

**Course Assessment Report
Washtenaw Community College**

Discipline	Course Number	Title
Magnetic Resonance Imaging	162	MRI 162 08/06/2019-MRI Pulsed Sequence, Imaging Options, and Parameters
Division	Department	Faculty Preparer
Health Sciences	Allied Health	Catherine Blaesing
Date of Last Filed Assessment Report		

I. Review previous assessment reports submitted for this course and provide the following information.

1. Was this course previously assessed and if so, when?

No

2. Briefly describe the results of previous assessment report(s).

3.

4. Briefly describe the Action Plan/Intended Changes from the previous report(s), when and how changes were implemented.

5.

II. Assessment Results per Student Learning Outcome

Outcome 1: Identify the pulse sequences commonly used in Magnetic Resonance Imaging (MRI).

- Assessment Plan
 - Assessment Tool: Departmental final exam
 - Assessment Date: Spring/Summer 2019
 - 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

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
		2018, 2017, 2016

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
17	17

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the program of study were included in the assessment.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students who completed the program of study were included in the assessment.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A final exam with an average of 153 multiple-choice and true/false questions was administered for this course. One point was awarded for each correct answer. The average weighted total for this exam is 33 percent of the overall final grade.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
 The standard of success states that 80% of the students will score 70% or higher on each related outcome question. To more accurately reflect students' overall understanding of the area, we used the standard of success: 80% of students will score correctly on 70% of the outcome-related questions. 21 common outcome-related questions between 2016-2018 were used to assess this outcome.

80% of the students scored 15/21 (71.4%) questions correctly, meeting the standard of success.

In the future, the standard of success will be updated to read, "70% of students will score 70% or higher on the final exam."

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The average score for this outcome in 2016 was 62.5. The average score for this outcome in 2018 was 68.5. The average score for this outcome for 2019 was 73.3. The overall average score for this outcome was 68.1.

The students from 2016 were the inaugural class for this program. Scores for this outcome have continued to improve in subsequent years. The repetition of this material has helped the student as stated in the most recent SOQ for this course.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Plans for improvement for this outcome is the adoption of material from the new chapters on this subject from the 5th ed. of *MRI in Practice*. This change should help as the material is updated to include pulse sequences not previously described but included in this class and at the clinical sites.

We will evaluate the questions from this outcome which had lower results, to investigate whether we should add instruction on these areas or revise the questions themselves.

Outcome 2: Recognize the Magnetic Resonance Imaging (MRI) parameters involved in MR image formation.

- Assessment Plan
 - Assessment Tool: Departmental final exam
 - Assessment Date: Spring/Summer 2019
 - 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

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
		2019, 2018, 2016

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
18	18

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the program of study were included in the assessment.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students who completed the program of study were included in the assessment.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A final exam with an average of 153 multiple-choice and true/false questions was administered for this course. One point was awarded for each correct answer. The average weighted total for this exam is 33 percent of the overall final grade.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No
 The standard of success states that 80% of the students will score 70% or higher on each related outcome question. To more accurately reflect students' overall understanding of the area, we used the standard of success: 80% of students will score correctly on 70% of the outcome-related questions. 11 common outcome-related questions between 2016-2018 were used to assess this outcome.

80% of the students scored 4/11 (36.4%) questions correctly, which does not meet the standard of success.

In the future, the standard of success will be updated to read, "70% of students will score 70% or higher on the final exam."

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The average score for this outcome for 2016 was 71.9. The average score for this outcome for 2018 was 85.2. The average score for this outcome for 2019 was 87.6. The overall average score for this outcome was 81.6, well above the ARRT Standard to pass at 76%, which indicates strength in understanding of this material.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Continuous improvement for this outcome will be to adopt the material from the new 5th edition of *MRI in Practice*.

We will evaluate the questions from this outcome which had lower results, to investigate whether we should add instruction on these areas or revise the questions themselves.

Outcome 3: Identify imaging options used to obtain diagnostic magnetic resonance (MR) images.

- Assessment Plan
 - Assessment Tool: Departmental final exam
 - Assessment Date: Spring/Summer 2019
 - 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
- 1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
		2019, 2018, 2016

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
18	18

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

All students who completed the program of study were included in the assessment.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students who completed the program of study were included in the assessment.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

A final exam with an average of 153 multiple-choice and true/false questions was administered for this course. One point was awarded for each correct answer. The average weighted total for this exam is 33 percent of the overall final grade.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: No

The standard of success states that 80% of the students will score 70% or higher on each related outcome question. To more accurately reflect students' overall understanding of the area, we used the standard of success: 80% of students will score correctly on 70% of the outcome-related questions. 12 common outcome-related questions between 2016-2018 were used to assess this outcome.

80% of the students scored 5/12 (41.7%) questions correctly, which does not meet the standard of success.

In the future, the standard of success will be updated to read, "70% of students will score 70% or higher on the final exam."

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The average score for this outcome in 2016 was 64.7. The average score for this outcome in 2018 was 77.8. The average score for this outcome in 2019 was 76.4. The overall average for this outcome was 73.0, indicating strength in understanding of this material.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

Continuous improvement for this outcome will be to adopt the material from the new 5th edition of *MRI in Practice*.

We will evaluate the questions from this outcome which had lower results, to investigate whether we should add instruction on these areas or revise the questions themselves.

III. Course Summary and Intended Changes Based on Assessment Results

1. Based on the previous report's Intended Change(s) identified in Section I above, please discuss how effective the changes were in improving student learning.

There was no previous assessment report.

2. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

It is surprising that the students scored so poorly on the pulse sequence portion of the assessment. This course needs to be updated to include new pulse sequences and their applications and use of the updated material provided by *MRI in Practice*, 5th ed.

3. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

The material contained in this report will be shared with department faculty and clinical instructors who will be given an opportunity to comment on the contents of this report.

4. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
Assessment Tool	We'd like to incorporate the ARRT exam results as an assessment tool for any MRI course that has a corresponding section(s) on the ARRT exam.	It is important that the standard of success for an assessment tool in this course relates to current ranking by the American Registry of Radiologic Technologists. For example, although the students did not meet the current standards of success, the ARRT exam results indicate that students scored an average of 8.8/10 on this exam for the areas corresponding to this course (Physical Principles of Image Formation, Sequence Parameters and Options, Data Acquisition and Processing). See attached files.	2020
Assessment Tool	The assessment tool will be updated from "departmental final exam" to "final exam".	To ensure consistency in data collection for future assessment.	2020
Course Materials (e.g. textbooks, handouts, on-line ancillaries)	Make changes to lectures and material based on the presentation in <i>MRI in Practice</i> , 5th ed.	MRI in Practice 5th ed. has been reorganized so that greater understanding of the material should be achieved as it	2020

		will slow the pace of presentation for the students. This book discusses pulse sequences that were not presented in previous versions of this book.	
Other: Standard of success	Standard of success to be used for this assessment: 80% of the students will score 70% or higher on each related outcome question should be changed to read "70% of students will score 70% or higher on the final exam".	The standard of success should reflect students' performance on the topic as a whole, not the class performance on each individual question. It is important for these tools and standards of success to reflect ARRT standards and rankings.	2020

5. Is there anything that you would like to mention that was not already captured?

6.

III. Attached Files

- [MRI 162 2019 Outcome 1](#)
- [2018 Course Performance MRI 162](#)
- [2019 Course Performance MRI 162](#)
- [MRI 162 2018 Outcome 1](#)
- [2016 Course Performance MRI 162](#)
- [MRI 162 2018 Outcome 3](#)
- [MRI 162 2018 Outcome 2](#)
- [MRI 162 2019 Outcome 2](#)
- [MRI 162 2019 Outcome 3](#)
- [ARRT Exam Results](#)
- [MRI 162 2018-2019 Assessment Data](#)

Faculty/Preparer: Catherine Blaesing **Date:** 10/24/2019
Department Chair: Kristina Sprague **Date:** 10/25/2019
Dean: Valerie Greaves **Date:** 10/28/2019
Assessment Committee Chair: Shawn Deron **Date:** 01/27/2020

