

RESPIRATORY CARE – B.S., M.S.R.C.

Respiratory care is an allied health profession that promotes health and improvement in the cardiopulmonary function of people with heart and lung abnormalities and disease. Newborn, pediatric, adult, and aging adult patients are treated for a wide range of problems—infant respiratory distress syndrome, trauma, cardiopulmonary arrest, conditions brought on by shock, and postoperative surgical complications; as well as respiratory diseases such as pneumonia, asthma, cystic fibrosis, chronic bronchitis, and emphysema.

The respiratory care practitioner is a member of the health-care team in medical centers, skilled nursing facilities, outpatient rehabilitation programs, physician offices, and in-home care. Many are involved in research and development of new and innovative care and equipment. They are effective communicators and compassionate caregivers, possessing an awareness of cultural sensitivity and diversity. They have leadership roles in patient education, wellness intervention, and development of respiratory care plans. Respiratory care professionals apply critical thinking skills in cardiopulmonary diagnostics and patient assessment to optimize decision making and delivery of patient care. In a time of high technology, increasing growth of the older adult population, and increasing numbers of patients with asthma and chronic lung disease, there is a greater demand for educated and skilled respiratory care practitioners.

Loma Linda University offers two Bachelor of Science degree curricula in respiratory care. The first is for students who have had no previous education in respiratory care and who have completed the program prerequisites. The second is for students who have an Associate in Science degree in respiratory care from a CoARC-accredited respiratory care program and who wish to earn a Bachelor of Science degree in respiratory care.

Professional association

The American Association for Respiratory Care (AARC) encourages students and graduates to become members and participate in national meetings and local chapters. The AARC's aim is to foster professional growth, encourage research, and provide services and representation for its members. Further information may be obtained from the national office, 9425 North MacArthur Boulevard, Suite 100, Irving, TX 75063; telephone, 972/243-2272; or website, <http://www.aarc.org>.

The California Society for Respiratory Care (CSRC), an affiliate of the AARC, is a nonprofit professional organization whose mission is to represent and encourage excellence in the art and science of cardiopulmonary support.

The CSRC is committed to health, healing, and disease prevention in the California community. The society extends these concepts to its members, students, health-care professionals, and the public through education and clinical practice. Further information may be obtained from the CSRC at 1961 Main Street, Suite 246, Watsonville, CA 95076; telephone, 888/730-2772; fax, 831/763-2814; or website: <http://www.csrc.org>.

Programs

- Respiratory Care – B.S. (Entry Level) (<http://llucatalog.llu.edu/allied-health-professions/respiratory-care/traditional-bs/>),

B.S. (Postprofessional) (<http://llucatalog.llu.edu/allied-health-professions/respiratory-care/postprofessional-bs/>), M.S.R.C. (<http://llucatalog.llu.edu/allied-health-professions/respiratory-care/msrc/>)

Courses

RSTH 301. Advanced Respiratory Therapy Science I. 3 Units.

Comprehensive review of patient-care techniques. Presents and discusses clinical application of respiratory therapy devices in-depth, and their influences on patient care. Reports and discussions of current and advanced developments. Integrates experience with current concepts and develops logical courses for proper equipment and technique application for specific patient care. (Not taught every year.)

RSTH 304. Cardiopulmonary Anatomy and Physiology. 4 Units.

Investigates anatomic and physiologic components of cardiovascular and respiratory systems. Emphasizes histology, embryology, diffusion, gases transported in the blood, acid-base balance, lung volumes and capacities, mechanics of ventilation, ventilation perfusion relationships, regulation of respiration, cardiac cell-membrane action potentials, and excitation-contraction coupling.

RSTH 314. ECG Interpretation and Analysis. 2 Units.

Develops basic ECG interpretation skills. Focuses on anatomy and physiology, underlying pathophysiology, and basic rhythm recognition. Overview of related treatments. Emphasizes skills needed by bedside practitioner to differentiate between benign and life-threatening dysrhythmias.

RSTH 315. Pediatric Perinatal Respiratory Care. 2 Units.

Pathophysiology of the newborn, prenatal risk factors, pediatric cardiopulmonary diseases, diagnostics, monitoring of clinical indices, and treatments used in perinatal/pediatric respiratory care. Advanced information on surfactant administration, high-frequency ventilation, and ECMO. May be used toward postprofessional B.S. degree in respiratory care in place of RSTH 422.

RSTH 316. 12-Lead ECG Interpretation. 2 Units.

Application and interpretation of the 12-lead system. Emphasizes recognition of the acute myocardial infarction. Includes identifying axis deviation, acute ischemic conditions, electrolyte imbalances, bundle-branch block, and infarct impostors. Attention to care of cardiac patients, emphasizing patient assessment, data collection, and use of the 12-lead to guide rapid intervention. Certificate issued upon successful course completion.

RSTH 318. Cardiology. 3 Units.

Development of assessment skills and medical management of patients with acute and chronic cardiovascular disorders. Focuses on anatomy and physiology, underlying pathophysiology, advanced history taking and physical assessment, cardiovascular pharmacology, electrical modalities, cardiac diagnostic testing, and current research. Emergency care of patients with myocardial infarction and cardiovascular trauma. Interaction with cardiac patients and clinical observation of diagnostic studies.

RSTH 323. Pulmonary Function Methodology. 3 Units.

Evaluates pulmonary function in health and disease through spirometry, plethysmography, helium dilution, nitrogen washout, single-breath nitrogen, volume of isoflow, and diffusing capacity studies—including blood-gas instrumentation, quality control, quality assurance, and current ATS standards. Lecture and laboratory.

RSTH 331. Pharmacology I. 2 Units.

Surveys pharmacologic agents currently used in medicine—including their kinetics, dynamics, and therapeutics. Emphasizes drugs and their effects on the respiratory, cardiovascular, and autonomic nervous systems. Topics include the bronchodilators, anti-inflammatory agents, mucokinetic agents, cardiovascular agents, diuretics, antimicrobials, neuromuscular agents, and agents used to treat nicotine dependence.

RSTH 332. Pharmacology II. 2 Units.

Surveys pharmacologic agents currently used in medicine—including their kinetics, dynamics, and therapeutics. Emphasizes drugs and their effects on the respiratory, cardiovascular, and autonomic nervous systems. Topics include the bronchodilators, anti-inflammatory agents, mucokinetic agents, cardiovascular agents, diuretics, antimicrobials, neuromuscular agents, and agents used to treat nicotine dependence.

RSTH 334. Patient Assessment. 2 Units.

General introduction to the clinical setting. Assesses and evaluates patients with respiratory disease. Develops clinical practice habits and patient-care techniques. Student must obtain current cardiopulmonary resuscitation (CPR) certification from the American Heart Association before the end of the term.

RSTH 341. Respiratory Therapy Science I. 5 Units.

Basic principles of respiratory therapy, as related to gas physics; medical-gas storage and therapy; and administration of humidity, aerosol and airway-pressure therapies, artificial airways, and resuscitation devices. Emphasizes methods of administration of the therapy, with special attention placed on the equipment used, as well as applies this information to the clinical setting.

RSTH 342. Respiratory Therapy Science II. 5 Units.

Lecture and laboratory presentation of the principles of respiratory therapy related to lung-inflation therapy; use of artificial airways, and their care and complications. Introduces mechanical ventilatory support, including beginning ventilators, support systems, comparison of methods, and respiratory monitoring. Emphasizes application of this information to the clinical setting. Prerequisite: RSTH 341.

RSTH 343. Respiratory Therapy Science III. 4 Units.

Lecture and laboratory presentation of the principles of respiratory therapy related to mechanical ventilatory support, including patient management and ventilatory support systems. Emphasizes methods of ventilatory support, with special attention to the mechanical ventilators commonly used in the students' clinical sites. Applies this information to the clinical setting. Prerequisite: RSTH 341, RSTH 342.

RSTH 354. Case Studies in Adult Respiratory Care. 2 Units.

Adult critical-care concepts presented through a case-study approach. Respiratory care plan used to present diseases, treatment, and procedures relevant to respiratory care. Patient rounds further develop critical-thinking skills in a patient-care setting. Prerequisite: RSTH 381.

RSTH 366. Diagnostic Techniques. 3 Units.

Continues the clinical use of diagnostic tests and procedures. Emphasizes evaluation of chest radiographs, electrocardiography, and monitoring hemodynamics. Lecture and laboratory. Prerequisite: RSTH 304, RSTH 331.

RSTH 381. Cardiopulmonary Diseases I. 2 Units.

Comprehensively studies cardiopulmonary diseases and their adverse effects. Course content includes disease etiology, pathology, pathophysiology, clinical features, prognosis, treatment, and prevention. Prerequisite: RSTH 304, RSTH 331, RSTH 341.

RSTH 382. Cardiopulmonary Diseases II. 2 Units.

Comprehensively studies cardiopulmonary diseases and their adverse effects. Course content includes disease etiology, pathology, pathophysiology, clinical features, prognosis, treatment, and prevention. Prerequisite or concurrent*: RSTH 304, RSTH 381*, RSTH 342.

RSTH 391. Respiratory Care Practicum I. 2 Units.

General introduction to the clinical setting; assessment of patients with respiratory disease. Develops work habits and patient-care techniques. Students must obtain current cardiopulmonary resuscitation (CPR) certification from the American Heart Association before the end of the quarter. Prerequisite: RSTH 341; AHA CPR certification.

RSTH 392. Respiratory Care Practicum II. 2 Units.

Applies specific therapeutic techniques, including oxygen and humidity therapy, aerosol therapy, airway management, lung-inflation techniques, and chest physiotherapy. Prerequisite: RSTH 342, RSTH 391; AHA CPR certification.

RSTH 393. Respiratory Care Practicum III. 5 Units.

Applies therapeutic techniques in continuous mechanical ventilation; special procedures, operation and postanesthesia room, and arterial blood-gas laboratory. Prerequisite: RSTH 343, RSTH 382, RSTH 392.

RSTH 401. Cardiopulmonary Intensive Care. 2-4 Units.

Management of the patient with cardiopulmonary failure. Theory and capabilities of various life support and monitoring systems. Prerequisite: Postprofessional student, senior standing; or consent of instructor.

RSTH 404. Critical Care. 4 Units.

Continues the theory, practice, and knowledge of mechanical ventilation, providing an integrated approach to respiratory care in the critical-care arena. Uses a systems-based approach to incorporate respiratory care concepts, such as planning and implementing of protocols, best-practice guidelines, etc. Utilizes presentations, projects, and critical evaluation to increase critical-thinking skills and patient-care skills. Presents advanced mechanical ventilation modes.

RSTH 411. Advanced Cardiac Life Support. 2 Units.

Principles and techniques of advanced emergency cardiac care. Includes basic CPR, endotracheal intubation, use of airway adjuncts, monitoring and dysrhythmia recognition, drugs for cardiac life support, intravenous techniques, circulatory adjuncts, and devices for elective cardioversion or defibrillation, stabilization, and transportation. Follows American Heart Association criteria for acid-base balance, drug therapy, and therapeutic interventions.

RSTH 421. Perinatal and Pediatric Respiratory Care. 2 Units.

Fetal development and circulation. Prenatal risk factors. Newborn resuscitation; newborn and pediatric assessment. Etiology, pathophysiology, course, treatment, and outcome of respiratory diseases as they relate to problems in pediatrics and neonatology. Discusses ECMO, high-frequency ventilation, and nitric oxide. Prerequisite: RSTH 304, RSTH 331.

RSTH 422. Advanced Perinatal and Pediatric Respiratory Care. 2 Units.

Pathophysiology of newborn and pediatric diseases likely to be encountered by the respiratory care practitioner. Perinatal risk factors, resuscitation, and research on the transition to extrauterine life. Diagnostics, monitoring of clinical indices, and treatments used in perinatal/pediatric respiratory care. Advanced information on surfactant, high-frequency ventilation, and ECMO. Prerequisite: RSTH 421; or consent of instructor. Does not apply to postprofessional respiratory care students.

RSTH 424. Exercise Physiology and Pulmonary Rehabilitation. 3 Units.

Metabolism of carbohydrates, lipids, and proteins in energy production, oxygen consumption, carbon dioxide production, and respiratory quotient applied to oxygen uptake, carbon dioxide output, and respiratory exchange ratio at rest and during exercise. Reviews metabolic, body-fat composition, and exercise studies; and, malnutrition in chronic obstructive pulmonary disease as foundations for evaluation and implementation of pulmonary rehabilitation programs.

RSTH 431. Senior Project I. 2 Units.

Introduces the process of proposal development for a respiratory care project. Weekly assignments apply the steps in developing the selected topic. Cardiopulmonary project development incorporates the concepts of evidence-based medicine.

RSTH 432. Senior Project II. 2 Units.

Introduces the process of proposal development for a respiratory care project. Weekly application of the steps in project development. Cardiopulmonary project incorporates project design concepts and needs assessment. Prerequisite: RSTH 431.

RSTH 433. Senior Project III. 2 Units.

The process of developing a proposal for a respiratory care project. Weekly application of the steps in topic development. Cardiopulmonary project design incorporates the concepts of design implementation and outcome assessment. Prerequisite: RSTH 431, RSTH 432.

RSTH 434. Advanced Patient Assessment. 2 Units.

Advanced skills in interviewing, physical examination, and interpretation of laboratory data. Lecture, reading material, and physical examination procedures. Provides insight for better interview and examination of patients with cardiopulmonary disease. Increases understanding of the pathophysiology behind the symptoms. Prerequisite: RSTH 334; Does not apply to postprofessional respiratory care students.

RSTH 435. Professional Development in Respiratory Care. 1 Unit.

Prepares students for the board exams matrix, provides interview practice in respiratory care, and models professionalism and success as a new respiratory therapist.

RSTH 441. Respiratory Therapy Science IV. 3 Units.

Presents and discusses the clinical application of respiratory therapy devices in-depth, and their influences on patient care. Reports and discussions of current and advanced developments. Emphasizes application of this information to the clinical setting. (Not taught every year.) Prerequisite: RSTH 341, RSTH 342, RSTH 343; or consent of instructor.

RSTH 444. Case Studies in Neonatal/Pediatric Respiratory Care. 2 Units.

Develops respiratory care-management skills in caring for the neonatal and pediatric patient through the presentation of student case studies. Clinical staff and faculty review current management of the newborn, infant, and child. Student presents patients and explains implications of care. Develops presentation skills. Prerequisite: RSTH 421; Does not apply to postprofessional respiratory care students.

RSTH 448. Clinical Practice Seminar. 2 Units.

Focuses on theories and research defining best respiratory care practices in the clinical setting. Addresses areas of general care, basic critical care, and advanced critical care in adult, pediatric, and neonatal settings. Prerequisite: CA RCP licensure.

RSTH 462. Management Practicum II. 3 Units.

Experience in the management of respiratory or emergency medical care management. Clinical application of the theoretical management skills developed during the didactic portions of the training.

RSTH 463. Management Practicum III. 3 Units.

Experience in the management of respiratory or emergency medical care management. Clinical application of the theoretical management skills developed during the didactic portions of the training. Includes assisting clinical managers in supervision and management of RCP staff and students.

RSTH 464. Case Management and Health Promotion in Respiratory Care. 2 Units.

Utilizes a case management approach to patient care in managing and evaluating disease and treatment. Emphasizes patient aspects of respiratory care that include discharge planning, utilization review, patient assessment, cost containment, patient education, and integration issues. Discusses relevance of epidemiology as well as selected disease trends, lifestyle modification, and public health approaches to communicable diseases. Prerequisite: RSTH 334, RSTH 424, RSTH 434; Does not apply to postprofessional respiratory care students.

RSTH 466. Advanced Diagnostic Techniques. 2 Units.

Advanced diagnostic theory and practice in the following areas: Holter monitoring, echocardiography, bronchoscopy, sleep studies, and other relevant respiratory care diagnostics. Prerequisite: RSTH 366; Does not apply to postprofessional respiratory care students.

RSTH 471. Instructional Techniques I. 2 Units.

Develops units of instruction, instructional objectives, and evaluation procedures. Students observe and participate in classroom management; and apply teaching principles through experience in various teaching activities, such as community preventive health care programs, in-service and continuing education, and college classroom and clinical teaching. Conferences and individual guidance.

RSTH 474. Cardiopulmonary Health Promotion and Disease Prevention. 2 Units.

Selected topics dealing with aspects of disease prevention. Includes the relevance of statistics, epidemiology, research designs, and clinical trials; as well as selected disease trends, lifestyle modification, the role of physical activity, nutrition and immunization, and public health approaches to communicable diseases. Prerequisite: RSTH 424.

RSTH 480. Lung Ultrasound Assessment. 2 Units.

Presents the technology and evidenced-based application of lung ultrasound in the assessment of the critically ill. Student learn to identify twelve signatures (images) of lung ultrasound with application of the BLUE-Protocol, FALLS-Protocol, and SESAME-Protocol. Includes online lectures, assignments, and interactive lung ultrasound case simulations. Prerequisite: RSTH 404 or licensed RCP.

RSTH 485. Evidenced-Based Medicine in Respiratory Care I. 2 Units.

Provides basic knowledge and experience in the area of evidenced-based medicine as it relates to respiratory care practice and research.

RSTH 486. Evidenced-Based Medicine in Respiratory Care II. 2 Units.

Provides advanced knowledge and experience in the area of evidenced-based medicine as it relates to respiratory care practice and research. Emphasizes the neonatal and pediatric areas of respiratory care.

RSTH 487. Evidenced-Based Medicine in Respiratory Care III. 2 Units.

Provides advanced knowledge and experience in the area of evidenced-based medicine as it relates to respiratory care practice and research. Emphasizes the adult areas of respiratory care.

RSTH 491. Education Practicum I. 3 Units.

Provides experience in clinical education, evaluation, and scheduling. Familiarizes student with hospital affiliation agreements and accreditation issues. Primary experience in the general and adult critical care areas. Prerequisite: CA RCP licensure.

RSTH 492. Education Practicum II. 3 Units.

Provides experience in clinical education, evaluation, and scheduling. Familiarizes student with hospital affiliation agreements and accreditation issues. Primary experience in the neonatal and pediatric intensive care units. Prerequisite: CA RCP licensure.

RSTH 493. Education Practicum III. 3 Units.

Provides experience in clinical education, evaluation, and scheduling. Familiarizes student with hospital affiliation agreements and accreditation issues. Primary experience in specialty procedures and rehabilitation. Prerequisite: CA RCP licensure.

RSTH 494. Respiratory Care Practicum IV. 3 Units.

Students develop professional competence and maturity in the clinical setting. Comprehensive training in all aspects of respiratory care, including the pulmonary function laboratory and home care. Prerequisite: RSTH 343, RSTH 382, RSTH 393, RSTH 404.

RSTH 495. Respiratory Care Practicum V. 2 Units.

Specialty training in respiratory care practice. Addresses neonatal/pediatric and adult critical care, cardiopulmonary diagnostics, hyperbaric medicine, sleep disorders, and cardiopulmonary rehabilitation in general, critical-care and extended care settings. Prerequisite: RSTH 494, RSTH 404.

RSTH 496. Respiratory Care Practicum VI. 3 Units.

Continues specialty training in respiratory care practice. Addresses neonatal/pediatric and adult critical care, cardiopulmonary diagnostics, hyperbaric medicine, sleep disorders, and cardiopulmonary rehabilitation in general, critical-care and extended care settings. Prerequisite: RSTH 495.

RSTH 499. Respiratory Therapy Independent Study. 0.5-4 Units.

Under the direction of the program director, student submits a project or paper on a topic of current interest in an area of respiratory care. Regular meetings provide student with guidance and evaluation in the development of the project or paper. Elected on the basis of need or interest.

RSTH 501. Advanced Cardiopulmonary Anatomy and Physiology I. 3 Units.

Clinical approach and application of cardiopulmonary anatomy and physiology to the respiratory care and medical patient. Includes study of respiratory physiology and cardiac and circulatory function, with relevant clinical application. Provides in-depth study of cardiac and pulmonary anatomy and physiology beyond undergraduate gross anatomy and physiology coursework, particularly at the molecular mechanistic level.

RSTH 502. Advanced Cardiopulmonary Anatomy and Physiology II. 3 Units.

Continues RSTH 501. Clinical approach and application of cardiopulmonary anatomy and physiology to the respiratory care and medical patient. Studies respiratory physiology, cardiac, and circulatory function—with relevant clinical application. Provides an in-depth study of cardiac and pulmonary anatomy and physiology beyond undergraduate gross anatomy and physiology coursework, particularly at the molecular mechanistic level. Prerequisite: RSTH 501.

RSTH 510. Seminar in Translational Cardiopulmonary Science I. 1 Unit.

First of a four-quarter series of seminars providing an overview of translational cardiopulmonary basic and clinical research. Includes discussion of current cardiopulmonary clinical best practices, scientific and administrative processes that achieve best practices, and current scientific research aimed at progression of cardiopulmonary science at the bedside. Required for MSRC students without a respiratory care background (research track).

RSTH 511. Seminar in Translational Cardiopulmonary Science II. 1 Unit.

Second of a four-quarter series of seminars providing an overview of translational cardiopulmonary basic and clinical research. Includes discussion of current cardiopulmonary clinical best practices, scientific and administrative processes that achieve best practices, and current scientific research aimed at progression of cardiopulmonary science at the bedside. Required for MSRC students without a respiratory care background (research track).

RSTH 512. Seminar in Translational Cardiopulmonary Science III. 1 Unit.

Third of a four-quarter series of seminars providing an overview of translational cardiopulmonary basic and clinical research. Includes discussion of current cardiopulmonary clinical best practices, scientific and administrative processes that achieve best practices, and current scientific research aimed at progression of cardiopulmonary science at the bedside. Required for MSRC students without a respiratory care background (research track).

RSTH 513. Seminar in Translational Cardiopulmonary Science IV. 1 Unit.

Fourth of a four-quarter series of seminars providing an overview of translational cardiopulmonary basic and clinical research. Includes discussion of current cardiopulmonary clinical best practices, scientific and administrative processes that achieve best practices, and current scientific research aimed at progression of cardiopulmonary science at the bedside. Required for MSRC students without a respiratory care background (research track).

RSTH 541. Advanced Concepts in Critical Care I. 2 Units.

Explores relevant studies impacting cardiopulmonary science. Discusses physical principles and molecular mechanisms associated with phenotypic changes in compliance and resistance upon implementation of positive pressure ventilation (PPV). Addresses benefits and limitations of techniques offered by advanced, novel ventilation modes in regard to reduced physiological insult upon PPV. Encourages research questions, data interpretation, and revision of current protocols and modalities.

RSTH 542. Advanced Concepts Critical Care II. 2 Units.

Continues RSTH 541. Includes the systemic effects of the critical care patient, their impact on the cardiopulmonary system, and the role of the cardiopulmonary system in maintaining homeostasis. Encourages research questions, data interpretation, and revision of current protocols and modalities. Prerequisite: RSTH 542.

RSTH 550. Advanced Procedures in Cardiopulmonary Science. 2 Units.

Study and practice of invasive and noninvasive procedures and associated equipment—such as the management of artificial airways, fiberoptic bronchoscopy, thoracentesis, chest tubes, hyperbaric therapy, arterial blood gas sampling, line placements, ACLS procedures, medications, IVs—related to the critical care patient. Emphasizes application to patient situations, assessment of care, and principles of equipment use above that of the entry-level respiratory care practitioner.

RSTH 560. Advanced Cardiopulmonary Assessment, Diagnostics, and Monitoring. 2 Units.

Applies integrated theory, management, practice, and application approaches to general medicine, cardiopulmonary assessment, diagnostics, and monitoring for the cardiopulmonary patient. Includes total system assessment, interpretation of diagnostics, and implementation of planning for improved intensive cardiopulmonary care. Encourages research questions, data interpretation, and revision of current protocols and modalities.

RSTH 571. Advanced Pathophysiology of Cardiopulmonary Diseases I. 3 Units.

A case study approach of the pathophysiology, clinical signs and symptoms, diagnosis, management, practice, and prognosis of acute and chronic pulmonary and cardiac diseases—with emphasis on respiratory care and comorbidities. Studies cardiopulmonary function as it relates to understanding of the pathophysiology of disease states.

RSTH 572. Advanced Pathophysiology of Cardiopulmonary Diseases II. 3 Units.

Continues RSTH 571. A case study approach to explore pathophysiology, clinical signs and symptoms, diagnosis, management, practice, and prognosis of acute and chronic cardiopulmonary diseases and comorbidities. Studies cardiopulmonary function as it relates to understanding the pathophysiology and molecular mechanisms of disease states. Encourages research questions/exploration and protocol/policy modification. Prerequisite: RSTH 571.

RSTH 574. Nutrigenomics and Cardiopulmonary Health and Disease. 4 Units.

Discusses nutrition and its effects on epigenetic regulation of genes that determine cardiopulmonary health and disease. Offers a brief overview of epigenetics, with a focus on food as source stimuli for altering the expression of pathway components known to both induce and minimize disease progression of the cardiovascular and pulmonary systems.

RSTH 580. Research Concepts in Respiratory Care Sciences. 3 Units.

Basic concepts of drafting literature review and respiratory care research. Presents concepts of evidence-based medicine. Applies research specific to respiratory care science through evaluation and comparison of literature relevant to clinical practice.

RSTH 585. Current Issues in Respiratory and Health Care Policy. 3 Units.

Addresses emerging issues in medicine, cardiopulmonary science, and health-care policy. Reviews relevant research and new trends in respiratory care management, as well as practice that impacts patient care. Includes inpatient, outpatient, rehabilitation, prevention, and related topics.

RSTH 587. R Programming for Health Care and Translational Science II. 4 Units.

Second course in a four-part series. Introduction to programming in R. Acquiring and cleaning internet data, subsetting and graphing data, using statistics in R for data analysis, and generating interpretable reports that can be presented to professional and lay audiences. Introduces tools necessary to analyze large datasets to answer epidemiological questions.

RSTH 591. Capstone Project in Respiratory Care I. 2 Units.

Students address and present a substantial issue related to their professional area of interest, then design and implement scholarly results and presentation. Emphasizes design, literature review, and needs assessment. A thesis option available for students who require a directed research study.

RSTH 592. Capstone Project in Respiratory Care II. 2 Units.

Students present the findings of their completed project—emphasizing data collection, implementation, and evaluation. A thesis option available for students who require a directed research study. Prerequisite: RSTH 591.

RSTH 593. Capstone Project in Respiratory Care III. 2 Units.

A continuation of RSTH 592. Graduate student presents findings of the total project, emphasizing data collection, implementation, and evaluation of the project. MSRC faculty and students discuss need for revision or further validation studies. Prerequisite: RSTH 591, RSTH 592.

RSTH 596. Advanced Clinical Practice in Respiratory Care I. 1-3 Units.

Clinical practicum in medicine, pulmonary, and critical care under direct supervision of a practicing/supervising pulmonologist or other approved physician. Emphasizes both inpatient and outpatient assessment, management, practice, and procedures. Requires prior approval of the program director as well as a signed and approved preceptor agreement on file.

RSTH 597. Advanced Clinical Practice in Respiratory Care II. 1-3 Units.

Continues RSTH 596. Clinical practicum in medicine, pulmonary, and critical care—under the direct supervision of a practicing-supervising pulmonologist, or other preapproved physician. Emphasizes inpatient and outpatient assessment, diagnosis, management, practice, and procedures. Requires prior approval of the program director, as well as an approved signed preceptor agreement on file.

RSTH 684. Management and Leadership in Respiratory Care Project. 1-3 Units.

Application of management in respiratory or emergency medical care from staffing, equipment, policies, billing, scheduling, and protocols, as well as clinical application of theoretical management and leadership skills in respiratory care.

RSTH 685. Respiratory Care Education Project. 1-3 Units.

Provides experience in respiratory care education, curriculum development, assessment, evaluation, and clinical scheduling, as well as an understanding of hospital affiliation agreement challenges and accreditation issues.

RSTH 698. Capstone Project in Respiratory Care. 1,2 Unit.

Development of capstone project in respiratory care including topic selection, literature review, data collection and analysis. Includes project implementation or publication readiness and presentation to faculty. Prerequisite: RSTH 580.