

**Course Assessment Report**  
**Washtenaw Community College**

Discipline	Course Number	Title
Magnetic Resonance Imaging	110	MRI 110 07/22/2019-MRI Physics I
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 and apply the principles of pulse sequences, parameters and pulse diagrams.

- Assessment Plan
  - Assessment Tool: Department Final Exam
  - Assessment Date: Fall 2018
  - 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 the outcome related questions.

- 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
23	21

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.

One student was dismissed from the program for behavioral issues at the clinical site prior to completion of this course. One student was dismissed from the program due to MRI safety issues at the clinical site and failure to comply with site policies. One student voluntarily left the program prior to completing this course due to a family health issue.

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 this course were included in this assessment.

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

A multiple choice and true/false final with an average of 66 questions was administered for this outcome. One point was awarded for each correct answer. The weighted total for this exam is 30 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 students scored correctly on 8/13 (61.5%) of questions, 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 scores for students in 2016, 2017, and 2018 were 95%, 86% and 84.4% respectively. Overall, the average final exam score of 88.4% for this outcome indicates strength in understanding of this material, which is well above the ARRT standard to pass, which is 76%.

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.

The students met the standard of success for this outcome. 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 2: Identify and apply the principles of spatial locational and k-space filling.

- Assessment Plan
  - Assessment Tool: Department final exam
  - Assessment Date: Fall 2018
  - 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 the outcome related questions.
  - 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
23	21

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.

One student was dismissed from the program for behavioral issues at the clinical site prior to completion of this course. One student was dismissed from the program due to MRI safety issues at the clinical site and failure to comply with site policies. One student voluntarily left the program prior to completing this course due to a family health issue.

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 this course 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 multiple choice and true/false final with an average of 66 questions was administered for this outcome. One point was awarded for each correct answer. The weighted total for this exam is 30 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. 16 common outcome-related questions between 2016-2018 were used to assess this outcome.

80% of the students scored correctly on 9/16 (56.3%) questions, 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 scores for students in 2016, 2017, and 2018 were 90%, 82.7% and 86.8% respectively. This shows that 95% of students achieved over 70% which exceeds the standard of success. Overall, the average final exam score of 86.5% (well above the ARRT pass rate of 76%) for this outcome 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.

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.

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

### 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 are no previous reports indicating intended changes for this course.

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?

This course is meeting the needs of the students by providing entry level understanding of the physics of MRI in preparation for the ARRT MRI Registry exam.

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

Department faculty will be given a copy of this report and an opportunity to comment on its contents. A process of meeting at the end of the year for all MRI

staff to review and make recommendations for changes to the program will continue.

4.

Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
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
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

Course Materials (e.g. textbooks, handouts, on-line ancillaries)	The new 5th edition of <i>MRI in Practice</i> will be used for this course, and changes to lectures and additions to student resources (e.g. YouTube videos) to align with the chapters in this book will be made.	The book contains the most up-to-date physics information for students and aligns with the ARRT Registry exam for MRI technologists.	2020
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 110 2016 Goal 1](#)
- [MRI 110 2016 Course Performance](#)
- [MRI 110 2017 Course Performance](#)
- [MRI 110 2018 Course Performance](#)
- [MRI 110 2016-2018 Assessment Data](#)
- [ARRT Exam Results](#)
- [MRI 110 2017 Goal 1](#)
- [MRI 110 2018 Goal 1](#)
- [MRI 110 2016 Goal 2](#)
- [MRI 110 2017 Goal 2](#)
- [MRI 110 2018 Goal 2](#)

**Faculty/Preparer:** Catherine Blaesing **Date:** 08/22/2019  
**Department Chair:** Kristina Sprague **Date:** 08/22/2019  
**Dean:** Valerie Greaves **Date:** 08/23/2019  
**Assessment Committee Chair:** Shawn Deron **Date:** 02/24/2020