LSC Use Only
Number: _____
Submission Date: _____
Action-Date: _____

UWUCC USE Only
Number: 97-28f
Submission Date:
Action-Date: App. 2/17/98
Senate app. 3/3/98

CURRICULUM PROPOSAL COVER SHEET
University-Wide Undergraduate Curriculum Committee

I. CONTACT

Contact Person Rebecca L. Hartman, EdD, Coordinator Phone 357-3257

Department Nursing/Allied Health Professions

II. PROPOSAL TYPE (Check All Appropriate Lines)

X **COURSE** RT 430 Pulmon Func Studies
Suggested 20 character title

___ New Course* _____
Course Number and Full Title

X Course Revision RT 430 Pulmonary Function Studies
Course Number and Full Title

___ Liberal Studies Approval+ for new or existing course _____
Course Number and Full Title

___ Course Deletion _____
Course Number and Full Title

___ Number and/or Title Change _____
Old Number and/or Full Old Title

_____
New Number and/or Full New Title

X Course or Catalog Description Change RT 430 Pulmonary Function Studies (3 credits)
Course Number and Full Title

X **PROGRAM:** X Major ___ Minor ___ Track

___ New Program* _____
Program Name

X Program Revision* Respiratory Care
Program Name

___ Program Deletion* _____
Program Name

___ Title Change _____
Old Program Name

_____
New Program Name

III. Approvals (signatures and date)

Rebecca L Hartman
Department Curriculum Committee

[signature] 4-10-97
Department Chair

Mary E. Swanlin 5/7/97
College Curriculum Committee

Harold E. Wengard
College Dean

_____
+Director of Liberal Studies (where applicable)

[signature]
*Provost (where applicable)

I. Catalog Description

RT 430 Pulmonary Function Studies (3c-01-3sh)

Prerequisites: RT 337

Introduces the student to the advanced diagnostic studies and equipment necessary for diagnosing and quantitating the various lung diseases. Included in this segment are advances in invasive studies as well as the rehabilitation evaluation tools. Troubleshooting becomes a part of this course as the student prepares for the operation of the varied equipment and patient instruction.

I. Catalog Description

RT 430 Pulmonary Function Studies

3 credits
3 lecture hours
0 lab hours
(3c-01-3sh)

Prerequisites: RT 337

Introduces the student to the advanced diagnostic studies and equipment necessary for diagnosing and quantifying the various lung diseases. Included are advances in invasive studies and rehabilitation evaluation tools.

II. Course Objectives

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

1. Identify various instrumentation used in the diagnosis of lung disease

2. Perform diagnostic studies for the assessment of pulmonary disease and quantify the extent of the disease while supporting the reliability of each test.

3. Assist the physician in performance of flexible bronchoscopies, creating slides and preparing biopsy specimens for pathology examination while maintaining continuous patient assessment throughout procedure .

4. Identify the use of esophageal balloon and plethysmography to evaluate lung compliance and the hazards and complications of the study.

5. Recognize physiologic complications which may affect the diffusing capacity of the lungs and mathematical formulas incorporated into the equation to standardize the values.

6. Identify equipment and methodology utilized in the performance of pulmonary functions on the neonate and child.

7. Recognize the use of low density gases and airway physiology to determine the integrity of the airways.

8. Interpret bronchial challenge testing for airway sensitivity by use of chemical antigens.

9. Assist in the performance and evaluation of sleep disorders studies and therapy prescription.

10. Interpret calorimetry studies.

11. Recommend, complete and interpret diagnostic studies for pulmonary functions.

III. Course Outline

A.	Gas analyzers	3 lecture hours
B.	Flow Volume Loops	1.5 lecture hours
C.	Bronchoscopy, Flexible vs Laser	3 lecture hours
D.	Functional Residual Capacity Studies	3 lecture hours
E.	Diffusions Testing	3 lecture hours
F.	Pediatric Studies	1.5 lecture hours
G.	Gas Density Studies for Early Airway Disease	3 lecture hours
H.	Diagnostic Compliance and Airway Resistance	3 lecture hours
I.	Bronchoprovocations Studies	2 lecture hours
J.	Sleep Disorders	6 lecture hours
K.	Exercise Testing	5 lecture hours
L.	Calorimetry	1.5 lecture hours
M.	Interpretation/ Case Studies	3 lecture hours
N.	Exams	3.5 lecture hours
	TOTAL HOURS	42 hours

IV. Evaluation Methods

The final course grade will be determined as follows:

Comprehensive final	45%
Exams and quizzes	35%
Unannounced quizzes	03%
Problems	17%
TOTAL	100%

There will be a total of three hours and thirty minutes for exams.

Evaluation will be based on the following grading scale:

A = ≥ 90%
B = 80-89%
C = 70-79%
D = 65-69%
F = < 65%

V. Required Textbooks, supplemental books and readings

Ruppel, G. (1994). Manual of Pulmonary Function Testing. St. Louis, MO: Mosby.

Wagner, J. (1996). Pulmonary Function Testing A Practical Approach. second edition, Baltimore, MD: Williams and Wilkins.

VI. Special resources requirements

None

VII. Bibliography

Change, J.T., Moran, M.B., Cugell, D.W., Webster, J.R., Jr. (1995). COPD in the elderly: a reversible cause of functional impairment. Chest, 108(3), 736-740.

Chatburn, C.L. (1996). Evaluation of instrument error and method agreement. Journal of the American Association of Nurse Anesthetists, 64(3), 261-268.

Clausen, J. (1985). Pulmonary Function Testing Guidelines and Controversies. Orlando, FL: Grune and Stratton, Inc.

Collard, P., Wilputte, J.Y., Aubert, G., Rodenstein, D.O., Frans, A. (1996). The single-breath diffusing capacity for CO in obstructive sleep apnea and obesity. Chest, 110(5), 1189-1193.

Dweik, R.A., Stoller, J.K. (1996). Pulmonary function corner: A 47 year old woman with cirrhosis and hypoxemia. Respiratory Care, 41(12), 1131-1133.

Dweik, R.A., Mehta, A.C., Meeker, D.P., Arroliga, A.C. (1996). Analysis of the safety of bronchoscopy after recent MI. Chest, 110(3), 825-828.

Gibbons, M. Indirect calorimetry is clinically useful in the ICU. Advance for Respiratory Care Practitioners, 8(19), 11-16.

Gries, R.E., Brooks, L.J. (1996). Normal oxyhemoglobin saturation during sleep. How low does it go? Chest, 110(6), 1489-1492.

MacPherson, D.S. (1996). Pulmonary function tests before surgery. Chest, 110(3), 587-589.

Madama, V. (1993). Pulmonary Function Testing and Cardiovascular Stress Testing, Albany, NY: Delmar, Inc.

Malley, W.J. (1990). Clinical Blood Gases, Application and Noninvasive Alternatives. Philadelphia, PA: Saunders.

Miller, A. (1987). Pulmonary Function Tests, A Guide for the House Officer. Orlanda, FL: Grune and Stratton, Inc.

Sahebja, H., Gartside, P.S. (1996). Pulmonary function in obese subjects with a normal FEV/FVC ratio. Chest, 110(6), 1425-1429.

Scott, F. (1995). Playing detective in pulmonary function labs. Advance for Respiratory Care Practitioners, 8(19), 8-9.

Veatch, M., Wanger, J., Chan, E. (1996). Pulmonary Function Corner #53: lessons from spirometry: look at the picture. Respiratory Care, 41,(8), 745-747.

Wilson, A.F. (1985). Pulmonary Function Testing - Indications and interpretation. Orlando, FL: Grune and Stratton, Inc.

Zibrack, J., O'Donnell, C., Marton, K. (1990). Indications for pulmonary function testing. Annals of Internal Medicine, 112, 763-771.

2. Summary of proposed revisions:

Course credit change from 2-3; course objectives revised to reflect course content changes and Joint Review committee for Respiratory Education standards; course outline changes to reflect new content in the area.

3. Justification/Rationale for the revision.

Change in health care have increased the demand for the respiratory therapist to perform more diagnostic studies, interpret data and recommend and implement therapy for those persons with pulmonary diseases. In the last few years, a trend for respiratory therapist to study sleep disorders and calorimetry studies has increased greatly and by including those areas into the current curriculum the graduate becomes more marketable. Expanding the role of respiratory therapist by adding more sophisticated diagnostics, improves the cohesiveness of diagnosis to therapy with greater proficiency. The credit increase from 2 to 3 will allow the time to include lecture content resulting from these changes.

III. Letters of Support

No letters are needed.

C. Services

All students enrolled in the program shall have access to the full range of services provided by the sponsoring institution(s).

GUIDELINE:
All students in respiratory care programs should be regularly matriculated in the educational institution which sponsors or participates in the program. Therefore, students should be eligible to receive all services offered by the educational institution.

D. Number

The number of students enrolled shall be commensurate with both the goals and standards of the program and the methods and requirements of its instructional plan. The number of students enrolled shall not exceed the resources of the program.

GUIDELINE:
The number of students enrolled in each class should be commensurate with effective learning and teaching practices, and should be consistent with appropriate student/instructor ratio for respiratory care education.

E. Clinical Experience

All clinical experiences shall be clinical in nature. The sponsor shall assure that each clinical assignment of the students is based upon the instructional plan of the program.

GUIDELINE:
All clinical activity assigned to students should be sequential, integrated with didactic and laboratory instruction, and consistent with the overall instructional plan of the program.

V. INSTRUCTIONAL PLAN

A. Curriculum

Instruction shall be based on a structured curriculum which clearly delineates the competencies to be developed and the methods whereby they are achieved.

GUIDELINE:
Practitioner competencies should provide the basis for deriving the objectives and activities constituting the program's curriculum. Both the competencies stated and the curriculum objectives derived should be consistent with the level of practitioner preparation delineated in the program's goal and standard statements, and encompass at least the knowledge, skill, and behavior expected of graduates at entry into the field.

These competencies should be achieved within the framework of appropriately sequenced basic science, clinical science, and respiratory care units, modules, and/or courses of instruction, accompanied or followed by a series of structured laboratory and clinical experiences.

The following units, modules, and/or courses of instruction should be included:

1. *Basic Sciences*

Biology
Cardiopulmonary anatomy and physiology
Chemistry
Computer science
Human anatomy and physiology
Mathematics
Microbiology
Pharmacology
Physics
Psychology

2. *Clinical Sciences*

Cardiopulmonary diseases
General medical and surgical specialties
Pathology
Pediatrics and perinatology

3. *Respiratory Care Content Areas*

Aerosol therapy
Airway management
Assessment of patients' cardiopulmonary status
Cardiopulmonary diagnostics and interpretation
Cardiopulmonary monitoring and interpretation
Cardiopulmonary rehabilitation and home care
Cardiopulmonary resuscitation
Chest physiotherapy
Ethics of respiratory care and medical care
Gas therapy

General patient care
Humidity therapy
Hyperinflation therapy
Mechanical ventilation management
Oxygen therapy
Pediatrics and perinatology

The scope and depth of instruction provided in these areas and the corresponding level of performance expected of students should be consistent with the goals and standards of the program. Whatever level of practitioner preparation is stated, program personnel are expected to ensure that the objectives, content, and activities stated in the curriculum represent current concepts and advances in the practice of respiratory care.

In accordance with the mission, goals, and standards of the sponsoring institution(s) and program, other courses of study may be necessary or desirable. Programs are encouraged to incorporate general education, liberal arts and humanities studies within their curricula, and to provide opportunities for subsequent academic and career growth.

B. Length and Credit

The length of the curriculum, credits earned, and academic recognition awarded shall be consistent with the identified goals and standards of the program and its sponsoring institution(s).

GUIDELINE:
The length of time the students spend in the program may vary according to the program's goals and standards, the instructional plan, and the student's background. However, the program should be long enough to allow for an appropriate sequence of basic science, clinical science, and respiratory care content accompanied or followed by a series of structured laboratory and clinical experiences.

C. Implementation

1. Instructional Methods

Instructional methods shall be consistent with the goals and standards of the program, the educational needs of its students, and the competencies and objectives stated in its curriculum.

GUIDELINE:
The choice of instructional strategies should be appropriate to the instructional plan and to the learning needs of the students.

2. Multiple Program Designs

When more than one design is used to develop the same practitioner competencies, the program shall provide evidence that all such variations result in equivalent graduate outcomes.

GUIDELINE:
The programs should demonstrate that the instructional methodologies are equivalent, that the teaching mechanisms are valid, and the products of all such program designs are equally competent.

All educational programs should offer alternate instructional methodologies to meet special student needs.

3. Integration

The program shall ensure that instruction in the clinical setting is properly integrated and coordinated with the other components of the curriculum, and that each student receives adequate technical instruction and experience consistent with the goals and standards of the program.

GUIDELINE:
The program should assure that the clinical experience and instruction of students is meaningful and parallel in content and concept with the material presented in didactic and laboratory sessions. Schedules should be developed which provide for equivalent clinical experience for all students. The instructional and supervisory activities of all clinical instructors should be appropriate, effective, and coordinated.

4. Physician Input

Physician input shall be provided both in the administration of the program and instruction of students to ensure achievement of the program's stated goals and standards.

RT 430
2 credits
Mrs. Druga
1996 Fall

Self Study and student responsibility of the following topics:

	Review of Pulmonary Mechanics:	Text: pages: 106-117 pages: 120-122 pages: 127-130 Ruppel: pages: 43-50 MVV only: 56-59
	Review of equipment:	Text: pages: 2-22 pages: 26-32 Ruppel: pages:200-218
***	Quality Control and Assurance	Ruppel: pages:287-296
	Pt. History collection/reports	Text: pages: 297-308 Ruppel: pages:157-164
TOPIC 1 Class 1&2	Review ABG electrodes PO2 (Clark) PCO2 (Severinghaus) pH (Sanz) Quality Control a. Types b. Levy-Jennings graphs	Malley pages: 37-54 Text: pages 50-66 Ruppel:pages:305-313
TOPIC 2 Class 3&4	Gas analyzers Polarographic electrode Zirconium fuel cell Infrared absorption Emission spectroscopy Thermal conductivity Gas Chromatography Mass Spectrometry Gas conditioning Quality Control and Calibration	 Text:pages:40-44 Ruppel: pg218-219 Text: page: 45 Ruppel: 219-221 Text: page: 45 Ruppel: pg. 221 Text: pages: 44-45 Ruppel: pg. 222 Text: pages: 47-49 Ruppel:pgs.223-224 Text: page: 49 Ruppel: pgs.224-225 Ruppel: pgs.225-226 Ruppel: pages:297-301

Exam: Self study and topic 1

TOPIC 3 class 5	Flow Volume Loops	Text: pages: 119-124 pages: 123-124 handouts Ruppel:pages: 57-60
TOPIC 4 class 6 & 7	Bronchoscopy a. flexible b. rigid	Ref: Bronchoscopy by:Stradling Handouts and notes
Class 8	MIDTERM EXAM Topics 2,3,4,and 5 more heavily weighted on 4 and 5.	
TOPIC 5 classes 8 continued and 9	FRC determination	
	Nitrogen wash-out testing	Text: pages 81-84 Ruppel:pages 5-6
	calculation	Ruppel:pages 477-478
	Helium dilution	Text: pages 84-87 Ruppel: pages 6-11
	calculation	Ruppel:pages478-479
	Plethysmography	Text: pages 87-91 Ruppel:pages 11-14
	calculations:	Ruppel: pages 482-483 Ruppel: page 473
	Comparison of data(dir versus Indir)	pages 91-92
	Radiologic estimation	Text: pages 92-93 Ruppel: pages 15-18
	Interpretation of data	Text: pages 94-99 Ruppel:pages121-124
TOPIC 7 class 10	Diffusion and Exam on FRC and Distribution studies	Text: page 170-191 Ruppel: page 97-115
Class 11 thru 14	Sleep Disorders	* Independant Study * Class notes * reading assignments given in class
FINAL EXAM	FINALS WEEK	CUMULATIVE

* Any external work assignments not completed and turned in is an automatic 0 and added to the quiz grades.

* Any late work without prior arrangement with the instructor is a 10% decrease in possible total points.

* A make up exam, if granted by the instructor, is an automatic 5 % decrease in the possible total points on the exam.

* An unexcused exam is an automatic 0.

* Class participation is counted into quiz grades with a total point score of 10 points.

Read each topic assignment before class to enhance the class work each week. Surprise quizzes are a favorite of this instructor.

Midterm exam	25%
Final	35%
Tests	25%
External Assignments ..	15%
	100%

Text 1: Pulmonary Function Testing and Cardiopulmonary Stress Testing by Vincent C, Madama

Text 2: Clinical Blood Gases by Malley

Text 3: Manual of Pulmonary Function Testing by Gregg Ruppel

EXTERNAL ASSIGNMENT

The following topics are available for research. Please write a short paper concerning the physical principle responsible for its function and/or it's application in pulmonary diagnostics.

1. Radiographic technique FRC, technique or reliability.
2. Discuss the difference between FVL versus volume /time tracings, benefits and/or debts.
3. Discuss the difference between the flexible bronchoscope and the rigid scope, design and uses.
4. Diffusion, usage in diagnosis of pulmonary disease or testing technique.
5. Discuss the volume and flow requirements of PFT equipment according to the ATS standards.
6. Compare the FRC of a patient performed by Helium

dilution then by Plethysmography and explain the difference if any appears.

The topics are assigned as followed:
Those with the last name beginning with:
A - D will research topic 1
E - G will research topic 3
H - L will research topic 4
M - R will research topic 2
S - U will research topic 6
V - Z will research topic 5

If anyone has a special interest in another topic either on the list or any aspect of Pulmonary, obtain approval from the instructor before writing paper.

Choose one focus of the procedure and expound on it.

Limit text to three pages, double spaced with one page of reference. (total of four pages)
1-1.5 inch margins around
Two references a must. (Follow guide-lines of Respiratory Care ref. notes.)

No special cover required. Just good information!!!!!!

Be certain to note work cited when applicable in the paper.

...Do not plagiarize!!!!

Date due: October 3,1996 at 3:00 pm.