NOVA COLLEGE-WIDE COURSE CONTENT SUMMARY
RAD 115 – PRINCIPLES OF MAGNETIC RESONANCE IMAGING (3 CR.)

Course Description

Presents concepts of Magnetic Resonance Imaging and Physics. Teaches fundamentals of Magnetic Resonance and application of principles. Lecture 3 hours per week.

General Course Purpose

This course is a component of a career certificate that is designed as a multi-competency module to provide expertise in magnetic resonance imaging to registered or registry eligible technologists. The completion of the career certificate will prepare individuals for employment as an MRI technologist in hospitals and imaging centers. This course will fulfill the professional continuing education requirements required by the American Registry of Radiologic Technologists.

Course Prerequisites/Corequisites

This course is offered to students who have graduated from an approved radiologic technology program and are registered or registry eligible according to the standards provided by the American Registry of Radiologic Technologists.

Course Objectives

Upon completing the course, the student will be able to:

1. Describe the history of magnetic resonance imaging
2. Discuss the relationship of electricity and magnetism to MRI
3. Describe nuclear magnetism
4. Discuss NMR signals
5. Describe RF pulses/sequences
6. Discuss NMR spectroscopy
7. Describe MRI parameters
8. Discuss T1 and T2 relaxation time/measurement
9. Describe MRI hardware
10. Discuss purchasing decisions
11. Identify site selection characteristics
12. Discuss digital imaging characteristics
13. Discuss spatial encoding
14. Discuss magnetic resonance images
15. Describe use of contrast agents
16. Describe flow
17. Identify strategies for fast imaging
18. Discuss RF pulse timing
19. Discuss/identify artifacts

Major Topics to be Included

A. An overview of magnetic resonance imaging
B. Electricity in magnetism
C. Nuclear magnetism
D. MRI signals and spectroscopy
E. MRI parameters
F. MRI hardware
G. Purchasing decisions and site selection

H. Digital imaging
I. Spatial encoding
J. Magnetic resonance imaging
K. Contrast agents
L. Fast imaging strategies
M. Artifacts