Discipline	Course Number	Title
Magnetic Resonance Imaging	130	MRI 130 08/06/2019-MRI Physics II
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: Recognize the mechanisms of flow.

- Assessment Plan

    o   Assessment Tool: Department final exam

    o   Assessment Date: Winter 2019

    o   Course section(s)/other population: All sections

    o   Number students to be assessed: All Students

    o   How the assessment will be scored: answer key

    o   Standard of success to be used for this assessment: 80% of the students will score 70% or higher on the outcome related questions.

    o   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
20	20

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 voluntarily left the program prior to completing this course.

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.

An average of 66 questions (multiple-choice and true/false) on the final exam was used as an assessment tool for this course. 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: Yes

The standard of success states that 80% of the students will score 70% or higher on the outcome-related questions. To more accurately reflect students' overall understanding of the area, we used the standard of success: 80% of students will score correctly 70% of the outcome-related questions. Five common outcome-related questions between 2016-2018 and 12 common outcome-related questions between 2017-2018 were used to assess this outcome.

For the questions in common between 2016-2018, 80% of students scored correctly on 4/5 (80%) of questions, meeting the standard of success. For the

questions in common between 2017-2018, 80% of students scored correctly on 10/12 (83.3%) of questions, 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 students in 2016, 2017, 2018 and 2019 was 78.2, 95.8, 93.5 and 90.8 respectively. Based on student final exam scores 23 out of 24 students scored 75% and above. One student scored less than 70%. The average final exam score of 89.5% for this outcome indicates strength in understanding of this material, which is well above the ARRT standard to pass, at 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: Recognize the appearance and cause of artifacts associated with Magnetic Resonance Imaging (MRI).

- Assessment Plan
    - Assessment Tool: Department final exam
    - Assessment Date: Winter 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 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)
	2019, 2018, 2017, 2016	

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

# of students enrolled	# of students assessed
26	25

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 voluntarily left the program prior to completing this course.

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.

An average of 66 questions (multiple-choice and true/false) on the final exam was used as an assessment tool for this course. 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: Yes

The standard of success states that 80% of the students will score 70% or higher on the outcome-related questions. 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. Eight common outcome-related questions between 2016-2019 were used to assess this outcome.

80% of the students scored correctly on 6/8 (75%) questions correctly, which meets 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 students in 2016, 2017, 2018 and 2019 was 69.1, 88.4, 93.1 and 81.2 respectively. The average final exam score of 82.9% for this outcome indicates strength in understanding of this material, which is well above the ARRT pass rate of 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 two 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 are no previous reports indicating 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 an understanding of the physics of MRI for technologists 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)	Changes to lectures to align with the new 5th edition of *MRI in Practice*	The book contains the most up to date physics information for students and	2020

	will be implemented.	aligns with the ARRT Registry exam for MRI technologists.	
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 130 2017 Course Performance](#)
[MRI 130 2016 Course Performance](#)
[MRI 130 2018 Course Performance](#)
[MRI 130 2019 Course Performance](#)
[ARRT Exam Results](#)
[MRI 130 2016 Goal 2](#)
[MRI 130 2017 Goal 2](#)
[MRI 130 2018 Goal 2](#)
[MRI 130 2019 Goal 2](#)
[MRI 130 2016-2018 Goal 1](#)
[MRI 130 2017-2018 Goal 1](#)
[MRI 130 2016-2019 Assessment Data](#)

Faculty/Preparer:	Catherine Blaesing	**Date:** 09/20/2019
Department Chair:	Kristina Sprague	**Date:** 09/24/2019
Dean:	Valerie Greaves	**Date:** 09/24/2019
Assessment Committee Chair:	Shawn Deron	**Date:** 03/02/2020