

Assessment Cycle 2019-2020

Master of Science in Radiologic Sciences

College: Nursing and School of Allied Health

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Northwestern State University Mission Statement: Northwestern State University is a responsive, student-oriented institution that is committed to the creation, dissemination, and acquisition of knowledge through teaching, research, and service. The University maintains its highest priority excellence in teaching in graduate and undergraduate programs. Northwestern State University prepares its students to become productive members of society and promotes economic development and improvements in the quality of life of the citizens in its region.

College of Nursing and School of Allied Health Mission Statement: Northwestern State University College of Nursing and School of Allied Health serves the people of Louisiana and in so doing improves the health of its citizens while advancing the mission of Northwestern State University through excellence in accessible undergraduate, graduate, and continuing education programs that are designed to assist individuals in achieving their professional goals as responsible and contributing members of their profession and society.

School of Allied Health Mission Statement: The School of Allied Health at Northwestern State University of Louisiana is dedicated to providing high-quality undergraduate and graduate programs that prepare individuals for a variety of professional healthcare roles and to be conscientious, contributing members of their profession and society.

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

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- 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.

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Student Learning Outcome	Tool	Benchmark	Results					
			2019	2018	2017	2016	2015	
I. Utilize critical thinking skills to resolve issues in radiologic or healthcare related problems.	A. Core Section of the Comprehensive Exam	90% of students will score an 80 or better on first attempt.						
			N	6	3	8	8	6
			Mean	86	79.6	83	82.5	87.8
			Range	80-96	65-91	62-93	72-93	84-91
			%	100	66	75	63	100
			# not met	0	1	2	3	0
	B. Critical Analysis Paper (RADS 5020)	100% of students will achieve an average of 85% or higher						
			N	16	11	10		
			Mean	87	90.7	83.6		
			Range	25-100	74-98	50-92		
			%	81	90	90		
			# not met	3	1	1	Tool not used	Tool not used

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

Findings:

Measure A: Core Section of Comprehensive Exam

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

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

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

2016: Unmet, only 63% of students achieved an 80% or higher

2015: Met, 100% of students achieved an 80% or higher

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Measure B: RADS 5020 Critical Analysis Paper

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

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

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

2016: Tool not used.

2015: Tool not used.

Analysis:

Measure A: Core Section of Comprehensive Exam

In 2018 assessment cycle, this measure was unmet. Based on those results, in 2019 faculty implemented a number of changes to drive improvement. These included increased advising for student prior to taking their comprehensive exam. Further, students were advised throughout the program to save syllabi and discussions to have a guideline of how comprehensive exams may be structured.

As a result, in 2019, this measure was met. The faculty feel that the changes implemented in 2018 helped to meet this benchmark. Even though this benchmark was met, faculty reviewed missed test questions for validity. In addition, new questions were added to the test pool in all subject categories. The faculty also reviewed current assignments with exam questions and lesson objectives.

Measure B: RADS 5020 Critical Analysis Paper

In 2018, this measure was unmet. To drive continuous improvement, faculty implemented several changes in 2019. These included incorporating more detailed feedback on written exercises and providing free editing resources for students; e.g. NSU's Writing Center.

As a result, in 2019, this measure was unmet. In 2019, three students scored below 85% for this assignment. One student scored an 80. In reviewing this student's graded assignment feedback, the course instructor noted that the content of the student's assignment submission was a pretty good paper; however, points were deducted for informal writing, spelling mistakes, and not citing sources in the paper. The second student reviewed, scored an 84. All points deducted for the second student were due to missing quotations for direct quotes and incorrect APA citation format. Again, the content was good. Overall, when looking at graded written assignments throughout the courses for 2019, there appears to be a trend in which benchmarks are not being met due to writing quality more than the actual content presented in the assignments. The third student scored a 25. Upon investigation, the student admitted to using a software program that rewrites

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sentences to assist in paraphrasing. The student did not realize that when this program reworded sentences, the content of the sentences was lost. Other mistakes were not citing content and overuse of personal opinion. The instructor gave extensive feedback on this paper. In addition, the graduate coordinator called the student to meet with in person. The paper assignment instructions were reviewed and all content in the module. The graduate coordinator and student read her paper and went over graded comments by the course instructor. The student agreed to no longer use the article re-writer assistance. Strategies were discussed to help guide the student in future writing assignments.

Decisions: In 2019 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's critical thinking skills to resolve issues in radiologic or healthcare-related problems. Several suggestions were given including the addition of a writing tool (Grammarly) and the addition of multiple writing assessments for students. More detailed plans follow:

Measure A: Core Section of Comprehensive Exam

In 2019, faculty emphasized test content throughout the curriculum in various assignments. Faculty threaded reminders in weekly announcements for students to save their work and keep graded feedback. Students were encouraged to use their completed assignments as a guide to help prepare for the comprehensive exam and create a portfolio type study guide. Faculty scheduled online advising sessions to help students prepare for the exam. Faculty reviewed test questions and student answers for quality and created new questions for all sections of the comprehensive exam.

Moving forward in the 2020 assessment cycle, to improve measure A, the graduate coordinator will develop a list of tips of how to prepare for the comprehensive final exam and post in the MSRS resource shell and in RADS 5910. Faculty will help students connect and align the course objectives with course assignments as a guide to study for the comprehensive final (measure A). Faculty will provide feedback for individual assignments and advise students to save the assignments and graded feedback to help them improve on learning the content. Faculty will advise the students both individually and as a group on the main topics discussed in courses. Faculty will make generate a new version of the exam as to avoid using the same questions over and over.

Measure B: RADS 5020 Critical Analysis Paper

In an effort to improve measure B in 2019, faculty added a "writing quality" component as part of the student's grade for all written assignments. This component was also added to all MSRS course assignment rubrics and described in the syllabi. The writing component was intended to help make students accountable for the quality of writing throughout the program. The writing component also helped students realize their level of writing each semester in hopes of encouraging them to improve as they progress throughout the program. Secondly, faculty added a plagiarism component (Turn-it-In) to all

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written assignments including discussion forums. Students were responsible for checking for plagiarism before submitting their work. Students were required to redo assignments above 15% originality report. Thirdly, the faculty adopted Grammarly program to assist in grading student's papers for sentence structure, grammar, spelling, etc. This program assisted faculty in grading the student's writing quality. Lastly, the assignment deadline for the critical analysis paper was moved to a later date in the semester to allow students to get some feedback from instructors before submitting the assignment.

Moving forward in 2020, to improve measure B, faculty plan to meet with students in person or online concerning feedback on their writing quality. Faculty plan to use Turn-it-In grading rubric to provide feedback on certain written assignments. The graduate coordinator will add a new database search assignment in the MSRS orientation to help guide students on how to search key topics in peer-reviewed publications. Faculty plan to include short video help guidelines for certain assignments to help clarify what is expected. Faculty plan to conduct live WebEx sessions in courses with heavier weighted written assignments to help students understand research projects and give students the opportunity to ask questions. For students who cannot attend the Webex sessions, the recording will be posted in moodle for viewing. Faculty plan to encourage students to attend the library search strategies sessions offered by the library.

Decisions: In terms of students' ability to utilize critical thinking skills to resolve issues in radiologic or healthcare-related problems, evidence shows there is still a need to improve measures used to assess this SLO. Based on the analysis of the 2019 results the following changes will be implemented in 2020.

- Develop a list of tips on how to prepare for comprehensive final exam and post in two different moodle course shells.
- Add live WebEx sessions to help explain assignments and allow students to ask questions
- Identify students early on who demonstrate poor writing quality and schedule a meeting in person or Webex or phone to discuss strategies to improve their writing quality and expected writing level for the graduate program
- Encourage students to attend free library search strategies sessions offered by the library
- Schedule web advising sessions in preparation for the comprehensive exam
- Revise test questions in the exam pool to align with course objectives, lesson objectives, individual assignments.
- Create new comprehensive exam versions to help exam integrity
- Add new database search assignment in MSRS orientation shell
- Include more audio-guided short assignment videos

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

Student Learning Outcome	Tool	Benchmark	Results									
				2019	2018	2017	2016	2015				
II. Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.	A. Core Section of the Comprehensive Exam	90% of students will score an 80 or better on both sections for first attempt.										
			N	6	3	8	8	6				
			Mean	86	79.6	83	82.5	87.8	87.8			
			Range	80-96	65-91	62-93	72-93	80-98	84-91			
			%	100	66	75	62	100	100			
			# not met	0	1	2	3	0	0			
	B. Evidence based practice project for education and administration RADS 5510/5530	100% of students will score an 80 or higher on evidence based project										
			N	10	4	4	12					
			Mean	95	91.25	92.2	93.1					
			Range	80-100	79-100	87-94	80-100					
			%	100	75	100	100					
			# not met	0	1	0	0	Tool not used				

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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

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

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

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

2016: Unmet, only 62% of students achieved an 80% or higher

2015: Met, 100% of students achieved an 80% or higher

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

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.

2016: Met, 100% of students achieved an 80% or higher.

2015: Tool not used.

Analysis:

Measure A: Core and Research Sections of Comprehensive Exam

Measure A: In 2018, this measure was unmet. Based on the analysis of those results, in 2019 faculty began to advise students before taking the comprehensive exam to ensure that the student was better prepared. Further, students were reminded throughout the program to retain syllabi and assignments to have a better idea of what type of format the comprehensive exam would follow. Faculty also checked to make sure the exam questions are in alignment with the course and lesson objectives as well as relating to previous course assignments. New questions were added to the test pool.

As a result, in 2019, Measure A was met. Faculty feel that the changes implemented in 2018 were successful in helping to successfully achieve this measure. While this benchmark was met, however, there is room for improvement such as creating new exam versions to help protect the integrity of the exams. Faculty will also develop a list of tips to help students' study.

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

In 2018, this measure was unmet. Based on the analysis of those results, in 2019 faculty began implementing additional steps for students to follow to ensure that the student fully understood all directions. Faculty revised the assignment and added more micro-steps to help guide students during the process.

As a result, in 2019, the measure was met. Faculty feel that the changes from 2018 helped to drive this positive change. Specifically, students were accountable throughout the semester by submitting smaller and more frequent sections of the project. Even though this benchmark was met, there is room for improvement. Faculty plan to provide feedback for each mini assignment submission to keep students on track for successfully completing measure B (evidence-based project) tool. The graduate coordinator will send students details EBP assignment instructions the semester before during registration.

Decisions: In 2019 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

Measure A: Core and Research Sections of Comprehensive Exam

In the 2019 assessment cycle, for Measure A, faculty emphasized test content to students throughout the curriculum in various assignments. Faculty threaded reminders in weekly announcements for students to save their work and keep graded feedback. Students were encouraged to use their completed assignments as a guide to help prepare for the comprehensive exam and create a portfolio type study guide. Faculty scheduled online advising sessions to help students prepare for the exam. Faculty reviewed test questions and student answers for quality and created new questions for all sections of the comprehensive exam.

Moving forward in 2020, the faculty plan to create new versions of the comprehensive final exam. The MSRS program is growing and there are more students taking the exam in the same semester; therefore, different exam versions will be implemented to assess the student's knowledge and protect the integrity of the exams. In addition, the graduate coordinator will develop a list of tips of how to prepare for the comprehensive final exam and post in the MSRS resource shell and in RADS 5910.

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

In 2019, for **Measure B** (EBP project), faculty revisited the course assignments and due dates. Faculty added more deadlines for EBP assignments in multiple stages. Faculty checked student's progress and provided feedback before their next steps. The Graduate coordinator advised students the semester before in selecting an external mentor ahead of time and submitting a letter of intent to work with a mentor in the first week of class.

Moving forward in 2020, to help guide students in being successful in completing the EBP project. The graduate coordinator will send students additional assignment instructions ahead of time during registration. These instructions include EBP projection guidelines, EBP projection rubric, EBP letter of intent to help find a mentor, EBP exploration of roles and responsibilities Assignment Guidelines and grading rubric. Students will receive this information the semester before taking RADS 5510/5530. This will give the students a chance to start thinking of what they plan to do for the project and also find a mentor. The course instructor will advise and answer questions once students receive the EBP assignment files.

Decisions: 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, based on the analysis of the 2019 results the following changes will be implemented in 2020.

- Develop a list of recommendations on how to prepare for the comprehensive final exam
- Advise students each semester to save their syllabi, graded assignments, and add to their portfolio study guide in the preparation of comprehensive final
- Create new comprehensive exam versions and assign different versions for students taking the exam in the same semester
- Provide more feedback for measure B as students submit micro assignments before progressing

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

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Student Learning Outcome	Tool	Benchmark	Results							
				2019	2018		2017		2016	
III. Demonstrate effective communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships. <i>Revised from 2018</i>	A. Research individual presentation (RADS 5110).	100% of students will achieve an average of 85% or higher	N	4	7		5		8	
				Pres	Pres	Paper	Pres	Paper	Pres	Paper
			Mean	95	92.8	69.8	97	83.6	93	85.3
			Range	92-100	84-98	44-90	90-100	64-97	70-100	69-96
			%	100	100	42	100	60	89	75
			# not met	0	0	4	0	2	1	2
				2015						
			N	6						
				Pre s	Paper					
			Mean	97	78					
	Range	90-100	57- 91							
	%	100	67							
	# not met	0	2							
	B. Legal and Ethical Presentation (RADS 5030)	100% of students will achieve an average of 85% or higher		2019	2018	2017	2016	2015		
			N	15	9	7	9	6		
			Mean	97.5	95.3	99	98	98		
			Range	86-100	80-100	95-100	94-100	95-100		
			%	100	100	100	100	100		

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Measure B: RADS 5030 Presentation

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

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

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

2016: Met, 100% of students achieved an 85% or higher.

2015: Met, 100% of students achieved an 85% or higher.

Measure C: RADS 5110 Group presentation

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

Analysis:

Measure A: RADS 5110 Research Presentation

In 2018, this measure was unmet. It was determined at that time by the faculty that this measure was primarily intended to determine the students' ability to effectively communicate. Despite, this, however, the measure was comprised of both a written and verbal component. Therefore, for 2019, it was determined by faculty to use only the verbal portion of the measure.

As a result, in 2019 (and using only the presentation), the measure was met. The tool used to measure A (research presentation) allows students to share their presentations with each other. Students are required to reply to peer presentations for a grade. While this benchmark was met, the lowest score was a 92; therefore, this is room for improvement.

Measure B: RADS 5030 Presentation

In 2018, this measure was met. Based on the analysis of those results, in 2019 to further drive improvement regarding the students' ability to effectively communicate, however, faculty implemented several changes. These included providing more frequent feedback regarding presentations and online resources for successful presentations.

As a result, in 2019, measure B (legal and ethical presentation) was met. Students shared their presentations with peers and were required to answer guided questions for their replies. While this benchmark was met, the lowest score was an 86; therefore, there is room for improvement.

Measure C: RADS 5110 Group presentation

Measure C (group presentation) is a newly added tool. At the end of the 2018 assessment cycle, faculty revisited SLO III and agreed that we really wanted to measure the student's communication with peers and healthcare personnel in

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general. As a result, the term *interdisciplinary* was added to the SLO. To measure the revised SLO, the Group presentation in RADS 5110 was added as a new measurement tool and the paper grade was removed. Students did not share their papers with each other; therefore, the paper assignment did not allow students the opportunity to communicate their research with each other. These forum shared assignments promote professional communication, collegial collaboration, and interdisciplinary relationships.

For the 2019 assessment cycle, the students were not successful for the following reasons:

Measure C: RADS 5110 Group Presentation: This benchmark was not met due to one student who did not show up for the group presentation. The student helped in developing the presentation but was not present for the actual delivery of the presentation. All other students who participated met the benchmark.

Decisions: In 2019 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships. In 2019, to improve SLO III, faculty added a new measurement tool (group presentation) to better measure collegial and collaborative communication. Students collaborated in developing and presenting as a group with their peers. The goal was to help equip future radiology leaders to facilitate team communication to include the various imaging modalities in our profession. With this in mind, faculty revised the SLO to include an interdisciplinary team communication approach that would involve team members with different specialized training to work collaboratively to reach a common purpose, to set goals, to make decisions, and to share resources and responsibilities. As a result, faculty added an "interdisciplinary" relationship to the existing SLO. To measure the revised SLO in 2019, faculty decided to use the three separate presentation assignments to measure SLO III: (1) group presentation in RADS 5110, (2) individual presentation in RADS 5110, and (3) individual presentation in RADS 5030.

Measure A: RADS 5110 Research Presentation

For measure A, this presentation is based on the student's written paper in RADs 5110. In 2020, to help students meet this benchmark, faculty will repeat the strategy of grading the paper and providing feedback to students before the presentation assignment is due.

Measure B: RADS 5030 Presentation

For measure B (presentation in RADS 5030), to help meet this benchmark in 2020, faculty will allow students to review sample presentations to help students envision the expected quality of assignments.

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Measure C: RADS 5110 Group Presentation

For measure C (group presentation), to improve students' performance on this tool, in 2020 faculty plan to emphasize the importance of participating in the group presentation that heavily affects their final grade for this assignment. Since this is a new tool, faculty will trend the data and compare results with the next assessment cycle for evaluation.

Decisions: In terms of students' ability to demonstrate effective communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships, based on the analysis of the 2019 results the following changes will be implemented in 2020.

- Emphasize the importance of participation in group presentation assignment in RADS 5110
- Make sure paper grade and feedback is completed for students to review before submitting their presentation
- Track trends in new measurement tool RADS 5110 group presentation
- Allow students to review sample presentation assignments

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

Student Learning Outcome	Tool	Benchmark	Results					
			2019	2018	2017	2016	2015	
IV. Conduct research studies to contribute to and improve the practice of the radiologic sciences.	A. Applied research project (RADS 5910).	100% of students will receive a score of 85% or higher.	N	3	3	8	4	6
			Mean	100	96	97	97	98
			Range	100-100	89-100	79-100	89-100	93-100
			%	100	100	94	100	100
			# not met	0	0	1	0	0

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

Findings:

Measure A: RADS 5910 Applied Research Project

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.
2016: Met, 100% of students achieved an 85% or higher.
2015: Met, 100% of students achieved an 85% or higher.

Measure B: RADS 5123 Survey Development Project

2019: Met, 100% of students achieved an 85% or higher.
2018: Met, 100% of students achieved an 85% or higher.
2017: Unmet, 87.5% of students achieved an 85% or higher.
2016: Unmet, 89% of students achieved an 85% or higher.
2015: Met, 100% of students achieved an 85% or higher.

Measure C: RADS 5110 Research Paper

2019: Unmet, only 75% 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.
2016: Unmet, only 75% of students achieved an 80% or higher.
2015: Unmet, only 67% of students achieved an 80% or higher.

Analysis:

Measure A: RADS 5910 Applied Research Project

In 2018, this measure was met. To drive continuous improvement, however, based on the analysis of those results, in 2019 faculty redesigned the course to ensure more frequent interaction with students and to keep students on track regarding the project. Further, faculty established more deadlines throughout the course, again to keep students moving forward with their project.

As a result, in 2019, this measure was met. The tool used for measure A (Applied Research Project) is a final graduate paper that students complete at the end of the program. This paper is submitted to the Graduate School for approval in

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order for students to meet graduation requirements. Students are assigned a committee with a lead faculty who works closely with the student to help guide them in the writing process. The paper usually takes a minimum of two semesters to complete. It is felt that the changes implemented in 2018 continued to enable students to be successful in this measure.

Measure B: RADS 5123 Survey Development Project

In 2018, this measure was met. Based on the analysis of those results and to further student improvement in their survey development skills, however, a statistician was employed as a tutor for this course in 2019. The statistician also taught several components of the course, to ensure that students understood the survey method from different perspectives.

As a result, in 2019, this measure was again met. The tool used for measure B (RADS 5123 Survey Development Project) challenges the student to develop a survey and test the validity of their original survey. In order for the students to be successful in this project, the students need to apply research skills they have learned. As a result of this advanced level assignment, students are expected to seek help in areas of data collection, methods for presenting and communicating results and findings. It was thought that the changes implemented in 2018 helped to improve the students' ability to develop survey instruments. While this benchmark was met in 2019, however, there was room for improvement in developing survey questions and analyzing data.

Measure C: RADS 5110 Research Paper

In 2018, this measure was unmet. Based on the analysis of those results, in 2019, faculty decided to add a "writing quality" component to the course as part of the student's overall grade. Further, faculty required all students to use a plagiarism check with all submissions. Finally, faculty adopted a grammar check tool to assist in grading student papers. This was thought to be an effective tool for assisting students with sentence structure, grammar, and spelling.

As a result, in 2019, the measure was met. The tool used for measure C (RADS 5110 Research Paper) challenges the student to conduct a literature review. The literature review paper precedes the final research paper in RADS 5110; therefore, faculty help guides students to choose a topic that they can expand.

Decisions: In 2019 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's writing skills for conducting research studies to contribute to and improve the practice of the radiologic sciences.

Measure A: In 2019, faculty encouraged students to stay on track, meet realistic deadlines, and complete edits in a timely manner. Based on the analysis of those results, in 2019 faculty scheduled conference calls to make sure students understood the direction of their papers. Faculty reached out to students frequently and reminded students, who missed

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paper submission deadlines, that this affected them finishing by the end of the semester. Students were accountable for communicating with the faculty more often and accountable for submitting more drafts of their paper to help reduce the number of repetitive mistakes.

While the tool for measure A was met, faculty want to students to continue to meet this benchmark. Moving forward in 2020, faculty will revise the assignment deadlines to address students waiting until the last minute to submit their final draft before the graduate school deadline for graduation. The current strategy requires students to submit guided portions of their paper at different time periods. At the beginning of the semester, faculty will encourage students and provide feedback on their first assignment in which students submit a proposed timeline to complete their paper. Faculty will inform students if their timeline appears to be realistic. If not, faculty will have students revise and submit their revised timeline. In addition, faculty will remind students of their proposed timeline throughout the semester in addition to meeting the set assignment submissions in the course. Students tend to stop communicating with faculty around midterm. Faculty will send weekly reminders and reach out to their assigned students who have not communicated in a timely manner.

Measure B: In 2019, the statistician agreed to continue to help the team teach the assigned courses and guide students in the survey development project as well as continue to serve as a tutor. Faculty provided students guidance and resources to be successful in completing the survey development project.

Moving forward in 2020, while the tool for measure B was met, there is room for improvement. The course faculty and statistician plan to add an additional online question and answer WebEx meetings to guide students on the survey development project. The students will be given questions ahead of time to consider their project design. Each student will be asked to answer the questions and faculty plan to discuss if they are on the right track.

Measure C: In 2019, to improve measure C, faculty added a “writing quality” component as part of the student’s grade for all written assignments. This component was added to all MSRS course assignment rubrics and described in the syllabi. The writing component was implemented to help students more accountable for their writing quality throughout the program. Second, faculty added a plagiarism component (Turn-it-In) to all written assignments including discussion forums. Students were responsible for checking for plagiarism before submitting their work. Students’ originality report was only accepted if below 15%. Third, faculty adopted Grammarly program to assist in grading student’s papers for sentence structure, grammar, spelling, etc. This program helped faculty grade writing quality, so faculty could better focus on content.

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Moving forward in 2020, to improve students' performance on the research paper in RADS 5110 and writing quality throughout the program, faculty will encourage students to participate in the free library database search tutorials offered by the librarian. The graduate coordinator will also add a new database search strategy in the MSRS course shell and require students to complete this assignment as part of the program's orientation. Faculty will also work on identifying students who submit poor writing early in the program and plan to meet with students in person or WebEx or phone conference. These strategies will start the first semester. A current strategy used is having students submit a rough draft of their paper assignments in both RADS 5010 and RADS 5110, receive feedback, and complete revisions for their final draft. This strategy will be repeated in 2020. In addition, faculty will make an effort to better advise students on expectations of research assignments in all courses threaded throughout the curriculum.

Decisions: In terms of students' ability to conduct research studies to contribute to and improve the practice of the radiologic sciences, evidence shows that students met measures A and B, but several students did not meet measure C for this SLO. Based on the analysis of the 2019 results the following actions will be implemented in 2020:

- Add database search assignment in MSRS orientation.
- Add additional question and answer WebEx sessions with guided questions.
- Encourage students to participate in the free library database search tutorials offered by the librarian.
- In, RADS 5910, revise assignment deadlines to address students waiting until the last minute to submit their final draft.
- In RADS 5910, require students to revise their timeline until the schedule is more realistic and remind students of their proposed timeline
- Frequently remind students of meeting paper deadlines to graduate on time.
- Advise students to meet with statistician for final paper.
- Strengthen writing skills in pre-requisite courses.
- Have students submit rough drafts of research papers and receive feedback for improvement on final draft.

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

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Outcome	Tool	Benchmark	Results								
V. Evaluate ethical standards in practice as a radiologic sciences educator or administrator.	A. Core and Concentration Sections of the Comprehensive Exam.	90% of students will score 80% or better on both sections for first attempt.		2019	2018	2017	2016				
			N	6	3	8	8				
				Core	Conc	Core	Conc	Core	Conc	Core	Conc
			Mean	86	85	79.6	78.6	83	80	82.5	85
			Range	81-96	80-95	65-91	66-85	70-93	40-95	72-93	73-98
			%	100	100	66	66	75	88	62.5	88
			# not met	0	0	1	1	2	1	3	1
			2015								
				Core	Conc						
				6	6						
		87.8	62.8								
		84-91	61-98								
		100	67								
		0	2								
	B. Legal and Ethical presentation (RADS 5030)	100% of students will achieve an average of 85% or higher		2019	2018	2017	2016	2015			
N			15	9	7	9					
Mean			97.5	95.3	99	98					
Range			86-100	80-100	95-100	94-100					
%			100	100	0	0					
# not met			0	0	0	0	Tool not used				

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

Findings:

Measure A: Core and Concentration Sections of Comprehensive Exam

2019: Met, 100% of students achieved an 80% or better on the Core and Concentration Sections of the Comprehensive Exam.

2018: Unmet, only 66% of students achieved an 80% or higher on Core section. Only 66% of students achieved an 80% or higher on
Concentration section.

2017: Unmet, only 75% of students achieved an 80% or higher on Core section. Only 88% of students achieved an 80% or higher on
Concentration section.

2016: Unmet, only 62% of students achieved an 80% or higher on Core section. Only 88% of students achieved an 80% or higher on
Concentration section.

2015: Unmet, only 67% of students achieved an 80% or higher on Concentration section. Met, 100% of students achieved an 80% or
higher on Core section.

Measure B: RADS 5030 Legal and Ethical Presentation

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

2018: Met, 100% of students achieved an 80% or higher.

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

2016: Met, 100% of students achieved an 80% or higher.

2015: Tool not used.

Analysis:

Measure A: Core and Concentration Sections of Comprehensive Exam

In 2018, this measure was unmet. Based on the analysis of those results, in 2019 faculty decided that to drive improvement with this measure, test content would be better emphasized and that exam questions were better aligned with the course and lesson objectives.

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As a result, in 2019, this measure was met. It was thought that because this was the result of faculty checking to make sure the exam questions were in alignment with the course and lesson objectives as well as relating to previous course assignments. Further, new questions were added to the test pool, which again was thought to improve the outcome. While this benchmark was met, however, faculty felt that there was room for improvement such as creating new exam versions to help protect the integrity of the exams. Faculty will also develop a list of tips to help students' study.

Measure B (RADS 5530 Legal and Ethical Presentation)

In 2018, this measure was met. Based on the analysis of those results, in 2019 and to drive continuous improvement in the students' ability to competently evaluate ethical standards as either a radiologic science educator or administrator, however, faculty posted additional sample presentations for students to have a better understanding of the expected quality of assignments.

As a result, in 2019, this measure was met. Measure B is an audio presentation in which students research ethical and legal dilemmas most commonly faced in healthcare. Students share their audio presentation with one another and answer a set of questions per presentation for a grade. Many ethical topics are discussed. While this benchmark was met, however, the lowest score was an 86, therefore this is room for improvement.

Decisions: In 2019 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's evaluation of ethical standards in practice as a radiologic sciences educator or administrator.

Measure A: Core and Concentration Sections of Comprehensive Exam

In 2019, faculty emphasized test content throughout the curriculum in various assignments. Faculty threaded reminders in weekly announcements for students to save their work and keep graded feedback. Students were encouraged to use their completed assignments as a guide to help prepare for the comprehensive exam and create a portfolio type study guide. Faculty scheduled online advising sessions to help students prepare for the exam. Faculty reviewed test questions and student answers for quality and created new questions for all sections of the comprehensive exam.

Moving forward in the 2020 assessment cycle, to improve measure A, the graduate coordinator will develop a list of tips on how to prepare for the comprehensive final exam and post in the MSRS resource shell and in RADS 5910. Faculty will help students connect and align the course objectives with course assignments as a guide to study for the comprehensive final (measure A). Faculty will provide feedback for individual assignments and advise students to save the assignments and graded feedback to help them improve on learning the content. Faculty will advise the students both individually and

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as a group on the main topics discussed in courses. Faculty will make generate a new version of the exam as to avoid using the same questions over and over.

Measure B (RADS 5530 Legal and Ethical Presentation)

For measure B (presentation in RADS 5030), to help meet this benchmark in 2020, faculty will allow students to review sample presentations to help students envision the expected quality of assignments.

Decisions: In terms of students' ability to evaluate ethical standards in practice as a radiologic sciences educator or administrator, based on the analysis of the 2019 results the following actions will be implemented in 2020:

- Revise test questions in the exam pool to align with course objectives, lesson objectives, individual assignments.
- Advise students to use their course syllabi, course objectives, and lesson objectives to develop a study guide.
- Advise students to save all their work for review in preparation for the final exam.
- Develop new exam versions.

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

Summary of 2019 Assessment for the Master of Science in Radiologic Sciences (MSRS) program.

The assessment of the student learning outcomes for the MSRS program revealed that four of the benchmarks that did not meet in 2018 improved, and were met in 2019. Seven benchmarks remained the same with five meeting the benchmarks and two not meeting the benchmarks in 2019. There was one new benchmark added for 2019 that did not meet the benchmark. MSRS faculty have action plans to improve all 5 SLOs. Some changes were implemented in the program during the 2019 assessment cycle. First, faculty addressed student's writing skills throughout the program. Faculty incorporated teaching strategies to help students be more accountable for their writing quality. These strategies included requiring students to check for originality for written assignments by using Turn-it-In plagiarism check. Faculty also adopted Grammarly service to help grade grammar and spelling for all assignments. The feedback from Grammarly reports was shared with the students for revisions. In order to improve scores on the comprehensive final, faculty reviewed test questions missed for validity and to make sure the content was covered in the courses. In 2020, the faculty plan to implement various strategies to improve both met and unmet benchmarks. These strategies are geared towards providing more guidance on assignments and preparing for the comprehensive exam such as conducting live WebEx sessions, increasing tutorials for conducting research, and guidelines for studying. Course assignment dates will be

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moved forward to allow more time for student feedback. Faculty will emphasize weighted grades and encourage more student participation.

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

As always, continuous improvement is the focus of the program. With the focus of continuous improvement, there have been numerous changes that have been implemented throughout the program in an attempt 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 2019 assessment cycle related to the student learning outcomes for the MSRS program:

- SLO 1: Utilize critical thinking skills to resolve issues in radiologic or healthcare-related problems.
 - Increased student's accountability for writing quality throughout program by adding a "writing quality" component as part of the student's grade for all written assignments.
 - Adopted Grammarly program to assist in grading student's papers and providing student feedback.
 - Required students to check for plagiarism by submitting all written assignments to Turn-it-In.
 - Moved measure B assignment due date to a later time thus allowing students to receive faculty feedback earlier in the semester
 - Advised students each semester to save their syllabi, graded assignments, and create study guide in preparation of comprehensive final.
 - Scheduled web advising sessions in preparation for comprehensive exam.
 - Revised test questions in exam pool to align with course objectives, lesson objectives, individual assignments.
 - Created new test questions in comprehensive exam pool.
 - Incorporated current electronic resources for student learning in resource center and individual courses.
 - Included free editing services provided by the Academic Success Center in the resource center.
 - Informed students of free counseling services.

- SLO 2: Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.
 - Increased student's accountability for writing quality throughout program by adding a "writing quality" component as part of the student's grade for all written assignments.
 - Adopted Grammarly program to assist in grading student's papers and providing student feedback.

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- Required students to check for plagiarism by submitting all written assignments to Turn-it-In.
 - Advised students each semester to save their syllabi, graded assignments, and add to their portfolio study guide in preparation for comprehensive final.
 - Increased test pool for comprehensive exam with consistent test question format.
 - Incorporated more electronic resources for student learning in new resource center and individual courses.
 - Revised measure B for students to submit assignments earlier, submit assignments more frequently, submit assignments in smaller increments, and receive more feedback before progressing.
- SLO 3: Demonstrate effective communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships.
 - Added a new group presentation assignment tool from RADS 5110.
 - Revised the SLO to include team communication in support of interdisciplinary relationships.
 - Kept individual prestaton assignments for RADS 5030 and RADS 5110 as measurement tools.
 - SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
 - Increased student's accountability for writing quality throughout program by adding a "writing quality" component as part of the student's grade for all written assignments.
 - Adopted Grammarly program to assist in grading student's papers and providing student feedback.
 - Required students to check for plagiarism by submitting all written assignments to Turn-it-In.
 - In, RADS 5910, required students to submit paper drafts more often and receive feedback for moving forward.
 - Scheduled facilitated one on one writing sessions.
 - Frequently reminded students of meeting paper deadlines to graduate on time.
 - Advised students to meet with statistician for final paper.
 - Strengthened writing skills in pre-requisite courses.
 - Allowed students to submit paper draft and receive feedback before submitting final draft in RADS 5110.
 - Continued to have statistician team teach RADS 5123.
 - Directed students resource center shell in moodle.
 - SLO 5: Evaluate ethical standards in practice as a radiologic sciences educator or administrator.

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- Revised test questions in exam pool to align with course objectives, lesson objectives, individual assignments.
- Created new test questions in comprehensive exam pool.
- Advised students each semester to save their syllabi, graded assignments, and add to their portfolio study guide in preparation for comprehensive final.
- Incorporated more electronic resources for student learning in new resource center and individual courses.
- Identified interventions that may help at-risk students to help prepare for comprehensive exam.
- Posted sample presentations.

Plan of Action Moving Forward in 2020

Based on the evidence provided from the 2019 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.
 - Develop a list of tips on how to prepare for comprehensive final exam and post in two different moodle shells
 - Add live WebEx sessions to help explain assignments and allow students to ask questions
 - Identify students early on who demonstrate poor writing quality and schedule a meeting in person or Webex or phone to discuss strategies to improve their writing quality and expected writing level for the graduate program
 - Encourage students to attend free library search strategies sessions offered by the library
 - Schedule web advising sessions in preparation for the comprehensive exam
 - Revise test questions in the exam pool to align with course objectives, lesson objectives, individual assignments.
 - Create new comprehensive exam versions to help exam integrity
 - Add new database search assignment in MS orientation shell
 - Include more audio-guided short assignment videos
- SLO 2: Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.
 - Develop a list of recommendations on how to prepare for the comprehensive final exam

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- Advise students each semester to save their syllabi, graded assignments, and add to their portfolio study guide in preparation of comprehensive final
- Create new comprehensive exam versions and assign different versions for students taking the exam in the same semester
- Provide more feedback for measure B as students submit micro assignments before progressing
- SLO 3: Demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships.
 - Emphasize importance of participation in group presentation assignment in RADS 5110
 - Make sure paper grade and feedback is completed for students to review before submitting their presentation
 - Track trends in new measurement tool RADS 5110 group presentation
 - Allow students to review sample presentation assignments
- SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
 - Add database search assignment in MSRS orientation
 - Add additional question and answer WebEx sessions with guided questions
 - Encourage students to participate in the free library database search tutorials offered by the librarian
 - In, RADS 5910, revise assignment deadlines to address students waiting until the last minute to submit their final draft.
 - In RADS 5910, require students to revise their timeline until the schedule is more realistic and remind students of their proposed timeline
 - Frequently remind students of meeting paper deadlines to graduate on time.
 - Advise students to meet with statistician for final paper.
 - Strengthen writing skills in pre-requisite courses.
 - Have students submit rough drafts of research papers and receive feedback for improvement on final draft.
- SLO 5: Evaluate ethical standards in practice as a radiologic sciences educator or administrator
 - Revise test questions in exam pool to align with course objectives, lesson objectives, individual assignments
 - Advise students to use their course syllabi, course objectives, and lesson objectives to develop a study guide
 - Advise students to save all their work for review in preparation for the final exam

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- Develop new exam versions