

College: College of Nursing and School of Allied Health

Degree Program: Master of Science in Radiologic Sciences

Assessment Year: 2021

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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.

MSRS ASSESSMENT 2021

Student Learning Outcome 1:

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

Tool	Benchmark (Target)	Results					
		2021	2020	2019	2018	2017	
A. Core Section of the Comprehensive Exam (spring, summer & fall)	90% of students will score an 80 or better on first attempt.	N	18	11	6	3	8
		Mean	85	82	86	79.6	83
		Range	80-95	41-98	80-96	65-91	62-93
		%	100	81	100	66	75
		# unmet	0	2	0	1	2
B. Critical Analysis Paper (RADS 5020) (fall)	100% of students will achieve an average of 85% or higher	N	17	23	16	11	10
		Mean	91.4	89.5	87	90.7	83.6
		Range	70-97	70-99	25-100	74-98	50-92
		%	94	79	81	90	90
		# unmet	1	5	3	1	1

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

Findings:

Measure A: Core Section of Comprehensive Exam

2021: Met, 100% of students scored 80% or higher.

2020: Unmet, 81% of students scored an 80% or higher.

2019: Met, 100% of students scored an 80% or higher.

2018: Unmet, 66% of students scored an 80% or higher.

2017: Unmet, 75% of students scored an 80% or higher

Measure B: RADS 5020 Critical Analysis Paper

2021: Unmet, 94% of students scored an 85% or higher.

2020: Unmet, 79% of students scored an 85% or higher.

2019, Unmet, 81% of students scored an 85% or higher.

2018: Unmet, 90% of students scored an 85% or higher.

2017: Unmet, 90% of students scored an 85% or higher.

Analysis: Based on the analysis of the 2020 assessment results in 2021 the faculty implemented the following changes to drive improvement.

Measure A: Core Section of Comprehensive Exam

There was a significant improvement for this measure in 2021. Based on the analysis of the 2020 results in 2021 the faculty implemented the following changes to drive improvement. Last year, the MSRS coordinator developed a list of tips for how to prepare for the comprehensive exam and posted it in the Moodle course shell. Additionally, informational sessions were held to explain the expectations for the comprehensive exam and to answer any student questions. When

students registered for RADS 5910, students were advised about the comprehensive exam to help them prepare. It appears that these strategies have improved the student outcomes for this measure. Faculty discussed the possibility of phasing out this measure in the future and replacing it with a measure that is more specific to measuring critical thinking.

Measure B: RADS 5020 Critical Analysis Paper

In 2020, 79% of students met the benchmark for this measure. In 2021, this improved to 94% of students meeting the benchmark with only 1 student scoring below the benchmark. Additionally, the mean score for this measure showed improvement over last year as well. This measure has been trending upward for the last 2 years. The one student scoring below the benchmark had numerous errors including grammar, spelling, APA, and not providing a clear argument. Based on the analysis of the 2020 results in 2021 the faculty implemented serious efforts to help improve student writing. Numerous resources and assignments were threaded throughout the program to help students develop the skills necessary to be successful. The graduate coordinator added several resources in the MSRS resources Moodle shell regarding APA format, library search strategies, and how to find peer reviewed literature. Faculty included short videos regarding guidelines for certain assignments to help clarify expectations. Faculty conducted online meetings in courses to help students understand research projects and give students the opportunity to ask questions. For students who could not attend the virtual meeting sessions, the recordings were posted in Moodle for viewing. Faculty encouraged students to attend the library search strategies sessions offered by the library.

Decisions: Based on the 2021 assessment results, in 2022 the following changes will be implemented to drive the cycle of improvement. In terms of students' ability to utilize critical thinking skills to resolve issues in radiologic or healthcare-related problems, evidence shows there has been improvement, but more can be done to continue this progress. The following actions will be implemented:

- The MSRS coordinator will revise the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area will include:
 - Copies of course syllabi
 - Tips for exam preparation
 - Video describing the exam and strategies for preparing for the exam
- The MSRS coordinator will continue to advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
- Faculty will review the comprehensive exam to assure it is up to date with the current course content.
- Review and revise critical analysis paper guidelines and rubric to resolve any areas of confusion.
- Add additional resources such as Turnitin, videos, tutorials, and artificial intelligence applications to help student improve writing assignments.

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- Add new measures for SLO 1—RADS 5220 Item Analysis Assignment and RADS 5310 Quality Management Project. These measures will be piloted for 3 years and if they are successful the Core Section of the Comprehensive Exam will be discontinued as a measure for SLO 1.

These actions will improve students' ability to utilize critical thinking skills to resolve issues in radiologic or healthcare-related problems.

MSRS ASSESSMENT 2021

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					
		2021	2020	2019	2018	2017	
A. Core Section of the Comprehensive Exam (spring, summer & fall)	90% of students will score an 80 or better for first attempt.	N	18	11	6	3	8
		Mean	85	82	86	79.6	83
		Range	80-95	41-98	80-96	65-91	62-93
		%	100	81	100	66	75
		# unmet	0	2	0	1	2
B. Evidence based practice project for education and administration) RADS 5510/5530) (spring & summer)	100% of students will score an 80 or higher on evidence-based project	N	21	5	10	4	4
		Mean	98	96	95	91.25	92.2
		Range	92-100	90-100	80-100	79-100	87-94
		%	100	100	100	75	100
		# unmet	0	0	0	1	0

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

2021: Met, 100% of students scored 80% or higher

2020: Unmet, 81% of students achieved an 80% or higher

2019: Met, 100% of students achieved an 80% or higher

2018: Unmet, 66% of students achieved an 80% or higher.

2017: Unmet, only 75% of students achieved an 80% or higher.

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

2021: Met, 100% of students achieved an 80% or higher

2020: Met, 100% of students achieved an 80% or higher

2019: Met, 100% of students achieved an 80% or higher

2018: Unmet, 75% of students scored an 80% or higher.

2017: Met, 100% of students achieved an 80% or higher.

Analysis: Based on the analysis of the 2020 assessment results in 2021 the faculty implemented the following changes to drive improvement.

Measure A: Core Section of Comprehensive Exam

As previously stated for SLO 1, there was a significant improvement for this measure in 2021. During 2021, the MSRS coordinator developed a list of tips for how to prepare for the comprehensive exam and posted it in the Moodle course shell. Additionally, informational sessions were held to explain the expectations for the comprehensive exam and to answer any student questions. When students registered for RADS 5910, students were advised about the comprehensive exam to help them prepare. It appears that these strategies have improved the student outcomes for this measure. Faculty discussed the possibility of phasing out this measure in the future and replacing it with a measure that is more specific to applying research evidence in the administration and education concentrations.

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

For third year, this measure has met the benchmark. Additionally, the average score has continued to improve as well. Although this measure has been met for the last 3 years, faculty have continued to make improvements to this assignment. Information on the assignment was sent to students before they register for the course to help them prepare for the expectations and requirements for the assignment. The graduate coordinator and faculty teaching the course answered student questions prior to the course to help them find a mentor and identify a possible project. These strategies helped students to be better prepared to meet the expectations for the assignment.

Decisions: Based on the 2021 assessment results, in 2022 the following changes will be implemented to drive the cycle of improvement. In terms of students' ability to apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice, the following actions will be implemented:

- The MSRS coordinator will revise the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area will include:
 - Copies of course syllabi
 - Tips for exam preparation
 - Video describing the exam and strategies for preparing for the exam
- The MSRS coordinator will continue to advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
- Faculty will review the comprehensive exam to assure it is up to date with the current course content.
- Submit EBP assignment instructions during registration.
- Revise instructions for identifying a mentor for the EBP project.

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- Provide examples of previous topics for EBP projects completed in the past.
- Create a video with information on developing goals and objectives for the EBP project.
- Add new measures for SLO2—RADS 5210 Teaching Methods Application Presentation and RADS 5330 Cybersecurity Assessment. These measures will be piloted for 3 years and if they are successful the Core Section of the Comprehensive Exam will be discontinued as a measure for SLO 2.

These actions will maintain students' ability to apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

MSRS ASSESSMENT 2021

Student Learning Outcome 3:

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

Tool	Benchmark (Target)	Results							
			2021	2020	2019	2018		2017	
A. Research individual presentation (RADS 5110). (spring & fall)	100% of students will achieve an average of 85% or higher	N	16	10	4	7		5	
		Tool	Pres	Pres	Pres	Pres	Paper	Pres	Paper
		Mean	97.6	98.5	95	92.8	69.8	97	83.6
		Range	90-100	95-100	92-100	84-98	44-90	90-100	64-97
		%	100	100	100	86	42	100	60
		# unmet	0	0	0	1	4	0	2
B. Legal and Ethical Presentation (RADS 5030) (summer)	100% of students will achieve an average of 85% or higher		2021	2020	2019	2018	2017		
		N	10	21	15	9	7		
		Mean	95	97.71	97.5	95.3	99		
		Range	76-100	86-100	86-100	80-100	95-100		
		%	90	100	100	89	100		
		# unmet	1	0	0	1	0		
C. Group presentation (RADS 5110) (spring & fall)	100% of students will achieve an average of 85% or higher		2021	2020	2019				
		N	16	10	4				
		Mean	93	97	91				
		Range	63-100	92-100	73-97				
		%	88	100	80				
		# unmet	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

2021: Met, 100% of students scored 85 or higher on the individual presentation.

2020: Met, 100% of students achieved an 85% or higher for individual presentation.

2019: Met, 100% of students achieved an 85% or higher for presentation. The measurement of the paper tool was removed.

2018: Unmet, only 42% of students achieved an 85% or higher on the research paper assignment. Unmet, 86% met for presentation.

2017: Unmet, only 60% of students achieved an 85% or higher on the research paper assignment. 100% met for presentation.

Measure B: RADS 5030 Presentation

2021: Unmet, 90% of students scored an 85% or higher.

2020: Met, 100% of students achieved an 85% or higher.

2019: Met, 100% of students achieved an 85% or higher.

2018: Unmet, 89% of students achieved an 85% or higher.

2017: Met, 100% of students achieved an 85% or higher.

Measure C: RADS 5110 Group presentation

2021: Unmet, 88% of students scored an 85% or higher on the group presentation.

2020: Met, 100% of students achieved an average of 85% or higher on group presentation.

2019: Unmet, 80% of students achieved an 85% or higher.

Analysis: Based on the analysis of the 2020 assessment results in 2021 the faculty implemented the following changes to drive improvement.

Measure A: RADS 5110 Research Presentation

This measure met the benchmark for the third year. The average was very slightly lower than the previous year; however, the students are still performing well on this assignment. For the last two 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.

Measure B: RADS 5030 Presentation

This measure was unmet this year with one student not achieving the benchmark. However, the average scores are still high for this assignment. The student who was unsuccessful did not include all of the required components of the project. The guidelines and rubric are provided clear expectations and requirements. However, the student did not follow all of the instructions. For measure B, in 2021, faculty provided updated sample presentations for students to review for setting the expectations of the assignment. Currently, this measure is used to assess two SLOs in the assessment plan. Faculty felt that this measure was a better fit for SLO 5 and should be discontinued for SLO 3. Since SLO 3 has two other measures that are providing excellent data for the assessment of student achievement, faculty will remove this measure for SLO 3 next year.

Measure C: RADS 5110 Group presentation

This is a relatively new measure for this SLO. This measure was not met in 2021 due to two students who did not complete the assignment correctly. The two students were the only two students in the group and did not understand the expectations for the assignment. In following up with these students, it was found that they did not carefully review the guidelines or the rubric for the assignment; therefore, they missed some key components of the presentation.

Decisions: Based on the 2021 assessment results, in 2022 the following changes will be implemented to drive the cycle of improvement. In terms of students' ability to demonstrate effective communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships, the following actions will be implemented:

- Course instructors will include resources for creating presentations.
- Discontinue measure B: RADS 5030 Presentation for SLO 3 in 2022.
- Allow students to review sample presentation assignments to set the expectations for the quality of assignment.
- Review and revise guidelines and rubric for group presentation in RADS 5110.

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

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Student Learning Outcome 4:

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

Tool	Benchmark (Target)	Results					
		2021	2020	2019	2018	2017	
A. Applied research project (RADS 5910) (spring, summer & fall)	100% of students will receive a score of 85% or higher.	N	18	9	3	3	8
		Mean	100	99	100	96	97
		Range	100	92-100	100-100	89-100	79-100
		%	100	100	100	100	94
		# unmet	0	0	0	0	1
B. Survey development project (RADS 5123) (spring & summer)	100% of students will receive a score of 85% or higher.	N	17	7	9	8	8
		Mean	96.6	93.5	93.1	93.1	88.3
		Range	93-100	81-100	90-100	86-100	69-100
		%	100	86	100	100	87.5
		# unmet	0	1	0	0	1
C. Literature Review (RADS 5110) (spring & fall)	100% of students will achieve an average of 80% or higher	N	16	10	4	7	5
		Mean	90.4	88.5	89	69.8	83.6
		Range	80-97	75-98	82-95	44-90	64-97
		%	100	80	100	42	60
		# unmet	0	2	0	4	2

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

Findings:

Measure A: RADS 5910 Applied Research Project

2021: Met, 100% of students achieved an 85% or higher.

2020: Met, 100% of students achieved an 85% or higher.

2019: Met, 100% of students achieved an 85% or higher.

2018: Met, 100% of students achieved an 85% or higher.

2017: Unmet, 94% of students achieved an 85% or higher.

Measure B: RADS 5123 Survey Development Project

2021: Met, 100% of students achieved an 85% or higher.

2020: Unmet, 86% of students achieved an 85% or higher.

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2019: Met, 100% of students achieved an 85% or higher.

2018: Met, 100% of students achieved an 85% or higher.

Measure C: RADS 5110 Research Paper

2021: Met, 100% of students scored 80% or higher.

2020: Unmet, 80% of students scored 80% or higher.

2019: Met, 100% of students achieved an 80% or higher.

2018, Unmet, only 42% of students achieved an 80% or higher.

2017: Unmet, only 60% of students achieved an 80% or higher.

2017: Unmet, 87% of students achieved an 85% or higher.

Analysis: Based on the analysis of the 2020 assessment results in 2021 the faculty implemented the following changes to drive improvement.

Measure A: RADS 5910 Applied Research Project

This measure was met for the fourth year in a row. It appears that the strategies implemented for this measure and throughout the program have been successful. In 2021, faculty began using the revised rubric to grade the student's final project. The rubric was revised to be more reflective of the expectations for this assignment. Faculty feel the rubric is a better measure of student performance, however, the use of the rubric has not been consistent with all faculty.

Measure B: RADS 5123 Survey Development Project

This measure was met this year and the mean score increased as well. This seems that the strategies that were implemented have been successful. In 2021, the course faculty and statistician continued with an additional online question and answer session to assist students on the survey development project. Students were given questions ahead of time to consider their project design. During the session students shared their responses and received feedback from faculty. Last year only one student, who was identified as weak academically did not reach the benchmark. This year all students met the benchmark.

Measure C: RADS 5110 Research Paper

This measure was met this year and the mean score increased as well. Last year two students did not meet the benchmark and faculty implemented strategies to guide students to develop papers based on previous topics. In 2021, faculty worked with students to develop topics that they had started in their previous research course. This allowed them to improve that topic and build on what they had already started. The improvement seems to indicate that these strategies were successful.

Decisions: Based on the 2021 assessment results, in 2022 the following changes will be implemented to drive the cycle of improvement. In terms of students' ability to conduct research studies to contribute to and improve the practice of the radiologic sciences, the following actions will be implemented:

- Add location in RADS 5910 to submit rubric for final paper evaluation. When the final version of the paper is submitted and signed by faculty, the lead faculty member will complete the rubric and submit it in RADS 5910.
- Offer online question and answer sessions to help students with project development in RADS 5123.
- Revise modules in RADS 5123 to add more statistical content to help students.
- Encourage students to continue to develop topics from RADS 5010 in RADS 5110.
- Use AI online system to allow students to get feedback on their papers prior to submitting for grading.

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

MSRS ASSESSMENT 2021

Student Learning Outcome 5:

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

Tool	Benchmark (Target)	Results										
		2021		2020		2019		2018		2017		
A. Core and Concentration Sections of the Comprehensive Exam (spring, summer & fall)	90% of students will score 80% or better on both sections for first attempt.	N	18		11		6		3		8	
		Tools	Core	Conc	Core	Conc	Core	Conc	Core	Conc	Core	Conc
		Mean	85	90	82	85	86	85	79.6	78.6	83	80
		Range	80-95	75-100	41-98	70-100	81-96	80-95	65-91	66-85	70-93	40-95
		%	100	94.4	82	82	100	100	66	66	75	88
		# unmet	0	1	2	2	0	0	1	1	2	1
B. Legal and Ethical presentation (RADS 5030) (summer)	100% of students will achieve an average of 85% or higher	2021		2020		2019		2018		2017		
		N	10		21		15		9		7	
		Mean	95		97.71		97.5		95.3		99	
		Range	76-100		86-100		86-100		80-100		95-100	
		%	90		100		100		89		0	
		# unmet	1		0		0		1		0	

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

Findings:

Measure A: Core and Concentration Sections of Comprehensive Exam

2021: Met, 94.4% of students achieved an 80% or better on the core and concentration sections of the comprehensive exam.

2020: Unmet, 82% of students achieved an 80% or higher on the core section and 85% of students achieved an 80% or higher on the concentration section.

2019: Met, 100% of students achieved an 80% or better on the core and concentration sections of the comprehensive exam.

2018: Unmet, 66% of students achieved an 80% or higher on the core section and 66% of students achieved an 80% or higher on concentration section.

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2017: Unmet, 75% of students achieved an 80% or higher on the core section and 88% of students achieved an 80% or higher on concentration section.

Measure B: RADS 5030 Legal and Ethical Presentation

2021: Unmet, 90% of students achieved an 85% or higher.

2020: Met, 100% of students achieved an 85% or higher.

2019: Met, 100% of students achieved an 80% or higher.

2018: Unmet, 89% of students achieved an 80% or higher.

2017: Met, 100% of students achieved an 80% or higher.

Analysis: Based on the analysis of the 2020 assessment results in 2021 the faculty implemented the following changes to drive improvement.

Measure A: Core and Concentration Sections of Comprehensive Exam

This measure was met for the 2021 assessment cycle and the mean scores increased for the core and concentration sections over 2020. Additionally, the number of students taking the test also has increased as the MSRS program continues to grow. Faculty discussed the possibility of phasing out this measure in the future and replacing it with a measure that is more specific to evaluating ethical standards.

In 2021, the MSRS coordinator implemented several strategies to help improve this measure. First, a list of tips for how to prepare for the comprehensive exam was created and posted in the Moodle course shell. Second, online informational sessions were held to explain the expectations for the comprehensive exam and to answer any student questions. For students who were unable to attend these sessions, recordings were made and posted to allow viewing at a later time. When students registered for RADS 5910, students were advised about the comprehensive exam to help them prepare. It appears that these strategies have improved the student outcomes for this measure.

Measure B: RADS 5530 Legal and Ethical Presentation

This measure was unmet this year with one student not achieving the benchmark. However, the average scores are still high for this assignment. For measure B, in 2021, faculty provided updated sample presentations for students to review for setting the expectations of the assignment. The student who was unsuccessful did not include all the required components of the project. The guidelines and rubric provided clear expectations and requirements. However, the student did not follow all the instructions.

Decisions: Based on the 2021 assessment results, in 2022 the following changes will be implemented to drive the cycle of improvement. In terms of students' abilities to evaluate ethical standards in practice as a radiologic sciences educator or administrator, the following actions will be implemented:

- The MSRS coordinator will revise the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area will include:
 - Copies of course syllabi
 - Tips for exam preparation
 - Video describing the exam and strategies for preparing for the exam
- The MSRS coordinator will continue to advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
- Faculty will review the comprehensive exam to assure it is up to date with the current course content.
- Allow students to review current sample presentation assignments to set the expectations for the quality of assignment.
- Add new measure for SLO 5—RADS 5010 CITI Social & Behavioral Research module. This measure will be piloted for 3 years and if the measure is successful the Core and Concentration Sections of the Comprehensive Exam will be discontinued as a measure for SLO 5.

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

Summary of 2021 Assessment for the MSRS program

Overall, out of 12 benchmarks, there were four that were not met. This was a slight decrease in the number of benchmarks that were met from the previous year. In looking at each benchmark, there was an improvement in the mean for 7 out of 12. Two means remained the same with only 1% difference. MSRS faculty have developed action plans to improve all 5 SLOs. Some strategies that were implemented in previous assessment cycles have been effective in improving student outcomes. However, there are still some measures that need continued improvement. In several instances of unmet benchmarks, there were only one or two students that accounted for the decrease. Faculty will work to identify weak students early in the program to help them to improve any identified deficiencies.

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 2021 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.
 - Posted comprehensive exam preparation tips in MSRS resources shell.
 - Advised students registering for RADS 5910 regarding comprehensive examination preparation.
 - Created master list of syllabi to share with students to prepare for comprehensive exam.
 - Offered live meeting to answer questions regarding the comprehensive exam.
 - Shared information with students regarding online library help sessions.
 - Added APA resources to MSRS resources shell.
 - Held information sessions regarding assignments.
- SLO 2: Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.
 - Posted comprehensive exam preparation tips in MSRS resources shell.
 - Advised students registering for RADS 5910 regarding comprehensive examination preparation.
 - Created master list of syllabi to share with students to prepare for comprehensive exam.
 - Offered live meeting to answer questions regarding the comprehensive exam.
 - Sent EBP assignment instructions to students during advising prior to the start of the semester.
 - Shared EBP project guidelines, rubric and mentor information during registration.
- SLO 3: Demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships.
 - Provided more resources on creating a presentation and add more details to the guidelines and rubric.
 - Tracked trends in new measurement tool RADS 5110 group presentation.
 - Allowed students to review sample presentation assignments.
- SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
 - Allowed students to continue to develop their research topics from RADS 5010.
 - Offered online question and answer sessions to help students with assignments.
 - Shared information with students regarding online library help sessions.
 - Use revised rubrics for RADS 5910 final projects.
- SLO 5: Evaluate ethical standards in practice as a radiologic sciences educator or administrator

- Posted comprehensive exam preparation tips in MSRS resources shell.
- Advised students registering for RADS 5910 regarding comprehensive examination preparation.
- Created master list of syllabi to share with students to prepare for comprehensive exam.
- Offered live meeting to answer questions regarding the comprehensive exam.
- Allowed students to review sample presentations.

Plan of Action Moving Forward in 2022

Based on the evidence provided from the 2021 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.
 - The MSRS coordinator will revise the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area will include:
 - Copies of course syllabi
 - Tips for exam preparation
 - Video describing the exam and strategies for preparing for the exam
 - The MSRS coordinator will continue to advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
 - Faculty will review the comprehensive exam to assure it is up to date with the current course content.
 - Review and revise critical analysis paper guidelines and rubric to resolve any areas of confusion.
 - Add additional resources such as Turnitin, videos, tutorials, and artificial intelligence applications to help student improve writing assignments.
 - Add new measures for SLO 1—RADS 5220 Item Analysis Assignment and RADS 5310 Quality Management Project. These measures will be piloted for 3 years and 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.
 - The MSRS coordinator will revise the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area will include:
 - Copies of course syllabi
 - Tips for exam preparation
 - Video describing the exam and strategies for preparing for the exam

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- The MSRS coordinator will continue to advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
- Faculty will review the comprehensive exam to assure it is up to date with the current course content.
- Submit EBP assignment instructions during registration.
- Revise instructions for identifying a mentor for the EBP project.
- Provide examples of previous topics for EBP projects completed in the past.
- Create a video with information on developing goals and objectives for the EBP project.
- Add new measures for SLO2—RADS 5210 Teaching Methods Application Presentation and RADS 5330 Cybersecurity Assessment. These measures will be piloted for 3 years and 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.
 - Course instructors will include resources for creating presentations
 - Discontinue measure B: RADS 5030 Presentation for SLO 3 in 2022.
 - Allow students to review current sample presentation assignments to set the expectations for the quality of assignment.
 - Review and revise guidelines and rubric for group presentation in RADS 5110.
- SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
 - Add location in RADS 5910 to submit rubric for final paper evaluation.
 - Offer online question and answer sessions to help students with project development in RADS 5123.
 - Revise modules in RADS 5123 to add more statistical content to help students.
 - Encourage students to continue to develop topics from RADS 5010 in RADS 5110.
 - Use AI online system to allow students to get feedback on their papers prior to submitting for grading.
- SLO 5: Evaluate ethical standards in practice as a radiologic sciences educator or administrator
 - The MSRS coordinator will revise the MSRS resources Moodle shell to create a specific area for the comprehensive exam. This area will include:
 - Copies of course syllabi
 - Tips for exam preparation
 - Video describing the exam and strategies for preparing for the exam
 - The MSRS coordinator will continue to advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
 - Faculty will review the comprehensive exam to assure it is up to date with the current course content.

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- Add new measure for SLO 5—RADS 5010 CITI Social & Behavioral Research module. This measure will be piloted for 3 years and if the measure is successful the Core and Concentration Sections of the Comprehensive Exam will be discontinued as a measure for SLO 5.