Springfield Technical Community College
Academic Affairs

Course Number: RDG 127 Class/Lect. Hours: 50 Lab Hours: 0 Credits: 3 Dept.: DMIR

Course Number Title: _RDG 127 Advanved Imaging Modalities_____ Semester:Summer Extended Year:2026

Course Description, Prerequisite, Corequisite:

Advanced Imaging Modalities introduces students to CT, MRI, and ultrasound imaging with a focus on cross-sectional anatomy and multi-planar interpretation. Students learn how advanced imaging systems create diagnostic images and develop competency in identifying major anatomical structures across all planes and body regions. Restriced to DMIR

OBJECTIVES/COMPETENCIES

COURSE OBJECTIVES	COURSE COMPETENCIES
By the end of this course, students will: 1. **Describe** the fundamental principles, capabilities, and limitations of advanced imaging modalities including CT, MRI, and Ultrasound. 2. **Explain** how each modality generates images and how acquisition parameters influence appearance and diagnostic quality. 3. **Develop** foundational skills in cross-sectional image interpretation across axial, sagittal, and coronal planes. 4. **Identify** normal anatomical structures as visualized on CT, MRI, and ultrasound across all major body regions. 5. **Apply** spatial reasoning skills to interpret multi-planar reconstructions and correlate anatomy across modalities. 6. **Recognize** when advanced modalities are clinically indicated based on patient presentation, anatomy, and imaging characteristics. 7. **Communicate** anatomical and modality-specific findings using accurate radiologic terminology.	Upon successful completion of *Advanced Imaging Modalities*, students will be able to: **Modality Knowledge & Image Formation** 1. **Compare and contrast** CT, MRI, and ultrasound in terms of physics, signal generation, image acquisition, and clinical application. 2. **Describe** basic CT principles (attenuation, window/level, contrast enhancement, voxel/slice concepts). 3. **Explain** essential MRI concepts (T1/T2, pulse sequences, relaxation, image weighting). 4. **Identify** the basic factors that affect ultrasound image quality (frequency, acoustic windows, echogenicity). **Cross-Sectional Anatomy Competency** 5. **Identify** major anatomical structures in the head, neck, thorax, abdomen, pelvis, and extremities on CT, MRI, and ultrasound. 6. **Differentiate** tissues, organs, and vasculature using modality-specific image characteristics. 7. **Interpret** normal anatomical relationships in axial, sagittal, and coronal planes. 8. **Recognize** normal vs. abnormal anatomical appearances at an introductory level. **Clinical Relevance & Application** 9. **Select** the most appropriate advanced imaging modality for common clinical scenarios. 10. **Explain** how pathology may alter normal anatomic appearance on CT, MRI, or ultrasound (intro level). 11. **Communicate** imaging findings using appropriate radiologic and anatomical terminology.