

**Course Objectives/Course Outline**  
**Spokane Community College**

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**Course Title:** Various Modalities

**Prefix and Course Number:** RAD 213

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**Course Learning Outcomes:**

**By the end of this course, a student should be able to:**

- Describe the practical physics of ultrasonography
- Describe the biological effects of ultrasound waves
- List various modes of scanning and describe their functions
- Describe the basic anatomical landmarks and scanning planes used in imaging
- Describe the properties and mass of an atom
- Describe the components and physics of a scintillation detector
- Describe the history and development of CT technology
- Describe the advantages of CT over conventional radiography
- Describe the history and development of MRI technology
- Describe the basic physics and principles of operation of the MRI system
- Critique MRI, CT and ultrasound images
- Demonstrate basic control testing procedures and describe the results

**Course Outline:**

- I. Nature of Ultrasound
  - A. History
  - B. Transducer
  - C. Operational Modes
  - D. Biological Effects
- II. Special Procedures
  - A. History of Catheterization
  - B. Equipment
  - C. Injectors
  - D. Contrast Agents
  - E. Accessories
  - F. Angiographies
- III. Nuclear Medicine
  - A. History
  - B. Radiopharmaceuticals
  - C. Instrumentation
  - D. SPECT (Single Photon Emission Computed Tomography)
  - E. Introduction to Procedures

- IV. MRI
  - A. History
  - B. Principles
  - C. Safety
  - D. Examination Protocols
  - E. Clinical Applications
- V. Computerized Tomography (CT)
  - A. History
  - B. Principles
  - C. Safety