

# RADIOLOGIC IMAGING SCIENCES (RIS)

## **RIS 501. RIS Physics and Instrumentation. (3 Units)**

Basic sciences of radiologic professions including physics, instrumentation, data capture and management. Includes discussions of modalities in radiography, nuclear medicine, radiation therapy, ultrasound, and CVIS.

Offered Fall, Spring

## **RIS 502. RIS Sciences I. (3 Units)**

Imaging techniques, technological advances in the radiologic/imaging sciences, patient care trends, and the role of a radiologic and imaging sciences professional.

Offered Fall, Spring

## **RIS 503. RIS Sciences II. (3 Units)**

Integrated modalities in the radiologic professions such as CT, MRI, SPECT/CT, PET/MRI, IMRT, 3D imaging and teleradiology. Healthcare legal, regulatory, and ethical issues are also discussed.

Offered Summer

## **RIS 510. RIS Research Methods and Data Analysis. (3 Units)**

Introduction to radiologic and imaging science research methods, data analysis, as well as current research trends and publications in the field.

Offered Fall, Spring

## **RIS 511. Informatics in Radiologic Imaging Sciences. (3 Units)**

Introduction to Health Information Technology (HIT), Radiology Information Systems (RIS) and Picture Archive and Communication Systems (PACS). Includes basic information system technology as well as clinical and administrative application of healthcare information systems in radiologic and imaging sciences.

Offered Fall, Spring

## **RIS 520. RIS Management. (3 Units)**

Introduction to principles of management with emphasis on it applications in radiologic and imaging department administration.

Offered Fall, Spring

## **RIS 521. RIS Leadership. (3 Units)**

Introduction to principles of leadership with emphasis on its applications in radiologic and imaging department administration.

Offered Fall, Spring

## **RIS 522. Clinical Practice Accreditation. (3 Units)**

Application for and maintenance of clinical professional accreditation of clinical operations. Emphasis is on the role of the radiology administrator.

Offered Fall, Spring

## **RIS 530. Pedagogy and Andragogy in RIS. (3 Units)**

Principles and practice of effective teaching, curriculum development and evaluation in radiologic and imaging sciences.

Offered Fall, Spring

## **RIS 531. Radiologic and Imaging Sciences Program Administration. (3 Units)**

Orientation to academic program directorship, faculty development, student affairs, academic affairs, the higher education system in the US and how colleges and universities in the US work. Topics include scholarship, advisement, teaching as well as faculty recruitment retention and development.

Offered Fall, Spring

## **RIS 532. RIS Academic Program Accreditation. (3 Units)**

An introduction to accreditation of radiologic and imaging sciences academic programs. Topics include outcome assessments, benchmarking, Self-Study preparation, applying for and maintaining accreditation, and accreditation site visits.

Offered Fall, Spring

## **RIS 540. CT Physics, Instrumentation and Procedures. (3 Units)**

In-depth study of the physical principles and instrumentation in CT.

Offered Fall, Spring

## **RIS 541. Advanced Topics in CT. (3 Units)**

CT artifacts, reconstruction algorithms, 3-D imaging, angiography and radiation safety are discussed.

Offered Fall, Spring

## **RIS 542. CT Clinical Applications. (3 Units)**

A discussion on clinical application of CT. Topics include central nervous system, cardiovascular, gastrointestinal, genitourinary, hepatobiliary, musculoskeletal, and cardiac systems.

Offered Fall, Spring

## **RIS 550. MRI Physics & Instrumentation. (3 Units)**

In-depth study of the physical principles and instrumentation in MRI.

Offered Fall, Spring

## **RIS 551. Advanced Topics in MRI. (3 Units)**

MRI artifacts, magnetic resonance angiography and MRI safety are discussed.

Offered Fall, Spring

## **RIS 552. MRI Clinical Applications. (3 Units)**

A discussion on clinical application of MRI. Topics include central nervous system, cardiovascular, gastrointestinal, genitourinary, hepatobiliary, musculoskeletal, and cardiac systems.

Offered Fall, Spring

## **RIS 560. Ultrasound Physics and Instrumentation. (3 Units)**

Emphasizes principles of physics and instrumentation of diagnostic ultrasound. Topics including sound wave parameters, energy transfer through wave propagation, surface reflection processes, and transducer construction. Includes an overview of A-mode, B-mode, and M-mode.

Offered Fall, Spring

## **RIS 561. Advanced Topics in Ultrasound. (3 Units)**

Discussion of computer technology and the instrumentation used to create and store the ultrasound image and an introduction to fluid dynamics, and the spectral, color and amplitude related to Doppler. Includes discussions about echo cardiology.

Offered Fall, Spring

## **RIS 562. Ultrasound Clinical Applications. (3 Units)**

Topics include abdominal, OB/GYN, cardiac and vascular sonographic techniques.

Offered Fall, Spring

## **RIS 570. PET/CT Physics and Instrumentation. (3 Units)**

Introduces the physical principles and instrumentation used in computed tomography and PET. Topics include the physics associated with PET, PET technology, an overview of computed tomography technology, and computer reconstructions algorithms.

Offered Fall, Spring

**RIS 571. PET Radiopharmaceuticals. (3 Units)**

A discussion of the radiopharmaceuticals and CT contrast used in PET/CT. Emphasis is on chemistry of positron-emitting nuclides and radiopharmaceuticals, the physiological interactions of radiopharmaceuticals, and iodinated contrast media in patients. Patient safety, patient screening, and radiation safety are included.

Offered Fall, Spring

**RIS 572. PET/CT Clinical Applications. (3 Units)**

Encompasses the interrelated aspects of performing PET/CT procedures. Includes anatomy, physiology and pathology of the organ systems, patient preparation and care, imaging instrumentation and protocols.

Offered Fall, Spring

**RIS 580. Radiation Therapy Physics and Treatment Planning. (3 Units)**

Basic principles of ionizing radiation, radiation dosimetry, imaging equipment, radiation therapy equipment and radiation detectors.

Offered Fall, Spring

**RIS 581. Principles and Practices of Radiation Therapy I. (3 Units)**

The fundamentals of clinical radiation oncology are discussed including the medical, biological, and pathological aspect as well as technical aspects. Topics also include the diagnosis, interpreting and implementing the treatment prescription, and documentation of treatment parameters for various physiological systems.

Offered Fall, Spring

**RIS 582. Principles and Practices of Radiation Therapy II. (3 Units)**

A continuation of RIS 581. Introduces Proton beam therapy, Intraoperative Radiotherapy (IORT), and Gamma Knife radiosurgery.

Offered Fall, Spring

**RIS 590. Practicum. (1-3 Units)**

Observing and applying discipline specific clinical, educational or managerial principles in a patient care or academic setting. Restricted to majors.

Offered Fall, Spring, Summer

**RIS 597. Directed Reading. (3 Units)**

Extensive reading in selected areas under the guidance of a faculty mentor. Restricted to majors. Repeatable course.

Offered Fall, Spring, Summer

**RIS 598. Directed Research. (3 Units)**

Extensive research on a subject related to the student's area of concentration under the guidance of a faculty advisor. Restricted to majors. Repeatable course.

Offered Fall, Spring, Summer

**RIS 599. Capstone Project. (3 Units)**

Prerequisite: Enrolled in the final semester of the degree program. A radiologic science related, practical project proposed by the student and approved by the advisor.

Offered Fall, Spring, Summer

**RIS 600. Grad Continuation Course. (1 Units)**

Graduate students who have completed course work but not their thesis, project, or comprehensive examination, or who have other requirements remaining for completion of their degree, may maintain continuous attendance by enrolling in this course. Signature of graduate program coordinator required.

Offered Fall, Spring