

Hagerstown Community College

OFFICIAL COURSE SYLLABUS DOCUMENT

COURSE: Principles of MR Imaging RAD 222 4 credits

INSTRUCTOR: Brad Smith **SEMESTER/YEAR:** Spring 2016

CONTACT INFORMATION:

COURSE DESCRIPTION:

This course provides a comprehensive overview of magnetic resonance imaging, including its historical development, the concepts of electricity and magnetism, image formation and the factors affecting image quality. Magnetic resonance hardware, system operation, and advanced imaging techniques are also discussed. Total of 60 hours of hybrid instruction. Co-requisites: RAD 212. 4 credits.

TEXTBOOK:

MRI in Practice, 4th edition, 2011, Catherine Westbrook, Wiley-Blackwell Publishing.

ISBN: 978-1-4443-3743-3

Students will maintain an account in Moodle, a web-based course management platform accessed through the HCC website designed to provide student access to additional MRI web sites, course information, email, and much more.

STUDENT LEARNING OUTCOMES:

At the completion of this course, the student will be able to:

- Describe the historical development of MRI technology and its advantages as an imaging modality today.
- Describe the basic principles of MRI.
- Define basic MRI terminology and image parameters used to produce magnetic resonance images.
- Identify common MRI parameters and the important role each plays in the production of an optimal magnetic resonance image.
- Describe MRI hardware and basic system operation.
- Identify common artifacts that can occur during MRI imaging and the compensation techniques used to manage them.
- Identify MRI contrast agents, their chemical and physiologic properties, and indications and contraindications for their use.

- Describe the patient experience for a typical MRI exam, including patient preparation and post-exam instructions.
- Describe the “flow” of information from initial image acquisition to post processing, image interpretation and image storage.
- State the magnet safety and shielding guidelines required for patients and operators.

Total Hours of Coursework

To earn an academic credit at HCC, students are required to complete a minimum of 37.5 clock hours (45 fifty-minute “academic” hours) of coursework per semester. Those hours of coursework may be completed through a combination of hours within the classroom and hours outside the classroom. Certain courses may require more than the 37.5 minimum hours of coursework per credit.

For most classes, students should expect to do at least 2 hours of coursework outside the class for each hour of in-class coursework.

ACCOUNTING FOR CREDIT HOUR REQUIREMENT:

Hybrid class

Assignment/Assessment

Clock Hours

Reading/studying for lecture exams	3 exams X 20 hours per exam =60
Reading/studying for quizzes	10quizzes X 6 hours per quiz = 60
One final assessment (comprehensive final)	1 exam X 20 hours = 20
Reading and answering Discussion Questions	15 hours reading, taking notes, etc.
Total out of class time	185 hours