

DEPARTMENT OF HEALTH SCIENCES

The mission of the Department of Health Sciences is to improve the health and wellbeing of all people of North Carolina, the nation, and globally through exemplary and culturally sensitive teaching, innovative research, and person-centered care.

- **Exemplary Teaching:** To produce a diverse, interprofessional, and culturally competent workforce of health care practitioners, educators, researchers, and health care leaders.
- **Innovative Research:** To conduct research aimed at generating new knowledge that advances the practices and policies of health care.
- **Person-Centered Care:** To advance the science and practice of person-centered care with a focus on patient outcomes, families, communities, integrative health care, health promotion/disease prevention, and the improvement of overall quality of life.

Throughout our teaching, research, and clinical care, we are committed to engagement with diverse student, faculty, and patient/client populations and to creating an inclusive and equitable environment in which to work and learn.

Majors

- Clinical Laboratory Science Major, B.S. (<https://catalog.unc.edu/undergraduate/programs-study/clinical-laboratory-science-major-bs/>)
- Neurodiagnostics and Sleep Science, B.S. (<https://catalog.unc.edu/undergraduate/programs-study/neurodiagnostics-sleep-sciences-major-bs/>)
- Radiologic Science, B.S. (<https://catalog.unc.edu/undergraduate/programs-study/radiologic-science-major-bs/>)

Minor

- Speech and Hearing Sciences (<https://catalog.unc.edu/undergraduate/programs-study/speech-hearing-sciences-minor/>)

Professor

Elizabeth R. Crais, Karen Erickson, John Grose, Katarina Haley, Tara C. Moon, Jordan B. Renner, Stephanie Sjoblad.

Associate Professors

Lisa Domy, Sarah Hess, Adam Jacks, Nancy McKenna, Brenda Mitchell, Joy J. Renner, Devon Weist, Mary Ellen Wells, Sharon W. Williams.

Assistant Professors

Lindsey Byom, Amy Dela Cruz, Julia Drouin, Kenya Haugen, Kimberly Jenkins, Patricia Johnson, Bai Li, Shawn Luby, Hannah Hodson McLean, Lauren Noble, Hannah Siburt, Katrina Steinsultz, Laine Stewart, Sara Taylor, Susan Taylor.

Adjunct Assistant Professor

Melissa Culp.

Instructors

Kristine Barnette, Randy Gay, Susan MacNeela, Wendy Ross.

Professors Emeriti

Charles B. Burns, Janice C. Keene, Robert L. Thorpe.

Courses

CLSC–Clinical Laboratory Science

CLSC 150. Current Topics in Clinical Laboratory Medicine. 1 Credits.

A survey of topics in laboratory medicine including transfusions, forensic science, infectious diseases, and hematologic diseases.

Rules & Requirements

Grading Status: Pass/Fail.

CLSC 410. Laboratory Mathematics. 1 Credits.

Permission of the instructor for nonmajors. Basic mathematical principles, calculations, quality assurance, and method validation relevant to the clinical laboratory.

Rules & Requirements

Grading Status: Letter grade.

CLSC 410L. Basic and Molecular Laboratory Methods. 2 Credits.

Majors only. Basic skills associated with the clinical laboratory including pipetting, spectrophotometry, standard curves, dilutions, and immunoassays. Molecular methods include small volume pipetting, microwell plating, nucleic acid extraction, and PCR techniques.

Rules & Requirements

Grading Status: Letter grade.

CLSC 420. Urinalysis and Body Fluids. 1 Credits.

Permission of the instructor for nonmajors. The physical, chemical, and microscopic analysis of body fluids in the clinical laboratory with an emphasis on correlation of laboratory data.

Rules & Requirements

Grading Status: Letter grade.

CLSC 420L. Urinalysis Laboratory. 1 Credits.

For Clinical Laboratory Science majors only. The physical, chemical, and microscopic examination of urine with an emphasis on the correlation of laboratory data.

Rules & Requirements

Grading Status: Letter grade.

CLSC 430. Biochemistry. 3 Credits.

Permission of the instructor for nonmajors. Physiological biochemistry of the metabolic pathways and alterations in selected diseases. Also includes principles and applications of molecular techniques in the clinical laboratory.

Rules & Requirements

Grading Status: Letter grade.

CLSC 440. Hematology I. 2 Credits.

Permission of the instructor for nonmajors. Introduction to normal hematopoiesis, blood cell function and identification, hematologic tests, principles of hemostasis, and hemostasis disorders.

Rules & Requirements

Grading Status: Letter grade.

CLSC 440L. Hematology I Laboratory. 1 Credits.

Permission of the instructor for nonmajors. Basic clinical assays for identification and evaluation of erythrocytes, leukocytes, and platelets with an emphasis on microscopy. Also includes coagulation testing.

Rules & Requirements

Grading Status: Letter grade.

CLSC 442. Hematology II. 3 Credits.

Majors only. Hematologic disorders involving erythrocytes and leukocytes, with an emphasis on the analysis and interpretation of laboratory data.

Rules & Requirements

Grading Status: Letter grade.

CLSC 442L. Hematology II Laboratory. 1 Credits.

Majors only. Microscopic identification and evaluation of abnormal erythrocyte and leukocyte morphology, correlation with other laboratory data, and clinical interpretation.

Rules & Requirements

Grading Status: Letter grade.

CLSC 450. Immunology. 3 Credits.

Permission of the instructor for nonmajors. Basic immunology and serology. Innate and immune body defenses. The development and properties of cellular and humoral elements and their alterations in pathological and other conditions.

Rules & Requirements

Grading Status: Letter grade.

CLSC 460. Special Pathogens. 2 Credits.

Permission of the instructor for nonmajors. Study of clinically significant fungi, parasites, and atypical or unusual bacteria. Correlation of disease, disease transmission, mechanisms of pathogenicity, and diagnostic testing.

Rules & Requirements

Grading Status: Letter grade.

CLSC 460L. Parasitology and Mycology Laboratory. 1 Credits.

Permission of the instructor for nonmajors. Clinical laboratory diagnostic methods for human parasitic and fungal infections. Microscopic morphology of fungal organisms and parasites, including their various life cycle forms.

Rules & Requirements

Grading Status: Letter grade.

CLSC 462. Clinical Bacteriology. 3 Credits.

Majors only. Principles and practice of clinical bacteriology. Study of medically significant bacteria with correlation of human disease, mechanisms of bacterial pathogenicity, and laboratory diagnostics.

Rules & Requirements

Grading Status: Letter grade.

CLSC 462L. Clinical Bacteriology Laboratory. 2 Credits.

Majors only. A comprehensive course describing bacteria that infect humans. Correlation of diseases and pathological mechanisms of bacteria.

Rules & Requirements

Grading Status: Letter grade.

CLSC 470. Clinical Chemistry. 3 Credits.

Majors only. An introduction to the methods of analysis used in the clinical chemistry laboratory. Emphasis on the correlation of chemistry laboratory values with disease states.

Rules & Requirements

Grading Status: Letter grade.

CLSC 470L. Clinical Chemistry Laboratory. 2 Credits.

Majors only. Performance of clinical laboratory assays for significant biochemical molecules. Principles of analysis, quality control, method evaluation, and basic laboratory instrumentation are presented.

Rules & Requirements

Grading Status: Letter grade.

CLSC 480. Immunohematology. 3 Credits.

Majors only. Introduction to blood group serology with an emphasis on the major blood group systems, pretransfusion testing, and antibody identification.

Rules & Requirements

Grading Status: Letter grade.

CLSC 480L. Immunohematology Laboratory. 2 Credits.

Majors only. Laboratory techniques for red cell typing, antibody identification, and pretransfusion testing.

Rules & Requirements

Grading Status: Letter grade.

CLSC 540L. Clinical Hematology Laboratory. 4 Credits.

Majors only. Laboratory rotation in clinical hematology.

Rules & Requirements

Making Connections Gen Ed: EE- Field Work.

Requisites: Prerequisite, CLSC 440.

Grading Status: Letter grade.

CLSC 542L. Clinical Hemostasis Laboratory. 2 Credits.

Majors only. Laboratory rotation in clinical coagulation.

Rules & Requirements

Requisites: Prerequisite, CLSC 440.

Grading Status: Letter grade.

CLSC 550L. Clinical Immunology Laboratory. 1 Credits.

Majors only. Laboratory rotation in clinical immunology.

Rules & Requirements

Requisites: Prerequisite, CLSC 450.

Grading Status: Letter grade.

CLSC 560L. Clinical Microbiology Laboratory. 4 Credits.

Majors only. Laboratory rotation in clinical microbiology.

Rules & Requirements

Requisites: Prerequisite, CLSC 462.

Grading Status: Letter grade.


CLSC 570L. Clinical Chemistry Laboratory Rotation. 4 Credits.

Majors only. Laboratory rotation in clinical chemistry.

Rules & Requirements

Requisites: Prerequisite, CLSC 470.

Grading Status: Letter grade.

 **CLSC 580L. Clinical Immunohematology Laboratory. 4 Credits.**
Laboratory rotation in clinical immunohematology. Majors only.

Rules & Requirements

 **IDEAs in Action Gen Ed:** HI-INTERN.

Making Connections Gen Ed: EE- Field Work.

Requisites: Prerequisites, CLSC 480 and 480L.

Grading Status: Letter grade.

CLSC 582L. Clinical Transplantation Medicine Laboratory. 1 Credits.
Majors only. Clinical rotation in histocompatibility, flow cytometry, and hematopoietic progenitor cell laboratories.

Rules & Requirements


Requisites: Prerequisite, CLSC 480.

Grading Status: Letter grade.

CLSC 620. Clinical Laboratory Management. 2 Credits.
Majors only. Foundation in the technical and nontechnical aspects of supervision and management of clinical laboratory testing.

Rules & Requirements

Grading Status: Letter grade.

 **CLSC 630. Research Methods in Clinical Laboratory Science. 2 Credits.**

Majors only. An overview of the knowledge of research design and methods commonly used in the clinical laboratory research arena, providing the basis for the critical examination of professional literature.

Rules & Requirements

 **IDEAs in Action Gen Ed:** RESEARCH.

Making Connections Gen Ed: CI.

Grading Status: Letter grade.

 **CLSC 670. Clinical Laboratory Science Educational Methods. 2 Credits.**

Majors only. Introduction to the basic principles of clinical laboratory education, including objectives, learning formats, test development, and clinical teaching.

Rules & Requirements

 **IDEAs in Action Gen Ed:** COMMBEYOND.

Grading Status: Letter grade.

CLSC 695. Undergraduate Research in Clinical Laboratory Science. 3 Credits.

This mentored and self-directed course provides students with research experience in the clinical laboratory field. Students will apply knowledge of research methods to generate results and communicate results to others. This is a clinical laboratory science elective course. Seniors only.

Rules & Requirements

Requisites: Prerequisite, CLSC 630 or CLSC 730.

Grading Status: Pass/Fail.

NDSS–Neurodiagnostics and Sleep Science

NDSS 393. Clinical rotation in Neurophysiology and Polysomnography. 2 Credits.

Students will be exposed to real life clinical neurophysiology and sleep laboratory practice and develop competence in the performance of these studies in the clinical setting. Students should apply the knowledge and skills necessary to perform basic neurophysiological and sleep studies, including recording and interpreting basic studies. Upon completion, students should be able to demonstrate competence performing these studies. Students will discuss the cases, review waveforms, and identify events with clinical mentors.

Rules & Requirements

Requisites: Prerequisite, NDSS 415L.

Grading Status: Letter grade.

NDSS 400. NDSS UNCC Participants. 0 Credits.

Rules & Requirements

Repeat Rules: May be repeated for credit.

Grading Status: Letter grade.

NDSS 401. Basic Neurophysiology and Sleep for Clinical Neurophysiology. 3 Credits.

This course provides a concentrated study of anatomy and physiology essential to the practice of neurodiagnostics and polysomnography. Emphasis is placed on the physiology of the nervous, cardiovascular, and pulmonary systems and basic pharmacological principles. Upon completion, students should be able to demonstrate competence in concepts through written evaluation.

Rules & Requirements

Requisites: Prerequisite, A biology course above 100.

Grading Status: Letter grade.

NDSS 410. Intro to Basic Sleep and Neurophysiology Instrumentation and Technology. 4 Credits.

This course introduces fundamental concepts of NDSS equipment and recording of bio-electric potentials. Topics include concepts of basic electronics and instrumentation, key features of recording bio-electric potentials, function and application of neurodiagnostic equipment, construction of montages, display mechanisms, limitations of the recordings and essential clinical settings for the recording. Upon completion, students should be able to demonstrate basic competence in understanding neurodiagnostics and polysomnography and bio potentials.

Rules & Requirements

Grading Status: Letter grade.

NDSS 415L. Polysomnographic and Neurophysiologic Technology/ Lab. 7 Credits.

This course provides practical application of theories covered in the basic instrumentation course. Emphasis is placed on NDSS procedures. Students will have a hands-on laboratory practice and develop competence, knowledge and skills to perform these studies. Students will extend their understanding through application and review of clinical cases. Upon completion, students should be able to successfully complete practice lab exams and competencies.

Rules & Requirements

Requisites: Prerequisite, NDSS 410.

Grading Status: Letter grade.

NDSS 420. Pathophysiology of Sleep, Neurological, and Related Disorders. 3 Credits.

Students will learn about diseases affecting the nervous system, the sleep/wake cycle, and psychiatric and behavioral disorders. Topics include etiology, clinical manifestations, pharmacology, disease prevention, and overview of treatments. Restricted to NDSS Majors, Advanced undergraduates (instructor permission required).

Rules & Requirements

Grading Status: Letter grade.

NDSS 430. Neurological and Sleep Diagnostic and Therapeutic Methods, and Monitoring. 3 Credits.

Students will learn about services available at sleep and neurophysiology laboratories and interpretation of diagnostic findings. Topics include sleep procedures, electroencephalography, and long-term epilepsy monitoring. Students participate in laboratory practice sessions. Restricted to NDSS Majors, Advanced undergraduates (instructor permission required).

Rules & Requirements

Grading Status: Letter grade.

NDSS 440. Evidence Based Practice in Neurodiagnostics and Sleep Science. 3 Credits.

Admittance into NDSS program required. An Introduction to the concept of evidence-based practice and an opportunity to acquire the skills necessary to be able to incorporate evidence and best practices into professional work. These include an understanding of research methods and the approach to critical appraisal of research literature. (Fall, On demand).

Rules & Requirements

Grading Status: Letter grade.

NDSS 450. Advanced Sleep and Neurodiagnostic Clinical Procedures. 3 Credits.

Students will learn advanced procedures performed in sleep centers and neurophysiology laboratories. Topics include nerve conduction velocities, actigraphy, and autonomic testing techniques. Students participate in laboratory practice sessions. Restricted to NDSS Majors, Advanced undergraduates (instructor permission required).

Rules & Requirements

Grading Status: Letter grade.

NDSS 460. Informational Technology and Analytics in Neurodiagnostics and Sleep Science. 3 Credits.

A study and focus on information technology and analytics used specifically in Neurodiagnostics and Sleep Science. Emphasis is placed on development of the knowledge and competencies necessary for selective use and evaluation of research, data acquisition, computer transfer of acquisition studies, acquisition interpretations, and data management in the healthcare of Neurodiagnostic and Sleep Science patients.

Rules & Requirements

Grading Status: Letter grade.

NDSS 493. Neurodiagnostics and Sleep Science Practicum. 3 Credits.

Sleep disorders center and clinical neurophysiology laboratory clinical experience. Students participate in direct working experience in clinical neurophysiology and sleep laboratories (note that students may not be substituted as staff). Students may participate in practicum rotations in private practices and acute care centers accredited by the American Academy of Sleep Medicine and/or The American Board of Registration of Electroencephalographic and Evoked Potential Technologists, or other accreditation as deemed appropriate by the instructor. Majors only.

Rules & Requirements

Requisites: Pre- or corequisites, NDSS 420 and 430.

Grading Status: Letter grade.

NDSS 500. Principals and Practice of Healthcare Education. 3 Credits.

This course provides a foundation in the principles and practice of healthcare education. Topics include the educational process, learner characteristics, and teaching and learning theories, techniques, and strategies. Restricted to NDSS Majors, Advanced undergraduates (instructor permission required).

Rules & Requirements

Grading Status: Letter grade.

NDSS 510. Program Administration: Neurodiagnostics and Sleep Science Department Management. 3 Credits.

Admittance in to NDSS program required. Students will be introduced to the concepts of project development and management related to Neurodiagnostics and Sleep Science. Administration, financial, human resources, legal and policy concepts and issues in outpatient, public, and private sector settings. Topics and emphasis may vary. Students will be required to solve a clinical question using an inter-professional team-based approach.

Rules & Requirements

Grading Status: Letter grade.

NDSS 520. Advanced Physiological Monitoring and Data Acquisition. 3 Credits.

Students will learn advanced clinical procedures performed in clinical neurophysiology laboratories and operating rooms. Topics include evoked potentials, nerve conduction studies, autonomic testing, and intraoperative neurophysiologic monitoring. Students participate in laboratory practice sessions. NDSS majors only.

Rules & Requirements

Grading Status: Letter grade.


NDSS 530. Leadership in Healthcare Organizations. 3 Credits.

Admittance into NDSS program required. This course focuses on the theories and practices of leadership in health care. Global, social, legal, political, economic, and ethical issues are explored.

Rules & Requirements

Requisites: Prerequisite, NDSS 510 with a grade of C or higher.

Grading Status: Letter grade.

 **NDSS 593. Neurodiagnostics and Sleep Science Internship. 3 Credits.**


Sleep and Clinical neurophysiology laboratory educational and management internship with mentoring component. Direct working experience in one or more of the following setting: educational facility; clinical facility or hospital; NDSS related company or business; other as deemed appropriate by the instructor. The student and internship supervisor negotiate a learning contract outlining the internship schedule and specific tasks to be learned and completed. Majors only.

Rules & Requirements

 **IDEAs in Action Gen Ed:** HI-INTERN.

Requisites: Pre- or corequisites, NDSS 500 and 510.

Grading Status: Letter grade.

 **NDSS 697. Neurodiagnostics and Sleep Science Capstone. 3 Credits.**


Students complete a research project and presentation culminating from the undergraduate course of study. Project topics provide students the opportunity to summarize, evaluate, and integrate knowledge gained throughout the undergraduate major. Teaching methods include direct student exposure and significant time spent in a healthcare/clinical/educational environment specific to practice interests. The capstone project is in the form of research, or other scholarly activity that articulates the design, organization, statistics and data analysis used. Majors only.

Rules & Requirements

 **IDEAs in Action Gen Ed:** RESEARCH.

Requisites: Pre- or corequisites, NDSS 440 and 493.

Grading Status: Letter grade.

 **NDSS 698. Neurodiagnostics and Sleep Science Capstone II. 3 Credits.**

This course is a continuation of NDSS 697. Students complete a research project and presentation culminating from the undergraduate course of study. Project topics provide students the opportunity to summarize, evaluate, and integrate knowledge gained throughout the undergraduate major. Teaching methods include direct student exposure and significant time spent in a healthcare, clinical, or educational environment that is specific to practice interests. NDSS majors only.

Rules & Requirements

 **IDEAs in Action Gen Ed:** RESEARCH.

Requisites: Pre- or corequisite, NDSS 697.

Grading Status: Letter grade.

RADI-Radiologic Science

RADI 432. Concepts and Perspectives in Radiologic Science. 1 Credits.

This overview of radiologic science encompasses patient care, imaging modalities for diagnosis and treatment, radiation protection, health care trends, and information management systems. Pass/Fail course.

Rules & Requirements

Grading Status: Pass/Fail.

RADI 440. Gross Anatomy for Health Sciences. 3 Credits.

This course includes lecture and lab sessions to strengthen knowledge of human anatomy and to guide the application of this material for medical imaging. Students will participate in laboratory activities to better understand the spatial relationships between anatomic regions and specific structures. The emphasis of the course is on thoracic, abdominal, pelvic, and musculoskeletal anatomy. Course previously offered as AHSC 440. Radiologic Science majors only.

Rules & Requirements

Requisites: Prerequisites, BIOL 252 and 252L.

Grading Status: Letter grade.

RADI 442. Introduction to Radiologic Science. 3 Credits.

Majors only. Lectures, discussions, demonstrations, and laboratory exercises are combined to introduce topics including patient assessment, image characteristics, radiation protection, positioning skills, medical terminology, and the role of imaging sciences in health care.

Rules & Requirements

Grading Status: Letter grade.

RADI 461. Radiography I. 4 Credits.

Prepares students for standard radiography of upper extremities, lower extremities, axial skeleton, bony thorax, chest, abdomen, and the basic skull, considering pathologies and gross, radiographic, and cross-sectional anatomy. Three lecture hours and two laboratory hours.

Rules & Requirements

Requisites: Prerequisites, HSCI 440 and RADI 442.

Grading Status: Letter grade.

RADI 462. Radiographic Imaging I. 4 Credits.

An overview of radio-graphic imaging methods examining the imaging process as a sequence of events from X-ray production through hard copy processing. The imaging equipment is discussed in terms of function, influence on the image, the impact of alteration on image characteristics, and compensation techniques for changes in the sequence. Three lecture hours and two laboratory hours.

Rules & Requirements

Requisites: Prerequisites, HSCI 440 and RADI 442.

Grading Status: Letter grade.

 **RADI 463. Clinical Education I. 4 Credits.**

A clinical course focusing on the application and evaluation of radiography in the hospital setting. With supervision, the student develops clinical skills through observation and participation in radiographic procedures. Twenty practicum hours.

Rules & Requirements

 **IDEAs in Action Gen Ed:** HI-INTERN.

Making Connections Gen Ed: EE- Academic Internship.

Requisites: Prerequisites, HSCI 440 and RADI 442.

Grading Status: Letter grade.

RADI 465. FOUNDATIONS IN RAD THER. 4 Credits.

Rules & Requirements

Grading Status: Letter grade.

RADI 466. Abdominal Sonography. 4 Credits.

Diagnostic Medical Sonography track. The course includes intra-abdominal organs, abdominal vessels, peritoneal spaces, and retroperitoneal structures and introduces normal/abnormal sonographic findings. Integration of findings with clinical history, exam, and laboratory findings are included along with skills with scanning protocols, technical factors, and image quality developed in the lab. Majors only.

Rules & Requirements

Requisites: Prerequisites, HSCI 440 and RADI 442.

Grading Status: Letter grade.

RADI 467. Ultrasound Principles and Instrumentation. 4 Credits.

Diagnostic Medical Sonography Track. The course provides comprehensive instruction on the principles of ultrasound, including wave characteristics and propagation, acoustic variables, transducers, pulsed waves, real time imaging, and image display and image archiving. More topics include Doppler physics, equipment instrumentation and operation, quality assurance, and biological effects of ultrasound. Majors only.

Rules & Requirements

Requisites: Prerequisites, RADI 440 and RADI 442.

Grading Status: Letter grade.

RADI 471. Radiography II. 3 Credits.

The course content prepares students for standard radiography of cranial bones, facial bones, and special cranial projections. Contrast studies include gastrointestinal, urinary, biliary, cardiovascular, and other special procedures. The course includes pathologies, and gross, radiographic, and cross-sectional anatomy. Two lecture hours and two laboratory hours.

Rules & Requirements

Requisites: Prerequisite, RADI 461.

Grading Status: Letter grade.

RADI 472. Radiographic Imaging II. 4 Credits.

A detailed study of specific elements of the radiographic process, with an emphasis on the interrelationships of the radiographic parameters, refinement of image analysis and problem-solving skills, and quality control testing for evaluating the performance of the radiographic equipment and accessories. Three lecture hours and two laboratory hours.

Rules & Requirements

Requisites: Prerequisite, RADI 462.

Grading Status: Letter grade.

RADI 473. Clinical Education II. 4 Credits.

A continuation of RADI 463 with emphasis on the application and evaluation of more complex radiographic studies. Twenty practicum hours.

Rules & Requirements

Requisites: Prerequisite, RADI 463.

Grading Status: Letter grade.

RADI 474. Obstetrics and Gynecology Sonography. 4 Credits.

Normal and abnormal anatomy/physiology/sonographic features of the nongravid and gravid female pelvis. Normal and abnormal fetal growth and anatomy, fetal well-being, and sonographic measurements associated with the second and third trimesters of pregnancy are included in the content. Students will engage in correlations of sonographic findings with patient clinical history, clinical exam, and laboratory findings. Lab skills covered: scanning protocols, technical factors, and image quality. Majors only.

Rules & Requirements

Requisites: Prerequisites, RADI 466 and 467.

Grading Status: Letter grade.

RADI 478. Sonographic Imaging I. 4 Credits.

This course presents topics of advanced sonographic imaging techniques including advanced abdomen and obstetric concepts, superficial structures, pediatrics, introduction to vascular, and interventional procedures. This course presents the normal and abnormal sonographic findings, along with the relationship of these findings to patient clinical history, clinical exam, and laboratory findings. Skills related to scanning protocols, technical factors, and image quality are developed in the lab. Majors only.

Rules & Requirements

Requisites: Prerequisites, RADI 466 and 467.

Grading Status: Letter grade.

RADI 479. Advanced Imaging in Sonography II. 4 Credits.

This course continues topics of advanced sonographic imaging techniques and presents new technologies, superficial structures, pediatrics, advanced obstetrics, and transplants. This course also presents the normal and abnormal sonographic findings of these structures along with relationships of these findings to patient clinical history, clinical exam, and laboratory findings. Skills related to protocols, technical factors, and image quality are developed in the lab. Majors only.

Rules & Requirements

Requisites: Prerequisites, RADI 466, 467, 474, and 478.

Grading Status: Letter grade.

RADI 574. Clinical Education III. 3 Credits.

Under general supervision, the student will function at an increased level of responsibility in general diagnostic radiography in a variety of clinical settings outside of the university setting.

Rules & Requirements

Requisites: Prerequisite, RADI 473.

Grading Status: Letter grade.

RADI 575. Clinical Education IV. 5 Credits.

Under general supervision, the student will function at an increased level of responsibility in radiography in clinical settings outside of the university setting. The course includes a comprehensive review examination and case studies.

Rules & Requirements

Requisites: Prerequisite, RADI 574.

Grading Status: Letter grade.

RADI 583. Clinical Education V. 4 Credits.

A clinical course utilizing contract learning to provide students an opportunity to gain additional competency in specialized areas of radiology. Twenty-four education and independent study hours.

Rules & Requirements

Requisites: Prerequisites, RADI 574 and 575.

Grading Status: Letter grade.

RADI 584. Clinical Education VI. 6 Credits.

This course is a continuation of RADI 583 using learning contracts to allow students to explore and gain additional expertise in various areas of radiology. Twenty-four clinical hours.

Rules & Requirements

Requisites: Prerequisite, RADI 583.

Grading Status: Letter grade.

RADI 585. Radiologic Health Physics. 3 Credits.

A course in the physics of diagnostic radiology, including radiation effects on tissue, radiation detection and measurement, protection methods and techniques, and environmental radiation issues. Three lecture hours.

Rules & Requirements

Requisites: Prerequisite, RADI 472; permission of the instructor for students lacking the prerequisite.

Grading Status: Letter grade.

RADI 586. Research in Radiologic Science I. 1 Credits.

Majors only. The major part of the course is devoted to an investigative project on a discipline-related topic of student interest. Select issues affecting professional affairs of radiologic technologists are also included.

Rules & Requirements

Grading Status: Letter grade.

RADI 591. Practicum in Radiologic Science. 4 Credits.

This course offers an elective clinical experience in an area of student interest.

Rules & Requirements

Requisites: Prerequisite, RADI 584.

Grading Status: Letter grade.

RADI 594. Professional Communications and Interactions. 3 Credits.

Majors only. This course provides for a brief cognitive and skills approach to communication skills, the teaching/learning process, and methods and materials of instruction and delivery. Three lecture/discussion hours per week.

Rules & Requirements

Grading Status: Letter grade.

RADI 597. Leadership in Radiologic Science. 3 Credits.

Majors only. In this course students will analyze the theoretical literature on leadership and apply that knowledge in the analysis of various radiology environment situations. Three lecture hours.

Rules & Requirements

Grading Status: Letter grade.

RADI 660. Pathophysiology. 3 Credits.

Majors only. This course will enhance and integrate the student's knowledge of anatomy, physiology, and pathology related to all human body systems. Emphasis will be placed on understanding how structure, function, and disease are interrelated. Three lecture hours per week.

Rules & Requirements

Grading Status: Letter grade.

RADI 662. Instrument and Imaging Methods. 4 Credits.**Rules & Requirements**

Grading Status: Letter grade.

RADI 670. Integrated Principles of Imaging Analysis. 4 Credits.

This course involves students in situational problem solving and radiographic analysis. Integration of concepts and knowledge of anatomy, pathology, procedures, patient care, and imaging principles are emphasized. Four lecture hours.

Rules & Requirements

Requisites: Prerequisite, RADI 660.

Grading Status: Letter grade.

RADI 672. Radiographic Imaging II. 4 Credits.

A detailed study of specific elements of the radiographic process, with an emphasis on the interrelationships of the radiographic parameters, refinement of image analysis and problem-solving skills, and quality. Three lectures hours and two laboratory hours.

Rules & Requirements

Grading Status: Letter grade.

RADI 681. Trends in Medical Imaging Practices Issues in the Radiology Practice Environment. 3 Credits.

Majors only. The course covers issues related to health care systems, medicolegal ethics, and practice and quality assurance. Three lecture hours per week.

Rules & Requirements

Grading Status: Letter grade.

RADI 686. Research in Radiologic Science II. 2 Credits.

Majors only. Students complete a research project involving a major clinical or policy issue in radiologic science. This course is an expansion of the fall semester research culminating in both a paper and presentation.

Rules & Requirements

Grading Status: Letter grade.

RADI 694. Clinical Decisions in Radiology. 3 Credits.

Majors only. This course involves the pharmacology of common radiology medications and advanced patient assessment techniques. With the additional knowledge and skills, students can make informed decisions regarding patient care. Three lecture hours.

Rules & Requirements

Grading Status: Letter grade.

SPHS–Speech and Hearing Sciences

SPHS 196. Undergraduate Research Experience. 1-4 Credits.

Supervised undergraduate directed research on communication science topics of mutual interest to the student and a faculty member.

Rules & Requirements

Repeat Rules: May be repeated for credit. 12 total credits. 12 total completions.

Grading Status: Letter grade.

SPHS 400. Autism in Our Communities: An Interdisciplinary Perspective. 3 Credits.

Students have 30 hours of service-learning with individuals with autism at community partner sites. Class discussions introduce students to diverse topics related to autism spectrum disorder. This is an APPLES course.

Rules & Requirements

 **IDEAs in Action Gen Ed:** HI-SERVICE.

Making Connections Gen Ed: EE- Service Learning.

Grading Status: Letter grade.

Same as: EDUC 400.

SPHS 401. American Sign Language I. 3 Credits.

This American Sign Language (ASL) course includes topics on linguistic features, cultural protocols, and core vocabulary for students to function in basic ASL conversations on a variety of topics. All instructions and discussions in the classroom will be conducted in ASL. Students minoring in Speech and Hearing Sciences have priority in registering.

Rules & Requirements

Grading Status: Letter grade.

SPHS 402. American Sign Language II. 3 Credits.

Students in the Speech and Hearing Minor have priority in registering. The American Sign Language (ASL) course focuses on developing conversational skills on a variety of topics. All instructions and discussions in the classroom will be conducted in ASL.

Rules & Requirements

Requisites: Prerequisite, SPHS 401.

Grading Status: Letter grade.

SPHS 510. Introduction to Communication Disorders. 3 Credits.

Introductory overview of communication disorders, including the nature of communication across the lifespan; cultural and linguistic issues that impact communication; communication modalities; speech disorders; language disorders; hearing disorders; swallowing disorders.

Rules & Requirements

Grading Status: Letter grade.

SPHS 520. Human Communication Across the Lifespan. 3 Credits.

Development of human communication processes across the lifespan, including linguistic and cultural bases of communication.

Rules & Requirements

Grading Status: Letter grade.

SPHS 521. Human Communication Across the Lifespan (EE). 4 Credits.

Development of human communication processes across the lifespan, including linguistic and cultural bases of communication. Includes a minimum of 30 service hours related to human communication. 12 spaces reserved for Juniors in Speech and Hearing Sciences Minor.

Rules & Requirements

Making Connections Gen Ed: EE- Service Learning.

Grading Status: Letter grade.

SPHS 530. Introduction to Phonetics. 3 Credits.

A detailed study of the International Phonetic Alphabet with emphasis on the sound system of American English. Application of phonetics to problems of pronunciation and articulation. Includes broad and narrow phonetic transcription.

Rules & Requirements

Grading Status: Letter grade.

SPHS 540. Speech Science. 3 Credits.

Introduction to the science of speech, including production, acoustics, and perception.

Rules & Requirements

Grading Status: Letter grade.

SPHS 570. Anatomy and Physiology of the Speech, Language, and Hearing Mechanisms. 3 Credits.

Anatomy and physiology of the speech producing and aural mechanisms.

Rules & Requirements

Grading Status: Letter grade.

SPHS 582. Introductory Audiology I. 3 Credits.

Theory and practice of the measurement of hearing, causative factors in hearing loss, evaluation of audiometric results, and demonstration of clinical procedures.

Rules & Requirements

Grading Status: Letter grade.

SPHS 583. Introduction to Clinical Practice in Speech-Language Pathology and Audiology. 3 Credits.

Introduction to diagnosis and treatment of communication disorders, including articulation, fluency, voice, and language, and those resulting from autism and hearing loss.

Rules & Requirements

Grading Status: Letter grade.

Contact Information

Department of Health Sciences

Visit Program Website (<https://www.med.unc.edu/healthsciences/>)

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Chair

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