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**[X] Undergraduate Curriculum Council**

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Email completed proposals to [curriculum@astate.edu](mailto:curriculum@astate.edu) for inclusion in curriculum committee agenda.

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**1.Contact Person** (Name, Email Address, Phone Number)

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**2.Proposed Change**

Update Course frequencies and other editorial changes.

**3.Effective Date**

Spring 2018

**4.Justification –** *Please provide details as to why this change is necessary.*

Many of the course frequencies listed in the 2017-2018 bulletin need to be updated to reflect current course offerings.

**Bulletin Changes**

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| **Instructions** |
| **Please visit** [**http://www.astate.edu/a/registrar/students/bulletins/index.dot**](http://www.astate.edu/a/registrar/students/bulletins/index.dot) **and select the most recent version of the bulletin. Copy and paste all bulletin pages this proposal affects below. Follow the following guidelines for indicating necessary changes.**  **\*Please note: Courses are often listed in multiple sections of the bulletin. To ensure that all affected sections have been located, please search the bulletin (ctrl+F) for the appropriate courses before submission of this form.**  - Deleted courses/credit hours should be marked with a red strike-through (~~red strikethrough~~)  - New credit hours and text changes should be listed in blue using enlarged font (blue using enlarged font).  - Any new courses should be listed in blue bold italics using enlarged font (***blue bold italics using enlarged font***)  *You can easily apply any of these changes by selecting the example text in the instructions above, double-clicking the ‘format painter’ icon 🡪 , and selecting the text you would like to apply the change to.*  *Please visit* [*https://youtu.be/yjdL2n4lZm4*](https://youtu.be/yjdL2n4lZm4) *for more detailed instructions.* |

**DEPARTMENT OF MEDICAL IMAGING**

**AND RADIATION SCIENCES**

**Radiography (RAD)**

**RAD 2001. Introduction to Medical Imaging and Radiation Sciences** Overview of medical imaging modalities and radiation therapy, as well as the practitioner’s role in the health care delivery system. Spring , Fall

**RAD 3103. Introduction to Radiography** Introduction to the clinical environment, the latest imaging technologies, general patient care, venipuncture lab practice, and legal and ethical issues. Prerequisite, Admission to the Radiologic Science Program. ~~Summer.~~ Spring

**RAD 3111. Radiographic Procedures I Lab** Basic radiographic procedures, specifically of the chest, abdomen, upper extremity, and shoulder girdle. Prerequisite, Admission to the Radiologic Science Program. ~~Summer.~~ Spring

**RAD 3113. Radiographic Procedures I** Radiographic terminology, preliminary steps of a radiographic examination including radiographic anatomy, positioning of the chest, abdomen, upper extremity and shoulder girdle, positioning nomenclature, pathology and film evaluation will be covered. Prerequisite, Admission to the Radiologic Science Program. ~~Summer.~~ Spring

**RAD 3123. Radiation Physics and Imaging** Introduction to the basic x-ray equipment and the production and use of ionizing radiation, basic radiation physics and its application, and components for radiologic imaging. Prerequisite, Admission to the Radiologic Science Program. ~~Summer.~~ Spring

**RAD 3201. Radiographic Procedures II Lab** Radiographic procedures, specifically of the lower extremity, pelvis, spine, and bony thorax. Prerequisite, Admission to the Radiologic Science Program. Fall.

**RAD 3202. Imaging Equipment** Components, operation and purpose of imaging equipment, including image-intensified and digital fluoroscopy, automatic exposure control, image recording options, laser readers, and mobile imaging. Prerequisite, Admission to the Radiologic Science Program. Fall.

**RAD 3203. Radiographic Procedures II** Radiographic terminology and the preliminary steps of a radiographic examination. Radiographic anatomy and positioning of the lower extremity, pelvis, spine and bony thorax. Includes positioning nomenclature, pathology and film evaluation. Prerequisite, Admission to the Radiologic Science Program. Fall.

**RAD 3211. Image Acquisition and Evaluation I Lab** Manipulation of exposure factors and evaluation of the effects on image quality in the laboratory setting. Focus on skills to achieve safe and optimal image acquisition. Prerequisite, Admission to the Radiologic Science Program. Fall.

**RAD 3213. Image Acquisition and Evaluation I** Image acquisition for digital and screen-film image receptors, the Image quality evaluation process, image quality factors, and image quality analysis. Emphasis on application of skills and suggested corrective actions. Prerequisite, Admission to the Radiologic Science Program. Fall.

**RAD 3223. Sectional Anatomy** Introduction to sectional images of human anatomy using CT and MRI. Provides the foundation knowledge required for successful practice by the radiologic professional. Prerequisite, Admission to the Radiologic Science Program. ~~Spring.~~ Summer

**RAD 3233. Radiography Clinical I** Supervised clinical experience in routine radiographic procedures. Students are evaluated with a competency based evaluation system. Prerequisite, Admission to the Radiologic Science Program. ~~Fall.~~ Summer

**RAD 4101. Radiographic Procedures III Lab** Advanced radiographic procedures, specifically cranium, gastrointestinal, genitourinary, trauma, foreign body, and bone growth. Prerequisite, Admission to the Radiologic Science Program. Spring.

**RAD 4103. Radiographic Procedures III** Radiographic terminology and the preliminary steps of a radiographic examination. Radiographic anatomy and positioning of the cranium, gastrointestinal, genitourinary, trauma, foreign body and bone growth studies. Includes positioning nomenclature, pathology and film evaluation. Prerequisite, Admission to the Radiologic Science. Spring

**RAD 4113. Image Acquisition and Evaluation II~~I~~** Continues the study of image acquisition and evaluation begun in RAD 3213 with specific emphasis on digital image acquisition errors, image artifacts, pathology effects on image quality and technique chart development and use. Prerequisite, Admission to the Radiologic Science Program. Spring.

**RAD 4123. Imaging Pathology** Imaging presentation of traumatic injuries and diseases including manifestations of disease on images and the modalities best suited to distinguish the various pathologies. Prerequisite, Admission to the Radiologic Science Program. ~~Spring.~~ Summer

**RAD 4132. Radiobiology** Introduction to the biological effects of ionizing radiation and radiation safety standards required for professional practice. Prerequisite, Admission to the Radiologic Science Program. ~~Spring.~~ Summer

**RAD 4143. Radiography Clinical II** Supervised clinical experience in routine radiographic procedures. Students are evaluated with a competency based evaluation. Prerequisite, Admission to the Radiologic Science Program. ~~Spring.~~ Fall

**RAD 4203. Radiography Clinical III** Supervised clinical experience in routine radiographic procedures. Students are evaluated with a competency based evaluation system. Prerequisite, Admission to the Radiologic Sciences Program. ~~Fall.~~ Spring

**RAD 4213. Radiography Clinical IV** Supervised clinical experience in routine radiographic procedures. Prerequisite, Admission to the Radiologic Science Program. Summer.

**Radiologic Sciences (RS)**

**RS 3122. Legal and Regulatory Environment of Radiology** Introduction to the growing legal and regulatory requirements being placed on radiology departments and professionals. Content includes American College of Radiology. Joint Commission on Accreditation of Healthcare Organizations, Food and Drug Administration, and state regulatory regulations as well as other legal considerations regarding personnel, operations and staffing. Prerequisite, formal acceptance in to the professional program. Fall, ~~Spring,~~ Summer.

**RS 3133. Radiologic Sectional Anatomy** Radiologic concepts and applications of sectional anatomy including transverse, sagittal and coronal sections of all body areas. Prerequisite, formal acceptance in to the professional program. Fall, Spring, Summer.

**RS 3142. Advanced Imaging and Therapy I** Foundation information on the physics, instrumentation, and clinical procedures for digital imaging, computed tomography, magnetic resonance imaging, diagnostic medical sonography equipment as well as an overview of quality management concepts. Fall, ~~Summer~~.

**RS 3152. Advanced Imaging and Therapy II** Foundation information on the physics, instrumentation, and clinical procedures for cardiovascular interventional technology, mammography, bone densitometry, nuclear medicine, and radiation therapy. Spring~~, Summer~~.

**RS 3633. Pediatric Considerations in Radiology** Practice standards utilized in pediatric radiology including accepted methods of immobilization, patient care and techniques. Prerequisite, formal acceptance in to the professional program. ~~Fall,~~ Summer.

**RS 3733. Geriatric Considerations in Radiology** Psychosocial, emotional, mental and psychiatric issues encountered in the aging process with attention to normal processes of aging, common interventions, and treatments. ~~Fall,~~ Spring, Summer.

**RS 3811. Radiologic Quality Management Administration** Administrative aspects of the concepts and applications of the various quality assurance theories and techniques. Includes those quality functions mandated by various accrediting bodies related to medical imaging and radiation therapy. Prerequisite, formal acceptance in to the professional program. Fall.

**RS 3843. Advance Clinical Practice** Focus is on current healthcare delivery environment including patient assessment, monitoring, infection control, and management. It includes working with multicultural patients, managing problem patients, and patient education. Prerequisite, Admission to the Imaging Specialist program. Spring.

**RS 4101. Overview of Magnetic Resonance Imaging** Overview of MRI including the four content areas required by the ARRT for post-primary certification. Prerequisite, Instructor approval.

**RS 4183. Leadership Practicum** Experiential learning practicum with three radiologic facilities that allows students to participate with department management the skills, concepts and theories studied in RS 4343. Prerequisite, formal acceptance in to the professional program. Fall, Spring, Summer.

**RS 4343. Radiologic Administrative Concepts** Introduction to the organization, operations, and management of a radiology department. Includes an introduction to health care delivery systems, decision making, and the management functions. Prerequisite, formal acceptance in to the professional program. ~~Fall,~~ Spring.

**RS 436V. Independent Study in Radiologic Sciences** Guided investigation of an advanced radiologic topic selected in consultation with a member of the radiologic sciences faculty. May be repeated with different topics for a total of 6 semester credits. Prerequisite, formal acceptance in to the professional program. ~~Demand.~~ Summer

**RS 4413. Cardiovascular Equipment and Intervention** Overview of cardiovascular intervention equipment and disease intervention. Prerequisite, formal acceptance into the professional program. Fall.

**RS 4423. Cardiovascular-Interventional Procedures and Instrumentation** The course will discuss angiography and interventional procedures. The student will be introduced to the specialized equipment required to produce and acquire the images and for monitoring the patient. Patient care procedures, medical and legal implications, and pharmaceutical and contrast agents specific to each examination will be defined. Prerequisite, formal acceptance in to the professional program. Fall.

**RS 4433. Cardiac Equipment and Intervention** Overview of cardiac catheterization main and ancillary equipment and disease intervention. Prerequisite, formal acceptance into the professional program. Spring

**RS 4443. Cardiac Physiology and Procedures** Emphasis on cardiac anatomy and physiology, electrocardiography, ECG, instrumentation, procedural performance, and elementary interpretation. Diagnostic imaging procedures and interventional therapies related to coronary disease and dysfunction are also presented. Hands on experience with ECG equipment will be introduced. Prerequisite, formal acceptance in to the professional program. Spring.

**RS 4444. Cardiac Clinic** Clinical practice experiences designed for development, application, and evaluation of concepts and theories in cardiac catheterization procedures to prepare CIT students for entry-level practice. Prerequisites, formal admission to the professional program. Spring.

**RS 4454. Cardiovascular Interventional Clinical Education** Clinical practice experiences designed for development, application, and evaluation of concepts and theories in cardiovascular-interventional radiology to prepare CIT students for entry-level practice. Prerequisites, formal admission to the professional program. Fall.

**RS 4463. Statistics for Medical Imaging** Methods used for data collection and statistical analysis in medical imaging procedures and education with a focus on the applications of data and statistics in reporting of clinical efficiency, image repeat rates, and educational outcomes. Fall~~, Spring.~~

**RS 4464. Cardiovascular Interventional Internship** Guided clinical practice to develop, apply, analyze, integrate, synthesize and evaluate concepts and theories in cardiovascular-interventional radiology. Prerequisite, Admission to the Radiologic Science Program. Summer.

**RS 4512. Mammography Instrumentation** Components, operation and purpose of specialized mammographic equipment, including mammographic x-ray tube, digital imaging, automatic exposure control, image recording options, and laser readers. Prerequisite, Admission to the Radiologic Science Program. ~~Summer.~~ Spring

**RS 4502. Mammography Procedures** Clinical concepts and applications of the various mammographic procedures performed and equipment used in the mammography suite, emphasizes the understanding of the equipment and the performance of all procedure. Prerequisite, Admission to the Radiologic Science Program. Fall.

**RS 4532. Mammography Procedures and Instrumentation** This course is designed to introduce the student to the technical and procedural aspects of mammography. Various aspects of mammography, breast anatomy, patient interaction and exam procedures will be covered. Prerequisite, formal acceptance in to the professional program. Spring.

**RS 4553. Mammography Clinical Education I** Guided clinical practice experiences to develop, apply, analyze, integrate, synthesize and evaluate concepts and theories in mammography. Prerequisite, Admission to the Radiologic Science Program. ~~Spring.~~ Fall

**RS 4563. Mammography Clinical Education II** Guided clinical practice experience designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in mammography. Prerequisite, Admission to the Radiologic Science Program. ~~Summer.~~ Spring

**RS 4601. Overview of Computed Tomography** Four content areas required by the ARRT for post-primary CT certification. Prerequisite, Instructor approval and admission to the Radiologic Science Program. Fall, Spring, Summer.

**RS 4623. Computed Tomography Instrumentation** Components, operation and purpose of specialized Computed Tomography equipment, including computer mechanisms, imaging theory and equipment operation. Prerequisite, Admission to the Radiologic Science Program. Summer.

**RS 4633. Computed Tomography Procedures** Anatomy, pathology, scanning protocols, contrast administration, and contraindications for all CT procedures. Prerequisite, Admission to the Radiologic Science Program. Fall.

**RS 4644. Computed Tomography Clinical Education** Guided content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in computed tomography. Prerequisite, Admission to the Radiologic Science Program. Summer.

**RS 4822. Psychosocial Factors in Health Care Delivery** Focus on psychosocial issues which impact the delivery of healthcare in a medical imaging environment. Prerequisite, formal acceptance in to the professional program. ~~Fall,~~ Spring.

**RS 4852. Advanced Radiologic Pathophysiology I** This course is an intensive study of the radiographic manifestations of diseases that affect the muscoloskeletal and respiratory systems, excluding neoplasms. Emphasis is on physiologic changes evident in images and differentiating which imaging modalities are most sensitive in detecting these changes. Prerequisite, formal acceptance in to the professional program. Fall, ~~Summer~~.

**RS 4862. Advanced Radiologic Pathophysiology II** This course is an intensive study of the radiographic manifestations of neoplasms and diseases that affect vascular systems. Emphasis is on physiologic effects of neoplasma and vascular system diseases and image manifestations of these effects. Prerequisite, formal acceptance in to the professional program. Spring, Summer.

**Magnetic Resonance Imaging (RSMR)**

**RSMR 3853. Advanced MR Pathophysiology I** Provides knowledge of patient care and assessment, imagining contraindications, contrast agents, introduction to MRI and MRI safety, cultural diversity, infection control, interpersonal communication, and body mechanics. Prerequisite, formal acceptance in to the professional program. Fall.

**RSMR 3863. Advanced MR Pathophysiology II** Common pathologies found in magnetic resonance imaging (MRI) of the thorax, abdomen, pelvis, and cardiovascular systems. Prerequisite, formal acceptance in to the professional program. Spring.

**RSMR 4702. Introduction to MR Imaging** Provides knowledge of patient care and assessment, imagining contraindications, contrast agents, introduction to MRI and MRI safety, cultural diversity, infection control, interpersonal communication, and body mechanics. Prerequisite, formal acceptance in to the professional program. Fall.

**RSMR 4703. MRI Safety and Instrumentation** A study of the equipment used ~~t~~in production of the MR signal and image, specific coil designs, quality assurance measures, and equipment safety. Prerequisite formal acceptance in to the professional program. Fall.

**RSMR 4712. Imaging Information Management** Explains the functioning of computers and computer concepts in medical imaging. Topics covered are HIPAA, PACS, and RIS in MRI and the imaging department. Prerequisite, formal acceptance in to the professional program. ~~Spring.~~ Fall.

**RSMR 4723. MRI Procedures I** Provides knowledge of anatomy, pathology, scanning protocols, contrast administration, and contraindications for magnetic resonance imaging of the head, spinal column, and musculoskeletal system. Prerequisite, formal acceptance in to the professional program. ~~Fall.~~ Spring

**RSMR 4733. MRI Procedures II** Provides knowledge of anatomy, pathology, scanning protocols, contrast administration, and contraindications for magnetic resonance imaging of the abdomen, pelvis, and musculoskeletal system. Prerequisite, formal acceptance in to the professional program. ~~Spring.~~ Summer.

**RSMR 4753. MRI Clinical Education I** The course will provide beginning level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in magnetic resonance imaging. Prerequisite, formal acceptance in to the professional program. Fall.

**RSMR 4763. MRI Clinical Education II** The course will provide intermediate level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in magnetic resonance imaging. Prerequisite, formal acceptance in to the professional program. Spring.

**RSMR 4773. MRI Clinical Education III** The course will provide advanced level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in magnetic resonance imaging. Prerequisite, formal acceptance in to the professional program. Summer.

**RSMR 4783. MRI Clinical Education IV** The course will provide advanced level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in magnetic resonance imaging. Prerequisite, formal acceptance in to the professional program.. Summer.

**RSMR 4803. MRI Physical Principles I** Introduction of the concepts of basic physics and instrumentation for magnetic resonance imaging. Topics include nuclear magnetism, the Larmour equation, tissue characteristics, and imaging parameters. Prerequisite, formal acceptance in to the professional program. ~~Fall.~~ Spring

**RSMR 4812. MRI Pharmacology** Provides knowledge of types of contrast media, contraindications, dose calculation, administration routes, affects on the MRI image, patient care and assessment. Prerequisite, formal acceptance in to the professional program. Summer.

**RSMR 4813. MRI Physical Principles II** Exploration of imagining options, spin echo, fast spin echo, STIR, FLAIR, gradient imagining, and echo planar imaging. Includes a comprehensive analysis of image artifacts. Prerequisite, formal acceptance in to the professional program. ~~Spring.~~ Summer

**RSMR 4823. Data Acquisition and Processing** A study of the patient coordinate system and spatial localization, magnetic resonance imaging gradient system, data manipulation, and quality control practices in MRI. Prerequisite, formal acceptance in to the professional program. Spring.

**RSMR 4833. Advanced MRI Imaging** Anatomy, pathology, scanning protocols, contrast administration, and contraindications for magnetic resonance angiography, venography, functional imaging, dynamic imaging, and cardiac imaging. Prerequisite, ~~Admission to the Radiologic Science Program. Spring.~~ formal acceptance in to the professional program. Summer.

**Nuclear Medicine (RSN)**

**RSN 300V. Nuclear Medicine Program Exchange** Clinical Preceptorship to be taken concurrently while enrolled in the nuclear medicine program. Prerequisite, formal acceptance in to the

**RSN 4113. Nuclear Medicine Pharmacy** This course focuses on the study of the chemical and biological aspects of radiopharmaceuticals, radionuclides, radioactive decay, and the preparation and quality control of radiopharmaceuticals. Clinical procedure information for magnetic resonance imaging studies. Prerequisite, formal acceptance in to the professional program. Spring.

**RSN 4213. Nuclear Medicine Physics and Instrumentation** This course focuses on the study of nuclear medicine physics, especially radionuclide production and detection, counting statistics, energy spectrum analysis, and scintillation imaging systems. Prerequisite, formal acceptance in to the professional program. Fall.

**RSN 4313. Nuclear Medicine Procedures I** This course focuses on the study of nuclear medicine clinical procedures for in vivo and in vitro studies, related anatomic studies, and associated physiologic pathologic conditions. Prerequisite, formal acceptance in to the professional program. Fall.

**RSN 4323. Nuclear Medicine Procedures II** This course focuses on the continued study of nuclear medicine clinical procedures for in vivo and in vitro studies, related anatomic studies, and associated physiologic pathologic conditions. Prerequisite, formal acceptance in to the professional program. Spring.

**RSN 4513. Nuclear Medicine Clinical Education I** The course will provide beginning level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in nuclear medicine procedures. Prerequisite, formal acceptance in to the professional program. Fall.

**RSN 4523. Nuclear Medicine Clinical Education II** The course will provide intermediate level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in nuclear medicine procedures. Prerequisite, formal acceptance in to the professional program. Spring.

**RSN 4535. Nuclear Medicine Clinical Education III** The course will provide advanced level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in nuclear medicine procedures. Prerequisite, formal acceptance in to the professional program. Summer.

**Radiation Therapy (RST)**

**RST 4203. Introduction to Radiation Therapy and Patient Care** This course will provide an overview of the foundations of radiation therapy and the practitioners role in the health care delivery system. Prerequisite, formal acceptance in to the professional program. Fall.

**RST 4214. Radiation Therapy Principles and Practice I** The course will provide a knowledge base for assessing, comparing, contrasting and recommending the type of radiation therapy equipment, procedure and technique, patient positioning and immobilization for appropriate tumor localization and treatment delivery. Prerequisite, formal acceptance in to the professional program. Fall.

**RST 4224. Radiation Therapy Principles and Practice II** The course will examine and evaluate the management of specific neoplastic disease. Prerequisite, formal acceptance in to the professional program. Spring.

**RST 4234. Radiation Therapy Principles and Practice III** The course will build on the foundations of the principles of radiation therapy practice from the two previous courses. Prerequisite, formal acceptance in to the professional program. Summer.

**RST 4242. Radiation Therapy Clinical Treatment Planning** The course will build on the foundations of the principles of radiation therapy practice from the two previous courses. Prerequisite, formal acceptance in to the professional program. Summer.

**RST 4313. Radiation Therapy Physics I** This course will establish a knowledge of physics pertinent to developing an understanding of radiations used in the radiation therapy clinical setting Fall.

**RST 4323. Radiation Therapy Physics II** The course will review and expand concepts and theories in the Radiation Physics I course. Prerequisite, formal acceptance in to the professional program. Spring.

**RST 4333. Applied Radiation Biology** This course will present basic concepts and principles of radiation biology. Prerequisite, formal acceptance in to the professional program. ~~Summer.~~ Spring

**RST 4413. Radiation Protection, Safety, and Quality Management** This course will present principles of radiation protection and safety for the radiation therapist. Prerequisite, formal acceptance in to the professional program. ~~Spring.~~ Summer

**RST 4513. Radiation Therapy Clinical Education I** The course will provide beginning level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Prerequisite, formal acceptance in to the professional program. Fall.

**RST 4523. Radiation Therapy Clinical Education II** The course will have immediate content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Prerequisite, formal acceptance in to the professional program. Spring.

**RST 4533. Radiation Therapy Clinical Education III** The course will have advanced content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in radiation therapy. Prerequisite, formal acceptance in to the professional program. Summer.

**Diagnostic Medical Sonography (RSU)**

**RSU 4101. Introduction to Ultrasound** This course will provide an overview of the foundations of diagnostic medical sonography and the practitioners role in the health care delivery system. Spring.

**RSU 4112. Sectional Anatomy Sonography** Knowledge of anatomical layering and review body systems. Sonographic terminology, organ and organ system relationships, and directional terminology will also be focused upon in this course. Prerequisite, formal acceptance in to the professional program. Summer.

**RSU 4122. Small Parts Sonography** Knowledge of anatomy pathology of small parts including male pelvis, breast, thyroid, and musculoskeletal sonography. Prerequisite, formal acceptance into the professional program. Summer.

**RSU 4132. Introduction to Sonography Laboratory** Clinical application knowledge of sonography equipment, sonographic terminology, and anatomy pathology of small parts. Students will participate in directed scanning exercises and simulator scanning to develop the critical thinking skills needed in practice of sonography. Prerequisite, formal acceptance into the professional program. Summer.

**RSU 4213. Ultrasound Physics and Instrumentation I** This course will provide theoretical foundations and clinical applications of ultrasound physics and instrumentation, including Doppler principles, performance testing, and bioeffects. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4223. Abdominal Sonography I** Specific anatomic and pathologic information necessary for the clinical practice of abdominal diagnostic medical sonography, including abdominal organs and organ systems, normal, abnormal appearances, and pertinent laboratory tests are discussed. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4232. Abdominal Sonography I Laboratory** This course will provide clinical application knowledge of abdominal organs and organ systems. Students will participate in directed scanning exercises and simulator scanning to develop the critical thinking skills needed in practice of abdominal sonography. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4322. OBGYN Sonography Laboratory** Laboratory scanning of specific anatomy and pathology necessary for the clinical practice of obstetric and gynecologic diagnostic medical sonography. Corequisites, RSU 4613 and 4323. Prerequisite, formal acceptance into the professional program. Spring.

**RSU 4323. Physics and Instrumentation II** This course is a continuation of RSU 4213. Advanced theoretical foundations and clinical applications of ultrasound physics and instrumentation, including Doppler principles, performance testing, and bioeffects. Prerequisite, formal acceptance into the professional program. Spring.

**RSU 4413. Vascular Sonography** Knowledge of venous and arterial anatomy, physiology and clinical considerations necessary for practice in the vascular clinical setting. Anatomy of the upper and lower extremities, abdomen, special circulations, cerebrovascular circulation. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4422. Vascular Sonography Laboratory** Ultrasound scanning of anatomy of the upper and lower extremities, abdomen, and special circulations, as well as cerebrovascular intra and extracranial circulation will be the focus of this course. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4511. Ultrasound Clinic I** Entry level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in small parts and abdominal sonography. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4523. Ultrasound Clinical Education II** Advanced level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in small parts, abdominal, and ob-gyn sonography. Prerequisite, formal acceptance into the professional program. Spring.

**RSU 4534. Ultrasound Clinical Education III** Advanced level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in small parts, abdominal, and obstetrics and gynecology sonography. Prerequisite, formal acceptance into the professional program. Summer.

**RSU 4544. Ultrasound Clinical Education IV** Advanced level content and clinical practice experiences designed for sequential development application, analysis, integration, synthesis and evaluation of concepts. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4551. Sonography Clinical Relevancy** Advanced application of anatomy and pathology as seen with sonographic examination and case studies will be the focus of this course. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4552. Ultrasound Clinical Education V** Advanced level content and clinical practice experiences designed for sequential development, application, analysis, integration, synthesis and evaluation of concepts and theories in small parts, abdominal, ob gyn, and vascular sonography. Prerequisite, formal acceptance into the professional program. ~~Fall~~Spring.

**RSU 4562. Ultrasound Clinical Education VI** Provides students with supplemental clinical experience in the event students should miss an excessive amount of clinical days, the student feels that additional clinical experience in needed, or DMS faculty and clinical instructors feel that the student would benefit from additional clinical experience. Prerequisite, formal acceptance into the professional program. ~~Demand~~Summer.

**RSU 4613. Obstetric and Gynecologic Sonography** Specific anatomic and pathologic information necessary for the clinical practice of obstetric and gynecologic diagnostic medical sonography. Prerequisite, formal acceptance into the professional program. Fall

**RSU 4622. Obstetric Sonography II** Continuation of specific anatomic and pathologic information necessary for the clinical practice of obstetric diagnostic medical sonography. ~~Registration restricted to students who have successfully completed the spring semester in the DMS program~~. Prerequisite, formal acceptance into the professional program. ~~Summer~~Spring.

**RSU 4642. Introduction to Cardiovascular Sonography** Cardiovascular anatomy, physiology and clinical considerations necessary for practice in the cardiovascular clinical setting. Indications for cardiovascular testing and disease processes are discussed. Prerequisite, formal acceptance into the professional program. Summer.

**RSU 4652. Special Procedures in Sonography** Specific anatomic and pathologic information necessary for the clinical practice of special procedures in abdominal, pediatric, and neonatal diagnostic medical sonography. ~~Fall~~Spring.

**RSU 4712. Introduction to Cardiac Sonography** Cardiac anatomy, physiology and clinical considerations necessary for practice in the cardiovascular clinical setting. Indications for cardiac testing and disease processes are discussed. Prerequisite, formal acceptance into the professional program. Spring.

**RSU 4723. Cardiac Sonography** Continued discussion of cardiac disease processes. Corequisite RSU 4732. Good standing in DMS program required. Summer.

**RSU 4732. Competency Sonography Lab I** Clinical application knowledge of small parts, abdominal organs and organ systems. Students will participate in directed scanning exercises and simulator scanning to develop the critical thinking skills needed. Corequisite, 4223. Prerequisite, formal acceptance into the professional program. Fall.

**RSU 4742. Cardiac Sonography Lab** Provide clinical application knowledge of gynecologic and obstetrical, vascular, or cardiac sonography. Directed scanning exercises and simulator scanning to develop the critical thinking skills. Registration restricted to students who have successfully completed the fall semester of appropriate DMS program. ~~Summer~~Spring.

**RSU 4762. Advanced Vascular Sonography Procedures** Clinical application knowledge of advanced vascular sonography procedures, directed scanning exercises and simulator scanning to develop the critical thinking skills needed in practice of vascular sonography. Prerequisite, formal acceptance into the professional program. Spring.

**RSU 4812. Cardiac Conduction and Arrhythmia** Provides an understanding of normal and abnormal conduction of electrical impulses in the cardiac system. Prepares students to recognize cardiac rhythms in the clinical setting. Registration restricted by admittance to the DMS program. Spring.

**RSU 4833. Breast Sonography** Sonographic knowledge, skills and abilities in the areas of normal breast as well as breast abnormalities and how to coordinate images with screening or diagnostic mammography. Restricted to BSRS majors. Spring.

**Radiologic Technology (RT)**

**RT 1003. Making Connections Radiologic Sciences** Open to incoming Freshmen only. This course will provide both an introduction to the nature of university education and a general orientation to the functions and resources of the university as a whole. This section of First Year Seminar is a special health professions section and will include a focus on understanding and appreciating radiologic science majors. Prerequisite, formal acceptance into the professional program. Fall.