College: College of Nursing and School of Allied Health

Degree Program: Master of Science in Radiologic Sciences

Assessment Year: 2022

Prepared by: Dr. Laura Aaron   **Date**: March 1, 2023

Approved by: Dr. Joel Hicks   **Date**: June 9, 2023

Northwestern State University Mission Statement: Northwestern State University is a responsive, student-oriented institution committed to acquiring, creating, and disseminating knowledge through innovative teaching, research, and service. With its certificate, undergraduate, and graduate programs, Northwestern State University prepares its increasingly diverse student population to contribute to an inclusive global community with a steadfast dedication to improving our region, state, and nation.

College of Nursing and School of Allied Health Mission Statement: Northwestern State University College of Nursing and School of Allied Health serves an increasingly diverse student population while advancing the mission of the University by offering excellent and innovative undergraduate, graduate, certificate, and continuing education programs that are designed to assist individuals in achieving their goal to become responsible and contributing members of an interprofessional global community that improves the health of our region, state, and nation.

MSRS Program Mission: To provide a learning environment for the development of knowledge, intellectual skills, and dispositions necessary for radiologic sciences professionals to function as leaders in the areas of administration and education and to furnish a foundation for doctoral study.

Program Goals:
- To prepare radiologic sciences professionals who are able to function as leaders in radiologic sciences professions.
- To develop radiologic sciences professionals who are prepared to contribute to the professional body of knowledge.
- To provide a foundation for radiologic sciences professionals to become lifelong learners who strive for continued professional growth.

Program Objectives:

Graduates of the MSRS program will be able to:

- Distinguish leadership skills in radiologic sciences education or administration.
- Utilize critical thinking skills to resolve issues in radiologic or healthcare-related problems.
- Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.
- Demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships
- Conduct research studies and disseminate findings and methods to contribute to and improve the practice of the radiologic sciences.
- Implement strategies to effect change within the radiologic sciences profession.
- Evaluate ethical standards in practice as a radiologic sciences educator or administrator.
- Serve as a role model to promote professionalism within the radiologic sciences.
- Contribute to the community and radiologic sciences profession through service.

Methodology

1. Data from assessment tools are collected and sent to the program coordinator.
2. The program coordinator enters the data into the tables for each SLO.
3. The results are shared with the MSRS Assessment Committee. The committee discusses data analysis, interpretation, actions, trends, results, and future plans.
4. The MSRS Assessment committee findings are discussed in the School of Allied Health faculty meetings. Additional insights and actions are added to the assessment plan, as necessary.

Student Learning Outcome 1:

Utilize critical thinking skills to resolve issues in radiologic or healthcare related problems.

Tool	Benchmark (Target)	Results					
A. Core Section of the Comprehensive Exam (spring, summer & fall)	90% of students will score 80 or better on their first attempt.		**2022**	**2021**	**2020**	**2019**	**2018**
		N	10	18	11	6	3
		Mean	84.3	85	82	86	79.6
		Range	72-96	80-95	41-98	80-96	65-91
		%	70	100	81	100	66
		# unmet	3	0	2	0	1
B. Critical Analysis Paper (RADS 5020) (fall)	100% of students will achieve an average of 85% or higher.		**2022**	**2021**	**2020**	**2019**	**2018**
		N	27	17	23	16	11
		Mean	87	91.4	89.5	87	90.7
		Range	65-97	70-97	70-99	25-100	74-98
		%	74	94	79	81	90
		# unmet	7	1	5	3	1
C. Item Analysis Assignment (RADS 5220) (spring)	100% of students will achieve an average of 85% or higher.		**2022**				
		N	10				
		Mean	100				
		Range	100				
		%	100				
		# unmet	0				
D. Quality Management Project (RADS 5310) (fall)	100% of students will achieve an average of 85% or higher		**2022**				
		N	9				
		Mean	91.6				
		Range	72-100				
		%	78				
		# unmet	2				

SLO 1: Utilize critical thinking skills to resolve issues in radiologic or healthcare related problems.

Findings:

Measure A: Core Section of Comprehensive Exam

2022: Unmet, 70% of students scored 80% or higher.

Analysis:

Measure A: Core Section of Comprehensive Exam

In 2021, there was a significant improvement, and the target was met, with 100% of students scoring 80% or higher on the core section of the comprehensive exam. The faculty implemented several changes to drive improvement, which continued in 2022. Specifically, the MSRS coordinator developed a list of tips for preparing for the comprehensive exam and posted it in the Moodle course shell. When students registered for RADS 5910, students were advised about the comprehensive exam to help them prepare. While these strategies had a positive effect in 2021, the results were not sustained in 2022. Three students scored below the 80% benchmark on their first attempt on the core portion of the comprehensive exam in 2022. In examining the areas where students are showing weaknesses on the exam, there does not appear to be a trend.

Last year, the faculty decided to phase out this measure in the future and replace it with a measure that is more specific to measuring critical thinking. However, this measure will continue to be used for two more years. Additionally, since this exam is still an important part of the program, it is still essential that improvement strategies be implemented.

Decisions:

Measure A: Core Section of Comprehensive Exam

In 2022, the target was that 90% of students would score 80% or higher on their first attempt on the core portion of the comprehensive exam; however, only 70% met the benchmark. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Review the question pool for the core portion of the comprehensive exam and update it as needed.
- Review and revise study tips for the comprehensive exam.
- Create outlines for each course to help with preparation.
- Send reminders to students throughout the program to remember to keep assignments to help them study for the comprehensive exam.
- Create a video with information on preparing for the comprehensive exam.
- Continue to use this measure for two more years and then phase out and use measures C & D in its place.

These changes will improve the student's ability to think critically, thereby pushing the cycle of improvement forward.

Findings:

Measure B: RADS 5020 Critical Analysis Paper

2022: Unmet, 74% of students scored an 85% or higher.

Analysis:

Measure B: RADS 5020 Critical Analysis Paper

In 2021, 94% of the students met the benchmark for this measure by scoring 85% or higher on the critical analysis paper. Only one student scored below the benchmark. To drive improvement, the faculty reviewed and revised critical analysis paper guidelines and rubric to resolve any areas of confusion. Also, additional resources such as Turnitin, videos, tutorials, and artificial intelligence applications were added to the course to help students improve their writing assignments. However, in 2022, only 74% of students met the benchmark, and the mean score decreased to 87%. Seven students scored below the benchmark. In examining the reasons for their low scores, it was determined that the writing and evidence portions of the assignment were the areas where most points were deducted. Additionally, some students lost points for their argument and evaluation of the issue. The topic for the critical analysis paper changed in 2022 from advanced practice to artificial intelligence. While the rubric and guidelines were revised, since the topic changed as well, it may be that this affected student scores negatively.

Decisions:

Measure B: RADS 5020 Critical Analysis Paper

In 2022, the target was that 90% of students would score 80% or higher on their first attempt on the core portion of the comprehensive exam; however, only 74% of students met the benchmark. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Review and revise the guidelines and rubric to ensure they are congruent with the new topic for the paper.
- Create a video to provide more information to students regarding the expectations for the assignment.
- Implement Feedback Fruits to review papers to give students feedback on their writing before submission.

These changes will improve the student's ability to think critically, thereby pushing the cycle of improvement forward.

Findings:

Measure C: RADS 5220 Item Analysis Assignment

2022: Met, 100% of students scored 85% or higher.

Analysis:

Measure C: RADS 5220 Item Analysis Assignment

This is a new measure being used in the assessment plan, and as such, no data is available from 2021. In 2022, 100% of the students scored an 85% or higher on this assignment, with the mean score being 100%. The faculty discussed the lack of variance in the scores and reviewed the guidelines and rubric for the assignment. Faculty feel this measure is still a good indicator for critical thinking but may need some revision to get more information from this measure.

Decisions:

Measure C: RADS 5220 Item Analysis Assignment

In 2022, the target was that 90% of students would score 80% or higher on their first attempt on the core portion of the comprehensive exam, and this benchmark was met. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Review and revise the guidelines and rubric for this assignment to ensure that the data provides useful information regarding students' critical thinking abilities.
- Continue to use this tool to measure critical thinking and begin to get data that can be trended.

These changes will improve the student's ability to think critically, thereby pushing the cycle of improvement forward.

Findings:

Measure D: RADS 5310 Quality Management Project

2022: Unmet, 78% of students scored 85% or higher.

Analysis:

Measure D: RADS 5310 Quality Management Project

This is a new measure being used in the assessment plan, and as such, there is no data available from 2021. In 2022, 78% of the students scored 85% or higher, with a mean score of 91.6%. Two students failed to meet the benchmark. In the case of one student, the assignment was submitted late and obviously was hurried. There were several missing pieces of the assignment. The other student's submission was timely but did not capture the intent of the assignment. Rather than designing a quality improvement project, the student's submission was written as if it was reporting on a previously executed project. While some pieces could be evaluated, there were several that were completely missing.

Decisions:

Measure D: RADS 5310 Quality Management Project

In 2022, the target was that 100% of students would score 85% or higher on the quality management project in RADS 5310; however, only 78% met the benchmark. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Utilize additional methods to remind students of due dates, such as recorded video or audio messages.
- Provide an exemplar to demonstrate the intent of the assignment.
- Continue to use this tool to measure critical thinking and begin to get data that can be trended.

These changes will improve the student's ability to think critically, thereby pushing the cycle of improvement forward.

Student Learning Outcome 2:

Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

Tool	Benchmark (Target)	Results					
A. Core Section of the Comprehensive Exam (spring, summer & fall)	90% of students will score 80 or better on the first attempt.		**2022**	**2021**	**2020**	**2019**	**2018**
		N	10	18	11	6	3
		Mean	84.26	85	82	86	79.6
		Range	72-96	80-95	41-98	80-96	65-91
		%	70	100	81	100	66
		# unmet	3	0	2	0	1

Tool	Benchmark (Target)	Results					
B. Evidence-based practice project for education and administration (RADS 5510/5530) (spring & summer)	100% of students will score an 85% or higher on the evidence-based project.		**2022**	**2021**	**2020**	**2019**	**2018**
		N	6	21	5	10	4
		Mean	94.67	98	96	95	91.25
		Range	83-100	92-100	90-100	80-100	79-100
		%	83	100	100	100	75
		# unmet	1	0	0	0	1

Tool	Benchmark (Target)	Results	
C. Teaching Methods Application Presentation (RADS 5210) (fall)	100% of students will achieve an average of 85% or higher.		**2022**
		N	17
		Mean	97.2
		Range	87-100
		%	100
		# unmet	0

Tool	Benchmark (Target)	Results	
D Cybersecurity Assessment (RADS 5330) (summer)	100% of students will achieve an average of 85% or higher.		**2022**
		N	10
		Mean	92.5
		Range	77-97
		%	90
		# unmet	1

SLO 2: Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

Findings:

Measure A: Core Section of Comprehensive Exam

2022: Unmet, 70% of students scored 80% or higher.

Analysis:

Measure A: Core Section of Comprehensive Exam

As previously stated for SLO 1, in 2021, there was a significant improvement, and the target was met, with 100% of students scoring 80% or higher on the core section of the comprehensive exam. Faculty implemented several changes to drive improvement, and those were continued in 2022. Specifically, the MSRS coordinator developed a list of tips for preparing for the comprehensive exam and posted it in the Moodle course shell. When students registered for RADS 5910, students were advised about the comprehensive exam to help them prepare. While these strategies had a positive effect in 2021, the results were not sustained in 2022. Three students scored below the 80% benchmark on their first attempt on the core portion of the comprehensive exam in 2022. In examining the areas where students are showing weaknesses on the exam, there does not appear to be a trend.

Last year, the faculty decided to phase out this measure in the future and replace it with a measure more specific to measuring the application of research evidence and skills in the practice setting. However, this measure will continue to be used for two more years. Additionally, since this exam is still an important part of the program, it is still essential that improvement strategies be implemented.

Decisions:

Measure A: Core Section of Comprehensive Exam

In 2022, the target was that 90% of students would score 80% or higher on their first attempt on the core portion of the comprehensive exam; however, only 70% met the benchmark. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Review the question pool for the core portion of the comprehensive exam and update it as needed.
- Review and revise study tips for the comprehensive exam.
- Create outlines for each course to help with preparation.
- Send reminders to students throughout the program to remember to keep assignments to help them study for the comprehensive exam.
- Create a video with information on preparing for the comprehensive exam.
- Continue to use this measure for two more years and then phase out and use measures C & D in its place.

These changes will improve the student's ability to apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

Findings:

Measure B: RADS 5510/5530 Evidence Based Practice Project for Education and Administration

2022: Unmet, 83% of students achieved an 85% or higher.

Analysis:

Measure B: RADS 5510/5530 Evidence Based Practice Project for Education and Administration

In 2021, this measure met the benchmark for the third year in a row, and the average score also improved. Faculty continued to improve this assignment by providing information on it to students before they registered for the course to help them prepare for the expectations and requirements for it. Additionally, the instructions for identifying a mentor were updated, examples of EBP project topics were provided, and a video was created providing information on writing goals and objectives for the project. However, in 2022, the benchmark was not met by one student. This student had several components missing from their submission and did not provide adequate depth in several key areas. However, the mean score for all students was 94.67%, which is still a good mean score for the project.

Decisions:

Measure B: RADS 5510/5530 Evidence Based Practice Project for Education and Administration

In 2022, the target was that 100% of students would score 85% or higher on the Evidence-Based Practice Project; however, only 83% of students met the benchmark. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Continue to advise students of course requirements during registration.
- Request that students watch the video regarding the mentor and expectations for the course.
- Send email reminders about the Evidence-Based Practice Project requirements to help assure that students include all components of the project.

These changes will improve the student's ability to apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

Findings:

Measure C: RADS 5210 Teaching Methods Application Presentation

2022: Met, 100% of students scored 85% or higher.

Analysis:

Measure C: RADS 5210 Teaching Methods Application Presentation

This is a new measure being used in the assessment plan, and as such, no data is available from 2021. In 2022, the benchmark was met, with 100% of students scoring 85% or higher on the presentation. The average score was 97.2%. The faculty felt this

tool is a good measure for demonstrating students' ability to apply research evidence and skills in the practice setting as an educator. However, since the student scores were similar on this assignment, the faculty felt the rubric should be reviewed.

Decisions:

Measure C: RADS 5210 Teaching Methods Application Presentation

In 2022, the target was that 100% of students would score 85% or higher on the Teaching Methods Application Presentation, and the benchmark was met. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Review and revise the guidelines and rubric for this assignment to ensure that the data provides useful information regarding students' ability to apply research evidence and skills in the practice setting as an educator.
- Continue to use this tool to measure students' ability to apply research evidence and skills in the practice setting and begin to get data that can be trended.

These changes will improve the student's ability to apply research evidence and skills in the practice setting as an educator in the radiologic sciences to improve practice.

Findings:

Measure D: RADS 5330 Cybersecurity Assessment

2022: Unmet, 90% of students achieved an 85% or higher.

Analysis:

Measure D: RADS 5330 Cybersecurity Assessment

This is a new measure being used in the assessment plan, and as such, no data is available from 2021. In 2022, only 90% of students met the benchmark for this measure. One student scored below the benchmark. This student did not provide enough depth or detail to meet the expectations for the assignment. It appeared that the assignment might have been hurried since there were APA and grammatical errors as well.

Decisions:

Measure D: RADS 5330 Cybersecurity Assessment

In 2022, the target was that 100% of students would score 85% or higher on the Cybersecurity Assessment; however, only 90% of students met the benchmark. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Create a video to review the expectations for the assignment.
- Review and revise the guidelines for the assignment.
- Continue to use this tool to measure students' ability to apply research evidence and skills in the practice setting and begin to get data that can be trended.

These changes will improve the student's ability to apply research evidence and skills in the practice setting as an administrator in the radiologic sciences to improve practice.

Student Learning Outcome 3:

Demonstrate effective communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships.

Tool	Benchmark (Target)	Results					
A. Research individual presentation (RADS 5110). (spring & fall)	100% of students will achieve an average of 85% or higher.		**2022**	**2021**	**2020**	**2019**	**2018**
		N	13	16	10	4	7
		Tool	Pres	Pres	Pres	Pres	Pres / Paper
		Mean	95	97.6	98.5	95	92.8 / 69.8
		Range	92-100	90-100	95-100	92-100	84-98 / 44-90
		%	100	100	100	100	86 / 42
		# unmet	0	0	0	0	1 / 4

Tool	Benchmark (Target)	Results				
B. Group presentation (RADS 5110) (spring & fall)	100% of students will achieve an average of 85% or higher.		**2022**	**2021**	**2020**	**2019**
		N	14	16	10	4
		Mean	97	93	97	91
		Range	91-100	63-100	92-100	73-97
		%	100	88	100	80
		# unmet	0	2	0	1

SLO 3: Demonstrate effective communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships.

Findings:

Measure A: RADS 5110 Research Presentation

2022: Met, 100% of students scored 85 or higher on the individual presentation.

Analysis:

Measure A: RADS 5110 Research Presentation

This measure met the benchmark for the fourth year. The average has been trending slightly lower for the past two years; however, the students are still performing well on this assignment. For the last three years, faculty included more resources on creating a presentation and added more detail to the guidelines and rubric. These strategies have been successful to date.

Decisions:

Measure A: RADS 5110 Research Presentation

In 2022, the target was that 100% of students would score 85% or higher on the presentation, and for the 4th year in a row, the target was met. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive improvement:

- Course instructors will continue to include resources for creating presentations.

These actions will improve students' ability to demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships.

Findings:

Measure B: RADS 5110 Group presentation

2022: Met, 100% of students achieved an average of 85% or higher on the group presentation.

Analysis:

Measure B: RADS 5110 Group presentation

This measure was not met in 2021 due to two students who did not complete the assignment correctly. To drive improvement, the faculty reviewed and revised the guidelines for the group presentation to ensure that students understood the expectations for the assignment. Additionally, the faculty held a live online session to explain the assignment thoroughly. For students who were unable to attend, the session was recorded. These changes had positive results, and 100% of students scored an 85% or higher on the assignment.

Decisions:

Measure B: RADS 5110 Group presentation

In 2022, the target was that 100% of students would score an 85% or higher on the group presentation, and that target was met. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive improvement:

- Continue to hold live online sessions to explain the assignment thoroughly to students.

These actions will improve students' ability to demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships.

Student Learning Outcome 4:

Conduct research studies to contribute to and improve the practice of the radiologic sciences.

Tool	Benchmark (Target)	Results					
A. Applied research project (RADS 5910) (spring, summer & fall)	100% of students will receive a score of 85% or higher.		**2022**	**2021**	**2020**	**2019**	**2018**
		N	12	18	9	3	3
		Mean	95.7	100	99	100	96
		Range	87-100	100	92-100	100-100	89-100
		%	100	100	100	100	100
		# unmet	0	0	0	0	0
B. Survey development project (RADS 5123) (spring)	100% of students will receive a score of 85% or higher.		**2022**	**2021**	**2020**	**2019**	**2018**
		N	11	17	7	9	8
		Mean	93	96.6	93.5	93.1	93.1
		Range	77-100	93-100	81-100	90-100	86-100
		%	91	100	86	100	100
		# unmet	1	0	1	0	0
C. Literature Review (RADS 5110) (spring & fall)	100% of students will achieve an average of 80% or higher		**2022**	**2021**	**2020**	**2019**	**2018**
		N	13	16	10	4	7
		Mean	80.23	90.4	88.5	89	69.8
		Range	65-98	80-97	75-98	82-95	44-90
		%	38	100	80	100	42
		# unmet	8	0	2	0	4

SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.

Findings:

Measure A: RADS 5910 Applied Research Project

2022: Met, 100% of students achieved an 85% or higher.

Analysis:

Measure A: RADS 5910 Applied Research Project

This measure was met for the fifth year in a row. The strategies implemented for this measure and throughout the program have been successful. In 2022, faculty consistently used the revised rubric to grade the student's final projects. This provided more

information regarding student performance on this project. Since the rubric was used consistently, the average score decreased some but still indicates strong student performance.

Decisions:

Measure A: RADS 5910 Applied Research Project

In 2022, the target was that 100% of students would score 85% or higher on the Applied Research Project, and for the fifth year, this target was met. Based on the analysis of the 2022 results, the faculty will implement the following changes to drive improvement in 2023:

- Continue to use the revised rubric consistently on all projects.
- Examine the areas where students are having points deducted to determine if there are any trends.

These actions will improve students' ability to conduct research studies to contribute to and improve the practice of the radiologic sciences.

Findings:

Measure B: RADS 5123 Survey Development Project

2022: Unmet, 91% of students achieved an 85% or higher.

Analysis:

Measure B: RADS 5123 Survey Development Project

In 2021, this measure was met, and the mean score also increased. However, in 2022, only 91% of students achieved an 85% or higher. One student scored below the benchmark. This student was missing some components of the project, and it appeared that they did not devote adequate time to the assignment. To drive improvement, faculty offered online question-and-answer sessions to help students with project development. Additionally, some modules were revised to add more statistical content to help students. While one student did not meet the benchmark, the average score for all students was 93, which is still a strong average.

Decisions:

Measure B: RADS 5123 Survey Development Project

In 2022, the target was that 100% of students would score 85% or higher on the Survey Development Project; however, the benchmark was unmet, with 91% of students scoring 85% or higher. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement:

- Send email reminders that encourage students to start early on the assignment and outline its requirements.

These actions will improve students' ability to conduct research studies to contribute to and improve the practice of the radiologic sciences.

Findings:

Measure C: RADS 5110 Research Paper

2022: Unmet, 38% of students scored 80% or higher.

Analysis:

Measure C: RADS 5110 Research Paper

In 2021, this measure was met, and the mean score also increased. To drive improvement, the faculty encouraged students to continue to develop their topics from RADS 5010 and RADS 5110. Additionally, an AI online system allowed students to get feedback on their papers before submitting them for grading. However, in 2022, there was a dramatic drop, only 38% of students achieved the benchmark for this measure, and the mean score dropped 10 points to 80.23. In carefully examining the data for this measure, it was determined that the major issue students were having was that they were not adequately developing their topics. While they were continuing to use the topics from 5010, they were doing little to expand what they had previously written. In talking to students, it was clear that they were not understanding some key components and expectations for the assignment. In the past, student writing was an issue. That does not seem to be the case now. Rather the issue is that students are not adding the breadth and depth necessary for a thorough literature on their topics.

Decisions:

Measure C: RADS 5110 Research Paper

In 2022, the target was that 100% of students would score an 80% or higher on their 5110 research papers; however, only 38% of students met the benchmark. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement:

- Create a video describing the expectations for the assignment.
- Revise guidelines for the assignment to provide more detail for students.
- Create templates for assignments to help students ensure that they include all required components.
- Provide exemplars to help students understand the format and expectations.
- Hold live online sessions to answer student questions and provide more information for expectations.

These actions will improve students' ability to conduct research studies to contribute to and improve the practice of the radiologic sciences.

Student Learning Outcome 5:

Evaluate ethical standards in practice as a radiologic sciences educator or administrator.

Tool	Benchmark (Target)	Results										

Tool	Benchmark (Target)		2022		2021		2020		2019		2018	
A. Core and Concentration Sections of the Comprehensive Exam (spring, summer & fall)	90% of students will score 80% or better on both sections on the first attempt.	N	10		18		11		6		3	
		Tools	Core	Conc	Core	Conc	Core	Conc	Core	Conc	Core	Conc
		Mean	84	89	85	90	82	85	86	85	79.6	78.6
		Range	72-96	70-100	80-95	75-100	41-98	70-100	81-96	80-95	65-91	66-85
		%	70	80	100	94.4	82	82	100	100	66	66
		# unmet	3	2	0	1	2	2	0	0	1	1

B. Legal and Ethical presentation (RADS 5030) (summer)	100% of students will achieve an average of 85% or higher.		2022	2021	2020	2019	2018
		N	19	10	21	15	9
		Mean	98	95	97.71	97.5	95.3
		Range	90-100	76-100	86-100	86-100	80-100
		%	100	90	100	100	89
		# unmet	0	1	0	0	1

C. CITI Social & Behavioral Research Modules (RADS 5010) (spring)	100% of students will receive a total score of 90% or higher.		2022
		N	36
		Mean	92.31
		Range	81-100
		%	69.44
		# unmet	11

SLO 5: Evaluate ethical standards in practice as a radiologic sciences educator or administrator.

Findings:

Measure A: Core and Concentration Sections of Comprehensive Exam

2022: Unmet, 70% of students achieved an 80% or better on the core and concentration sections of the comprehensive exam.

Analysis:

Measure A: Core and Concentration Sections of Comprehensive Exam

As previously stated for SLO 1 and 2, in 2021, there was a significant improvement, and the target was met, with 100% of students scoring 80% or higher on the core section of the comprehensive exam. This SLO also examines the concentration portion of the exam as well, and 94% of students met that benchmark in 2021. Faculty implemented several changes to drive improvement, which continued in 2022. Specifically, the MSRS coordinator developed a list of tips for preparing for the comprehensive exam and posted it in the Moodle course shell. When students registered for RADS 5910, students were advised about the comprehensive exam to help them prepare. While these strategies had a positive effect in 2021, the results were not sustained in 2022. Three students scored below the 80% benchmark on their first attempt on the core portion of the comprehensive exam in 2022, and two students scored below the benchmark for the concentration portion of the exam. In examining the areas where students are showing weaknesses on the core portion of the exam, there does not appear to be a trend. For the concentration portion, both unsuccessful students were in the administration concentration. There did not appear to be any trend regarding the areas they struggled with for the concentration portion.

Last year, the faculty decided to phase out this measure in the future and replace it with a measure that is more specific to measuring ethical standards. However, this measure will continue to be used for two more years. Additionally, since this exam is still an important part of the program, it is still essential that improvement strategies be implemented.

Decisions:

Measure A: Core and Concentration Sections of Comprehensive Exam

In 2022, the target was that 90% of students would score 80% or higher on their first attempt on the core and concentration portions of the comprehensive exam; however, only 70% met the benchmark for the core portion, and 80% met the benchmark for the concentration portion. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement.

- Review the question pool for the core and concentration portions of the comprehensive exam and update it as needed.
- Review and revise study tips for the comprehensive exam.
- Create outlines for each course to help with preparation.
- Send reminders to students throughout the program to remember to keep assignments to help them study for the comprehensive exam.
- Create a video with information on preparing for the comprehensive exam.
- Continue to use this measure for two more years and then phase out and use measure C in its place.

These actions will improve students' ability to evaluate ethical standards in practice as a radiologic sciences educator or administrator.

Findings:

Measure B: RADS 5030 Legal and Ethical Presentation

2022: Met, 100% of students achieved an 85% or higher.

Analysis:

Measure B: RADS 5530 Legal and Ethical Presentation

In 2021, this measure was unmet, with 90% meeting the benchmark. One student scored below the benchmark. However, the average scores are still high for this assignment. To drive improvement in 2022, the faculty provided updated sample presentations for students to review to set the expectations of the assignment. In 2022, the benchmark was met, and the average score increased to 98%.

Decisions:

Measure B: RADS 5530 Legal and Ethical Presentation

In 2022, the target was met, with 100% of students scoring 85% or higher on the Legal and Ethical Presentation. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement:

- Continue to allow students to review current sample presentation assignments to set the expectations for the quality of the assignment.

These actions will improve students' ability to evaluate ethical standards in practice as a radiologic sciences educator or administrator.

Findings:

Measure C: RADS 5010 CITI Social & Behavioral Research Module

2022: Unmet, 69.44% of students achieved a total score of 90% or higher.

Analysis:

Measure C: RADS 5010 CITI Social & Behavioral Research Module

This is a new measure being used in the assessment plan, and as such, no data is available from 2021. In 2022, only 69.44% of students scored 90% or higher on the CITI training modules. Eleven students scored below the benchmark, and the average score was 92. The faculty examined the student scores carefully and reviewed the set benchmark. In order to pass the modules, students must score 80% or higher. The faculty discussed if the benchmark was appropriate for the measure.

Decisions:

Measure C: RADS 5010 CITI Social & Behavioral Research Module

In 2022, the target was unmet, with only 69.44% meeting the benchmark of scoring 90% or higher on the CITI Social & Behavioral Research Module. Based on the analysis of the 2022 results, the faculty will implement the following changes in 2023 to drive the cycle of improvement:

- Based on the analysis of the benchmark that was originally set, the benchmark will be revised to a score of 85% or higher.

- Emphasize the importance of the modules to students before they complete them.
- Continue to use this tool to measure students' ability to evaluate ethical standards in practice and begin to obtain data for trending.

These actions will improve students' ability to evaluate ethical standards in practice as a radiologic sciences educator or administrator.

Summary of 2022 Assessment for the MSRS program

In 2021, there were 12 benchmarks in the MSRS assessment plan. In 2022 five new tools to measure the SLOs were introduced into the MSRS assessment plan, and one was removed for a total of 16 benchmarks. Over the next two years, three more tools will be removed from the plan as trended data is obtained for the new measures. Overall, out of 16 benchmarks, there were ten that were not met. This was disappointing; however, in examining the data and the reasons for not achieving the benchmarks, there were several important observations made. First, in several cases, the benchmark was not met due to only one or two students being unsuccessful on an assignment. Therefore, most students were successful. Second, the new measures added to the assessment plan will provide a better assessment of student learning. However, there is still some refinement that needs to occur in terms of the targets that were set and the measures themselves. Over time, the MSRS faculty will have a better assessment of student learning in the program. MSRS faculty have developed action plans to improve all 5 SLOs. Some strategies implemented in previous assessment cycles have effectively improved student outcomes. However, there are still some measures that need continued improvement.

Comprehensive Summary of Key Evidence of Improvements Based on Analysis of Results

As always, continuous improvement is the focus of the program. There have been numerous changes that have been implemented throughout the program to positively affect student learning. Most of these changes were brought about through the assessment process. Below are some examples of the changes that have occurred during the 2022 assessment cycle to improve student learning outcomes for the MSRS program:

- SLO 1: Utilize critical thinking skills to resolve issues in radiologic or healthcare-related problems.
  - Revised the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area included:
    - Copies of course syllabi
    - Tips for exam preparation
  - Advised students registering for RADS 5910 regarding comprehensive exam preparation.
  - Reviewed comprehensive examination questions and revised exams.
  - Reviewed and revised critical analysis paper guidelines and rubric.

- o Added additional resources, including Turnitin, videos, tutorials, and artificial intelligence applications to help students improve writing assignments.
  - o Added new measures for SLO 1—RADS 5220 Item Analysis Assignment and RADS 5310 Quality Management Project and began a 3-year pilot. If they are successful, the Core Section of the Comprehensive Exam will be discontinued as a measure for SLO 1.
- SLO 2: Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.
  - o Revised the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area included:
    - Copies of course syllabi
    - Tips for exam preparation
    - Video describing the exam and strategies for preparing for the exam.
  - o Reviewed comprehensive examination questions and revised exams.
  - o Advised students registering for RADS 5910 regarding comprehensive exam preparation.
  - o Submitted EBP assignment instructions to students during registration.
  - o Revised instructions for identifying a mentor for the EBP project.
  - o Provided examples of previous topics for EBP projects completed in the past.
  - o Created a video with information on developing goals and objectives for the EBP project.
  - o Added new measures for SLO2—RADS 5210 Teaching Methods Application Presentation and RADS 5330 Cybersecurity Assessment and began a 3-year pilot. If they are successful, the Core Section of the Comprehensive Exam will be discontinued as a measure for SLO 2.
- SLO 3: Demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships.
  - o Included resources for creating presentations.
  - o Discontinued measure B: RADS 5030 Presentation for SLO 3.
  - o Allowed students to review current sample presentation assignments to set expectations for the quality of assignments.
  - o Reviewed and revised guidelines and rubric for the group presentation in RADS 5110.
- SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
  - o Added location in RADS 5910 to submit rubric for final paper evaluation.
  - o Offered online question-and-answer sessions to help students with project development in RADS 5123.
  - o Revised modules in RADS 5123 to add more statistical content to help students.
  - o Encouraged students to continue to develop topics from RADS 5010 in RADS 5110.
  - o Used an AI online system to allow students to get feedback on their papers prior to submitting them for grading.

- SLO 5: Evaluate ethical standards in practice as a radiologic sciences educator or administrator
  - Revised the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area included:
    - Copies of course syllabi
    - Tips for exam preparation
    - Video describing the exam and strategies for preparing for the exam.
  - Advised students registering for RADS 5910 regarding comprehensive exam preparation.
  - Reviewed comprehensive examination questions and revised exams.
  - Added new measure for SLO 5—RADS 5010 CITI Social & Behavioral Research module and began a 3-year pilot. If the measure is successful, the Core and Concentration Sections of the Comprehensive Exam will be discontinued as a measure for SLO 5.

Plan of Action Moving Forward in 2023

Based on the evidence provided by the 2022 assessment plan, the MSRS program will make the following changes for continuous program improvement:

- SLO 1: Utilize critical thinking skills to resolve issues in radiologic or healthcare-related problems.
  - Review the question pool for the core portion of the comprehensive exam and update it as needed.
  - Review and revise study tips for the comprehensive exam.
  - Create outlines for each course to help with preparation.
  - Send reminders to students throughout the program to remember to keep assignments to help them study for the comprehensive exam.
  - Create a video with information on preparing for the comprehensive exam.
  - Continue to use measure A for two more years and then phase out and use measures C & D in its place.
  - Review and revise the guidelines and rubric to ensure they are congruent with the new topic for the paper.
  - Create a video to provide more information to students regarding the expectations for the assignment.
  - Implement Feedback Fruits to review papers to give students feedback on their writing before submission.
  - Review and revise the guidelines and rubric for measure C to ensure the data provides useful information regarding students' critical thinking abilities.
  - Continue to use tool C to measure critical thinking and begin to get data that can be trended.
  - Utilize additional methods to remind students of due dates, such as recorded video or audio messages.
  - Provide an exemplar to demonstrate the intent of the assignment for measure D.
  - Continue to use tool D to measure critical thinking and begin to get data that can be trended.
- SLO 2: Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

- Review the question pool for the core portion of the comprehensive exam and update it as needed.
- Review and revise study tips for the comprehensive exam.
- Create outlines for each course to help with preparation.
- Send reminders to students throughout the program to remember to keep assignments to help them study for the comprehensive exam.
- Create a video with information on preparing for the comprehensive exam.
- Continue to use measure A for two more years and then phase out and use measures C & D in its place.
- Continue to advise students of course requirements during registration.
- Request that students watch the video regarding the mentor and expectations for the course.
- Send email reminders about the Evidence-Based Practice Project requirements to help assure that students include all components of the project.
- Review and revise the guidelines and rubric for measure C to ensure that the data provides useful information regarding students' ability to apply research evidence and skills in the practice setting as an educator.
- Continue to use tool C to measure students' ability to apply research evidence and skills in the practice setting and begin to get data that can be trended.
- Create a video to review the expectations for the assignment for measure D.
- Review and revise the guidelines for the assignment for measure D.
- Continue to use tool D to measure students' ability to apply research evidence and skills in the practice setting and begin to get data that can be trended.

- SLO 3: Demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships.
  - Course instructors will continue to include resources for creating presentations.
  - Continue to hold live online sessions to explain the assignment thoroughly to students.
- SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
  - Continue to use the revised rubric for measure A consistently on all projects.
  - Examine the areas where students are having points deducted to determine if there are any trends for measure A.
  - Send email reminders encouraging students to start early on the assignment for measure B and outline its requirements.
  - Create a video describing the expectations for the assignment for measure C.
  - Revise guidelines for the assignment for measure C to provide more detail for students.
  - Create templates for measure C assignments to help students ensure that they include all required components.
  - Provide exemplars to help students understand the format and expectations.
  - Hold live online sessions to answer student questions and to provide more information for expectations for measure C.

- SLO 5: Evaluate ethical standards in practice as a radiologic sciences educator or administrator.
  - Review the question pool for the core and concentration portions of the comprehensive exam and update it as needed.
  - Review and revise study tips for the comprehensive exam.
  - Create outlines for each course to help with preparation for the exam.
  - Send reminders to students throughout the program to remember to keep assignments to help them study for the comprehensive exam.
  - Create a video with information on preparing for the comprehensive exam.
  - Continue to use measure A for two more years and then phase out and use measure C in its place.
  - Continue to allow students to review current sample presentation assignments to set the expectations for the quality of the assignment.
  - Based on the analysis of the benchmark that was originally set, the benchmark for measure C will be revised to a score of 85% or higher.
  - Emphasize the importance of the modules to students before they complete them.
  - Continue to use tool C to measure students' ability to evaluate ethical standards in practice and begin to obtain data for trending.