to assure job security/leverage within their profession.
- To facilitate education by communicating with on campus students as well as networking with others in their class learning regional differences in the career of respiratory care.
- In addition to higher level of patient quality care, we like to graduate leaders, managers, community works and educators. Our program offers learning opportunities in all of these areas.
- Offering alternative work environments such as rural health and mid-level providers for our students to be aware of as opportunities within communities.
- Encourage our students to graduate coursework as it will provide a spring board into a variety of opportunities within respiratory care that includes upward mobility.

Core Theme 1:

Applied Degree Programs Oregon Tech offers innovative and rigorous applied degree programs. The teaching and learning model at Oregon Tech prepare students to apply the knowledge gained in the on line classroom to the current workplace resulting in a higher quality employee.

Core Theme 2:

Oregon Tech fosters student and graduate success by providing an intimate, hands-on learning environment, which focuses on application of theory to practice. The teaching and support services facilitate continued students' personal and academic development.

Core Theme 3:

Statewide On Line Educational Opportunities offers state and nationwide educational opportunities for the emerging needs of Oregon's citizens and Respiratory Care in general. To accomplish this, Oregon Tech provides innovative and rigorous applied degree programs to students across the state of Oregon, including high school programs, online degree programs, and partnership agreements with community colleges and universities.

Core Theme 4:

Public Service Oregon Tech will share information and technical expertise to state, national, and international constituents for Program Alignment to Oregon Tech Mission and Core Themes. The Respiratory Care Program aligns with the Oregon Institute of Technology Mission Statement and offers innovative as well as rigorous applied health technologies. This doesn't only include building current professionals in a growing career, but leaders to support the profession for many years into the future. We foster student and graduate success as we provide an intimate, hands-on learning environment and experience that focuses on application of theory to practice through didactic and lab courses that improves interfacing improved equipment with technologies each year. This is in-line with Oregon Techs offering with state and nationwide educational opportunities for the emerging needs of America's health care. The On-Line Respiratory Care Degree Completion Program has been highly regarded by

Oregon State Medical Centers as well as nationwide hospitals by filling high employment needs that keep significantly growing with quality graduates.

Accreditation:

The on-campus Respiratory Therapy Baccalaureate Degree Program is, and has been, accredited for many years during its existence; even in its infancy when the program was with Rogue Community College. This includes both CoARC and The NW Regional Accrediting agencies. Our standards have been recognized as high value education and job placement through accreditation with CoARC. We have been ranked within the top five programs in the United States, receiving multiple 'Distinguished Awards' for a well ran program for consecutive years, and we have just completed our site visit during the Spring of 2021 with the last accreditation done almost ten years prior (2011). This year there were a few minor recommendations that are being reconciled to the standards they are asking for. The Inter-Rater Reliability system while in clinical study and more community involvement with annual advisory board meetings are in the process of being resolved and reported to CoARC. Our students are continuing to be recognized for high pass rates, employer satisfaction and student satisfaction with their educational outcomes employed as an entry level employee after graduation which is a major component that CoARC is looking for. Our goals for our on-campus students are as follows:

- To be able to work and lead successfully in a team building environment within the health care industry.
- To provide the best Laboratory experience by using equipment that is currently used in the field of respiratory care.
- To provide may hours of clinical experience (over 1,000 hours) prior to graduation. Other than general and acute care skills, these clinical experiences also offers a variety of rotations that include diagnostics, home care, pulmonary rehabilitation, night studies, management/education and NICU.

The On-Line Respiratory Care Program is not currently accredited through CoARC, though we reserve the ability to do so. We do plan on working towards accreditation for the on-line program this year as it will benefit student head count by building bridge programs with other entities and like professions. There is speculation that perhaps this would be mandated in the near future anyway. The On-Line Respiratory Care Program is currently accredited through the Northwest Regional Accrediting Body. Our on- campus program has been highly successful evidenced by 100% employer and student satisfaction surveys mandated by CoARC for several years in a row. We further meet the Core Themes of Applied Degree Programs by being one of two programs in the Northwest regions that offers a Bachelor of Science Degree in Respiratory Care. As of January 2017, CoARC will not recognized any new Associate Degree Programs in Respiratory Care showing a need for higher education within this profession. Lane Community College has closed its Respiratory Care Program as a partial result to these changes. We are actively trying to work with Mount Hood Community College to create a partnership in continuing to vie for higher education yet meet the need in urban Oregon as well as the need in rural Oregon. We do place a 5-year limit for students to earn a Bachelor's Degree in Respiratory Care and revise curricular maps based on relevant changes to assure graduation can be met by everyone who enters this program. This is true for our On-Line program as well, but it is much more flexible with working schedules. Students are able to pick and choose the busiest schedule, or the minimal amount of credits it takes to

be a part of the on-line program. With this stated, each student will need to complete the program within five-years of being accepted into either the on-campus or on-line programs. These on-line students are involved in education as well by working closely with our on- campus students each term by providing detailed experiences that on-campus students have only read about. This gives our on-line students an opportunity, not only to educate with on campus students about real life scenario's, but interacts with them as they are to engage with on-line students about the scenario assignment presented to them each week. We have been heavily involved in recruiting for our program profession through seminars and city/county events as the job expectation growth is thought to almost double from during the 2014-24. The current survey for job growth expectations is 19% for 2019-29 as stated the Bureau of Labor and Statistics. CoARC partnering with the AARC and NBRC recognizes the set goal is to have 80% of the workforce acquiring a bachelor's degree by 2020.

Advisory Board: This is an area of improvement that CoARC has wanted improvement in. This will be remedied by approaching the Oregon State Respiratory Care Society and an approach to retirement professional groups found in the community. The Respiratory Care Program Advisory Board met with the Medical Director, Dr. Michael Blumhardt and Advisory Board Chair, Kelly Angel, assure that our program and student needs are being met. Two students from each cohort, sophomore, junior and seniors met together as well as faculty and various hospital managers to discuss on going changes for the best education for our students within the career field meeting industrial standards. Covid 19 has been an obstacle in the past two years but our next intended advisory board meeting is August 23rd, 2021. Our program has been graduating classes for a few years now with the credentials of ACLS, PALS and BLS and are open to all of OIT students that has helped leverage new graduates for job entry level positions. This advisory board does not recognize the operations of on-line courses. Though the committee does not recognize the on-line program their has been conversation to work with managers, industry and Oregon Tech's On-Line program for increasing student numbers and strengthening higher education standards in the local areas.

I. Introduction and History

This Respiratory Care Program is one of only two Bachelor Degree programs in the States of Oregon, Washington, Alaska, Hawaii, and California. There are emerging bachelor programs that are becoming more popular due to the demand for job security that some states are beginning to implement evidenced by higher credentials needed to practice in some states, including Oregon. This demand is also recognized as in line with the CoARC/AARC 2020 goals for 80% baccalaureate degree achievements. This program was initially an Associate Degree Program at Rogue Community College. The Respiratory Care Associate Program transitioned to Oregon Institute of Technology in September 2004 with 25 first year students enrolled and per cohort limitations. Since then, the Commission on Accreditation for Respiratory Care (CoARC) has allowed a maximum time before its next site visit in which we just now completed this year. They have found us to be within the top five performing Respiratory Care Programs in the nation for several years now, and has recognized that our board passing rate and employer satisfaction is at an all-time high. Initially in this transition, the program was taught on both the Rogue Community College campus and the Klamath Falls campus of Oregon Tech over a period of six years. In the fall of 2009, Oregon Tech enrolled the first class of bachelor's degree students on campus and began phasing out the associates degree with the last class of its kind graduating in June of 2010. At this time, we began our on-line program for currently working Registered Respiratory Therapists to

obtain their bachelor's to meet the goals of CoARC, The AARC and National Board for Respiratory Care (NBRC). We have seen a plateau of enrollment most likely due to burn out associated with Covid. When addressing this issue, there are plenty of articles that speak to on-line higher education medical professions showing a decline in enrollment for this very reason. The Respiratory Care Program has now moved to the Klamath Falls campus entirely including our on-line support staff. The first graduates of the BS program were in March, 2012. As the program has changed since this period, so have the current curriculum evolved to stay competitive in an always changing health care system. This curriculum assures that our on-line curricular map lines up with our on-campus courses as well.

II. Program Purpose:

The latest meeting objectives and Student Learning Outcomes during the November 2020 advisory board meeting continued to confirm that the September 2016 goals of the programs purpose, objectives and outcomes that were reviewed and affirmed as a committee remain the same until the next meeting. The goals and purposes for the On-Campus Respiratory Care Program are:

> "The Bachelor of Science Degree in Respiratory Care from Oregon Tech graduating students will be well integrated in theory, to build skills with laboratory experiences and to conclude with over 1,000 hours of clinical experience and bedside manner. The goal is to meet the demands in the State of Oregon and the region of the medical industry respiratory care positions needing to be fulfilled with confident knowledgeable respiratory care practitioners. Along the way we build professional and leaders that are highly desired in the medical arena."

The goals and purposes for the On-Line Respiratory Care Program are:

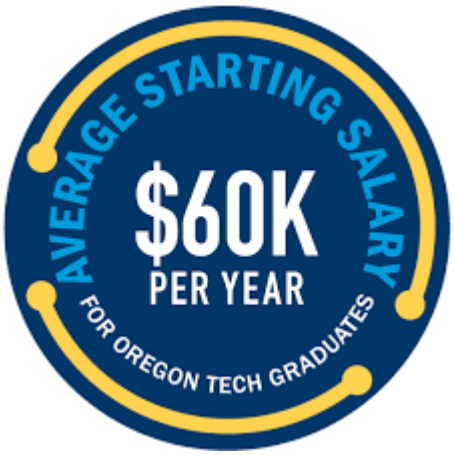
> "The purpose of the On-Line Respiratory Care Program, a Bachelor of Science Degree, is to offer continuing education in our profession, advancement or new options in our career and the bachelor's degree required for entry into master's degree programs. Many of the students go on to advanced degrees in business, education and more."

The purpose of the Respiratory Care Program, a Bachelor of Science Degree overall, is to provide for the regional needs for respiratory care practitioners prepared at an advanced level of a Registered Respiratory Therapist through higher education recognized by the National Board of Respiratory Care (NBRC). The secondary purpose is to meet the CoARC goals of recruiting associates to baccalaureate to elevate the profession in line with other like medical disciplines. The on-line program offers incentives by acquiring additional credentials through the NBRC strengthening or profession throughout the country. It is a unique opportunity to build leaders and educators to promote this profession to a higher standard of care within the healthcare industry. The On-Line Respiratory Care Program highlights two factors of our successful program that includes:

- Falls under the Best On-Line College in Oregon.

- Best Buy for Bachelors Health Professions as well as Most Affordable On-Line Respiratory Programs.

- This year, Oregon Tech has been recognized with the esteemed title of a Polytechnic University. Our students are above the average at a hiring rate of 98% within 6 months of graduation (most are hired prior to graduation pending NBRC exams) and a starting wage of a national average of $65K per year.



Program Educational Objectives:

- Graduates will demonstrate professional behaviors consistent with employer expectations as advanced-level respiratory therapists (affective domain).

- Graduates will demonstrate the ability to comprehend, apply, and evaluate clinical information relevant to their roles as advanced-level respiratory therapists (cognitive domain).
- Graduates will demonstrate technical proficiency in all the skills necessary to fulfill their roles as advanced-level respiratory therapists (psychomotor domain).

Expected Program Learning Outcomes Students in the program will demonstrate:

1. The ability to communicate effectively in oral, written and visual forms.
2. Knowledge of the respiratory care code of ethics and ethical and professional conduct.
3. The ability to function effectively in the health care setting as a member of the healthcare team.
4. Knowledge and application of mechanical ventilation and therapeutics.
5. Knowledge and application of cardiopulmonary diagnosis and monitoring.
6. Knowledge and application of cardiopulmonary pharmacology and pathophysiology.
7. Management of respiratory care plans for adult, neonatal and pediatric patients.

Three-Year Cycle for Assessment of Expected Student Program Learning Outcomes:

The following table shows the three-year plan for assessing individual student learning outcomes.

Program Student Learning Outcome	2020-21	2021-22	2022-23
1. The ability to communicate effectively in oral, written and visual forms			●
2. Knowledge of the respiratory care code of ethics and ethical and professional conduct.		●	
3. The ability to function effectively in the health care setting as a member of the healthcare team.		●	
4. Knowledge and application of mechanical ventilation and therapeutics.	●		
5. Knowledge and application of cardiopulmonary diagnosis and monitoring.	●		
6. Knowledge and application of cardiopulmonary pharmacology and pathophysiology.	●		
7. Management of respiratory care plans for adult, neonatal and pediatric patients.			●

Table 1. Respiratory Therapy Education Assessment Cycle. PSLO summarized in Appendix 1.

Institutional Essential Educational Objectives:

The Essential Student Learning Outcomes (ESLOs) support Oregon Tech's institutional Mission and Core Themes. The assessment structure is to have three pathways (foundation, essential practice, and capstone) for each of the six ESLOs.

The scaffolding assessment in essential learning is a process that is designed to integrate the desires of what employers are looking for in graduates for entry level jobs. It is also designed to for student growth, aside from the program needs, to allow students to interact successfully now and in their future career. Over the period in which the student is pursuing a program at Oregon Institute of Technology, there is a process in which the institution instills these learning objectives and are measured through an assignment or activity. The On-Line Respiratory Care Program cannot be assessed in the same way as our non-transfer on-campus students as many of their credits are transferred from other Associate Degree Respiratory Programs, general education and electives that are not included in Oregon Tech's scaffolding model.

Expected Essential Learning Outcomes Students at Oregon Institute of Technology should be able to demonstrate:

ESLO 1: Communication: OIT students will communicate effectively orally and in writing

Assessed in AAS program – General education content must include oral and written communications, psychology, and sociology. Graduates must be competent in communicating and collaborating with other members of the health care team to support comprehensive patient care. Assessed in students' communication courses transferred from previous colleges and/or through OIT courses as needed. Written communication is assessed in the BSRC program. Course on-campus RCP 451; Clinical Care II.

ESLO 2: Inquiry and Analysis: OIT students will engage in a process of inquiry and analysis.

Assessed in AAS program; Critical Thinking. Graduates must be competent in the evaluation of current scientific literature and graduates must be competent in problem solving strategies related to comprehensive patient care and on-going management of patients. Assessed in students' courses transferred from previous colleges and/or through OIT courses as needed. Inquiry and Analysis is assessed in the BSRT program; on-line and on-campus RCP 387; Critical Care II. On-line RCP 366

ESLO 3: Ethical Reasoning: OIT students will make and defend reasonable ethical judgments.

Assessed in AAS program, Graduates must be competent in the application of the principles of ethical reasoning, ethical decision making and professional responsibility as they pertain to the academic environment, research, patient care and practice management. Assessment activity for the BRST on-campus program is evaluated; RCP 100; Matriculation. On-line RCP

ESLO 4: Teamwork: OIT students will collaborate effectively in teams or groups.

Assessed in AAS program, Graduates must be competent in communicating and collaborating with other members of the health care team to support comprehensive patient care. Assessed in students' SPE 221; Small Group and Team Communication course transferred from previous college and/or taken through OIT. Assessment activity is address in the BSRT program; RCP 366 Clinical Simulation.

ESLO 5: Quantitative Literacy – OIT students will demonstrate quantitative literacy.

Assessed in students' MATH 243, Introductory Statistics or MATH 361 Statistical Methods course transferred from previous college and/or taken through OIT. Assessed in the BRST on-campus program through RCP 442; Case Management. On-line RCP 366 Clinical Simulations

ESLO 6: Diverse Perspectives: The OIT student will explore diverse perspectives.

Assessed in AAS program, Graduates must be competent in communicating and collaborating with other members of the health care team to support comprehensive patient care. An important concept to communicate with healthcare providers and patients that have a variety of cultural and diverse backgrounds. With demographics changing with physicians that is becoming quite diverse, it is important to assure procedures are being performed according to guidelines. To assure the best quality patient outcomes and being sensitive to culture, religion and social status. This assessment activity will be addressed in-campus in RCP 375; Pediatric Care. On-line program RCP 335; Exercise Physiology and Education.

Essential Learning Outcome Assessment Annual Cycle for On-Line Respiratory Therapy:

The following table shows the six essential learning outcomes cycle for assessing on-line individual students.

Program Student Learning Outcome	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
ESLO 1: Communication: Written and oral communication between health care providers that collaborate to the patients overall care.			**RCP 451** **Clinical Care II** ● **Digital Charting**			**RCP 451** **Clinical Care II** ● **Digital Charting**
ESLO 2: Inquiry and Analysis that includes critical thinking of a patients systemic approach, analysis of the data and decision making efforts.	**RCP 387** **Crit Care II** ● **simulations**			**RCP 387** **Crit Care II** ● **simulations**		

ESLO 3: Ethical Decision Making. The student will demonstrate and contrast ethical reasoning, decision making and professional responsibility.		**RCP 100** **Matriculation** ● **Article response**			**RCP 100** **Matriculation** ● **Article response**	
Program Student Learning Outcome	**2017-18**	**2018-19**	**2019-20**	**2020-21**	**2021-22**	**2022-23**
ESLO 4: Teamwork. The student will demonstrate the ability to work in a teambuilding environment in health care.			**RCP 366 Clinical Simulation** ● **Simulation Project**			**RCP 366 Clinical Simulation** ● **Simulation Project**
ESLO 5: Quantitative Literacy. The ability for the student to apply safe settings, interpret data and make clinical decisions for life saving devices based on mathematical computations.	**RCP 442 Case Management II** ● **Senior class Presentation Patient case study**			**RCP 442 Case Management II** ● **Senior class Presentation Patient case study**		
ESLO 6: Diverse Perspectives. Students will explore communication and patient management approaches with physicians, their peers and patients in an ever changing healthcare environment.		**RCP 375 Pediatric Care** ● **Video assignment**			**RCP 375 Pediatric Care** ● **Video assignment**	

Table 2. Respiratory Therapy Education Assessment Cycle. Assigned ESLO please see Appendix 2.

IV. Summary of 2019-20 Assessment Activities: The respiratory care faculty met in Fall 2020, to discuss assessment for the academic year 2020-21 for on-line course tagged as well as realizing the changes in schedule for the future. We have identified on-line course RCP 366, Clinical Simulations as the course to gather this information. As faculty, The Essential Student Learning Outcomes (ESLO) for the year were discussed and multiple places for on-line education where these are taught and measured in the curriculum were identified, as shown in Appendix A.

ESLO and PSLO Assessed for On Line Students

V. ESLO #2: Inquiry and Analysis On-Line.

The Institutional Rubric is used for Inquiry and Analysis and is used to measure this assignment. Students are given the option to take a NBRC Credentialing Exam that comprises of either the Adult Critical Care Specialist (ACCS), Neonatal Pediatric Specialist (NPS) or Registered Pulmonary Function Technologist. The descriptions that meet the inquiry and analysis are found at the following websites:

- https://www.nbrc.org/examinations/rpft/
- https://www.nbrc.org/examinations/accs/
- https://www.nbrc.org/examinations/nps/

There are other incentives to taking this exam besides strengthening individual skills and the respiratory care professions. It is an automatic waiver for those who choose courses that are in line with these exams as well as passing this course (RCP 366, Clinical Simulations). These exams add a permanent credential to the students status in the field that heightens their prestige in specialty practices. The option for this course is a video assignment presented at the end the term by virtual presentation that follows the policy and procedures that will be addressed in qualitative literature. The vetting of the these NBRC credentials meets the criteria of inquiry and analysis by the stated following:

RPFT: "Professionals who earn the RRT-ACCS credential have obtained sufficient clinical skills through the education program from which they graduated and sufficient mastery of specialty knowledge to provide competent critical care to adults. Knowledge domains include but are not limited to critical care of the respiratory system, general critical care principles, and medical ethics. Most RRT-ACCSs are employed in medical-practice settings such as inpatient hospitals although some work in specialized facilities where patients receive mechanical ventilation support over a long term."

ACCS: "Professionals who earn the RRT-NPS credential have obtained sufficient clinical skills through the education program from which they graduated and sufficient mastery of specialty knowledge to provide competent critical care to neonatal and pediatric patients. Knowledge domains include but are not limited to critical care, general care, and medical ethics. Most RRT-NPSs are employed in medical-practice settings such as inpatient hospitals."

NPS: "Professionals who earn the RRT-NPS credential have obtained sufficient clinical skills through the education program from which they graduated and sufficient mastery of specialty knowledge to provide competent critical care to neonatal and pediatric patients. Knowledge domains include but are not limited to critical care, general care, and medical ethics. Most RRT-NPSs are employed in medical-practice settings such as inpatient hospitals."

All of these, NBRC is backed by the a standard of cognitive ability to meet the criteria of Inquiry and Analysis by the following statement:

"Examination Content To begin your preparation in an informed and organized manner, you should know what to expect from the actual examination in terms of the content areas and complexity levels tested. The detailed content outlines available at nbrc.org describe the content areas and complexity levels covered on each examination. The outlines can be used to get a general impression of the examination, and with closer inspection, can give you specific study direction. For example, you can determine the relative weight of each content area on the examination by reviewing the number of questions in each section. The detailed content outline presents the specific patient care settings and content areas available for testing."
"Cognitive Levels Each question on a multiple-choice examination will stimulate thinking in a candidate at one of three cognitive levels. Recall is the ability to recall or recognize specific information. Application is the ability to comprehend, relate, or apply knowledge to new or changing situations. Analysis is the ability to analyze information, to put information together to arrive at solutions, and/or to evaluate the usefulness of the solutions." (Candidate Handbook, National Board or Respiratory Care) supported by The America Thoracic Society.

https://www.nbrc.org/wp-content/uploads/2021/08/Candidate-Handbook-08.24.21.pdf

It is highly suggested to those reviewing these reports to look into the input to these National Board Exams and the relationship to inquiry and analysis. Physicians who specialize in pulmonary, neonatal and cardiac areas have heavily participated in these exams to assure the quality of these exams and to be sure that they are vetted as recognizable specialties in the clinical environment.

Definition of Inquiry and Analysis: Inquiry and analysis consists of posing meaningful questions about situations and systems, gathering and evaluating relevant evidence, and articulating how that evidence justifies decisions and contributes to students' understanding of how the world works.

PERFORMANCE CRITERIA	High Proficiency (4) The work meets listed requirements for this criterion; little to no development needed	Proficiency (3) The work meets most requirements; minor development would improve the work.	Some Proficiency (2) The work needs moderate development in multiple requirements.	Limited Proficiency (1) The work does not meet this criterion: it needs substantial development in most requirements.
IDENTIFY	Identifies a creative, focused, and manageable topic that addresses potentially significant yet previously less-explored aspects of the subject. .	Identifies a focused and manageable topic that appropriately addresses relevant aspects of the subject.	Identifies a topic that, while manageable, is too narrowly focused and leaves out relevant aspects of the subject.	Identifies a topic that is too general and wide-ranging to be manageable.
INVESTIGATE	Clearly states, comprehensively describes, and synthesizes in-depth information from relevant high-quality sources representing various approaches and points of view.	States, comprehensively describes, and presents in-depth information from relevant high quality sources representing various approaches and points of view	Presents information from relevant sources representing a limited set of approaches or points of view, but descriptions leave some terms undefined or ambiguities unexplored.	Presents information from irrelevant sources representing a limited set of approaches or points of view, or states information without clarification or description.
SUPPORT	All elements of the methodology or theoretical framework are skillfully developed. (Appropriate methodology or theoretical frameworks may be synthesized from across disciplines.)	Critical elements of the methodology of theoretical framework are appropriately developed. However, more subtle elements are ignored.	Critical elements of the methodology of theoretical framework are missing, incorrectly developed, or unfocused.	Inquiry design demonstrates a misunderstanding of the methodology or theoretical framework.
EVALUATE	Organizes and synthesizes evidence to reveal insightful patterns, differences, or similarities related to subject focus.	Organizes evidence to reveal important patterns, differences, or similarities related to subject focus.	Organizes evidence, but the organization is not effective in revealing important patterns, differences, or similarities.	Lists evidence, the evidence presented is not organized or it is unrelated to the subject focus.
CONCLUDE	States an eloquently supported conclusion that is a logical extrapolation of the inquiry, reflecting the student's informed evaluation and ability to place substantial evidence and perspectives in priority order.	States a conclusion focused solely on the inquiry findings, arising specifically from and responding specifically to the inquiry findings.	States a general conclusion beyond the scope of the inquiry, the support for which is inadequate, or information was chosen to fit the conclusion.	States an ambiguous, illogical, or fallacious conclusion that is inconsistently tied to the inquiry findings.

Figure 1. Institutional Inquiry and Analysis rubric applied

ESLO 2: Institutional Inquiry and Analysis Rubric Applied to Outcomes.

Student	NBRC earned credential	NBRC credential outcomes.	Overall Outcome
Student 1	Identifying: 4 Investigate: 4 Support: 4 Evaluate: 4 Conclude: 3	95%	Pass
Student 2	Identifying: 4 Investigate: 4 Support: 4 Evaluate: 4 Conclude: 4	100%	Pass
Student 3	Identifying: 4 Investigate: 3 Support: 4 Evaluate: 4 Conclude: 4	95%	Pass
Student 4	Identifying: 4 Investigate: 4 Support: 4 Evaluate: 4 Conclude: 4	100%	Pass
Student 5	Identifying: 4 Investigate: 4 Support: 2 Evaluate: 3 Conclude: 3	80%	Pass
Student 6	Identifying: 3 Investigate: 3 Support: 2 Evaluate: 3 Conclude: 2	65%	FAIL
Overall Results		89%	83%

Table 3. Multiple Choice NBRC Exam for either ACCS, RPFT or NPS. Please see appendix B-1.

ESLO #2 Inquiry and Analysis Summary Outcomes and Actions:

Strengths: The strength of this exercise was that the Inquiry and Analysis were shared in Canvas "Discussions" that shared each other's approaches in studying for this national credentialing recognition exams. Throughout this course there were benchmarks that helped guide students along the way. Students were able to journal their progress throughout the process that showed how their skills in inquiry and analysis matured to an almost first time pass for all students taking this exam. Though the outcomes between individuals differed for scores and exams taken, all but one student met the passing threshold set by the NBRC which is high compared to the national average from 2019. https://www.nbrc.org/wp-content/uploads/2020/01/2020-Exam-Stats.pdf:

RPFT: 64.8%
ACCS: 66.5%
NPS: 66.5%

Our sample group fared with an exceptional first time pass rate of 83% meeting the threshold set for this essential learning outcome of 80% though the threshold for the NBRC yields at 74%. Students were able to network using an array of study guides and resources for remarkable outcomes. It led to an environment of student support and discussions about inquiry and analysis in order to successfully pass these exams set before them.

Weaknesses: Only one student failed the exam on the first attempt, but did pass it on the second try allowing the student to pass this course. Another weakness is that it would have been more prudent to compare to the national average with a bigger sample group. There didn't appear to many other weaknesses to this approach as weakly follow up on progress with each student appeared to be highly successful.

Actions: One student failed but after following up through "Discussions" there were signs that this may have been the case. This individual student "Discussion" post were not as thoughtful or vibrant as their peers. This is an indication for the instructor to reach out and help bring this individual to the expected quality of interactions that were being had.

Update: The update to this ESLO's from the last cycle was changed. Instead of having students creating simulations to strengthen their testing ability for the NBRC, it was taken away. This decision was based on too much work was expected in which hampered the need for studying for the actual course. It isn't just the material that was thought to be supported by the creation of exams, but more the approach to studying using inquiry and analysis techniques for the actual exam where time was a factor in doing so correctly. This group has shown a modest improvement from the previous Inquiry and Analysis cycle as a result to these actions.

Student Learning Summary: The students have more confidence by passing this exam in the first attempt the it is challenging, time consuming and expensive to set for this national credential. These students are well aware of the rigor and these test have been praised by prominent physicians as one of the most challenging exams overall in health care. The student learning outcomes assures that inquiry and analysis were met through the cognitive domain and the nature of theses exams as well as the process in studying for these exams. The outcomes also show that they have improved their specialty skills, learn to communicate more effectively with their peers and better intervene advocating for their patient care.

VI. ESLO #5: Quantitative Literacy On-Line: The Institutional Rubric for quantitative literacy is used to measure this assignment. Students who chose the video presentation as well as a corresponding paper for a bedside manner procedure of their choice had to use *policy and procedures* to evaluate this learning assessment. This project, along with assessment of the students performance outcomes, was evaluated in RCP 366 Clinical Simulations. The Policy and Procedures are highly regarded "manual instructions" that give step by step approaches, and in some cases, follows a pathway algorithm depending on the nature of care delivered to any given patient. Policy and procedures, in combination with this measured learning outcome, is found to be consistent with quantitative literature chosen for this tagged course. Policy and procedures are standardized set of rules backed by evidence based medicine to assure consistency of care. These evidence based standards derive from the NBRC, American Thoracic Society, the AARC and Chest Magazines; all reputable resources used by the respiratory care profession as well as Cardiologist and Pulmonologist. Students doing this assignment need to measure and calculate correct drug doses and safe equipment pressures, flow and volumes to prevent intrapulmonary barotrauma or shear stress of opposite extremes. This is done through biological gender, height, weight and body surface area calculations associated with equipment interfacing to avoid patient harm. The student needs to identify each component of these equations pertaining to ideal body weight using nomograms as well as calculating appropriate tidal volumes, minute ventilation, frequency and I:E ratio's as well as adjust them to the challenges that each individual patient may present.

Once the student has identified the equipment parameters, these equations are then used appropriately to interface with the patient correctly. This policy and procedure is illustrated by video presentation and role playing. The student included pleasantries of bedside manner, patient communication of the intervention procedure and application of the equipment used for the specific policy and procedure chosen. The presentation included an introduction, the main body and a conclusion that included a chart review that included history, lab results, diagnostic and head to toe physical assessment. All of this data pulled together allowed the student to confirm a pending diagnosis as well as the treatment plan. This interactive presentation was given through the virtual environment and the video sent by media.

Lastly, the students were instructed to chart and take notes through the process that supports the policy and procedure being presented. Once gathered, the students are instructed to give a written document

that back up their claims using reputable references. This written portion of the assignment supports the video as well by following the same pattern of an introduction, main body and conclusion.

Definition of Quantitative Literature: Quantitative literacy comprises the ability to appropriately extract, interpret, evaluate, construct, communicate, and apply quantitative information and methods to solve problems, evaluate claims, and support decisions in students' everyday professional, civic, and personal lives.

PERFORMANCE CRITERIA	**Foundational (instructions given in detail)**	**Practicing (general instructions given)**	**Capstone (little to no instruction)**
CALCULATE	Perform fair short single computations with tools provided.	Perform longer and more complicated computations, or solve problems involving sequences of linked computations selecting from a list of possible tools.	Perform challenging computations and sequences of computations, knowing the tools needed.
INVESTIGATE	When prompted, identify specific parts of equations or expressions, interpret specific data points on graphs, interpret results of computations literally.	In response to broad instructor prompting, interpret equations or expressions in a general sense, interpret overall patterns and trends in graphical information. When appropriate, interpret differences in computational results.	Give holistic interpretations of methods, tools used, and results, with little to no instructor prompting or guidance.
CONSTRUCT REPRESENTATIONS	Construct graphical models of statistical information in response to specific instructor prompting.	Construct analytical (equation) or graphical models of mathematical relationships in response to broad instructor prompting.	Construct appropriate, complex, and clearly labeled analytical and/or graphical models with little to no instructor prompting or guidance.
APPLY IN CONTEXT	Solve problems using given formulas or frameworks.	Choose correct formulas, set up correct equations (or systems of equations), and/or choose correct frameworks to solve problems in response to broad instructor prompting. Acknowledge assumptions used in solving problem(s).	Solve relevant complex, multifaceted problems, with little to no instructor prompting, or guidance. Acknowledge and justify assumptions used in solving problem(s).
	Accurately integrate quantitative evidence into basic arguments in response to	Accurately integrate quantitative evidence into an extended argument in	Accurately integrate quantitative evidence into complex arguments with little

COMMUNICATE	specific prompts. Quantitative evidence is conveyed and explained in such a way that a competent non-expert reader can follow along.	response to a broad prompt. While instructor provides guidance, student uses quantitative evidence to identify, explain, and/or solve a problem. Quantitative evidence is conveyed and explained in such a way that a competent non-expert reader can follow along.	to no prompting or guidance. Quantitative evidence is conveyed and explained in such a way that a competent non-expert reader can follow along.

Figure 2. Institutional Quantitative Literature Rubric. Please see appendix B-1

ESLO 5Institutional Quantitative Literacy applied rubric learning outcomes.

Student	**Video Presentation supported by evidence base medicine document.**	**Evidence based medicine based on policy and procedure outcomes.**	**Overall Outcome**
Student 1	PRACTICING	CAPSTONE	Pass
Student 2	CAPSTONE	CAPSTONE	Pass
Overall Results	**ABOVE AVERAGE**	**EXCELLENT**	100%

Table 4. Video and Evidenced Based Medicine Documents Presentation. Please see appendix B-2.

ESLO #2 Inquiry and Analysis

Strengths: The strength of this exercise was that the students followed the guidelines expected of this assignment. This assignment was benchmarked throughout the term and the students showed a well organized approach to this assignment. Each paper was well written and was interpreted as a success meeting the rubric pass or no pass criteria. The quality of one of the students video was fair, but not to the expectation anticipated for this assignment

Weaknesses: Though I enjoyed evaluating this work, it was too few students engaged in this assignment, only two. This makes it difficult to measure in order to compare to a cohort although it was more appropriate to measure with this rubric given the classification of foundation, practicing and capstone assessments. The limitations by policy to teach an on-line program that is otherwise done by adjuncts makes it difficult to be assessed in other courses.

Actions: Try to tag these ESLO's in more than one course to include more student participants in the future given the policy of how many course can be taught above courses on campus. Continue this assignment as it can be modified to address other ESLO assignments and results. This has been an assignment practice with longevity and success that students enjoy to do emphasizing more of the learning experience.

Update: This assignment was modified from the previous ESLO only. No other changes were made since last year regarding the assignment structure.

Student Learning Summary: Each student was able to put together a well organized video presentation of gathering data, interpreting the data and applying equipment that required calculation of a patients demographics and body type. These were displayed either through graphic waveforms, manometers and tachometers or all three. The set parameters had to reflect that they stayed within the upper and lower inflections points of the pressure-volume loop to avoid intrapulmonary injury. The flow-volume loop needed to assure closure to rule out a leak or auto-PEEP. Students are able to measure pressure in cmH2O and evaluate its effectiveness for treatment and to assure equal distribution for ventilation or overcoming atelectasis all the while assuring oxygenation and perfusion needs. The students were able to demonstrate the process of policy and procedures through equations to assure these set parameters were set effectively as well as evaluate the return values to give us effectiveness of the treatment. Each student was to play the lead actor with other(s) that role played the scene The student also narrated the scene presentation with skills used in a clinical setting meeting the needs of communicating the purpose of their assignment. The bedside manner used in the patient approach showed a sense of professionalism on a human scale.

Oregon Institute of Technology
Respiratory Care Program
RCP 366 Clinical Simulation
Syllabus January 4, 2021

Course Description:

The practice and measurement of approaches in the context of computer branching logic simulations. Students in teams use organized sequential topical examinations to review and measure retention of respiratory care content. Passage of secure national review examination by the NBRC is offered as an option in this course. The alternative option and to measure Inquiry and Analysis to the NBRC credentialing exam in this course is to ask you to submit a video by the end of the term as guided by the attached Rubric for video presentation. This can mimic a case study used from a text book, department policy and procedures or a scenario that you recently experienced. The Degree Completion Student will be communicating with on-campus students the experiences that they have currently experienced in the clinical arena.

Prerequisites: RCP 337

Instructor: Jeff Pardy MBA, RRT Phone: (541) 885-1541 email: jeff.pardy@oit.edu
Department Chair
Respiratory Care/Sleep Health
Program Director On-Line
Respiratory Care
Oregon Institute of Technology

Course Objectives:

This course provides an option of either project-based learning or challenging the NBRC's ACCS, NPS or RPFT exams. This is to meet the standards as a respiratory therapist that the NBRC regards you as competent of proficiency in serving any one of these specialties. A second option that may be a interest to some students as an alternative is creating a video production with an attached paper to justify the topic. This is a way to verify in detail the topic of interest and illustrate to others the importance and correct approaches to a clinical challenge. During this course the students are set in teams guided by a Rubric and will create computer clinical simulations as well as a written exam by completing the following objectives in this Syllabus. Students in this course are expected to communicate with on-campus students each week throughout the term and use their projects to test them at the end of the term. This is to fulfill the creation of simulations as well as testing their efficacy. The following summarizes the task of the student's responsibilities in this course. **All** students will be expected to work in assigned teams to complete the final simulation project. **All** students are expected to communicate with on campus students as well as in guided "Discussions" each week. **Option A** students may take the NBRC exams with communications points placed in "Discussions" and potentially waive corresponding courses in this program, or **Option B** students are expected to complete a video production as guided by the Rubric and to assure benchmarks are met in "Assignments" and will be presented by zoom at the end of the term.

1. Identify the evidence-based objectives for the simulation.
2. Take the NBRC exam. You will need to submit a pass or an attempt by the end of this term. All students will have to attempt this exam in order to pass. A no pass will not pass the course. Throughout the term, there will be communication based on progress of preparation for this exam. **You will be exempt from the video production with this option.**

-or-

3. Create a video production that portrays a patient's clinical case **unless you are taking the NBRC exam.** Describe and the flow of this production through a short simple guided paper **unless you are taking the NBRC exam.**

a. Describe the importance of this case through the introduction.

b. Identify the process through the main body of your paper.

c. Give the conclusion of this process and summarize the events of your topic that you created that describes the results as well as summarizes your video illustrations.

5. All Students will be placed in teams of three, we will create clinical simulations as well as a written TMC styled exam. The following methods will be used.

a. Write three titled computer simulation that are current (short) that can be fluently guided through using power point, prezi etc.

b. Write a 50 question multiple choice exam. This exam could be either based for the ACCS, RRT, RPFT, or NPS exam. Be sure to title this exam as the type that your team will be giving. Also, be sure to add references and rationale to each correct multiple choice answer.

c. Each student will be able to evaluate each member of the team as far as their professionalism and commitment to the project.

d. Submit your rough draft final to another team in the class for feedback to react on.

e. Submit your final project exams to the on-campus students to be taken and be prepared to grade them once done.

6. **All** students will have weekly post to your paired on-campus student about your hospital or facility experience of the week. The idea is to share your recent experience of a clinical issue that they we be able to ask questions about. The student will ask questions to be answered by you, the experienced respiratory therapist. At the end of the term you will submit and then grade your teams final project.

Philosophical emphasis:

This course is team project course. Teaching is based by both instructor and the students of this course. The primary focus of the student should be to fully engage in developing and implementing a clinical simulation and a written exam that meets the characteristics of working in a teambuilding environment**.** Each team will need to organize themselves to assure a working product results in the end. The student in this course should communicate effectively and professionally with each other in teams as well as with the on-campus students as if giving report to the next on-coming shift. The team will be able to choose between types of simulations and the written exam to create. These can include a computer simulation of a low fidelity simulation or a high-fidelity simulation. Full participating means to keep up with assignments and engaging with your on-campus student and your teammates. Again you are the mentor of on-campus students that should learn from your

experiences. Engage in the production of a chosen simulation to be shared with a peer from your class. Realize that you are committed to your independent work as with the NBRC exam or Video Production option, and as a team player for the final project.

Textbook and Resources:

Students are expected to access web materials on line and to use on line search engines to construct knowledge for the other class participants, instructors and students. There are no Some of the resources listed below can be helpful.

- Dana Oakes', Respiratory Care Simulations, 2016.
- Waxman, K.T., The Development of Evidence-Based Clinical Simulation Scenarios: Guidelines for Nurse Educators. January 2010, Vol. 49, No. 1
- http://people.ku.edu/~jomcderm/portfolio/courses/course_1/assign_5/assign_5_files/ebpsimscenarios_4.pdf
- McLaughlin, S. Simulation Scenario Design.
- http://hsc.unm.edu/som/programs/batcave/docs/SimSymposium/Scenario%20Design%20for%20Airway.pdf

Class Participation:

Health care involves working with people of diverse backgrounds in complex settings. In-class interaction and cooperation provides a venue for exercising the interpersonal communications necessary in the clinic. Comparing and contrasting one's thinking with that of one's classmates assist in further development of understanding. Degree completion students who have taken the project option will be passing to one another projects for peer reviews and exam taking from each other. For those who have chosen the NBRC option, there will be weekly communications in "Discussions" about your progress studying for this exam. It will be important for each student to keep a record of dates and times for communications to their peers and on-campus junior students. It would be even more effective "cc'ing" the instructor to ensure accountability and fluency**. IF COMMUNICATIONS HAVE BEEN MADE TO ME THERE SHOULD BE NO REASON THE RECIPIENT OF THE INTENDED COMMUNICATION HAD NOT RECEIVED IT AS WELL FOR PROJECT STUDENTS.** As for the recipient, if you are not getting projects to you on time (as listed dates in the "Modules"), please send to the originator this concern, again "cc'ing" me so I can intervene as needed. **These dates, times, and "cc'ing" me will be the standard in part of this grading system. Keep your communications towards the course objectives only as the Student Handbook is enforced in this area of professionalism.** The idea is for you to communicate frequently with your team members to assure quality of the simulation project prior to being given to your cohort student at the end of the term. **For on-campus student communications, simply screen shot your communication thread into "Assignments" each week.** Lastly, the production of the simulation video will be guided by your rubric in this course and is in line with standards that is established and can be referenced in your paper. You will get a rubrics in the agenda under "Agenda" the first week to also help guide the needs for this course. Again, you will be EXEMPT from the Video Production if you choose to get a credential through the NBRC.

Student participation will include the following responsibilities on your part:

- **Week 1: 01/04/2021 to 1/10/2021.** Introductions: Introduce ourselves in "Discussions."
  ALL Students: There will be a final project done in teams of three based off a Rubric for ESLO to be announced. All done through "Assignments."
  - ✓ Teams to organize a meeting and assign roles to complete the final project.
  - ✓ Title for multiple choice title due week 3.
  - ✓ Outline for **four** short simulation will be due week 3.
  - ✓ Rough draft progress due week 6.
  - ✓ Feedback to be given back week 7. As a team, be sure to act on the feedback or constructive critique given. This will be turned into me as well for credit.
  - ✓ Week 9 to do an internal team evaluation.
  - ✓ Week 10 Give exams to on-campus students.
  - ✓ Week 11 turn in grade results.

  ALL Students: To teach and share experiences to an assigned on-campus students. This includes actual experience that you have in your employment taking care of patients. At the end of the term, you will test them by applying your final team project to each assigned student for the term. Weekly snap shots due in "Assignments."
  - ✓ Weekly.

  OPTIONS: You can choose to take either a NBRC exam and potentially waive future courses or create a video production of a case study, clinical scenario or formal policy and procedures. This will have a short 3 no more than 5 double spaced written page paper to accompany this video presentation summarizing your production and experience. This project will be based on class Rubric for presentation. If you take and pass the NBRC exam it will be a sufficient alternative if you choose and you will get **100% of the final video production grade option upon passing the NBRC exam**. We **may** be able to waive a course or two after an audit of your current classes have been performed **but without promise**. Proof of credentialing with full summary feedback needs to be shown that the test was taken between *1/04/2021 to 3/19/2021* and not before. The summary is important to complete the ESLO Rubric for Inquiry and Analysis.

  There are three total rubrics for this course.

- **Week 2: 01/11/2021 to 1/17/2021.** All student be sure to communicate with your on-campus student and be prepared to answer questions that they may have. Be thoughtful in your responses as I will be looking for quality. *This is the minimal need. If your on campus student hasn't emailed questions about this stated experience then you have met the minimal need.*

  NBRC students be sure to communicate this week about how you intend to approach this exam in "Discussions." Discuss your plan.
  - ✓ NBRC formal exam results.

  Video Production students declare your works and what it will reference to. You will be assigned to review and give feedback. The paper will be a simple title with an

introduction, main body and conclusion. There will be benchmarks to meet with rough drafts and peer reviews. Assigned peer will be given this week.

- ✓ Introduction rough draft due *week four*.
- ✓ *Week six* to exchange video progress and turn in rough draft main body of paper.
- ✓ Feedback to act on given back *week seven.* These are to be turned in for grading as well.
- ✓ *Week nine* to have conclusion rough draft submitted
- ✓ *Week 10* Final Paper due
- ✓ Final video due *week 11.*

Final Project teams. Be sure to communicate frequently with each other as this accounts for close to 50% of the grade. This exercise will also include evaluating each team member for professionalism, accountability, work ethic and quality. This will be done in the future of this course towards the end. Please be sure to submit an outline next week in three. Be sure to discuss three short simulations mimicking the NBRC process when taken. Please also make a decision as a team about the multiple choice title of RRT, NPS, ACCS or RPFT.

- **Week 3: 01/18/2021 to 1/24/2021.** Continue communicating with your on-campus student as well as submitting screen shots for full credit in "Assignments." Reminder of the minimum requirements with thoughtful responses.
  NBRC student option should have references and resources that they are using. Please share these to the class in "Discussions."
  Video student option Production students informally submit your approach to assure the Rubric needs are meeting the highest standards for a quality product.
  Final All project students submit the outline as well as the title used for your multiple choice exam in "Assignments."

- **Week 4: 01/25/2021 to 1/31/2021.** Continue communicating with your on-campus student and submitting into "Assignments." Hopefully, you have built a close rapport with them at this time.
  NBRC option students you should have a scheduled date with your exam by this time. Please share this information in "Discussions" and why you feel this is in pace with your strategy.
  Video production option students please submit your Introduction Rough Draft in "Assignments" for the paper supporting your topic that you have chosen.
  Final Project all students in teams continue working together for your next goal of assembling your exams. Gradual multiple choice questions progression will assure quality. Reminder of rough draft by week six and at **LEAST** 25 questions submitted in assignments is expected, as a rough draft.

- **Week 5: 02/01/21 to 02/07/2021.** All students to continue communicating with your on-campus student submitting your screen shots in "Assignments" and meet the minimum needs for full credit.
  NBRC option students please submit the challenges that you might be running into while preparing for this exam and share in "Discussions."

Video Production student option, please let me know any challenges that you may be coming across. This might include editing, accessibility or props. Please give your feedback here and be prepared to give your rough draft to your assigned peer from week 2 next week.
Final project for all students continue your project and be prepared to swap them in week six with your assigned peer review team.

Week 6: 02/8/2021 to 02/14/2021. This week all students will have a change of on campus students as listed in "Pages." Please introduce yourself and give your first patient experience for the on-campus student to act on and continue communicating as previously with the same standards and submit at the end of the week.
NBRC student option, continue studying and be aware that the term will end soon. The quicker this is behind you the less stress moving forward. With that stated it is more important going in prepared and confident. Share in "Discussions" your attitude going into this exam.
Video student option give your assigned peer your current progress of your video production. Be sure to cc' the instructor to assure accountability is being observed.
Project teams: Team representatives should send their projects to their assigned peer group and prepare for feedback to potentially act on during week 7. Points will be assessed at the end of term in regards to team actions based on reasonable feedback.

- **Week 7: 02/15/2021 to 2/21/2021.** Continue communicating with your new on-campus student assigned to you last week as well as submitting your screen shot. This week there is additional request to add to your snap shot that you submit in "Assignments." Please indicate if you feel this experience was helpful to the last student, contrast your new student and more important is what you might have learned by reaching out to students who have no or minimal patient care comparatively (as with a CNA or ECG tech).
NBRC student option continue working towards your goal for passing this exam. There is no submission this week.
Video students should have their rough draft feedback this week to continue progress. Be sure to act on the constructive feedback that are within reason to assure a good quality product to be turned in. Please submit your feedback in "Assignments."
Project teams please send your feedback to the originators of the exams and be prepared to receive yours as well. Overall, it is an exchange of constructive criticism but also to give praise to good ideas. Please be sure to submit this to the instructor in "Assignments" as well for grading points. Move forward now with the final project as the next action will be to submit them to your assigned student in week 10. The final action will be for you to grade the exams that your students took in week 11.

- **Week 8: 02/22/2021 to 02/28/2021.** Continue communicating with your on-campus student and submitting your communication thread and in addition to this week please notify them of their exam that will coming week 10. I have not yet spoiled the surprise. One last question for your student is to ask them to reflect on the experience of communicating throughout the term with these shared clinical experiences. Please

submit this response in "Assignments" along with your normal weekly communications.

NBRC option student there will be no submissions this week. My hope is that have either taken the exam or that you are in the process of doing so. You will turn in your formal exam results in the last week of the term. If you pass you will have full credit that the video project students would potentially receive. If you do not pass this exam there will most likely be an "In Progress" grade that we can continue working on. If you do not take this exam at all it will be a failed grade by the end of the term.

Video students there are no submissions this week needed, but please continue to edit and assure that the Rubric categories are being met with the best possible quality. The conclusion rough draft will be due week 9, next week.

Project students for teams, this will be the week that you do an internal evaluation of each team member that will be anonymous through feedback and should be with both positive and negatives comments. This will be due during week 10. Continue finalizing your multiple choice and computer simulations. Remember to pay attention to the critique given by your peer team. You may not agree with every critique which would be expected, but be sure to use your best judgement. They should only be used if they are constructive and reasonable.

- **Week 9: 03/01/2021 to 03/07/2021.** This will be the final weekly communication with your on-campus student to be submitted and please ask the question of how they felt about this email process of shared experiences. **Please give your thoughts as well all for full credit. This is the final week for on-campus student communication of its kind.** With that stated, feel free to communicate with the on-campus student if you choose to.

  NBRC option students, please submit in "Discussions" if you have taken the exam, your outcomes and share your experiences throughout this process. Many may have already taken their exam at this time, but there is still two weeks left. Better sooner than later; just be sure you are ready. Nonetheless, if you have not taken the exam respond to others who have to get an idea of what to expect.

  Video Production students please submit your Conclusion rough draft in "Assignments." Please schedule a zoom time with the instructor for presentations.

  Final project students please turn in your internal team evaluations in "Assignments."

- **Week 10: 03/08/2021 to 03/14/2021. NBRC** students should be taking their test at this time if you haven't already. One week to go.

  Video Students please turn in your Final Paper that should be 3 to 5 pages long doubled space. This paper will not only be graded on rubric, context and content but will be graded according to sentence structure and mechanics expected of a bachelor degree student. Please indent and each paragraph should be 4 to 6 sentences long. Be sure to add any references used to build this video illustration. This final video will be turned in by next week, final week 11.

  Project students: Submit your exams to your assigned student to take. The window is short between on Tuesday March 9th. If there is any date to pay attention to is this one due to the tight restraints. Make sure this process works well and DO NOT inadvertently send the answer key. Please submit this final project to the instructor as well. The instructor requires the answer key as well. The students will submit the computer simulation back to each team and the multiple choice will be sent back

from the instructor via email for you to grade as well. The last submission will be next week with each individual student exam results being graded by you.

- **Week 11: 03/15/2021 to 03/21/2021**
  NBRC students submit your NBRC results in "Assignments" if you haven't already.

  Video students submit your final video production guided by your rubric in "Assignments."

  Final Project students to turn in final on-campus grade results to instructor in "Assignments" as well as all of your final works.

  Enjoy your Spring break.

Summary of Term

- NBRC **option** would enable the student to take either the NPS, RPFT or ACCS and will have a potential to waive future courses within the program at Oregon Tech. A passing grade will give you 100% credit of what is "the video production option" that is also given to students not interested in taking an NBRC exam. If you pass this Exam prior by the end of the term you will need to still engage in "Discussions" when as benchmarked. Your role at this point would be to motivate and encourage your other classmates who have yet to take it. Be sure the full summary outcome of your exam is legible for ESLO standard in this course. **Video production students are exempt from this process.**
- Video Production **option** would entail a benchmarked progress throughout the term in "Assignments" and will include a video production guided by a rubric along with a short simple paper that involves a title page, introduction, main body and a conclusion that summarizes the video production along with the experience in creating it. The video will be graded based on the Rubric given at the beginning of week one along with an assigned peer that will later give you feedback. The paper will need to be double spaced with the an organized fluent flow of your production that also is in line with what is expected for a bachelors level writing in sentence structure, grammar and mechanics. Keep an eye on due date expectations as mentioned in the weekly objectives above and put them on your calendar. **NBRC students receiving another credential from the NBRC are exempt from this process.**
- **All** students will be responsible to communicate weekly with on-campus students. This will include a clear and precise recent or any profound experience you may have had as a respiratory therapist. It should be presented to the on-campus student in a way where they will ask three questions from this experience. The minimal needs for full credit would be to answer these questions in a thoughtful and thorough way. If the questions are not asked of you, you have met the minimal needs for the weekly exchange. Recall the student handbook on professionalism when interacting with others in any OIT program. You will be turning in

rough drafts and getting peer reviews set up in week 1. See below for one other interaction you will have at the end of the term with your assigned on-campus student.

- **All** students will be set up in teams of three week 1. Do not waste anytime contacting each other to organize roles. This will be an exam that includes simulations and multiple choice that you will create. The clinical simulation will consist of four short simulations that are in line currently with the NBRC. Another aspect of the final project is creating a 50 point written exam. This could be based on the RRT, RPFT, ACCS or NPS exams. Each question will require a reference, page number and rationale for the correct answer. You will have two sets: 1.) That will be given to the assigned on-campus student as mentioned above and 2.) The answer key that will be sent to the instructor only. There will be benchmarks along the way so be sure to refer to the weekly objectives above and mark them on your calendar. You will be responsible to get feedback from another team in this course.
- **Lastly,** please ask questions to avoid confusion along the way.

Grading Policy:

Grading Scale: 70-79% = C, 80-89% = B, >90% = A.

It Is Emphasized That Date, Time, and CC'ing the instructor with communications between cohort peer reviewers, originators, test givers and test takers **for fluent course function will be used as a standard for grading.** Just like in the hospital, "if it was not documented it was not done." If you are not getting what you need in a timely fashion as mentioned in "Discussions" then take action and make an effort to communicate with the relevant person(s). Please contact me as well with these potential concerns, but the instructor is confident that each classmate will meet these guidelines. **Late work will not be accepted.**

Academic Policies:

Course Changes: The instructor reserves the right to alter the time of course discussions or assignments if it becomes obvious that a change is needed for better student learning.

Student Support and Safety:

Oregon Tech faculty and staff are committed to creating and maintaining a safe and equitable learning environment for the Oregon Tech community. Pursuant to U.S. Department of Education

requirements, all Oregon Tech faculty and staff (other than designated confidential staff) must report any information they become aware of regarding gender-based bias, sexual harassment, sexual assault, sexual misconduct, relationship violence, or stalking involving a student to the University Title IX Coordinator.

In addition, Oregon law requires a mandatory report to the Oregon Department of Human Services of any physical or emotional abuse of a child or other protected person, including elders and people with disabilities, or when a child or other protected person is perceived to be in danger of physical or emotional abuse. If you are the victim of sexual or physical abuse and wish to speak with a confidential resource, please call the National Sexual Assault Hotline at 1-800-656-4673. You may report an incident using Oregon Tech's Anonymous Safe Campus Incident Report form on the Title IX site at http://www.oit.edu.titile-ix. and select the "Report and Incident" button. For more information about your options, please visit http://www.oit.edu/titile-ix.

Americans with Disabilities Act:

If you believe that you need an academic adjustment for any type of disability, please let me know. Students with visual or hearing impairment are advised to select seating in the classroom favoring optimal visual or auditory access to classroom activities. You may also speak with the Support Services office at Oregon Institute of Technology:
TEL: 541-885-1031 TTY: 541-885-1072 FAX: 541-885-1520Sy

Accreditation:
This program is accredited by the Northwest Commission on Colleges and Universities (NWCCU). Inquiries regarding accreditation should be directed to: The Northwest Commission on Colleges and Universities (NWCCU), 8060 165th Avenue, N.E. Suite 100, Redmond, WA. 98052-3981.

Figure 3. On-line RCP 366, Clinical Simulations Syllabus.

ESLO and PSLO Assessed for On Campus Students

VII. ESLO #2 Inquiry and Analysis Outcomes for On-Campus students:

This assignment was evaluated on-line in RCP 452; Clinical III that included 13 students to prepare for the NBRC exam that they will take in a few short weeks after graduation. As faculty, we discussed a 72% cut score that would be the criteria for passing the RRT. A lower cut score of 66% allows job entry level in some states and is recognized as the CRT credential. The RRT and CRT is a Therapist Multiple Choice with two cut scores. The lower allows for job entry level employment at a novice level, whereas the RRT is the desired credential, as it identifies the individual as competent in critical thinking. This upper cut score allows the individual to take a computer simulated exam that further propels the student from competent to excels. This, combined with clinical experience, will be expected to have upward mobility within the profession, thus earning the RRT credential. This exam is highly regarded by reputable physicians as specialist in pulmonologist assisted in the creation of these exams. These exams have been

used annually for assessments as it is in-line with inquiry analysis based on the following Candidate Handbook statement:

CRT: "Professionals who earn the CRT credential have obtained sufficient clinical skills through the education program from which they graduated and sufficient knowledge mastery to provide competent respiratory care at entry into practice. Knowledge domains, include, but are not limited to evaluating patient information, troubleshooting devices, performing procedures, and implementing therapeutics. Most CRTs are employed in medical-practice settings such as inpatient hospitals; some CRTs are employed in outpatient clinics, free-standing diagnostic centers, and device manufacturing."

RRT: "Compared to CRTs, RRTs have demonstrated a higher level of proficiency by achieving a higher score on the same examination taken by CRTs and through additional evaluation of knowledge about facilitating the care of patients with a variety of needs. Professionals who earn the RRT designation have obtained sufficient clinical skills through the education program from which they graduated and sufficient knowledge mastery to provide competent respiratory care. Knowledge domains, include, but are not limited to evaluating patient information, troubleshooting devices, performing procedures, and implementing therapeutics. Most RRTs are employed in medical-practice settings such as inpatient hospitals; some RRTs are employed in outpatient clinics, free-standing diagnostic centers, and device manufacturing."

These are junior students who were evaluated in RCP. The results are shown in the table 5 below:

ESLO 2: Institutional Inquiry and Analysis Rubric Applied to On-Campus Outcomes: (please see table 3).

Student	NBRC style multiple choice outcomes converted to percentage.	NBRC style simulation outcomes.	Overall Outcome
Student 1	Identifying: 2 Investigate: 4 Support: 3 Evaluate: 2 Conclude: 3	56%	**No-Pass**
Student 2	Identifying: 3 Investigate: 3 Support: 4 Evaluate: 3 Conclude: 4	76%	**Pass - RRT**
Student 3	Identifying: 1 Investigate: 2 Support: 1 Evaluate: 1 Conclude: 2	51%	**No-Pass**

Student 4	Identifying: 3 Investigate: 2 Support: 1 Evaluate: 1 Conclude: 3	52%	**No Pass**
Student 5	Identifying: 4 Investigate: 1 Support: 3 Evaluate: 3 Conclude: 2	67%	**Pass CRT**
Student 6	Identifying: 3 Investigate: 4 Support: 2 Evaluate: 2 Conclude: 3	70%	**Pass CRT**
Student 7	Identifying: 2 Investigate: 3 Support: 2 Evaluate: 3 Conclude: 2	61%	**No Pass**
Student 8	Identifying: 3 Investigate: 4 Support: 4 Evaluate: 3 Conclude: 3	75%	**Pass RRT**
Student 9	Identifying: 2 Investigate: 1 Support: 2 Evaluate: 3 Conclude: 2	65%	**No Pass**
Student 10	Identifying: 2 Investigate: 3 Support: 4 Evaluate: 3 Conclude: 2	71%	**Pass CRT**
Student 11	Identifying: 1 Investigate: 1 Support: 2 Evaluate: 2 Conclude: 2	60%	**No Pass**
Student 12	Identifying: 3 Investigate: 4 Support: 3 Evaluate: 3 Conclude: 4	75%	**Pass RRT**

Student 13	Identifying: 1 Investigate: 1 Support: 4 Evaluate: 2 Conclude: 3	70%	**Pass CRT**
Overall Results	Average Points out of total potential 20 points per student is: 13.2	Average Pass Rate class overall 65.4%	No Pass: 6 Pass CRT: 4 Pass RRT: 3

Table 5. NBRC TMC Exam. Please see appendix B-3.

Program Observation and Assessment for ESLO 2 Inquiry and Analysis for On-Campus:

Strengths: These are students who have not started clinical at this point but this test was administered just one term prior toa years along clinical/external experience. This means that these score will most likely improve as these student begin to use motor skills and put into practice the objectives of the NBRC exam. These students will take this exam once again one year from this initial exam date. This will be the last term of their cohort program and allows the Clinical Director to work with each individual student in the areas that need reinforcement. This test allows for instructors to do a deep analysis and have a plan to assure success. This method has been ongoing year after year with very high first time pass rate after graduation. The Oregon Tech Respiratory Care Program has been recognized for the Distinguished Award for our outcomes with the NBRC first time pass rate among other factors. Due to this prestigious award, we are confident this method works effectively,

Weaknesses: The threshold was not met as a whole and on average of all students, we missed the low cut score by less than one-percent. A bigger sample size would have been optimal. 54% passed the low cut score while three of the thirteen students passed the high cut score.

Actions: We are able to evaluate the last five years for the first time takers and try to intervene where we see consistent areas of low scores. This will allow us to reinforce these areas throughout the sophomore and junior years to recognize how more time or changes in approach to teaching certain cognitive domains of weakness.

Update: There is no change to administering this exam. This will be the year to evaluate the trends to strengthen our program to the needs of the NBRC credentialing exam(s).

Student Learning Summary: The students are now aware of how this exam is organized as they get to see the same data set that generated this report. file:///C:/Users/pardy/Downloads/ISLO%20NBRC%20Content%20scores%20(2).pdf Besides this Institutional assessment, students are to evaluate where their strengths and weakness lie. The timing is purposeful as we implement this exam by the NBRC prior to clinical externship as they can put the highlighted areas of the exam outcomes into practice. We see each year a marked improvement by this method of teaching and learning.

Oregon Institute of Technology
RCP 452 Clinical III
Senior Spring Externship
Syllabus

Course Description

Externship is designed to successfully build organization of a workload providing optimal quality patient care. This final term of clinical practicums is to observe the ability to work well in a hospital environment communicating effectively with all members that the student clinician comes in contact with. The student clinician should be able to display professionalism and competence in respiratory care that is need for job entry level. All required competencies have been met in all areas of care that repetition at the externship site will further build skill experience. The ability to function in a teambuilding environment is essential for success in this course. Students must complete three previous terms (nine months) of clinical experience in both adult and neonatal respiratory care, to include cross-disciplinary communication and management of mechanical ventilation, hemodynamics, oxygen, and aerosol therapy, advanced cardiac life support, newborn resuscitation in the obstetrical unit, emergency room and pulmonary physiology laboratory. This term requires advanced levels of competence in mechanical ventilation and patient management in adult critical care units. Students need to be under the direct yet limited supervision of qualified respiratory therapists and physicians.

Prerequisites

Successful completion of Junior year didactic instruction, Introduction to Clinicals RCP 350, Clinical I RCP 450, and Clinical II RCP 451.

Philosophical Emphasis

To provide the student clinician with an array of respiratory care learning experiences. To allow the student to provide hands on care that will help build confidence and skills that will be required in becoming a valuable respiratory care provider. All students should be involved as guided by their mentors to implement safe quality care to patients. Work on independence with minimal needs of your mentors. Be proactive in your clinical education and engage with others to learn all that you can.

Instructor

Michael Gilinsky, MSAH, RRT, RRT-ACCS, RRT-NPS.
Office Phone: (541)885-0720; Cell Phone (541)601-8516.
Email address: Michael.gilinsky@oit.edu.
Office hours by appointment only via ZOOM per OIT guidelines due to Covid.

Due to the amount of emails I do receive and the amount of traveling I do I am not always able to check my emails 24/7, emails will not be responded to right away in some cases. If you need to get a hold of me, call me or text me. Emails on weekends may not be checked and it may take hours if not

days to get back to you in these cases. In the event of heavy email traffic, a triage method will be used with students, faculty, and clinical sites taking priority.

Course and learning Objectives

The senior respiratory clinician will:

1. Attend all scheduled shifts on time and prepared. The supervisor/manager will have the right to send any student home who is not on time or prepared.

2. Participate in report by giving and receiving confidential information about patient updates.

3. Become familiar with hospital Policies and Procedures as well as the Mission Statement and Core Values.

4. Become familiar with the respiratory care job description for an entry level practitioner.

5. Become familiar with different medical equipment not used prior. For example, this could be different ventilators and BiPAP/CPAP equipment made by different medical equipment companies.

6. Hone-in the student's communication. Report to the Clinical Director each week by email letting me know about your positives and negatives experiences for the week. This should include at least two paragraphs (4 – 6 sentences each). This participation accounts for part of your grade. Each weekly report missed will account in one dropped grade. Due by Sunday of each week. No late reports will be accepted.

7. Assure the student shows completion of Trajecsys after each shift. This not only helps students document their clinical skills, it simulates charting in the hospital as well.

8. Assure each student has the skills to properly clock in and clock out. This simulates real life experiences as it relates to timecards. These are required before and at the end of each shift. It will be your responsibility to turn these into your clinical director by the end of the term and complete your evaluation by appointment. No late papers accepted.

9. Have fun and enjoy your experience. You are paying for your experience, get as much as you can out of it.

10. Train and teach each student in Advanced care including ACLS training in week 11, and possibly PALS depending on what the instructor has planned. The ACLS and PALS instructor will be Sarah Fitzpatrick. This training will ensue the last week of the term.

11. Assist the student in becoming familiar with NBRC prep by Taking one practice NBRC exam in week 11 and then examining it afterwards. Date and time TBA. Your score will be tallied out of points possible. 12. Assure the student attends Clinical extern orientation so that the student is successful during their externship.

Textbook and Resources:

Suggested but not required: Dana Oakes or like student clinical handbook for respiratory care. Use all text books acquired throughout the program for reference.

Recommended: Comprehensive Respiratory Therapy Exam Preparation Guide fourth edition

Submitted Work

Will include time stamps, trajecsys and will be evaluated a whole grade for each missed. Weekly contact as mentioned above is to be continued and graded accordingly. Write with educational standards. One practice exam made by the NBRC.

Assignments:

Week 1: Mandatory Orientation Wednesday, March 31. Due to Covid, this will be ZOOM.

Weeks 2-10, weekly communication. Week 11: Turn in binders. Tuesday June 8th.

Week 11: ACLS training 6/9 and 6/10. For ALCS training, I would like you to sign in to trajecsys.

Week 11: Take final NBRC exam Tuesday June 8th.

Assignment:	Total points
Trajecsys Daily Log 100 Daily evaluation	100
Trajecsys Time Card	100 Each one missed is a letter grade drop.
More	than 2= failed grade
NBRC exam	NBRC Version B 100 points possible
Weekly reports to Clinical Director	All=no dropped grade. Missing 1= dropped letter grade. Missing 2= two dropped letters grades.
Final Site evaluation	25
Final Evaluation by coworkers and manager	150
Final Binder	25

Grading

At mid and end of the term the clinical director will inquire of the student's status and how they are performing during externship. The simple question will be asked, "If you could, would you hire this student once they have graduated?" This would include a response that supports their answer. The manager will determine the grade for you under the following hiring criteria:

- "A" Absolutely. 150 points
- "B" Yes, but with few issues to be worked with. 120 points
- "C" Yes, but many areas need addressing through further orientation. 90 points
- "D" Not sure, questions ability to do what is required. 50 points
- "F" Absolutely Not. 0 points

This will be based on feedback that the manager gets back from charge person(s), mentors, nurses, and physicians as well as empirical observation of the student. It is also based on meeting the policy and procedures required of the facility, the RCP 452 syllabus, needed time sheet, and Trajecsys entries. The student respiratory program handbook applies to action taken during any needed intervention and has to comply with the affiliation agreement between OIT and the given participating medical facility.

Clinical grading as stated below and the O.I.T. student handbook will apply. Your mid and final term evaluation will also have an impact on the grading system. Since this is somewhat subjective it will be graded along a rubrics matrix. The highest grade received will be contingent in all areas of responsibilities. For example: you as a student may be well received, knowledgeable, and skillful, but if you have not had a document signed, fully filled out, time missing, or missing trajecsys information your grade will be adversely affected.

All of the hospital clinical standards must be met in order to pass this course. Failure to meet these guidelines may cause the grade to drop a letter grade. One example would be incomplete competencies or occasional poor evaluations. An example of a failed grade would be consistent poor evaluations, not being active as a student, or having a poor attitude towards your classmates, facility that you are hosted at, or faculty. More severe breaches as described in the student handbook could result in instant failing or expulsion from the clinical site. One example would be patient safety or personal safety.

Americans with Disabilities Act:

If you believe you need an academic adjustment for any type of disability, please let me know. Students with visual or hearing impairment are advised to select seating in the classroom favoring optimal visual or auditory access to the classroom activities. You may also speak with the Support Services office at Oregon Institute of Technology: (541)885-1031.

Accreditation: This program is accredited by the Commission on Accreditation of Allied Health Programs (CAAHP) in collaboration with the Committee on Accreditation for Respiratory Care (CoARC). Inquiries regarding accreditation should be directed to: https://www.coarc.com/Contact.aspx.

Figure 4: Syllabus RCP 366, Clinical Simulation used for Quantitative Literacy.

VII. ESLO #5 Quantitative Literature On-Campus outcomes:

This assignment was evaluated on-campus in RCP 442; Case Management III. It is a course involving three sequences to provide a thorough, evidence-based medicine introduction, followed by an actual case study performed while in the clinical environment their senior year. This senior project gives the audience a chance to evaluate each individual student's professionalism of presentation and a thorough examination on a chosen disease process by reputable references. Lastly, the case study is the empirical

evidence that is acquired during the student's involvement with the patient, realizing sensitive information by HIPPA Laws. This case study involves a physical evaluation of the patient including a subjective, background, objective, assessment and plan. Further evidence collected is diagnostic and lab results. The student will then show a competent approach to patient care by intervention plans that include equipment interface using calculations for set parameters. Further calculations are used based on return values from equipment and lab results such as arterial blood gases. These return values will prompt the student to make the appropriate adjustments by using calculations between equipment parameters, return values and lab diagnostic outcomes.

Once this patient has had a full investigation of the findings pertinent to respiratory care, interventions have been enacted and changes made, if any, based on return values, diagnostics and lab draws. The respiratory care student must now be able to package and organized these events and data to submit to the physician who may or may not agree with the decisions made depending on diagnosis and how the patient presents. This communication has a traditional approach that is both interactive and professional in the best patient quality of care given.

Definition of Quantitative Literacy: Quantitative literacy comprises the ability to appropriately extract, interpret, evaluate, construct, communicate, and apply quantitative information and methods to solve problems, evaluate claims, and support decisions in students' everyday professional, civic, and personal lives.

ESLO 5: On-Campus Quantitative Literacy Outcomes using institutional rubric: (please see figure 2).

Student	**Video Presentation supported by evidence base medicine document.**	**Evidence based medicine based on policy and procedure outcomes.**	**Overall Outcome (Grade)**
Student 1	Practice	Capstone	Pass (B)
Student 2	Capstone	Practice	Pass (B)
Student 3	Foundation	Practice	Pass (C)
Student 4	Practice	Capstone	Pass (B)
Student 5	Capstone	Capstone	Pass (A)
Student 6	Practice	Practice	Pass (C)

Student 7	Capstone	Capstone	Pass (A)
Student 8	Practice	Capstone	Pass (B)
Student 9	Practice	Capstone	Pass (B)
Student 10	Capstone	Capstone	Pass (A)
Student 11	Practice	Practice	Pass (B)
Student 12	Capstone	Capstone	Pass (A)
Student 13	Practice	Foundation	Pass (C)
Overall Results	**Average**	**Excelled**	100% Pass

Table 6. Video and Evidenced Based Medicine Documents Presentation. Please see appendix B-2.

Strengths: All students showed a consistent organized approach to this senior project and appeared that instructions were followed very well as well as cohorts working together to critique each others work. Students mostly showed the correct calculations and were able to define the equations in what it meant for patient intervention given the many different case studies presented. These presentations garnered great interactions during the Q&A session at the end. The audience not only included cohorts and under classmen, but it included hospital staff and managers too, making it a more vibrant discussion. Each student showed the ability to present and communicate effectively the content of their case study backed by evidence-based medicine cited by reputable references.

Weaknesses: The Syllabus was anemic and further guidelines for this course were not available for assessment, though they do exist. Rubric grading by individuals in the class were not as subjective as they could have been and did not seem to avoid bias depending on their relationship with each student. The assessment outcomes could have been better communicated by the instructor.

Actions: This is a course where assessments are done frequently and will continue to use this in the future for this assessment cycle among others as it covers a wide range of essential institutional assessments. To assure that the instructor teaching this in the future give a clearer guideline and Syllabus for the assignment although it exists.

Update: The update for this ESLO were implemented in the last cycle and will be continued for use this model in the future.

Student Learning Summary: The students were able to put together what they applied in their courses throughout the program and clinical experiences. In an organized fashion, they were able to present a

case study to an audience of professionals. This is an important skill as students will soon graduate and have to continue presenting to an interdisciplinary team while doing "patient rounding" in the medical facilities. These patient rounds will include the collection of data, interpreting the data through calculations and communicating to the team about the approach for continued patient care.

Course Syllabus
Winter 2021

Instructor Information:

Name: Sarah Fitzpatrick, MHA, RRT
Email: sarah.fitzpatrick@OIT.edu
Phone: 541-885-1971
Office Hours: Remote Tuesday 11:00-2:00pm and Friday 9:00-11:00am
Email will not be checked after 4:00pm on weekdays or on the weekends.

Course Overview:

Course Number: RCP 442

Course Title: Case Management III

Course Description: Current clinical cases used as the basis for scholarly research and discussion. Students continue work on senior project in the field of respiratory care, including interviews, research, literature review, and formal presentation.

Pre- requisites: Each student must have successfully passed the following courses: All previous courses that allowed for senior class standings along with RCP 441 and RCP 451.

Credit Hours: 3

Accreditation: Individual courses cannot be accredited. Oregon Institute of Technology is accredited by the Northwest Commission on Colleges and Universities (NWCCU), an institutional accrediting body recognized by the Higher Education Coordination Commission and the Secretary of the U.S. Department of Education.

Attendance Expectations: Remote Asynchronized

- Strong communication with faculty is crucial.
- Required to attend presentation of Case Study to Medical Professionals (via zoom).
- Complete NBRC Mock Clin Sim Finals week.

SUBMITTED WORK:

• A formal Case Study Presentation will be given (100 points):
    o PowerPoint and Case Study Paper (Total of 200 points).
    o Outlines and Rough Drafts of Power Point and Paper due throughout term (note Canvas Schedule)

• Discussion post will be completed as scheduled below on Blackboard. o Open Sunday – Close Sunday at midnight.
    o 1 post and 3 comments on classmate's posts required (10 points each).

• RT Board Review (20 points each) Due the following Sunday at midnight

• Clin Sim Review- 1 page single spaced or 2 pages double spaced (10 points each).

• Secure Clin Sim Exam 100 points

• Professional Behavior 100 points

• All late assignments will receive 25% off earned score.

1	January 4th	RT Board Review: Simulation #13 Discussion Post and Clin Sim Review
2	January 11th	Final Presentation Topic due by Week 3 RT Board Review: Simulation #25 Discussion Post and Clin Sim Review
3	January 18th	Topic Summary due by Sunday at Midnight RT Board Review: Simulation #35 Discussion Post and Clin Sim Review
4	January 25th	RT Board Review: Simulation #26 Discussion Post and Clin Sim Review
5	February 1st	Final Presentation Outline due by Week 6 RT Board Review: Simulation #30 Discussion Post and Clin Sim Review
6	February 8th	RT Board Review: Simulation #38 Discussion Post and Clin Sim Review
7	February 15th	Presentation Rough Draft due by Week 8 RT Board Review: Topic 1E Discussion Post and Clin Sim Review
8	February 22nd	Final Presentation Power Point and Paper due by Week 10 RT Board Review: Simulation #32 Discussion Post and Clin Sim Review

9	March 1st	Senior Presentations (see schedule below) Discussion Post and Clin Sim Review
10	March 8th-12th	Senior Presentations (see schedule below) Discussion Post and Clin Sim Review
11	March 15th-18th	Timed and password secured CLIN SIM EXAM

	Date	Time	Student		Date	Time	Student
1	March 1st	1230		8	March 8th	1430	
2	March 4th	1230		9	March 8th	1500	
3	March 4th	1300		10	March 8th	1530	
4	March 4th	1330		11	March 11th	1230	
5	March 8th	1230		12	March 11th	1300	
6	March 8th	1300		13	March 11th	1330	
7	March 8th	1330					

Please note that subtle changes are possible in this course. Syllabus is subjective to subtle changes with events and points as opportunities for invaluable learning experiences may present itself.

Disability Accommodation Students with a documented disability who require assistance or academic accommodations should contact the office of Disability Services immediately to discuss eligibility. Disability Services staff are located on both the Klamath Falls and Wilsonville campuses, however arrangements can be made to meet with a student on any campus. Meetings are by appointment only, so please contact the Disability Services office at the campus closest to you: Klamath Falls (541) 885-1790 and Portland-Metro (503) 821-1305. Specific information and Disability Services forms can be found at www.oit.edu then go to "Academics" and click on "Student Success Center" and then "Disability Services." This link leads to the department's website: http://www.oit.edu/academics/ssc/disability-services

Academic Integrity at OIT Students are expected to demonstrate their knowledge with honesty and integrity. OIT considers academic dishonesty to be

an unacceptable practice. The complete OIT Student Academic Integrity Policy is available on the OIT web site.

Mandatory Attendance: In accordance with Federal Law attendance will be completed during the second week of the term. If you have are not in attendance during this time period or have not communicated with the instructor and are marked absence from class, you will be administratively dropped from the class.

Accreditation: This Respiratory Care Program (on-campus) is accredited by the Commission on Accreditation of Allied Health Programs (CAAHP) in collaboration with the Committee on Accreditation for Respiratory Care (CoARC). Inquiries regarding accreditation should be directed to: The Committee on Accreditation for Respiratory Care (CoARC), (800)874-5616.

Title IX Responsible Employee and Mandatory Child Abuse/Vulnerable Populations Reporting Obligations: Oregon Tech faculty and staff are committed to creating and maintaining a safe and equitable learning environment for the Oregon Tech community. Pursuant to U.S. Department of Education requirements, all Oregon Tech faculty and staff (other than designated confidential staff) must report any information they become aware of regarding genderbased bias, sexual harassment, sexual assault, sexual misconduct, relationship violence, or stalking involving a student to the University Title IX Coordinator. In addition, Oregon law requires a mandatory report to the Oregon Department of Human Services of any physical or emotional abuse of a child or other protected person, including elders and people with disabilities, or when a child or other protected person is perceived to be in danger of physical or emotional abuse. If you are the victim of sexual or physical abuse and wish to speak with someone confidentially you may contact the Center for Hope & Safety's 24/7 confidential crisis line at 503-399-7722; or the National Sexual Assault Hotline, a 24/7 confidential hotline, can be reached at 800-656-4673

Figure 5: Syllabus for RCP 452, Case Management III for ESLO #5, Quantitative Literature.

IX PSLO #4 Knowledge of applied mechanical ventilation therapeutics:

The knowledge and application of mechanical ventilation is based on the final examination in RCP 353, Mechanical Ventilation III. This final written exam (knowledge) and final lab exam (applied) demonstrates each student's ability to evaluate these modes of mechanical ventilation as well as troubleshooting based on waveform graphics, arterial blood gases and interventions based on patients demographics that include calculations and disease process. The return values and the lab results based on CXRay, ABG's and lab samples help the respiratory care student to understand the changes made without injury to the patient. This course is chosen because it is the end of a three sequence course, Fall, Winter and Spring and really works to the thorough exhibition of mechanical ventilation and interfacing to the patient depending on their individual need. It essential because the building blocks or scaffolding is realized along the way for this final comprehensive exam.

XI PSLO #4 Knowledge of applied mechanical ventilation based on final written and lab exams are as follows:

Student	Final Written Exam	Final Lab Exam	Grade Results
Student 1	B	B	B
Student 2	A	A	A
Student 3	A	A	A
Student 4	B	A	A
Student 5	C	A	B
Student 6	A	A	A
Student 7	A	A	A
Student 8	C	B	B
Student 9	C	A	B
Student 10	C	B	B
Student 11	B	B	B
Student 12	A	B	A
Student 13	C	B	B
Student 14	C	B	B

Table 7. Final written and final lab exam results.

Strengths: All students were to be able to successfully pass this course and is a testament to three sequences that students are competent enough to demonstrate skills associated with patient-to-medical equipment interfacing for interventions in saving lives. It is an important benchmark as extern clinicals begin the following term, in the summer. They will be applying this knowledge in respects to communicating with mentors and preceptors. These students will also use hands on skills to show these mentors and preceptors in the acute care setting by using repetitive motor skills that involves rigorous testing. This measure of outcomes showed students were exceptionally strong in the lab environment, more so than the didactic portion.

Weaknesses: We need to institute a rubric for the lab portion to do a direct observation of motor skills as well as assembling needed equipment to be functioning correctly. It should include a time frame as well, although not to be included in the class grade.

Actions: Continue to do a combination to assess this cycle of knowledge of applied mechanical ventilation as it fits the purpose for measurement. Consider conversations with faculty on a new way of measuring these objectives.

Update: From the last cycle, this same approach seemed to work well. No changes were made.

Student Learning Summary: The learning objectives were for students to safely set up a patient and to use return values and graphic waveforms to fine tune and to troubleshoot areas of mechanical ventilation. These students learn a variety of approaches to assure safe parameters are met depending on disease status. Finally, our students learn how to transport these patients with the mechanical ventilation needed for diagnostic tests that include fluoroscopy and tomography.

RCP 353
Mechanical Ventilation III
Syllabus Spring Term

COURSE DESCRIPTION:

The respiratory care student will be able to learn trouble shooting and ventilator liberation approaches for quality patient care. In this course students will have exposure to variable ventilators that are used currently in hospitals today. This will include the Volume Diffuse Respirator and oscillator for low compliant lungs and the Venti-Pak, one of many transport ventilators used today. Ventilation and oxygenation will be a focus of this course as well as ventilator changes to manage these outcomes. The student will learn how to troubleshoot the ventilator given patient assessment and ventilator return values. Each student will be proficient in making the appropriate ventilator changes needed to overcome clinical obstacles that will more than likely arise. Finally, the student will learn how to wean or liberate the patient successfully from the ventilator and follow up on post ventilator care. This course is accompanied with a lab which will require student participation. Ventilator interaction will be heavily emphasized in this course.

PREREQUISITES:
Each student must have successfully passed the following: Freshman and Sophomore courses. Other courses that must have been passed are RCP 336, RCP 337, RCP 345, RCP 351, RCP 352, RCP 386, RCP 388, and RCP 389.

Student must be almost finished with vaccination record communication and in constant contact with the OIT health center. This is a must or you will not be permitted into clinical. The student has a weeks to complete this. DO NOT PROCRASTINATE.

INSTRUCTOR:

Michael Gilinsky MSAH, RRT, RRT-ACCS, RRT-NPS
Clinical Director of Respiratory Care
Oregon Tech
(541)885-1541
Michael.gilinsky@oit.edu

Office hours: If the student needs to reach me, I will have Online hours and phone hours. My online hours are Tuesday 9-12, and TR 12-2. For this, you will need to schedule a Zoom meeting with me. You can reach me by phone PRN during regular business hours and days M-F 8am-5pm.

REQUIRED TEXTBOOKS:

Pilbeam, S., and Cairo, J.M. Mechanical Ventilation Physiological and Clinical Applications. *Ed. 6th*, St Louis, Missouri: Mosby (2015).

Wilkins, R., Stoller, J., Kacmarek, R., Egan's, Fundamentals of Respiratory Care. *Ed. 10*. St. Louis, Missouri: Elsevier, 2015..

PHILISOPHICAL EMPHASIS:

Full participation from each student will be expected. This course will require memorization and critical thought processes. Note taking, mathematics, and assigned readings will be important in order to pass this class. Group activities will help you become an important part of a professional team and therefore each student must interject his or hers ideas into the discussion. Questions are important but please wait until we can open opportunities to help keep organization for the class.

COURSE OBJECTIVES AND LEARNING OUTCOMES:

1. **Make appropriate ventilator adjustments to the ventilator according to arterial blood gases.**
2. **Suctioning approaches and technique and administering aerosols. Bronchoscopy approaches, positioning, and CPT while on the ventilator will be discussed.**
3. **Oxygenation using appropriate FiO2, optimal PEEP, and inverse ratio approaches will be discussed.**
4. **To have a well-rounded view of extra-pulmonary effects of mechanical ventilation.**
5. **To be well versed in the effects of positive pressure ventilation on the pulmonary system.**
6. **Troubleshooting patient assessment findings who are interfacing with the ventilator.**
7. **Troubleshooting ventilator alarms, leaks, and high peak pressures. This will include more ventilator graphic waveforms.**

8. **Weaning and liberating a patient from the ventilator including SIMV, PSV, and T-Piece approaches. Monitoring of hemodynamic values and sedation approaches during weaning.**

9. **Spontaneous Breathing Trial indications for discontinuing mechanical ventilation.**

10. **Oscillator function, indication and use.**

11. **Perform, interpret, and receive ABG's on one another.**

12. **Volume Diffuse Respirator (VDR) and Intrapulmonary Percussive Ventilator (IPV), Indication and physical application of both.**

13. **Extubation procedure and post extubation care.**

14. **Intubation techniques and methods, airway management.**

15. **On-board for clinical. Pass/no-pass.**

SUBMITTED WORK:

The assignments in this lecture class will include weekly quizzes and two exams. Laboratory class will consist of weekly lab exercises and a final exam. The student must be on time for each of the quiz or test of each week. There are no make ups unless there is a written statement of emergency or other committing circumstances. If this is the case the highest points possible for missed quizzes/tests is the lowest passing grade of the day that it was given. This will be available at the end of the term. The answer must be understood and legible when writing out the response when required otherwise multiple choice will be the major portion of testing. A list of answers will not be acceptable when only asked for a certain amount. Please do not state the same answer twice by using different verbiage as it will only count as one. Each class missed will reduce the end grade by 5%. Each tardy will be assessed at 1% per incident. It is the student's responsibility to notify the instructor of assignments that are missing during finals week.

Course Outline:

Week 1: Introduction to class syllabus.
Castle branch introduction. https://portal.castlebranch.com/OV63
Select packages:

1. **OA61bgdt**

You will complete the required information and create an account. Afterwards, Castle branch will provide you with a drug screen registration and background form in which you must get this completed through he required facility.

Strarting now, you will also get me your current HEALTH INSURANCE CARDS, NEGATIVE TB TEST RESULTS, SIGNED STUDENT HANDBOOKS, CPR CARDS AND PHYSICAL EXAM FORM COMPLETED FROM YOUR PROVIDER. BACKGROUND CHECKS AND DRUG SCREENS.
Week 2: Lecture over Lecture on Methods to improve Ventilation in Patient-Ventilatory Management. Begin lecture on Extrapulmonary Effects of Mechanical Ventilation. Lab (10 pts.)
Week 3: Quiz (20 pts.) effects of positive pressure ventilation on the pulmonary system chapter 17. Lecture on IPV. Lab (10 pts.) For this day, Lab will start at 12:00pm and go until 2:50pm. You will have a special guest.
Week 4: Quiz (20 pts.) Begin Lecture on Troubleshooting and Problem Solving. Exam Review. Lab . (10 pts.)
Week 5: Semi Final (130 pts.)
Lab: (10 points)
Week 6: Quiz (20 pts.) Lecture on Basic Concepts of Non-Invasive Positive Pressure Ventilation. (Readings pages 378-392: Pilbeam). Lab (10 points). All Castle branch and onboarding information is due by this date (exceptions will be individualized)
ON THIS DAY, I WILL COLLECT HEALTH INSURANCE CARDS, SIGNED STUDENT HANDBOOKS, CPR CARDS. BACKGROUND CHECKS AND DRUG SCREENS ARE DUE AS WELL.
Week 7: Quiz (20 pts.) Continue Lecture on Basic Concepts of Non-Invasive Positive Pressure Ventilation. (Readings pages 392-396: Pilbeam). Lecture on Weaning and Discontinuation from Mechanical Ventilation. (Readings pages 402-409: Pilbeam). Lab ABGS draws (10 pts.)
Week 8: Quiz (20 pts.) Continue Lecture on Weaning and Discontinuation from Mechanical Ventilation. (Readings pages 409-423: Pilbeam) Lab exam review.
Week 9: Quiz (20 pts.) Lecture on special techniques of ventilator support including APRV, High frequency Oscillation, and Heliox. (Readings pages 505-522: Pilbeam). Lab Exams 100 pts.
Week 10: Quiz (20 pts.) Lecture exam Review and Lab Exams 100 pts. BY THIS TIME ALL OF YOUR VACCINATIONS NEED TO BE COMPLETED THROUGH THE HEALTH CENTER. Also, NEGATIVE TB TEST RESULTS on file with the health center are due.
Week 11: Final Exam 130 pts.

Syllabus is subjective to subtle changes with events and points as opportunities for invaluable learning experiences may present itself.

Grading Criteria:

The grading criteria are as follows:

90–100%	**A**
80-89%	**B**
70-79%	**C**
60-69%	**D**
< 60%	**F**

There are a total of 490 points. Class grading will be dependent on testing and attendance. Lab grading will be based on participation, individual exercises, group exercises, and attendance. In order to gain lab points you must be present. Stay ahead of assignments, attend classes, and work together in study groups as this is challenging material. In order to pass the class, you must pass the

final lab exam. This ensures me that that the student is grasping key concepts and is able to perform in the clinical setting is asked to.
If your Castle Branch documentation is not completed by the required date, you will not be permitted into clinical. This is either a PASS/No PASS grade.

Americans with Disabilities Act:

If you have a physical, learning, sensory or psychological disability and require accommodations, please let me know as soon as possible. You will need to register with and, in most cases, provide documentation of your disability to Disability Services. Please contact Erin Ferrara, Coordinator of Disability Services at (541) 851-5227 or erin.ferrara@oit.edu. Disability Services is located in the Learning Resource Center, room 229.Oregon Tech faculty and staff is committed to creating and maintaining a safe and equitable learning environment for the Oregon Tech community. Pursuant to U.S. Department of Education requirements, all Oregon Tech faculty and staff (other than designated confidential staff) must report any information they become aware of regarding gender-based bias, sexual harassment, sexual assault, sexual misconduct, relationship violence, or stalking involving a student to the University Title IX Coordinator. In addition, Oregon law requires a mandatory report to the Oregon Department of Human Services of any physical or emotional abuse of a child or other protected person, including elders and people with disabilities, or when a child or other protected person is perceived to be in danger of physical or emotional abuse. If you are the victim of sexual or physical abuse and wish to speak with confidential staff to explore your options confidentially you may: contact the Integrated Student Health Center and ask to speak to Counseling Staff (541-885-1800); visit the Confidential Advocate in the Women's Resource Center (College Union Room 225C) during drop-in hours; and/or report an incident using Oregon Tech's Anonymous Safe Campus Incident Report form on the Title IX site at http://www.oit.edu/title-ix, and select the "Report an Incident" button. For more information about your options, please visit http://www.oit.edu/title-ix. Thank you.

Accreditation:

This program is accredited by the Commission on Accreditation of Allied Health Programs (CAAHP) in collaboration with the Committee on Accreditation for Respiratory Care (CoARC). Inquiries regarding accreditation should be directed to: The Committee on Accreditation for Respiratory Care (CoARC), 1248 Hardwood Road, Bedford, TX. 76021, (800)874-5616.

Figure 5: Syllabus for RCP 353 for Mechanical Ventilation III PSLO #4.

RCP 353
Final Exam
156 Points

1. All of the following contribute to perfusion **EXCEPT:**

    a. Oxygen transport.
    b. Blood oxygen content.
    c. Partial pressure of oxygen.
    d. Affinity for hemoglobin.

2. **T/F.** Once the patient has been started it is important to inflate the lungs to an mPaW up to 30 cmH2O prior to starting oscillation. (HFOV)

3. The FiO2 will react **BEST** to the following pulmonary condition:

    a. Atelectasis.
    b. Pulmonary embolism.
    c. Alveolar hypoventilation.
    d. Interstitial edema.

4. **T/F.** PEEP is important for suctioning some patients to avoid atelectasis.

5. The following can trigger the Apnea Alarm **EXCEPT:**

    a. Incorrect apnea alarm settings.
    b. A time that is not set by the RCP.
    c. Ventilator system leaks.
    d. Patient sedation or analgesics.

6. **T/F.** A minimal PEEP of 15 will need closer hemodynamic monitoring due to the potential cardiovascular effects.

7. Optimum PEEP can be **BEST** defined as:

    a. A level of PEEP that is just above alveolar collapse minimizing cardiovascular side effects.
    b. A level of PEEP that improves compliance, but minimizing the cardiovascular side effect.
    c. A level of PEEP the is at or near Total Lung Capacity with minimum cardiovascular side effects.
    d. A level of PEEP that sacrifices some oxygenation in order to balance cardiovascular side effects.
    e.

8. Why do high Vt returns occur over the set Vt?

a. due to the respiratory care practitioner setting the Vt too low.
b. due to meeting higher peak pressures than set by alarms.
c. due to the patient actively exhaling during the inspiratory phase.
d. due to the trigger sensitivity being set too light.

9. Why would the low source gas pressure activate?

a. Due to a leak in the system.
b. Due to the inspiratory flow rate set too low.
c. Low PSI in the pressure line quick connects.
d. Activates when apnea parameters are activated.

10. What does "waveform ringing" refer to?

a. Ventilator settings or compliance that overshoot the inspiratory breath.
b. Associated with the "bird beak" finding that identifies with over distension.
c. Another term for dynamic intrinsic hyperinflation or auto-PEEP.
d. a technique used to identify a leak in the circuit or artificial airway.

11. What does recommendation nine state for weaning guidelines?

a. Use of sedation or analgesics during weaning approaches.
b. Maintaining patient ventilation while on SBT trials are performed.
c. Role of tracheostomy while patient weaning is occurring.
d. Assessing nutritional status and exercise during mechanical ventilation.

12. **T/F.** T-Piece trials can be done on a ventilator.

13. All of the following are examples of traditional weaning approaches **EXCEPT:**

a. T-Piece trials.
b. Pressure Support Ventilation.
c. Mandatory Minute Ventilation.
d. Synchronized Intermittent Mandatory Ventilation.

14. What is the normal range for PaO2?

a. 60-80mmHg
b. 55-60 mmHg
c. 80-100 mmHg
d. 90-97 mmHg

15. **T/F.** If PEEP is over distending the pressure placed on the heart will increase cardia output.

16. The ideal amount of time for the initial T-Piece trial should last:

    a. 30 minutes.
    b. 10 minutes.
    c. 60 minutes.
    d. 120 minutes.

17. A patient being assessed for ventilation weaning the muscle strength evaluation is **BEST** measured by:

    a. NIF.
    b. CROP.
    c. VC.
    d. Ve.

18. What **BEST** defines PAO2?

    a. a partial pressure of oxygen found in the blood with a HgB with a high affinity.
    b. a partial pressure of oxygen left over in the alveoli after exhalation.
    c. a way to help resolve anatomical shunting in conjunction with PeTCO2.
    d. a partial pressure of oxygen found in the alveoli on end inspiration.

19. A patient who is optimistic about coming off the ventilator is known as the **TWINKLE/SLUG** Patient.

20. What does recommendation three state for weaning guidelines?

    a. patient pathology and comorbidities of mechanical ventilation.
    b. assessing the readiness for weaning through criteria being evaluated.
    c. non-invasive positive pressure can be used to support weaning.
    d. this is a patient weaning assessment during spontaneous breathing trial.

21. HFOV has been used in the **ADULT/NEONATAL** population the longest.

22. What is the normal value for PvO2?

    a. 65 mmHG
    b. 45 mmHg
    c. 35 mmHg
    d. 55 mmHg

23. When increasing the amplitude for high frequency oscillation ventilation the outcomes are essentially:

    a. decreasing the pressure gradient in turn decreasing the Vt.
    b. increasing the pressures gradient in turn increasing the Vt.
    c. decreasing the pressure gradient in turn increasing the Vt.
    d. increasing the pressure gradient in turn decreasing the Vt.

24. The main goal of using minimum or low PEEP pressure:

    a. achieve a level of PEEP that avoids atelectasis.
    b. to improve oxygenation supported with FiO2.
    c. to maintain functional residual capacity.
    d. to avoid complications of shearing pressures.

25. What **BEST** defines PaO2/PAO2 for clinical value?

    a. the amount of oxygen that crosses the AC membrane.
    b. the amount of injury that can be observed by O2 needs.
    c. the ability for oxygen to load onto red blood cells.
    d. the amount of oxygen needed by the peripheral tissues.

26. **T/F.** A high pressure alarm can be caused by Auto-PEEP.

27. All of the following are assessments that need to be done during optimal PEEP studies **EXCEPT:**

    a. ventilator parameters.
    b. Auscultation.
    c. nail color return.
    d. arterial PaCO2.
    e.

28. All of the following are contraindications of PEEP **EXCEPT:**

    a. dynamic hyperinflation.
    b. hypovolemia.
    c. increasing ICP's.
    d. bronchopleural fistula.

29. The **BEST** way to adjust the HFOV for a patient's PaCO2 is by adjust **HERTZ/AMPLITUDE**.

30. **T/F.** Weaning from PEEP should be done as quick as possible to avoid unwanted effects once lung compliance has returned to normal.

31. All of the following alarms would expected to trigger with a leak present **EXCEPT:**

    a. low Vt alarm.
    b. low PEEP alarm.
    c. low Pplat alarm.
    d. Low Ve alarm.

32. What is the normal CaO2 value?

    a. 16 vol/%.
    b. 20 vol%.
    c. 24 vol%.
    d. 12 vol%.

33. **T/F**. Out of all of the weaning approaches T-Piece trials are the quickest for weaning a patient from the ventilator.

34. What **BEST** assessment describes a patients asynchrony to ventilation when severe cardiovascular problems are noted?

    a. dynamic hyperinflation.
    b. drug induced distress.
    c. bronchospasm.
    d. abdominal distension.

35. Recommendation four states the following for weaning guidelines:

    a. removal of the artificial airway.
    b. spontaneous breathing trial failure.
    c. weaning in long term ventilation units.
    d. ventilator weaning assessment criteria.

36. **T/F**. A threshold resistor can achieve continuous PEEP and is found in the expiratory limb of the circuit.

37. What is the range for P(A-a)O2?

    a. 100-300 mmHg.
    b. 5-20 mmHg.
    c. 0-10 mmHg.
    d. 20-50 mmHg.

38. PEEP that overcomes the upper airway of the ETTube is known as **PHYSIOLOGICAL/THERAPEUTIC** PEEP.

39. What is the disadvantage of T-Piece trials?

    a. the inability to use PEEP.
    b. the flow will not vary for the patient.
    c. dead space ventilation due to reservoir.
    d. lack of patient ventilator alarms.

40. What is the **BEST** way to <u>adjust</u> for needed oxygenation once after the patient has been set up on HFOV?

    a. amplitude.
    b. mPaW.
    c. bias flow.
    d. FiO2.

41. **T/F.** Too much fat in the nutritional approach for weaning can cause an issue with weaning because of increased CO2 production.

42. Which setting is most important to achieve a wiggle?

    a. amplitude.

b. hertz.
c. Inspiratory %.
d. mPaW.

43. What is the normal average SaO2?

a. 92%.
b. 97%.
c. 100%
d. 94%.

44. **T/F**. After the upper inflection point has been met the tidal volume would expect to increase along with compliance.

45. **T/F.** An application of high flow may be able to maintain CPAP/PEEP levels but can cause airway pressures to rise causing asynchrony.

46. Please define DO2 in hemodynamic monitoring.

a. It is the amount of oxygenated blood returning to the right side of the heart.
b. It is the amount of blood being delivered to the peripheral tissue.
c. It is the pulmonary blood flow throughout the vascular bed.
d. It is the amount of oxygen unloaded to the peripheral tissues.

47. What are you looking for when you assess an appropriate chest rise and shake (wiggle)? (VDR)

a. Nipple line to mid thigh
b. Nipple line to navel

48. What controls would you change to increase oxygenation? (VDR)

a. Pulsatile flow
b. FiO2
c. Oscillatory CPAP
d. Demand CPAP
e. i. a, b, d

f. ii. a, b ,c
g. iii. all of the above

49. What controls you would change to decrease the CO2? (VDR)

a. Pulsatile flow (increase)
b. Pulsatile flow (decrease)
c. add a cuff leak (last choice)
d. Pulse frequency (decrease)
i. a, b, c
ii. a, c, d
iii. all of the above

50. How do you decide what PIP and CPAP/PEEP to set a patient on when setting up the VDR?

a. Start with a PIP of 30 and match the current PEEP
b. Start with a PIP of 30 and a PEEP of 10

51. Use a 2:2 I:E ratio for a convective rate of 15(VDR)

a. True
b. False

52. What control do you use to set the PIP? (VDR)

a. Pulse Frequency
b. Pulsatile Flow
c. Oscillatory CPAP

53. Set the demand CPAP at 2 and then add oscillatory CPAP on top of that to get the total PEEP. (VDR)

a. True
b. False

54. If you increase the CPAP/PEEP without increasing the PIP what effect does that have on Vt and Ve? (VDR)

a. Increases it, increases the delta P and ultimately decreases CO2
b. Decreases it, decreases the delta P, and ultimately decreases CO2
c. Decreases it, decreases the delta P, and ultimately increases CO2

55. If you increase the PIP what happens to the Vt and Ve? (VDR)

a. Increases it, increases the delta P, and ultimately decreases CO2
b. Decreases it, decreases the delta P, and ultimately decreases CO2
c. Increases it, decreases the delta P, and ultimately increases CO2

56. What patient vital would you look at to see if a patient was improving or decompensating? (VDR)

a. HR
b. RR
c. SpO2

57. How do you set a convective pressure rise? (VDR)

a. Decrease the pulsatile flow by the same amount as the convective pressure rise that you are going to add, then add a convective pressure rise to equal what the original PIP.
b. Add the convective pressure rise and then decrease the pulsatile flow by the same amount.

58. Delta P = change in pressure between the PIP and the PEEP which gives the "Vt" (VDR)

a. True
b. False

59. The CO2: Choose one (VDR)

a. Follows the percussive rate (CO2 increases if percussive rate is increased and vice versa)
b. Is inverse to the change in percussive rate (CO2 decreases if percussive rate is increased and vice versa)

60. To set a proper cuff leak, look at the PIP, add a cuff leak, and then increase the PIP back to the original setting. (VDR)

a. True
b. False

61. The adult maximum pulsatile flow is 46 and the maximum PEEP is 16. (VDR)

a. True
b. False

62. ABG's(VDR)

a. Are drawn 20-30 minutes after set up
b. About 30 minutes after changes are made
c. Both of the above

63. The maximum recommended pulse frequency is 700 and the minimum is 400. (VDR)

a. True
b. False

64. The reason behind clamping the ETT before disconnecting the vent circuit is to maintain the PEEP level in the lungs and prevent de recruitment. (VDR) (HFOV)

True/False

65. What is the normal value for C(a-v)O2?

    a. 20 vol%.
    b. 5 vol%.
    c. 10 vol%.
    d. 15 vol%.

66. **T/F**. When decreasing the oxygenation need by HFOV the FiO2 should be decreased to 50% and then begin with mPaW thereafter. (HFOV)

67. If the initial setting for PaCO2 does not correct in any way the next best approach is to adjust **BIAS FLOW/INSPIRATORY TIME %. (HFOV)**

68. What best defines SvO2 for hemnodynamics?

    a. Oxygen present in mixed venous blood.
    b. venous blood staturated by oxygen.
    c. Capillary blood saturated by oxygen.
    d. the amount of oxygen to be expired.

Mega Problems (20 Points)

69. A 66 year old male is in ICU due to drug overdose. Prior to instituting mechanical ventilation an SST showed a tubing compliance of 3.10 mL/cmH2O. The patient is 5'10" and weighs 188 lbs. and is on mechanical ventilation. The settings includes using 8 mL/kg Vt, a set PEEP of 8 cmH2O, and 45% FiO2 with an ABG is drawn with a noted lab temp of 34.0 Celsius and a Pb of 744 mmHg. Patient appears to be with general edema and is with good color and is warm to the touch. Patient bs are diminished T/O but with suctioning small amounts of purulent pale yellow secretions. CXRay shows bilateral ground glass infiltrates with cardiomegaly noted. Patient has a temperature of 37.8 Celsius. ECG shows atrial fibrillation with rates between 78-134. The ventilator return values are based on an AC mode with a flow rate of 75 lpm. The ventilator returns are as follows:

    Pplat 34 cmH2O, PIP 38 cmH2O, RR set rate, I:E 1:3.6. The Vt is .060 less than what you have set.

    The patient is hemodynamically monitored with measurements below. The patient appears to be without clubbing, cyanosis, or diaphoresis at this time though there is noted general edema and with a slow nail color return.

HEMODYNAMICS		**ABG RESULTS**		**CBC/ELECTROLYTES**	
HR	78-134 bpm	pH	7.19 torr	RBC	4.9

BP	144/88 mmHg	PaCO2	61 torr	HgB	15.6 g/dL
MPAP	22 mmHg	PaO2	58 torr	HCT	48%
CVP	9 mmHg	HCO3-	18 mEq/L	WBC	14,300/mm3
MaP	118 mmHg	SaO2	86%	CL-	101 mEq/L
PCWP	16 mmHg	SvO2	62%	Na+	122 mEq/L
CO	3.8 lpm	PvO2	35 torr	K+	4.2 mEq/L

Please calculate the following assessment values:

What ventilator settings would you use initially and **please calculate the needed for Vt, RR, Ve and I:E ratio for this patient.** After settings observe ABG's for ventilator changes for a **desired PaCO2 of 40 mmHg and a desired PaO2 of 100 mmHg. Ventilator assessment includes Cstat, Cdyn, and RaW. (8pts.)**

Pulmonary and Cardiovascular assessment includes **Cardiac Index (CI), Systemic Vascular Resistance (SVR), and Pulmonary Vascular Resistance (PVR). Please assess oxygenation including Pa/PAO2, DO2, and C(a-v)O2. (6pts.)**

What is the new Ve? What do you believe is the patients immediate problem? What actions or suggestions would you take? Please interpret the ABG. (4pts.)

Calculated Vt:

Calculated Cstat:

Calculated RR:

Calculated Cdyn:

Calculated Ve:

Calculated RaW:

Calculated I:E Ratio:

New Vt or RR:

New FiO2:

Calculated SVR:

Calculated PaO2/PAO2:

Calculated PVR:

Calculated DO2:

Calculated CI:

Calculated C(a-v)O2:

ABG Interpretation:

New Ve:

What is the main problem?

What actions should be taken?
(think of as many as possible)

70. What does recommendation #1 overall while approaching weaning success? (1pt.)

71. Under recommendation #1, what are the four weaning criteria's that the respiratory therapist looking for to establish successful weaning? (4pts.)

a. **c.**

b. **d.**

72. Please list three indicators that measure muscle strength while on the ventilator when addressing recommendation #1: (3pts.)

a. **b.** **c.**

73. In recommendation #1, what is the maneuver used to measure the drive to breathe? (1pt.)

74. In recommendation #1, what are the six physical signs to look for that would indicate that there is an increase work of breathing (WOB)? (6pts.)

75. Please list three oxygen measures used in recommendation #1 to assure adequate oxygenation prior to weaning: (3pts.)

a.

b.

c.

76. What does recommendation #2 overall while approaching weaning success?

77. What does recommendation #3 overall while approaching weaning success?

78. In recommendation #3, how long should a patient be able to tolerate SBT's prior to extubation? (1pt.)

79. In recommendation #3, please list four evaluative tools that determines SBT success: (4pts.)

a. **c .**

b. **d.**

80. In recommendation #3, what PSV range should be used when establishing SBTrials? (1pt.)

81. What does recommendation #4 overall while approaching weaning success?

82. Please list three basic risks to extubation of the invasively mechanical ventilated patient stated in recommendation #4: (3pts.)

    a.

    b.

    c.

83. In recommendation #4, non-invasive ventilation may be an alternative to reintubation as it has many benefits. Please list three: (3pts.)

    a.

    b.

    c.

84. What does recommendation #5 overall while approaching weaning success?

85. From recommendation #5, please list six non-respiratory factors that can complicate weaning or add to SBT failure: (6pts.)

a. **d .**

b. **e .**

c. **f.**

86. What does recommendation #6 overall while approaching weaning success?

87. In recommendation #6, how does the respiratory care practitioner assure comfort as well as minimize ventilator support for resting in between SBT's? Please list four: (4pts.)

    a.

    b.

    c.

    d.

88. What does recommendation #7 overall while approaching weaning success?

89. What does recommendation #8 overall while approaching weaning success?

90. What does recommendation #9 overall while approaching weaning success?

.

91. In recommendation #9, what orally intubated patients does the book list as people who would benefit from a tracheostomy tube instead? Please list four: (4pts.)

    a.

    b.

    c.

    d.

    e.

92. In recommendation #9, how long (range) does the author suggest that it takes for a tracheostomy tube to mature? (1pt.)

93. What does recommendation #10 overall while approaching weaning success?

94. What does recommendation #11 overall while approaching weaning success?

95. What does recommendation #12 state overall about the type of patient used with this recommendation?

96. In recommendation #12, what are the goals of weaning in long term facilities? Please list four: (4pts.)

    a.

    b.

    c.

    d.

    e.

97. The best way to prevent aspiration during NPPV is to
    a.
    b.
    c.
    d.

98. A patient has been on nasal mask NPPV for almost 24 hours. The patient complains of nasal congestion and a dry mouth. Which of the following would you recommend?
    A.
    B.
    C.
    D.

99. A patient experiences increased work of breathing, shallow breathing and a respiratory rate of 30 breaths per minute. The patient is receiving O2 by air-entrainment mask with a FiO2 of 0.50. The ABG is:

pH	7.44
PaCO2	34 torr
PaO2	46 torr
HCO3-	21 mEq/L
BE	0

    The doctor asks the respiratory care practitioner to improve the patient's hypoxemia. The therapist should recommend:

A.
B.

100. A patient is admitted to the coronary intensive care unit for acute CPE. The physician wants to use noninvasive ventilator support in the treatment of this patient's condition. Which mode of ventilator support would be most appropriate at this time?
A.
B.
C.
D.

101. What does APRV stand for: Please give recommended initial settings as well the peak flow rate is 60lpm: (5 points)

Name:
I.T:
E.T:
Phigh:
Plow:

102. In actual practice, clinicians tend to rely on the evaluations of the expiratory gas flow waveform: approximately, what is the T-PEFR set at?

103. Ventilation and PaCo2 are both determined by three primary factors. What are those factors?

104. It was found that in patients with _____ after 1 second had complete emptying of the lungs and after 2 seconds _____ remained stable with no further gas leaving the lungs.

105. What is the typical color of a heliox cylinder? (however that being said always check the label for safety)
A. Blue
B. White and grey
c. Grey
D. Brown and green

106. The benefit of heliox is seen more in the:

a. Upper and lower airways.
b. Central and lower airways

c. Acute upper and central
d. Upper only

107. Heliox cannot be used in which of the following circumstances?
a. During NPPV
b. In patient allergic to helium gas
c. During aerosolized medication delivery
d. Where adequate equipment is not available to deliver helium safely.

108. What are the conversion factors for Heliox total liter flow for 60/40, 70/30. 80/20.
a. 1.2, 1.4, 1.8
b. 1.4, 1.5, 1.6
c. 1.2, 1.3,1.4
d. 1.4, 1.6, 1.8

Figure 6. Didactic Mechanical Ventilation Final Exam for PSLO #4 Knowledge of applied Mechanical Ventilation.

STATION ONE

30 Points

Scenario:

1. Please set a patient up on the ventilator who is a 22 y/o 6'1" female and weighs 210 lbs. Once you have appropriate setting please do a ventilator check while in VC-AC. I.T should be 1.0. Pulmonary Artery Pressures (PAP) are reaching 15.
   Place the patient initially on 100% Fio2. What is the recommended peep for this patient according to the ARDSNET protocol (2 points) both high and low peep protocols?

2. First tell me the inclusion criteria for ARDS patients:
   1.
   2.
   3.

Initial Settings:

RR:
VT:
Ve:
I:E:
Mode:
Fio2:
ABG 2 hours later:
PH 7.33
Paco2: 52
PaO2: 50
HcO3-: 15
BE: -8

Change to APRV New initial Settings:
RR:
Phigh/vt:

Ve:
I:E:
Plow:
Thigh:
T-low:

STATION TWO
20 Points

TRANSPORT VENTILATOR SETTINGS:

VT:

RR:

I TIME:

E TIME:

FLOW:

WRIGHTS MEASUREMENT MET:

STATION THREE

30 POINTS

The APRV patient you previously setup has another ABG drawn post 4 hours on APRV:

PH: 7.22

PaCo2: 75

PaO2: 55

Hco3-: 18

VDR INITIAL SET UP:

Pulsatile flow:

Rate:

I:E:

i:e:

Demand Cpap

Osc Cpap:

Nebulizer:

Pulse Freq:

Readings:

Pulse Flow/pip:

Peep total:

Map:

Pulse freq:

Post initial settings ABG:

PH 7.45

PaC02: 30

PaO2: 92

Hco3-: 14

NEW VDR SETTINGs POST ABG:

Pulsatile flow:

Rate:

I:E:

i:e:

Osc Cpap:

Nebulizer:

Pulse Freq:

Demand Cpap

Readings:
Pulse Flow/pip:
Peep total:
Map:
Pulse freq:

STATION FOUR
INTUBATION AND HAND VENTILATION
20 POINTS

MET **NOT MET**

Station 5
10 points
Set-up of T-piece
Explain how to interface Chin-well, Aerosol mask, and HFNC

Figure 7. RCP 353, Mechanical Ventilation III Lab Final Exam for PSLO #4.

X PSLO #5 Knowledge of applied cardiopulmonary diagnostics and monitoring**:**

The knowledge and application of cardiopulmonary diagnostics and monitoring is based on the final examination in RCP 345, Cardiopulmonary Diagnostics and Monitoring. This final written exam (knowledge) and final lab exam (applied) demonstrates each student's ability to evaluate the ability to

perform outpatient diagnostic and have understanding of lung function. This is based on four aspects of diagnostics including flow volume loops, residual volumes, DLCO (diffusion) and MVV (diaphragm and accessory muscle strength). The student needs to be able to collect the results through effective testing through patient effort and be able to interpret results through calculations and predicted values versus actual values. These diagnostic tests are the GOLD standard for diagnosis of lung disease. A rubric was used to grade the lab portion as seen in figure 9.

X PSLO #5 Knowledge of applied cardiopulmonary diagnostic and monitoring based on final written and lab exams are as follows:

Student	Final Written Exam	Final Lab Exam	Grade Results
Student 1	B	A	A
Student 2	A	A	A
Student 3	A	A	A
Student 4	B	A	A
Student 5	B	A	A
Student 6	A	A	A
Student 7	A	A	A
Student 8	B	A	A
Student 9	A	A	A
Student 10	B	A	A
Student 11	B	A	A
Student 12	A	A	A
Student 13	B	A	A
Student 14	B	A	A

Table 8.

Strengths: All students seemed to perform well in this course and met the pass rate for this PSLO on cardiopulmonary diagnostics and monitoring. These students were able to display skills required of diagnostics. The strength was shown by how they were able to recruit folks from the community as test patients for the final lab exam. The students were able to coach, direct and evaluate the results of people who had normal lungs and those who had lung disease. Students were able to use equipment that is presently used in clinics around the nation with success and will be used soon while in clinicals as one of the specialty rotations that is mandatory as well as support the NBRC test questions in the future.

Weaknesses: This class was very well taught and has been used in this way for assessments in the past. The question of rigor is the only weakness I see as all students have “A’s” in this course.

Actions: No actions needed at this time. Will speak with the instructor of longevity for this course about the standards for grading.

Update: No changes needed for this exam other than minimal updates through editions or new evidence-based medicine. The approach using a written final exam and applied lab process for assessment is continued to be used currently and the next cycle for cardiopulmonary diagnostics and monitoring.

Student Learning Summary: Students were able to show the knowledge that lined up with the lab exercises to apply and confirm the didactic portion of this course. The lab was especially important as it involved bedside manner with volunteers from the community; a skill that they will need starting next term. This gives the student, somewhat of a real-life outpatient clinical environment where these diagnostic tests, though not limited to, are performed. It gives the students an understanding of analyzing the efficacy of diagnostic testing as it requires patient effort.

Oregon Institute of Technology
Respiratory Care Program
RCP 345-01
Cardiopulmonary Diag & monitor
Lecture Spring 2021

Time	Location	Instructor
10:00 – 11:50	Klamath EDOW 246	Rabe, Ki
11:50 – 12:30	Lunch	
12:30 – 15:20	Klamath EDOW 246	Rabe, Ki

Book recommendation: Pulmonary Function Testing, A practical approach By Jack Wanger, Third edition.

Week One: March 31st

- Calibration of the PFT machine: Read Chapter 12 Predicted values
- Arterial Blood Gasses draws: Read chapter 11 on Blood Gases

Week Two: April 7th

- Calibration of the PFT machine
- Spirometry study: Read Chapter 1 Forced Spirometry

Week Three: April 14th

- Calibration of the PFT machine
- Spirometry pre and post study,
- MVV

- Cardiopulmonary Exercise testing Chapter 5.
- Quiz (PFT box Normal: patient = you, volumes, ML/Kg and %)

Week Four: April 22th

- Calibration of the PFT machine
- Spirometry pre and post study,
- DLCO: Chapter 3 Diffusing Capacity of CO
- Quiz (PFT box Normal with volumes, ML/Kg and % verses COPD)

Week Five: April 28th

- Calibration of the PFT machine
- Quiz (PFT box Normal volumes, ML/Kg and % verses COPD verses Restrictive)
- Spirometry pre and post study,
- DLCO,
- Lung Volumes Body Box: Chapter 2

Week six: May 5th

- Calibration of the PFT machine
- Spirometry pre and post study
- Lung Volumes Body Box: Chapter 4 Plethysmography
- DLCO • N2 wash out
- Helium dilution
- Quiz (PFT box Normal volumes, ML/Kg and % verses Asthma pre and post)

Week Seven: May 12th

- Calibration of the PFT machine
- Spirometry pre and post study: Chapter 8, Bronchial Challenge testing
- Body box study

• DLCO

• Quiz (PFT interpretation)

Week Eight: May 19th

• Calibration of the PFT machine

• Full PFT Test (Pre Spirometry, lung volumes, DLCO, Post Spirometry)

• Exercise-Induced Bronchospasm study: Chapter 7

• Dyspnea Evaluation 6 min walk study Chapter 6

• Quiz (PFT interpretation) Week Nine: May 26th

• Practice Final exam on a first year RT student

• Quiz (PFT interpretation) Week ten: June 9th

• Final exam on you own (family, friend or an acquaintance) someone you think will have a disease process. Final week: June 7th to 11th

• Hand in final exam PFT.

Figure 8. RCP 345, Cardiopulmonary Diagnostic and Monitoring Syllabus for course objectives.

Oregon Tech Respiratory Care Rubric Grading PFT Skills Final 100 Points _____/100

Student Name _____

Criteria	0	+1	+3	+5	+7	+8	Points
Calibration of the PFT machine	Missing or feeble attempt at the PFT calibration.	PFT calibration with obvious mistakes.	PFT calibration with subtle mistakes or few errors. An attempt adherence but is weak.	PFT calibration with obvious standards attempts.	PFT calibration done well with most lines on the dotted lines and one red number	PFT calibration met and exceeded all ATS standards with all lines on doted lines no red numbers +2	

Three acceptable loops with peak flow peaks.	Missing or feeble attempt at the PFT.	PFT all the way through with obvious mistakes. No adherence to ATS standards.	PFT with subtle mistakes or few errors. Attempt to adherence to ATS standards but is weak.	PFT with obvious ATS standards attempts and gapes in the start of the loops.	PFT done well good peek on two of the three loops. ATS standards met	PFT met and exceed all ATS standards. A loops have a peak a perfect start of the test. +2	
PFT Quality including adherence to ATS standards. All zeros on test	Missing or feeble attempt student does not know about error codes	PFT with obvious mistakes. No adherence to ATS standards.	PFT with subtle mistakes or few errors. An attempt adherence to ATS standards but is weak.	PFT with obvious ATS standards attempts. Did not F2 the bad loops	PFT done well. Three loops chosen not all zeros.	PFT met and exceeded all ATS standards all zeros no ones.	
The student Knows FEV1 is upper airways	No FEV1 not done and not attempted	Demonstrates no understanding of FEV1 and how it relates to upper airways	Demonstrates little understanding of FEV1 and how it relates to upper airways	Demonstrates partial understanding of FEV1 and how it relates to upper airways	Demonstrates considerable understanding of FEV1 and how it relates to upper airways	Demonstrates complete understanding of FEV1 and how it relates to upper airways	
The student shows knowledge of FEF 25 to 75 lower airways	No response/task not attempted	Demonstrates no understanding of FEF 25 to 75 and how it relates to lower airways	Demonstrates little understanding of FEF 25 to 75 and how it relates to lower airways	Demonstrates partial understanding of FEF 25 to 75 and how it relates to lower airways	Demonstrates considerable understanding of FEF 25 to 75 and how it relates to lower airways.	Demonstrates complete understanding of running a FEF 25 to 75 test and how it relates to lower airways	
Student knows FEV1/FVC % yes or no question	No response/task not attempted	Demonstrates no understanding of FEV1/FVC % yes or no question	Demonstrates little understanding of FEV1/FVC % yes or no question of COPD	Demonstrates partial understanding of FEV1/FVC % yes or no question of COPD.	Demonstrates considerable understanding of FEV1/FVC % yes or no question of COPD.	Demonstrates complete understanding of FEV1/FVC % yes or no question of COPD.	
Student use TLC to prove air trapping patient case.	No TLC done and not mentioned	Demonstrates no understanding of TLC	Demonstrates little understanding of TLC.	Demonstrates partial understanding of TLC.	Demonstrates considerable understanding of TLC.	Demonstrates complete understanding of how to use TLC in PFT testing to prove or disprove air trapping.	
Student use RV to prove air trapping patient case.	No response of RV not mentioned	Demonstrates no understanding of RV	Demonstrates little understanding of RV. Many requirements explaining air trapping are missing.	Demonstrates partial understanding of RV. Most requirements of	Demonstrates considerable understanding of RV. All	Demonstrates complete understanding of RV. All requirements of explaining RV	

				understanding RV are included	requirements of understanding RV are included.	and air trapping are included	
Student states DLCO results	No response of DLCO and not attempted	Demonstrates no understanding of DLCO	Demonstrates little understanding of DLCO. Many requirements of understanding DLCO are missing.	Demonstrates partial understanding DLCO. Most requirements of explaining DLCO are included	Demonstrates considerable understanding of DLCO. All requirements of explaining DLCO are included.	Demonstrates complete understanding of DLCO. All requirements of DLCO are included	
Student reads general overview of PFT	No overview attempted	Demonstrates no understanding of a PFT overview	Demonstrates little understanding of how to present an overview of a PFT. Many requirements of explaining a PFT are missing.	Demonstrates partial understanding of an overview of a PFT. Most requirements of t explaining a PFT are included	Demonstrates considerable understanding of explaining a PFT. All requirements of explaining a PFT are included.	Demonstrates complete understanding of explaining a PFT. All requirements of explaining a PFT are included	
Student picks best flow volume loop	No response not attempted	Demonstrates no understanding of how to pick the best peak flow	Demonstrates little understanding of the problem. Many requirements of task are missing.	Demonstrates partial understanding of the problem. Most requirements of task are included	Demonstrates considerable understanding of the problem. All requirements of task are included.	Demonstrates complete understanding of the problem. All requirements of task are included	
Comments are precise and understandable	No comment response not attempted	Demonstrates no understanding of how to put in a comment	Demonstrates little understanding of including a comment. Many requirements of task are missing.	Demonstrates partial understanding of including a comment. Most requirements of the comment are included	Demonstrates considerable understanding of the comments. All requirements of the comments are included.	Demonstrates complete understanding of the included comment. All requirements of the comments are included	

Figure 9. Rubric used to measure RCP 345, Cardiopulmonary Diagnostic and Monitoring for lab final outcomes.

XI PSLO #6 Knowledge of cardiopulmonary pharmacology therapeutics application:

The cycle for knowledge of cardiopulmonary pharmacology has used the final exam as a standard as it is comprehensive material throughout the term. A third of the respiratory care responsibility is administering pharmacology and is tested extensively on the respiratory care exam. This final exam uses similar questions in-line with NBRC type questions to strengthen the students approach and having a great understanding on how sympathomimetics and parasympatholytics react with the ganglionic branches. Other medications are topical to the epithelial lining to be transcribed by a second messenger as well as improving ionic channels and breaking disulfide bonds within the mucus blanket. These medications help with the interventions associated with lung disease.

XI PSLO #6 Knowledge of cardiopulmonary pharmacology on final written comprehensive exam:

Student	Final Written Exam	[redacted]	Grade Results
Student 1	F		C
Student 2	A		A
Student 3	C		B
Student 4	C		A
Student 5	C		A
Student 6	B		B
Student 7	D		B
Student 8	C		A
Student 9	B		A
Student 10	D		B
Student 11	D		B
Student 12	C		A
Student 13	D		B
Student 14	B		A
Student 15	C		A

Table 9. RCP 252 Cardiopulmonary Pharmacology Grade outcomes from final exam and total course final grade listed.

Strengths: There were no strengths to this assessment other than the semi final and quizzes brought the students overall grade for the course in passing this course.

Weaknesses: The students at this point were ready for summer. Covid and institutional issues have taken its toll at this time. There was no excitement among students or faculty at this time. Out of 14 students, 5 did not pass this exam. The semi-final would have been a better measurement for outcomes, but this was the chosen measure at the beginning of this course.

Actions: To continue this line of testing as it has been a standard in the past with good results. The state of mind for students and faculty was the obstacle to this term overall.

Update: The update for ESLO's that were implemented will now to continue to use this model in the future.

Student Learning Summary: Students were able to display the ability to measure, realize indications for and to administer medications frequently used in respiratory care. Though the final exam does not express this due to poor outcomes, students were able to show novice approaches to medication administration.

Oregon Tech
Respiratory Therapy
Pulmonary Pharmacology
RCP 252 Syllabus
Spring 2021

Course Description:

This course is designed to have the student well versed in the mode of action of respiratory pharmaceutical agents as well as medications that affect the respiratory system indirectly. This course will concentrate on the study of administration, action, dosage and devices used. This course will also have the respiratory care student be aware of contraindications and side effects from each of these medications. The focus is on bronchodilators, anti-inflammatories, mucolytics, and anti-leukotriene's. More rare respiratory medications as with anti-infectives, prophylactics, and narcotics will also be assessed in this course. There will be an introduction of vasoactive, diuretics, anti-arrhythmic, sedatives, antimicrobials and neuromuscular blockers as these all affect the cardiopulmonary system and how these organs might function. This course will give exposure to the different devices and frequently used respiratory pharmaceutical administration procedures. It is designed to assess the patient's response and decisions made from evaluation efforts before and after therapy.

Prerequisites:

Successful completion the following courses are required prior to class entry: RCP 100, RCP 231, RCP 235, RCP 236, RCP 241, CHE 360, BIO 336, and BIO 105.

Philosophical Emphasis:

To provide the student with an array of respiratory care experiences. To encourage the students to provide hands on lab experiences that will help build confidence and skills that will be essential in becoming valuable respiratory care practitioners. These concepts will be used in hyperinflation therapy lab to some degree. To encourage the students to participate in class and to learn from each other as a cohort. All students should be involved in team building and group exercises to achieve their goal. Be proactive in your education, and engage with others to learn all that you can.

Instructor:

Jeff Pardy, MBA, RRT,
Phone (541)885-1541.
email: jeff.pardy@oit.edu,
Office hours by appointment only.
Open door policy applies.
Office is EDOW 210.
I encourage all who have questions or concerns to please stop in. In this case of the Covid 19 crisis, Zoom meeting as scheduled. Please use outlook for email communication as Canvas will primarily be used for Zoom invites.

Course Objectives:

The Sophomore Respiratory Care student upon completing this class will:

1. Review the anatomy and physiology of the autonomic nervous system and how drugs react to them for ideal outcomes as well as being aware of the side effects.

2. Demonstrate the knowledge of respiratory care pharmacological agents administered to patients. This includes particle sizes, enhancing devices, and patient positioning and effort to receive the most productive medication therapy administration.

3. Demonstrate the ability to use a variety of devices used to administer respiratory care pharmacological agents. Mostly included in hyperinflation therapy lab.

4. Be well versed in respiratory care medications including dosage, mode of action, innervations, side effects, frequency of administration, and contraindications.

5. Assess the patient before and after status to assess therapy treatment outcomes.

6. Be able to troubleshoot or take appropriate action responding to adverse reactions of medication distribution.

7. Use in combination with other therapies to maximize the patient's true therapeutic outcome. Bronchial Hygiene (pulmonary toilet) approach.

Textbook and Resources:

Gardenshire, D. (2016). Rau's, Respiratory Care Pharmacology. *Ed. 9.* St. Louis, Missouri: Elsevier, 2016

Wilkins, R., Stoller, J., Kacmarek, R., Egan's, Fundamentals of Respiratory Care. *Ed. 10*. St. Louis, Missouri: Elsevier, 2015.

Sills, J. R., The Comprehensive Respiratory Therapist Exam Review. *Ed 6.* St. Louis, Missouri: Elsevier, 2016.

Leverage the use of the library, or resource center, for excellent resources for journals like The AARC, Chest, Journal of American Medical Association, and Journal of New England Medicine.

Submitted Work:

Submitted work will consist of **weekly quizzes** with one **Mid-term** exam and one **Final exam** at the end of the term. Weekly lab exercises built into hyperinflation therapy will be the main focus and must have full participation of the student requiring attendance. There is approximately **410 points** total for this class.

This course is subject to subtle changes that will not add any workload to this class.

Grading Policies:

1. To pass this course the student will need to attend all classes and participate in discussion. Absences can affect your grade with a 5% penalty reduction for each class missed, especially without any written reason by medical or emergencies. Tardis will be assessed at 1% grade reduction for each incident. Too many absences would suggest a withdrawal from the course as class discussion participation is expected.

2. If the student misses a day of an exam or quiz it must be made up during finals week in CFLAT, and the student who misses that day can only get the lowest passing grade for the student that was there the day of the scheduled quiz or exam.

3. Quiz and Exam policies. Do not cheat and please create distance between each other during these times. Cheating will result in pursuing Oregon Tech policy and procedure to the fullest penalty. Read questions carefully and only list as many that are asked for. A longer list may compromise points if wrong. Clarify all questions with the instructor that are not well understood. There are not many questions that are open ended and with few True/False question, but will be mostly multiple choice problems. The student must pass the term with at least 70%.

4. To pass this course the respiratory care student will demonstrate patient evaluation and medication delivery through lab exercises. Further abilities include selecting the right device for medication administration and frequency in which they are delivered.

5. To pass this course the student must be able to articulate respiratory care medications and how they fit into the overall therapeutic care of the patient.

6. To pass this course Arterial Blood Gas interpretations and application will be a general theme in all courses taught as will the memorization of all respiratory care medications beginning now and until you graduate.

Grading Criteria:

The grading criteria for this course are as follows:

90 – 100%	A
80-89%	B
70-79%	C
60-69%	D
< 60%	F

There is a total of 410 points. Class grading will be dependent on testing and attendance. In order to gain lab points, you must be present and participate. Stay ahead of assignments, attend classes, and work together in study groups as it is a fast paced class.

Course Outline:

Week 1: Introduction to class syllabus. Respiratory care history. Administration of Aerosolized Agents. (3/29/2021) Read the Rau for week two quiz (Rau pages 31-44, Sills pages 239-252, and Egan's. pages 845-884, 708-710).

Week 2: Quiz 1 (20 pts.) (4/5/2021) Continue lecture on Administration of Aerosolized Agents. Read Rau for week three quiz (Rau pages 44-62, Sills pages 239-252, and Egan's. pages 845-884, 708-710).

Week 3: Quiz 2 (20 pts.) (4/12/2021) Lecture on Central and Peripheral Nervous System. Read Rau for week four quiz (Rau pages 77-95, Egan's 177-183).

Week 4: Quiz 3 (20 pts.) (4/19/2021) Lecture on Adrenergic (Sympathomimetic) Bronchdilators. Read Rau for week five semi-final. (Rau pages 97-118, Sills 258-259, and Egan's 710-714).

Week 5: <u>Semi Final (120 pts.)</u> (4/26/2021) Lecture on Anticholinergic Parasympatholytic Bronchodilators. Read Rau for week six quiz (Rau pages 122-136, Sills 259-260, and Egan's 714-716).

Week 6: Quiz 4 (20pts.) (5/3/2021) Lecture on Mucus Controlling Drug Therapy. Read Rau for week seven quiz (Rau pages 148-166, Sills 263-264, Egan's 716-719).

Week 7: Quiz 5 (20 pts.) (5/10/2021) Lecture on Corticosteroids in Respiratory Care. Read Rau for week eight quiz (Rau pages 183-200, Sills 260-262, Egan's 719-722).

Week 8: Quiz 6 (20 pts.) (5/17/2021) Lecture on Aerosolized Anti-infective Agents. Read Rau for week nine quiz (Rau pages 219-236, Sills 264-266, and Egan's 724-729).

Week 9: Quiz 7 (20 pts.) (5/24/2021) Lecture on Anti-Microbial Agents. Read Rau for week ten quiz. (Rau pages 238-263, Sills 264-266, and Egan's 724-729).

Week 10: Quiz 8 (20 pts.) (5/31/2021) Final Exam Review.

Week 11: <u>Final Exam (120 pts.)</u> (6/7/2021)

Canvas Interaction:

This course is the first time in history to become a Hybrid Course due to pandemic crisis that is to limit gathering of students and faculty. Therefore, we will need to work together to assure that remote learning is done in the virtual sense to assure the needs of these course objectives are meeting the accreditation standards for academia. This will also include recorded lecture and quiz reviews each week. The class is basically consistent week after week and is broken down in three sections for points. Discussions, Assignments and quizzes/tests. Please see the below instructions for each area:

"Pages" will include weekly agendas to give you the expected work that is a seven day work period to complete the assigned tasks. Also in "Pages" you will find the Power Point lecture along with the video lecture recording week to week.

"Discussions" This is an opportunity to be involved in cohort dialogue that pertains to the course relevance. This is the process needed in order to get potential full credit of 10 points weekly. You will be prompted by a topic cycling each week from a clinical topic to personal views about your involvement in health care. The following are the directions:

- By Tuesday of each week you will need to post your comments, thoughts or creativity to the weekly topic. On clinical topics you can post videos of procedures or related experiences found on social media including engaging in the topic needs.

- By Thursday, each student will respond to at least one other persons post with two thoughtful questions about their simple research or clinical post.

- By Sunday midnight of each week (due date) the recipient should respond to at least one of the students set of questions posed to them

.• All posts should be thoughtful and not one word or one liner responses. NOTE: If you initiated your post in a timely fashion and you have no response you will not be held responsible for lost points. The alternative of not engaging will result in penalty points, so be sure to ask just at least two thoughtful questions and respond accordingly to avoid losing points.

- Engage all that you want. It does not need to be just the minimal needs required for potential full points for participation.

"Quizzes" These quizzes are ones used on campus and is now uploaded into canvas. Each week there will be a 20 point quiz with the exception of week 1 (introduction) a Semi Final in week 5 and a Final in week 10. The final and semi final will be worth 120 points each. Quizzes will be 30 minutes long in order to begin course interactions on time given on Monday's. If you have Canvas, you have the ability for Zoom. You will find your invites in the Canvas emails. These meeting will summarize the lecture, assignments and discussions as well as offer opportunity for questions.

Americans with Disabilities Act:

If you believe you need an academic adjustment for any type of disability, please let me know. Students with visual or hearing impairment are advised to select seating in the classroom favoring optimal visual or auditory access to the classroom activities. You may also speak with the Support Services office at Oregon Institute of Technology: (541)885-1031.

Student Support and Safety:

Oregon Tech faculty and staff are committed to creating and maintaining a safe and equitable learning environment for the Oregon Tech community. Pursuant to U.S. Department of Education requirements, all Oregon Tech faculty and staff (other than designated confidential staff) must report any information they become aware of regarding gender-based bias, sexual harassment, sexual assault, sexual misconduct, relationship violence, or stalking involving a student to the University Title IX Coordinator. In addition, Oregon law requires a mandatory report to the Oregon Department of Human Services of any physical or emotional abuse of a child or other protected person, including elders and people with disabilities, or when a child or other protected person is perceived to be in

danger of physical or emotional abuse. If you are the victim of sexual or physical abuse and wish to speak with a confidential resource, please call the National Sexual Assault Hotline at 1-800-656-4673. You may report an incident using Oregon Tech's Anonymous Safe Campus Incident Report form on the Title IX site at http://www.oit.edu.titile-ix. and select the "Report and Incident" button. For more information about your options, please visit http://www.oit.edu/titile-ix.

Accreditation:

This program is accredited by the Commission on Accreditation of Allied Health Programs (CAAHP) in collaboration with the Committee on Accreditation for Respiratory Care (CoARC). Inquiries regarding accreditation should be directed to: The Committee on Accreditation for Respiratory Care (CoARC), 1248 Hardwood Road, Bedford, TX. 76021, (800)874-5616. Institutional Accreditation done through Northwest Accreditation. If you believe you need an academic adjustment for any type of disability, please let me know. Students with visual or hearing impairment are advised to select seating in the classroom favoring optimal visual or auditory access to the classroom activities. You may also speak with the Support Services office at Oregon Institute of Technology.

Figure 10. RCP 252 Cardiopulmonary Pharmacology Syllabus

Pulmonary Pharmacology
RCP 252
Final Exam
130 Points

1. What is the agent, Pentamidine indicated for, and in what types of patients would it be **most** prevalent in? (2pts.)

2. What are the three **primary** functions of the mucocilliary system? (3pts.)

   a.

   b.

   c.

3. Please list five side effects associated with systemic steroid use: (5pts.)

   a.

   b.

   c.

   d.

   e.

4. Please list three dysfunction outcomes that may occur with the failure of the mucocilliary system: (3pts.)

   a.

   b.

   c.

5. What are the two layers of the mucus blanket and what is the function of each one? (2pts.)

   a.

   b.

6. Please list the three major components of asthma: (3pts.)

   a.

   b.

   c.

7. **Albuterol:** Please list device with the respective dose delivered. What will it innervate, and what are the desired therapeutic outcomes? How often is this drug administered and list at least one <u>frequent</u> side effect: (6pts.)

8. Relenza is used for the treatment of _____ infection, but needs to be started within _____ days to be effective. (2pts.)

9. Maintenance of Pnuemocystic Carinii Pneumonia is delivered by _____ route and the acute onset of Pnuemocystic Carinii Pneumonia is delivered by _____ route. (2pts.)
10. Please list three indications for inhaled corticosteroids: (3pts.)
    a.

    b.

    c.

11. **Spiriva:** Please list device with the respective dose delivered. What will it innervate, and what are the desired therapeutic outcomes? How often is this drug administered and list at least one <u>frequent</u> side effect: (6pts.)

12. What is inhaled tobramycin **specifically** indicated for, and in what type of patient with chronic pulmonary disease might this **mostly** be found in? (2pts.)

13. What disease is the agent ribavirin used for, and what device should be used to deliver this medication? (2pts.)

14. Please list six side effects associated with neuromuscular blocking agents: (6pts.)

    a.

    b.

    c.

    d.

    e.

    f.

15. **Atrovent:** Please list device with the respective dose delivered. What will it innervate, and what are the desired therapeutic outcomes? How often is this drug administered and list at least one <u>frequent</u> side effect: (6pts.)

16. Please list three factors that can impede ciliary function: (3pts.)

    a.

    b.

    c.

17. What are the five physical characteristic of mucin? Express each ones function in the efficiency of the mucus blanket: (5pts.)

    a.

    b.

    c.

d.

e.

18. Though there is a higher global population of asthmatic today, why do emergency departments now see less patient admits currently than ever before? (1pt.)

19. Please list three symptoms of Tuberculosis: (3pts.)

    a.
    b.
    c.

20. What is the type of mask required for treat T.B.? (1pt.)

21. **Symbicort:** Please list device with the respective dose delivered. What will it innervate, and what are the desired therapeutic outcomes? How often is this drug administered and list at least one frequent side effect: (6pts.)

22. What is the **primary** clinical indication for aerosol steroid therapy? (1pt.)

23. Please list three endogenous steroids produced by the adrenal system within our bodies: (3pts.)

    a.

    b.

    c.

24. Please list three side effects seen with Ribavirin: (3pts.)
    a.

    b.

    c
25. What is the mode of action that Tobramycin has on bacteria that overcomes this infection? (3pts.)

26. **Pulmicort:** Please list device with the respective dose delivered. What will it innervate, and what are the desired therapeutic outcomes? How often is this drug administered and list at least one <u>frequent</u> side effect: (6pts.)

27. What is the mode of action with Pentamidine in combating PCP, How does this disease process present in the lungs? (3pts.)

28. What are two methods used to verify a patient is positive for Tuberculosis? (2pts.)
    a.

    b.

29. Please give the **specific** infection that each agent listed is combating and the device used with each to administer this specific medication: (4pts.)

	<u>Specific Infection</u>	<u>Device</u>
Pentamidine:		
Relenza:		
Ribavirin:		

Tobramycin:

30. Please give the mode of action with Relenza combating viral infections: (3pts.)

31. Please list three purposes of the mucocilliary system within the lungs: (3pts.)
    a.

    b.

    c.

32. What are three anatomical features within the lungs that secrete sputum into the airways? (3pts.)
    a.

    b.

    c.

33. **Mucomyst:** Please list device with the respective dose delivered. What will it innervate, and what are the desired therapeutic outcomes? How often is this drug administered and list at least one <u>frequent</u> side effect: (6pts.)

34. Briefly Explain: Why do exogenous steroids cause hypothalamic-pituitary-adrenal (HPA) suppression and what is the common therapeutic approach taken to limit this side effect and what is the idea behind this approach? (5pts.)

35. What is the mode of action that mucomyst has on the mucus blanket? (2pts.)

36. What is the mode of action that Pulmicort have on the airways? (3pts.)

37. **Brovana:** Please list device with the respective dose delivered. What will it innervate, and what are the desired therapeutic outcomes? How often is this drug administered and list at least one <u>frequent</u> side effect: (6pts.)

Figure 11. RCP 252 Cardiopulmonary Pharmacology Final Exam

<u>The Tagged Courses for Assessment 2020-2021</u>

Appendix A-1

Student Learning Outcomes-Course Matrix 2020-2021 ESLO 2 for On-Line: Inquiry and Analysis involving the NBRC and graded by the institution are flagged in RCP 366, Clinical Simulations for on-line. RCP Courses that are shaded in green below indicate that the ESLO above is taught in the course, students demonstrate skills or knowledge in the ESLO, and students receive feedback on their performance on the ESLO by the instructor and NBRC as attached in this document. The courses shaded in yellow is where the measurement occurred.

F = Foundation **E = Essential Practice** **C = Capstone**

Freshman	Sophomore	Junior	Senior
FALL	**FALL**	**FALL**	**FALL**
BIO 231 Anat & Phys I	BIO 336 Essentials of Pathology	RCP 337 Pulmonary Pathology	RCP 441 Case Management Credentials I (P)
CHE 101/104 Elementary Chemistry	CHE 360 Clinical Pharmacology	RCP 351 Mechanical Ventilation I	RCP 450 Clinical Care I (P)
Math 111 or 243 College Algebra or Statistics	RCP 100 Respiratory Matriculation	RCP 388 Advanced Neonatology	
WRI 121 English Composition I	RCP 231 Pulmonary Physiology		
WINTER	**WINTER**	**WINTER**	**WINTER**
BIO 232 Anat & Phys II	BIO 105 Microbiology	RCP 352 Mechanical Ventilation II	RCP 442 Case Management Credentials II (F)
PSY 201 or 202 or 203 Psychology Series	RCP 235 Arterial Blood Gas Interpretations	RCP 386 Critical Care I	RCP 451 Clinical Care II (C)
HUM Humanities Elective	RCP 236 Cardiopulmonary Dynamics	RCP 389 International Neonatology	RCP 366 Clinical Simulations (C) *On-Line

SOC Social Science Elective	RCP 241 Gas Therapeutics		
WRI 122 English Composition II			
SPRING	SPRING	SPRING	SPRING
BIO 233 Anat & Phys III	RCP 221 Introduction to Patient Assessment	RCP 326 Disaster Preparedness	RCP 452 RCP 452 Clinical Care III
BIO 200 Medical Terminology	RCP 223 Emergent Chest Radiograph Interpretation	RCP 335 Exercise Physiology and Education	
SPE 111 Public Speaking	RCP 252 Cardiopulmonary Pharmacology	RCP 353 Advanced Mechanical Ventilation III	
HUM Humanities Elective	RCP 336 Hyperinflation Therapies	RCP 387 Critical Care II	
SOC Social Science Elective	SPE 321 Group and Team Communications		
SUMMER	SUMMER	SUMMER	SUMMER
COM 205 Intercultural Communication		RCP 350 Introduction to Clinicals	
WRI 227 Technical Writing		RCP 366 Clinical Simulations	
MATH Elective		RCP 440 Case Management	

		Credentials I	
HUM Humanities Elective			
SOC Social Science Elective			

Appendix A-2

Student Learning Outcomes-Course Matrix 2020-2021 ESLO #5: The courses below are where these skills are taught and measured for Quantitative Literacy. Courses that are shaded in purple below indicate where this ESLO is taught in the course, students demonstrate skills or knowledge in the ESLO, and student receive feedback on their performance on the by instructor and audience that experienced these presentations.

F = Foundation **E = Essential Practice** **C = Capstone**

Freshman	Sophomore	Junior	Senior
FALL	FALL	FALL	FALL
BIO 231 Anat & Phys I	BIO 336 Essentials of Pathology	RCP 337 Pulmonary Pathology	RCP 441 Case Management Credentials I
CHE 101/104 Elementary Chemistry	CHE 360 Clinical Pharmacology	RCP 351 Mechanical Ventilation I	RCP 450 Clinical Care I
Math 111 or 243 College Algebra or Statistics	RCP 100 Respiratory Matriculation	RCP 388 Advanced Neonatology	RCP 441 Case Management Credentials II (F)
WRI 121 English Composition I	RCP 231 Pulmonary Physiology		
WINTER	WINTER	WINTER	WINTER
BIO 232 Anat & Phys II	BIO 105 Microbiology	RCP 352 Mechanical Ventilation II	RCP 442 Case Management Credentials II

PSY 201 or 202 or 203 Psychology Series	RCP 235 Arterial Blood Gas Interpretations	RCP 386 Critical Care I	RCP 451 Clinical Care II
HUM Humanities Elective	RCP 236 Cardiopulmonary Dynamics	RCP 375 Pediatric Care	RCP 366 Clinical Simulations (C) On-Line
SOC Social Science Elective	RCP 241 Gas Therapeutics		RCP 441 Case Management Credentials II (C) On-Campus
WRI 122 English Composition II			
SPRING	SPRING	SPRING	SPRING
BIO 233 Anat & Phys III	RCP 221 Introduction to Patient Assessment	RCP 326 Disaster Preparedness	RCP 452 Clinical Care III
BIO 200 Medical Terminology	RCP 223 Emergent Chest Radiograph Interpretation	RCP 335 Exercise Physiology and Education	RCP 442 Case Management Credentials II
SPE 111 Public Speaking	RCP 252 Cardiopulmonary Pharmacology	RCP 353 Advanced Mechanical Ventilation III	
HUM Humanities Elective	RCP 336 Hyperinflation Therapies	RCP 387 Critical Care II	
SOC Social Science Elective	SPE 321 Group and Team Communications		
SUMMER	SUMMER	SUMMER	SUMMER
COM 205 Intercultural		RCP 350	

Communication		**Introduction to Clinicals**	
WRI 227 Technical Writing		**RCP 366 Clinical Simulations**	
MATH Elective			**RCP 440 Case Management Credentials I (P)**
HUM Humanities Elective			
SOC Social Science Elective			

Appendix A-3

The Student Learning Outcomes-Course Matrix 2020-2021 PSLO #4: Knowledge of Applied Mechanical Ventilation tagged courses below. Courses that are shaded in blue below, indicate where this PSLO above is taught within the program and is shaded in yellow where it was actually measured. Students demonstrate skills and knowledge in this PSLO, and students receive feedback on their performance on this PSLO.

F = Foundation **E = Essential Practice** **C = Capstone**

Freshman	Sophomore	Junior	Senior
FALL	**FALL**	**FALL**	**FALL**
BIO 231 Anat & Phys I	**BIO 336 Essentials of Pathology**	**RCP 337 Pulmonary Pathology**	**RCP 441 Case Management Credentials I**
CHE 101/104 Elementary Chemistry	**CHE 360 Clinical Pharmacology**	**RCP 351 Mechanical Ventilation I (P)**	**RCP 450 Clinical Care I**
Math 111 or 243 College Algebra or Statistics	**RCP 100 Respiratory Matriculation**	**RCP 388 Advanced Neonatology**	

WRI 121 English Composition I	RCP 231 Pulmonary Physiology		
WINTER	WINTER	WINTER	WINTER
BIO 232 Anat & Phys II	BIO 105 Microbiology	RCP 352 Mechanical Ventilation II (F)	RCP 442 Case Management Credentials II
PSY 201 or 202 or 203 Psychology Series	RCP 235 Arterial Blood Gas Interpretations	RCP 386 Critical Care I	RCP 451 Clinical Care II
HUM Humanities Elective	RCP 236 Cardiopulmonary Dynamics	RCP 389 International Neonatology	
SOC Social Science Elective	RCP 241 Gas Therapeutics		
WRI 122 English Composition II	RCP 366 Clinical Simulation On-Line		
SPRING	SPRING	SPRING	SPRING
BIO 233 Anat & Phys III	RCP 221 Introduction to Patient Assessment	RCP 326 Disaster Preparedness	RCP 452 Clinical Care III
BIO 200 Medical Terminology	RCP 223 Emergent Chest Radiograph Interpretation	RCP 335 Exercise Physiology and Education	
SPE 111 Public Speaking	RCP 252 Cardiopulmonary Pharmacology	RCP 353 Advanced Mechanical Ventilation III (C)	
HUM Humanities Elective	RCP 336 Hyperinflation Therapies	RCP 387 Critical Care II	
SOC	SPE 321		

Social Science Elective	**Group and Team Communications**		
SUMMER	**SUMMER**	**SUMMER**	**SUMMER**
COM 205 Intercultural Communication		**RCP 350 Introduction to Clinicals**	
WRI 227 Technical Writing		**RCP 366 Clinical Simulations**	
MATH Elective		**RCP 440 RCP 442 Case Management Credentials II**	
HUM Humanities Elective			
SOC Social Science Elective			

Appendix A-5

Student Learning Outcomes-Course Matrix 2020-2021 PSLO #5: Knowledge of Applied Cardiopulmonary Diagnostic and Monitoring tagged courses below. Courses that are shaded red below, indicate where this PSLO above is taught within the program and is shaded in yellow where it was actually measured. Students demonstrate skills and knowledge in this PSLO, and students receive feedback on their performance on this PSLO.

F = Foundation **E = Essential Practice** **C = Capstone**

Freshman	Sophomore	Junior	Senior
FALL	**FALL**	**FALL**	**FALL**
BIO 231 Anat & Phys I	**BIO 336 Essentials of Pathology**	**RCP 337 Pulmonary Pathology**	**RCP 441 Case Management Credentials I**

CHE 101/104 Elementary Chemistry	CHE 360 Clinical Pharmacology	RCP 351 Mechanical Ventilation I (P)	RCP 450 Clinical Care I
Math 111 or 243 College Algebra or Statistics	RCP 100 Respiratory Matriculation	RCP 388 Advanced Neonatology	
WRI 121 English Composition I	RCP 231 Pulmonary Physiology		
WINTER	WINTER	WINTER	WINTER
BIO 232 Anat & Phys II	BIO 105 Microbiology	RCP 352 Mechanical Ventilation II (F)	RCP 442 Case Management Credentials II
PSY 201 or 202 or 203 Psychology Series	RCP 235 Arterial Blood Gas Interpretations	RCP 386 Critical Care I	RCP 451 Clinical Care II
HUM Humanities Elective	RCP 236 Cardiopulmonary Dynamics	RCP 389 International Neonatology	
SOC Social Science Elective	RCP 241 Gas Therapeutics		
WRI 122 English Composition II	RCP 366 Clinical Simulation On-Line		
SPRING	SPRING	SPRING	SPRING
BIO 233 Anat & Phys III	RCP 221 Introduction to Patient Assessment	RCP 326 Disaster Preparedness	RCP 452 Clinical Care III
BIO 200 Medical Terminology	RCP 223 Emergent Chest Radiograph Interpretation	RCP 335 Exercise Physiology and Education	

SPE 111 Public Speaking	RCP 252 Cardiopulmonary Pharmacology	RCP 353 Advanced Mechanical Ventilation III (C)	
HUM Humanities Elective	RCP 336 Hyperinflation Therapies	RCP 387 Critical Care II	
SOC Social Science Elective	SPE 321 Group and Team Communications	RCP 345 Cardiopulmonary Diagnostics and Monitoring (C)	
SUMMER	SUMMER	SUMMER	SUMMER
COM 205 Intercultural Communication		RCP 350 Introduction to Clinicals	
WRI 227 Technical Writing		RCP 366 Clinical Simulations	
MATH Elective		RCP 440 RCP 442 Case Management Credentials II	
HUM Humanities Elective			
SOC Social Science Elective			

Appendix A-6

Student Learning Outcomes-Course Matrix 2020-2021 PSLO #6: Knowledge of Applied Cardiopulmonary Pharmacology is tagged courses below. Courses that are shaded green below, indicate where this PSLO above is taught within the program and is shaded in yellow where it was actually measured. Students demonstrate skills and knowledge in this PSLO, and students receive feedback on their performance on this PSLO.

F = Foundation E = Essential Practice C = Capstone

Freshman	Sophomore	Junior	Senior
FALL	FALL	FALL	FALL
BIO 231 Anat & Phys I	BIO 336 Essentials of Pathology	RCP 337 Pulmonary Pathology	RCP 441 Case Management Credentials I
CHE 360 Pharmacology Chemistry (P)	CHE 360 Clinical Pharmacology	RCP 351 Mechanical Ventilation I	RCP 450 Clinical Care I
Math 111 or 243 College Algebra or Statistics	RCP 100 Respiratory Matriculation	RCP 388 Advanced Neonatology	
WRI 121 English Composition I	RCP 231 Pulmonary Physiology		
WINTER	WINTER	WINTER	WINTER
BIO 232 Anat & Phys II	BIO 105 Microbiology	RCP 352 Mechanical Ventilation II	RCP 442 Case Management Credentials II
PSY 201 or 202 or 203 Psychology Series	RCP 235 Arterial Blood Gas Interpretations	RCP 386 Critical Care I	RCP 451 Clinical Care II
HUM Humanities Elective	RCP 236 Cardiopulmonary Dynamics	RCP 389 International Neonatology	
SOC Social Science Elective	RCP 241 Gas Therapeutics		
WRI 122 English Composition II	RCP 366 Clinical Simulation On-Line		

SPRING	SPRING	SPRING	SPRING
BIO 233 Anat & Phys III	RCP 221 Introduction to Patient Assessment	RCP 326 Disaster Preparedness	RCP 452 Clinical Care III
BIO 200 Medical Terminology	RCP 223 Emergent Chest Radiograph Interpretation	RCP 335 Exercise Physiology and Education	
SPE 111 Public Speaking	RCP 252 Cardiopulmonary Pharmacology (F)	RCP 353 Advanced Mechanical Ventilation III	
HUM Humanities Elective	RCP 336 Hyperinflation Therapies	RCP 387 Critical Care II (C)	
SOC Social Science Elective	SPE 321 Group and Team Communications	RCP 345 Cardiopulmonary Diagnostics and Monitoring (C)	
SUMMER	SUMMER	SUMMER	SUMMER
COM 205 Intercultural Communication		RCP 350 Introduction to Clinicals	
WRI 227 Technical Writing		RCP 366 Clinical Simulations	
MATH Elective		RCP 440 RCP 442 Case Management Credentials II	
HUM Humanities Elective			
SOC Social Science Elective			

Appendix B-1

On-Line Multiple Choice Outcomes to ESLO assignment. Video's to be archived.

Appendix B-2

On-Line Clinical Simulations to ESLO assignment. Video's to be archived.