Washtenaw Community College Comprehensive Report

MRI 160 MRI Advanced Imaging Procedures
Effective Term: Fall 2022

Course Cover

College: Health Sciences
Division: Health Sciences
Department: Allied Health
Discipline: Magnetic Resonance Imaging
Course Number: 160
Org Number: 15600
Full Course Title: MRI Advanced Imaging Procedures
Transcript Title: MRI Advanced Imaging
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: Inactivation
Change Information:
Consultation with all departments affected by this course is required.
Rationale: The program is being reduced, and this course is being inactivated and removed from the program. The content in this course will be incorporated into an existing course.
Proposed Start Semester: Fall 2022
Course Description: In this course, students learn advanced Magnetic Resonance Imaging (MRI) scanning procedures to date. Topics include breast MRI including dynamic contrast enhanced MR of the breast, cardiac MR including myocardial perfusion and cardiac stress MR, function and functional MR, MR enterography (MRE), colonography, molecular MR imaging and MR elastography.

Course Credit Hours

Variable hours: No
Credits: 3
Lecture Hours: Instructor: 45 **Student:** 45
Lab: Instructor: 0 **Student:** 0
Clinical: Instructor: 0 **Student:** 0

Total Contact Hours: Instructor: 45 **Student:** 45
Repeatable for Credit: NO
Grading Methods: Letter Grades
Audit
Are lectures, labs, or clinicals offered as separate sections?: NO (same sections)

College-Level Reading and Writing

College-level Reading & Writing

College-Level Math

Requisites

Enrollment Restrictions
Admission to Magnetic Resonance Imaging (MRI) program.
Corequisite
MRI 165

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

1. Differentiate the protocols for the advanced Magnetic Resonance Imaging (MRI) scanning procedures.
   Assessment 1
   Assessment Tool: Departmental final exam
   Assessment Date: Spring/Summer 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: answer key
   Standard of success to be used for this assessment: 80% of the students will score 70% or higher on each related outcome question.
   Who will score and analyze the data: Departmental Faculty

2. Identify the clinical indications and contraindications for the advanced Magnetic Resonance Imaging (MRI) scanning procedures.
   Assessment 1
   Assessment Tool: Departmental final exam
   Assessment Date: Spring/Summer 2019
   Assessment Cycle: Every Three Years
   Course section(s)/other population: All sections
   Number students to be assessed: All students
   How the assessment will be scored: answer key
   Standard of success to be used for this assessment: 80% of the students will score 70% or higher on each related outcome question.
   Who will score and analyze the data: Departmental Faculty

Course Objectives

1. Determine normal cardiac anatomy including 2, 3, and 4 chamber views, left ventricular outflow tract, right ventricular outflow tract, and short axis images.
2. Recognize normal and abnormal anatomy on MRI imaging of the myocardium, including scars and tumors.
3. Describe how breast magnetic resonance (MR) is performed including, dynamic breast imaging and MR breast biopsy.
4. Explain molecular imaging and the difference between perfusion and arterial spin labeling.
5. Explain the patient preparation and scanning procedure used for both magnetic resonance enterography(MRE) and colongraphy.
6. Explain the concepts related to magentic resonance MR elastography including why, and how it is used in the clinical setting.
7. Discuss the role of Magnetic Resonance Imaging (MRI) in detection of cardiac insult, tumor and determination of cardiac viability.
8. Specify the scan slice placement used to produce images of the chambers, outflow tracts, pulmonary vessels, great vessels, and valves of the heart.
9. Discuss the role of MRI in detecting breast cancers for BRCA1 and BRCA2 positive patients.
10. Explain uptake and washout curves and the role of computer-aided detection of breast cancers.
11. Discuss the principles of molecular imaging for clinical and research magnetic resonance imaging (MRI).

12. Discuss the role of magnetic resonance (MR) enterography in detecting and staging of small and large bowel pathologic processes.
13. Discuss patient care issues and list preparations for all advanced MR procedures.
14. Explain magnetic resonance (MR) spectography and Hunter's angle.
15. Discuss funtional magnetic resonance (MR) with activation maps and identify the various functional areas of the brain.
16. Discuss the concepts behind magnetic resonance (MR) elastography as it relates to liver imaging for cirrhosis and the new application in brain imaging.
17. Compare and contrast the advantages and disadvantages of the advanced Magnetic Resonance Imaging (MRI) scanning procedures.
18. Evaluate efficacy of advanced Magnetic Resonance Imaging (MRI) scanning procedures.
19. Discuss the role of advanced Magnetic resonance Imaging (MRI) scanning procedures in patient care.
20. Discuss the benefits and potential limitations of current advanced Magnetic Resonance Imaging (MRI) scanning procedures.

New Resources for Course

Course Textbooks/Resources

Textbooks

Westbrook, C., Roth C., & Talbot, J. *MRI in Practice*, 4 ed. Wiley-Blackwell, 2011, ISBN: 9781444337433.

Manuals

Periodicals

Software

Equipment/Facilities

Level III classroom

Other: OE 121 Radiography lab will be used.

Reviewer	Action	Date
Faculty Preparer:		
Catherine Blaesing	*Faculty Preparer*	*Dec 02, 2021*
Department Chair/Area Director:		
Kristina Sprague	*Recommend Approval*	*Dec 03, 2021*
Dean:		
Shari Lambert	*Recommend Approval*	*Jan 10, 2022*
Curriculum Committee Chair:		
Randy Van Wagnen	*Reviewed*	*Feb 07, 2022*
Assessment Committee Chair:		
Vice President for Instruction:		
Kimberly Hurns	*Approve*	*Feb 11, 2022*

Washtenaw Community College Comprehensive Report

MRI 160 MRI Advanced Imaging Procedures
Effective Term: Fall 2015

Course Cover

Division: Math, Science and Health
Department: Allied Health
Discipline: Magnetic Resonance Imaging
Course Number: 160
Org Number: 15600
Full Course Title: MRI Advanced Imaging Procedures
Transcript Title: MRI Advanced Imaging
Is Consultation with other department(s) required: No
Publish in the Following: College Catalog , Time Schedule , Web Page
Reason for Submission: New Course
Change Information:
Rationale: This is a required course for the Magnetic Resonance Imaging (MRI) program.
Proposed Start Semester: Spring/Summer 2016
Course Description: In this course, students learn advanced Magnetic Resonance Imaging (MRI) scanning procedures to date. Topics include breast MRI including dynamic contrast enhanced MR of the breast, cardiac MR including myocardial perfusion and cardiac stress MR, function and functional MR, MR enterography (MRE), colonography, molecular MR imaging and MR elastography.

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Requisites

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Corequisite
MRI 165

General Education

Request Course Transfer

Proposed For:

Student Learning Outcomes

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   Matched Outcomes
2. Recognize normal and abnormal anatomy on MRI imaging of the myocardium, including scars and tumors.
   Matched Outcomes
3. Describe how breast magnetic resonance (MR) is performed including, dynamic breast imaging and MR breast biopsy.
   Matched Outcomes
4. Explain molecular imaging and the difference between perfusion and arterial spin labeling.
   Matched Outcomes
5. Explain the patient preparation and scanning procedure used for both magnetic resonance enterography(MRE) and colongraphy.
   Matched Outcomes
6. Explain the concepts related to magentic resonance MR elastography including why, and how it is used in the clinical setting.
   Matched Outcomes
7. Discuss the role of Magnetic Resonance Imaging (MRI) in detection of cardiac insult, tumor and determination of cardiac viability.
   Matched Outcomes
8. Specify the scan slice placement used to produce images of the chambers, outflow tracts, pulmonary vessels, great vessels, and valves of the heart.
   Matched Outcomes
9. Discuss the role of MRI in detecting breast cancers for BRCA1 and BRCA2 positive patients.
   Matched Outcomes
10. Explain uptake and washout curves and the role of computer-aided detection of breast cancers.
    Matched Outcomes

11. Discuss the principles of molecular imaging for clinical and research magnetic resonance imaging (MRI).
    Matched Outcomes
12. Discuss the role of magnetic resonance (MR) enterography in detecting and staging of small and large bowel pathologic processes.
    Matched Outcomes
13. Discuss patient care issues and list preparations for all advanced MR procedures.
    Matched Outcomes
14. Explain magnetic resonance (MR) spectography and Hunter's angle.
    Matched Outcomes
15. Discuss funtional magnetic resonance (MR) with activation maps and identify the various functional areas of the brain.
    Matched Outcomes
16. Discuss the concepts behind magnetic resonance (MR) elastography as it relates to liver imaging for cirrhosis and the new application in brain imaging.
    Matched Outcomes
17. Compare and contrast the advantages and disadvantages of the advanced Magnetic Resonance Imaging (MRI) scanning procedures.
    Matched Outcomes
18. Evaluate efficacy of advanced Magnetic Resonance Imaging (MRI) scanning procedures.
    Matched Outcomes
19. Discuss the role of advanced Magnetic resonance Imaging (MRI) scanning procedures in patient care.
    Matched Outcomes
20. Discuss the benefits and potential limitations of current advanced Magnetic Resonance Imaging (MRI) scanning procedures.
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Reviewer	Action	Date
Faculty Preparer:		
Connie Foster	*Faculty Preparer*	*Nov 18, 2014*
Department Chair/Area Director:		
Connie Foster	*Recommend Approval*	*Nov 18, 2014*
Dean:		
Kristin Brandemuehl	*Recommend Approval*	*Nov 19, 2014*
Vice President for Instruction:		
Bill Abernethy	*Approve*	*Jan 05, 2015*