Assessment Cycle 2020-2021

Degree Program: Master of Science in Radiologic Sciences

College: Nursing and School of Allied Health

Prepared by: Dr. Tammy Curtis Date: June 9, 2021

Approved by: Dr. Joel Hicks, Dean Date: June 9, 2021

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.

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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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<table>
<tr><th>Student Learning Outcome</th><th>Tool</th><th>Benchmark</th><th>Results</th></tr>
<tr>
<td>I. Utilize critical thinking skills to resolve issues in radiologic or healthcare related problems.</td>
<td>A. Core Section of the Comprehensive Exam</td>
<td>90% of students will score an 80 or better on first attempt.</td>
<td>
<table>
<tr><th></th><th>2020</th><th>2019</th><th>2018</th><th>2017</th><th>2016</th></tr>
<tr><td>N</td><td>11</td><td>6</td><td>3</td><td>8</td><td>8</td></tr>
<tr><td>Mean</td><td>82</td><td>86</td><td>79.6</td><td>83</td><td>82.5</td></tr>
<tr><td>Range</td><td>41-98</td><td>80-96</td><td>65-91</td><td>62-93</td><td>72-93</td></tr>
<tr><td>%</td><td>81</td><td>100</td><td>66</td><td>75</td><td>63</td></tr>
<tr><td># not met</td><td>2</td><td>0</td><td>1</td><td>2</td><td>3</td></tr>
</table>
</td>
</tr>
<tr>
<td></td>
<td>B. Critical Analysis Paper (RADS 5020)</td>
<td>100% of students will achieve an average of 85% or higher</td>
<td>
<table>
<tr><th></th><th>2020</th><th>2019</th><th>2018</th><th>2017</th><th>2016</th></tr>
<tr><td>N</td><td>23</td><td>16</td><td>11</td><td>10</td><td></td></tr>
<tr><td>Mean</td><td>89.5</td><td>87</td><td>90.7</td><td>83.6</td><td></td></tr>
<tr><td>Range</td><td>70-99</td><td>25-100</td><td>74-98</td><td>50-92</td><td></td></tr>
<tr><td>%</td><td>79</td><td>81</td><td>90</td><td>90</td><td></td></tr>
<tr><td># not met</td><td>5</td><td>3</td><td>1</td><td>1</td><td>Tool not used</td></tr>
</table>
</td>
</tr>
</table>

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

Findings:

Measure A: Core Section of Comprehensive Exam
2020, Unmet, 81% of students achieved an 80% or higher.
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

Measure B: RADS 5020 Critical Analysis Paper
2020, Unmet, only 79% of students achieved an 85% or higher.
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.

Analysis:

For the 2020 assessment cycle, the students were not successful for the following reasons:

Measure A: Core Section of Comprehensive Exam
In 2020 assessment cycle, there were a larger number of students who completed the exam than the year before. Due to COVID-19 and the challenge of securing a live proctor, the faculty had to figure out a way to proctor the exam. Faculty decided to allow students to take the exam at home using Respondus lockdown browser. The MSRS coordinator created a Respondus orientation and pre-check quiz to ensure students have a good internet connection to include enough bandwidth and a webcam for recording. One of the two students who were not successful on the first attempt struggled to get her Respondus lockdown browser to work. After many attempts, the MSRS coordinator requested the student to delete the software program and download again. We discovered that the student had the older version of Respondus from a previous course, and this is why she could not get her camera to work. By this time, the student was anxious and stressed due to software issues. After following up with the student, she admitted to not studying properly. The MSRS coordinator met with the student and advised her how to better prepare for her second attempt. The second student who did not pass the exam also took the exam at home. When the MSRS coordinator followed up with this student, she admitted that she did not use the resources and tools available to study for the exam and just went for it. After reviewing the resources with the MSRS coordinator, the student realized how to better prepare for taking the exam and was successful on her second attempt.

Measure B: RADS 5020 Critical Analysis Paper
In 2020, while five students scored below 85% for this assignment, the mean slightly improved. There were a larger number of students enrolled in this course when compared to the previous year. In reviewing graded assignment feedback for the five students who scored below an 85%, the majority of points deducted were for writing quality, grammar, sentence structure, in-text citations, APA format, and credible sources. All five students were scored as

excellent or good for the evaluation and argument sections of the assignment but lacked in writing quality and supporting an argument with substantial references.

Action Plan: In 2020 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's success in passing the core section of the comprehensive final exam on their first attempt and also ways to improve the student's writing skills and APA formatting.

Measure A: Core Section of Comprehensive Exam
In 2020, assessment cycle, to improve measure A for students scoring closer to the benchmark score of 80, the graduate coordinator developed a list of tips of how to prepare for the comprehensive final exam and posted this resource in RADS 5910. The MSRS coordinator developed a pre-preparation lockdown browser orientation and quiz. The MSRS coordinator changed the exam preparation guidelines to better prepare the students to take the exam at home as result of COVID-19 restrictions. The MSRS coordinator developed a survey for students to complete, which indicates their choice of when to take the exam. The MSRS coordinator sent the students detailed instructions on how to prepare for the exam and step by step instructions for the day of the exam. The MSRS faculty provided their personal cell phone numbers and were available to call while the student was taking the exam, should they have technical difficulty.

Moving forward in 2021, the MSRS coordinator will post the exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910. The MSRS coordinator will advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam. The MSRS coordinator plans to develop an instructional video to better advise students on how to prepare for the exam and post this video in both the MSRS resource shell and RADS 5910 course shell. In addition, the MSRS coordinator will keep a master list of current syllabi to share with students for studying for the comprehensive exam.

Measure B: RADS 5020 Critical Analysis Paper
In 2020, to improve measure B, faculty met with students in person or online concerning feedback on their writing quality. Faculty used Turn-it-In grading rubric to provide feedback on certain written assignments. The graduate coordinator added a new database search assignment in the MSRS orientation to help guide students in learning how to search key topics in peer-reviewed publications. Faculty included short video help guidelines for certain assignments to help clarify what was expected. Faculty conducted live virtual meetings in courses with heavier weighted written assignments 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.

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Moving forward in 2021, in addition to the strategies described in 2020, the MSRS coordinator will add more resources in the MSRS resource program Moodle shell addressing APA format and research strategies for finding credible sources. Faculty will offer live virtual meetings for explanation, question, and answer sessions for discussing the paper assignment and expectations. Faculty are adding more videos to help students understand various writing topics.

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. The following actions will be implemented:

- The MSRS coordinator will post the exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910.
- The MSRS coordinator will advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
- The MSRS coordinator plans to develop an instructional video to better advise students on how to prepare for the exam and post this video on both the MSRS resource shell and RADS 5910 course shell.
- The MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.
- Revise test questions in the exam pool to match revisions of course assignments in core courses.
- MSRS coordinator will advise students on preparation for comprehensive exam in RADS 5910.
- Offer live virtual meetings to help explain assignments and allow students to ask questions.
- Encourage students to attend free library search strategies sessions offered by the library.
- Schedule web advising sessions in preparation for the comprehensive exam.
- Add additional resources in the MSRS resource program Moodle shell addressing APA format and research strategies.
- Faculty are adding videos on specific topics related to areas of student deficiencies.

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

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<table>
<tr><th>Student Learning Outcome</th><th>Tool</th><th>Benchmark</th><th>Results</th></tr>
<tr>
<td>II. Apply research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.</td>
<td>A. Core Section of the Comprehensive Exam

B. Evidence based practice project for education and administration RADS 5510/ 5530</td>
<td>90% of students will score an 80 or better on both sections for first attempt.

100% of students will score an 80 or higher on evidence based project</td>
<td>
<table>
<tr><th></th><th>2020</th><th>2019</th><th>2018</th><th>2017</th><th>2016</th></tr>
<tr><td>N</td><td>11</td><td>6</td><td>3</td><td>8</td><td>8</td></tr>
<tr><td>Mean</td><td>82</td><td>86</td><td>79.6</td><td>83</td><td>82.5</td></tr>
<tr><td>Range</td><td>41-98</td><td>80-96</td><td>65-91</td><td>62-93</td><td>72-93</td></tr>
<tr><td>%</td><td>81</td><td>100</td><td>66</td><td>75</td><td>62</td></tr>
<tr><td># not met</td><td>2</td><td>0</td><td>1</td><td>2</td><td>3</td></tr>
</table>
<table>
<tr><th></th><th>2020</th><th>2019</th><th>2018</th><th>2017</th><th>2016</th></tr>
<tr><td>N</td><td>5</td><td>10</td><td>4</td><td>4</td><td>12</td></tr>
<tr><td>Mean</td><td>96</td><td>95</td><td>91.25</td><td>92.2</td><td>93.1</td></tr>
<tr><td>Range</td><td>90-100</td><td>80-100</td><td>79-100</td><td>87-94</td><td>80-100</td></tr>
<tr><td>%</td><td>100</td><td>100</td><td>75</td><td>100</td><td>100</td></tr>
<tr><td># not met</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr>
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</td>
</tr>
</table>

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

Measure B: RADS 5510/5530 Evidence Based Practice Project for Education and Administration
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.
2016: Met, 100% of students achieved an 80% or higher.

Analysis:
For the 2020 assessment cycle, the students were not successful for the following reasons:

Measure A: Core Section of Comprehensive Exam
In 2020 assessment cycle, there were a larger number of students who completed the exam than the year before. Due to COVID-19 and the challenge of securing a live proctor, the faculty had to figure out a way to proctor the exam. Faculty decided to allow students to take the exam at home using Respondus lockdown browser. The MSRS coordinator created a Respondus orientation and pre-check quiz to ensure students have a good internet connection to include enough bandwidth and a webcam for recording. One of the two students who were not successful on the first attempt struggled to get her Respondus lockdown browser to work. After many attempts, the MSRS coordinator requested the student to delete the software program and download again. We discovered that the student had the older version of Respondus from a previous course, and this is why she could not get her camera to work. By this time, the student was anxious and stressed due to software issues. After following up with the student, she admitted to not studying properly. The MSRS coordinator met with the student and advised her how to better prepare for her second attempt. The second student who

did not pass the exam also took the exam at home. When the MSRS coordinator followed up with this student, she admitted that she did not use the resources and tools available to study for the exam and just went for it. After reviewing the resources with the MSRS coordinator, the student realized how to better prepare for taking the exam and was successful on her second attempt.

Measure B: RADS 5510/5530 Evidence Based Practice Project for Education and Administration
Measure B: In 2020, while met, the strategies implemented appeared to maintain the mean for students' progress.

Action Plan: In 2020 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's success in passing the core section of the comprehensive final exam on their first attempt. Faculty also discussed ways to improve the student's application of research evidence and skills in the practice setting as an educator or administrator in the radiologic sciences to improve practice.

Measure A: Core Section of Comprehensive Exam
In 2020, assessment cycle, to improve measure A for students scoring closer to the benchmark score of 80, the graduate coordinator developed a list of tips of how to prepare for the comprehensive final exam and posted this resource in RADS 5910. The MSRS coordinator developed a pre-preparation lockdown browser orientation and quiz. The MSRS coordinator changed the exam preparation guidelines to better prepare the students to take the exam at home as result of COVID-19 restrictions. The MSRS coordinator developed a survey for students to complete, which indicates their choice of when to take the exam. The MSRS coordinator sent the students detailed instructions on how to prepare for the exam and step by step instructions for the day of the exam. The MSRS faculty provided their personal cell phone numbers and were available to call while the student is taking the exam, should they have technical difficulty.

Moving forward in 2021, the MSRS coordinator will post the exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910. The MSRS coordinator will advise students as they enroll in 5910 on how to best prepare for the comprehensive exam. The MSRS coordinator plans to develop an instructional video to better advise students on how to prepare for the exam and post this video on both the MSRS resource shell and RADS 5910 course shell. In addition, the MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.

Measure B: RADS 5510/5530 Evidence Based Practice Project for Education and Administration
In 2020, to help guide students in being successful in completing the EBP project, the graduate coordinator sent students additional assignment instructions ahead of time during registration. These instructions included EBP project

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 received this information the semester before taking RADS 5510/5530. This gave the students a chance to start thinking of what they plan to do for the project and find a mentor.

Moving forward in 2021, the graduate coordinator will send EBP assignment instructions to students during advising prior to the start of the semester to help prepare students for expectations for this project. Both the MSRS coordinator and course instructor plan answer questions prior to the start of the semester.

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, the following actions will be implemented:

- Faculty will include reminders in course announcements for students to save their syllabi, graded assignments, and add to their portfolio study guide in the preparation of comprehensive final.
- The MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.
- The MSRS coordinator will advise students in 5910 how to prepare for the comprehensive exam.
- Update exam questions and versions to match revisions of updated assignments.
- Submit EBP assignment instructions during registration.

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.

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<table>
<tr><th>Student Learning Outcome</th><th>Tool</th><th>Benchmark</th><th>Results</th></tr>
<tr>
<td>III. Demonstrate effective communication skills in professional settings to maintain collegial, collaborative, and interdisciplinary relationships. Revised from 2018</td>
<td>A. Research individual presentation (RADS 5110).</td>
<td>100% of students will achieve an average of 85% or higher.</td>
<td>
<table>
<tr><th></th><th>2020</th><th>2019</th><th colspan="2">2018</th><th colspan="2">2017</th></tr>
<tr><td>N</td><td>10</td><td>4</td><td colspan="2">7</td><td colspan="2">5</td></tr>
<tr><td>Tool</td><td>Pres</td><td>Pres</td><td>Pres</td><td>Paper</td><td>Pres</td><td>Paper</td></tr>
<tr><td>Mean</td><td>98.5</td><td>95</td><td>92.8</td><td>69.8</td><td>97</td><td>83.6</td></tr>
<tr><td>Range</td><td>95-100</td><td>92-100</td><td>84-98</td><td>44-90</td><td>90-100</td><td>64-97</td></tr>
<tr><td>%</td><td>100</td><td>100</td><td>86</td><td>42</td><td>100</td><td>60</td></tr>
<tr><td># not met</td><td>0</td><td>0</td><td>1</td><td>4</td><td>0</td><td>2</td></tr>
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<table>
<tr><th></th><th colspan="2">2016</th></tr>
<tr><td>N</td><td colspan="2">8</td></tr>
<tr><td></td><td>Pres</td><td>Pape</td></tr>
<tr><td>Mean</td><td>93</td><td>85.3</td></tr>
<tr><td>Range</td><td>70-100</td><td>69-96</td></tr>
<tr><td>%</td><td>89</td><td>75</td></tr>
<tr><td># not met</td><td>1</td><td>2</td></tr>
<tr><td></td><td></td><td></td></tr>
</table>
</td>
</tr>
<tr>
<td></td>
<td>B. Legal and Ethical Presentation (RADS 5030)</td>
<td>100% of students will achieve an average of 85% or higher.</td>
<td>
<table>
<tr><th></th><th>2020</th><th>2019</th><th>2018</th><th>2017</th><th>2016</th><th>2015</th></tr>
<tr><td>N</td><td>21</td><td>15</td><td>9</td><td>7</td><td>9</td><td>6</td></tr>
<tr><td>Mean</td><td>97.71</td><td>97.5</td><td>95.3</td><td>99</td><td>98</td><td>98</td></tr>
<tr><td>Range</td><td>86-100</td><td>86-100</td><td>80-100</td><td>95-100</td><td>94-100</td><td>95-100</td></tr>
<tr><td>%</td><td>100</td><td>100</td><td>89</td><td>100</td><td>100</td><td>100</td></tr>
</table>
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</table>

	C. Group presentation (RADS 5110)	100% of students will achieve an average of 85% or higher.	

# not met	0	0	1	0	0	0

	2020	**2019**
N	10	4
Mean	97	91
Range	92-100	73-97
%	100	80
# not met	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
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.
2016: Unmet, only 75% of students achieved an 85% or higher on the research paper assignment. Unmet, 87% achieved an 85% or higher for presentation.

Measure B: RADS 5030 Presentation
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.
2016: Met, 100% of students achieved an 85% or higher.

Measure C: RADS 5110 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:
Measure A: RADS 5110 Research Presentation
Even though the number of students increased, there was a slight increase in the class average. The strategies implemented in 2020 appear to be successful.

Measure B: RADS 5030 Presentation
Measure B appears to be holding strong and meeting the benchmark; however, the lowest score was an 86; therefore, there is room for improvement.

Measure C: RADS 5110 Group presentation
Measure C (group presentation) was newly added tool in 2019. The strategies implemented in 2020 appeared to have helped. The average mean improved, and this benchmark was met.

Action Plan: Measures A, B, and C appear to be successful benchmarks. The program enrollment is growing, and faculty would like to observe if these tools will be successful measurements with a higher number of students completing these assignments.

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 included more resources on creating a presentation and added more detail to the guidelines and rubric. These resources will be utilized again in 2021.

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Measure B: RADS 5030 Presentation
For measure B (presentation in RADS 5030), to help meet this benchmark in 2020, faculty allowed students to review sample presentations to help students envision the expected quality of assignments. In 2021, faculty will provide updated sample presentations for students to review for setting the expectations of the assignment.

Measure C: RADS 5110 Group Presentation
For measure C (group presentation), to improve students' performance on this tool, in 2020, faculty emphasized 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 for 2021 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, the following actions will be implemented:

- Course instructor will provide faculty more resources on creating a presentation and added more detail to the guidelines and rubric.
- Track trends in new measurement tool RADS 5110 group presentations.
- Allow students to review current sample presentation assignments to set the expectations for the quality of assignment.

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

<table>
<tr><th>Student Learning Outcome</th><th>Tool</th><th>Benchmark</th><th>Results</th></tr>
<tr><td>IV. Conduct research studies to contribute to and improve the practice of the</td><td>A. Applied research project (RADS 5910).</td><td>100% of students will receive a score of 85% or higher.</td><td>
<table>
<tr><th></th><th>2020</th><th>2019</th><th>2018</th><th>2017</th><th>2016</th></tr>
<tr><td>N</td><td>9</td><td>3</td><td>3</td><td>8</td><td>4</td></tr>
<tr><td>Mean</td><td>99</td><td>100</td><td>96</td><td>97</td><td>97</td></tr>
</table>
</td></tr>
</table>

radiologic sciences.

Range	92-100	100-100	89-100	79-100	89-100
%	100	100	100	94	100
# not met	0	0	0	1	0

B. Survey development project (RADS 5123)

100% of students will receive a score of 85% or higher.

	2020	**2019**	**2018**	**2017**	**2016**
N	7	9	8	8	9
Mean	93.5	93.1	93.1	88.3	92.4
Range	81-100	90-100	86-100	69-100	76-98
%	86	100	100	87.5	89
# not met	1	0	0	1	1

C. Literature Review (RADS 5110)

100% of students will achieve an average of 80% or higher

	2020	**2019**	**2018**	**2017**	**2016**
N	10	4	7	5	8
Mean	88.5	89	69.8	83.6	85.3
Range	75-98	82-95	44-90	64-97	69-96
%	80	100	42	60	75
# not met	2	0	4	2	2

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

Findings:

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Measure A: RADS 5910 Applied Research Project
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.
2016: Met, 100% of students achieved an 85% or higher.

Measure B: RADS 5123 Survey Development Project
2020: Unmet, 86 % of students achieved a score of 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, 87.5% of students achieved an 85% or higher.
2016: Unmet, 89% of students achieved an 85% or higher.

Measure C: RADS 5110 Research Paper
2020: Unmet, 80% of students a score of 85% 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.
2016: Unmet, only 75% of students achieved an 80% or higher.

Analysis:
Measure A: RADS 5910 Applied Research Project
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 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. This measure was met in 2020.

Measure B: RADS 5123 Survey Development Project
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. 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. In 2020, the mean remained the same as the year before; however, the benchmark was unmet in 2020 due to one student.

Measure C: RADS 5110 Research Paper
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 5910; therefore, faculty guide students to choose a topic that they can expand. The number of students completing this assignment increased from 4 to 10 in 2020. This benchmark was unmet as a result of two students.

Action Plan: In 2020 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 2020, faculty revised 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 encouraged students and provide feedback on their first assignment, in which students submit a proposed timeline to complete their paper. Faculty informed students if their timeline appears to be realistic. If not, faculty had students revise and submit their revised timeline. In addition, faculty reminded students of their proposed timeline throughout the semester in addition to meeting the set assignment submissions in the course. Faculty discussed if this tool is yielding valuable information for meeting the SLO. As a result, the faculty revised the rubric to reflect students' progress on completing the research paper and meeting course expectations which is based more on their progress. The quality of the paper is held to a certain standard as put forth by the graduate school. Faculty felt that if the students meet the graduate school standards, they also meet the assignment standards. In 2021, faculty will use the revised paper rubric to determine the student's final grade in the course and trend the data for comparison.

Measure B: In 2020, the course faculty and statistician added an additional online question and answer virtual meeting to guide students on the survey development project. The students were given questions ahead of time to consider their project design. Each student was asked to answer the questions, and faculty discussed if they are on the right track. In 2020, the one student who scored an 81 instead of 85 had been identified as a weak student academically in 2019 and throughout the program. This student has consistently scored the lowest in all courses in the program. In 2021, the strategies implemented will be repeated to see if the next cohort will perform higher than the one student identified as weak in the 2020 cohort.

Measure C: In 2020, to improve students' performance on the research paper in RADS 5110 and writing quality throughout the program, faculty encouraged students to participate in the free library database search tutorials offered by the librarian. The graduate coordinator added a new database search strategy in the MSRS course shell and required students to complete this assignment as part of the program's orientation. Faculty worked on identifying students who submit poor writing early in the program and plan to meet with students in person or virtual meeting or phone conference. These strategies started the student's first semester in the program. This benchmark was unmet due to two students' progress. In reviewing the students' feedback for this assignment, the students were weak in their writing quality and supporting their work with sufficient resources. The students kept switching back and forth between the first and second person as well as grammar and APA mistakes. Their topic ideas were good but did not fully develop support for the topics. Some aspects of the sections on the paper were underdeveloped. Moving forward in 2021, faculty are adding a reflection assignment at the beginning of the course for students to revisit their topic from the first research course RADS 5010. Faculty will advise students that if they choose a good topic in RADS 5010, they will be able to build on this topic in research II, RADS 5110. In addition, faculty have compared the assignments in the first research course 5010 and assignments in 5110. Faculty plan to allow students to revise their work from 5010 while developing new sections of the paper in 5110. Faculty hope to improve student achievement in developing support for their topic.

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, but there is room for improvement for measures B and C for this SLO. The following actions will be implemented:

- Add a reflection assignment in 5110 to help guide students on an appropriate topic moving forward in the program.
- Revise assignments in 5110 as to not duplicate work from 5010 but instead better develop their topic with new sections of paper.
- Offer question and answer virtual sessions with guided questions.
- Encourage students to participate in the free library database search tutorials offered by the librarian.
- 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.

Assessment Cycle 2020-2021

<table>
<tr><th>Outcome</th><th>Tool</th><th>Benchmark</th><th>Results</th></tr>
<tr><td rowspan="2">V. Evaluate ethical standards in practice as a radiologic sciences educator or administrator.</td><td>A. Core and Concentration Sections of the Comprehensive Exam.</td><td>90% of students will score 80% or better on both sections for first attempt.</td><td>
<table>
<tr><th></th><th colspan="2">2020</th><th colspan="2">2019</th><th colspan="2">2018</th><th colspan="2">2017</th><th colspan="2">2016</th></tr>
<tr><td>N</td><td colspan="2">11</td><td colspan="2">6</td><td colspan="2">3</td><td colspan="2">8</td><td colspan="2">8</td></tr>
<tr><td>Tools</td><td>Core</td><td>Conc</td><td>Core</td><td>Conc</td><td>Core</td><td>Conc</td><td>Core</td><td>Conc</td><td>Core</td><td>Conc</td></tr>
<tr><td>Mean</td><td>82</td><td>85</td><td>86</td><td>85</td><td>79.6</td><td>78.6</td><td>83</td><td>80</td><td>82.5</td><td>85</td></tr>
<tr><td>Range</td><td>41-98</td><td>70-100</td><td>81-96</td><td>80-95</td><td>65-91</td><td>66-85</td><td>70-93</td><td>40-95</td><td>72-93</td><td>73-98</td></tr>
<tr><td>%</td><td>82</td><td>82</td><td>100</td><td>100</td><td>66</td><td>66</td><td>75</td><td>88</td><td>62.5</td><td>88</td></tr>
<tr><td># not met</td><td>2</td><td>2</td><td>0</td><td>0</td><td>1</td><td>1</td><td>2</td><td>1</td><td>3</td><td>1</td></tr>
</table>
</td></tr>
<tr><td>B. Legal and Ethical presentation (RADS 5030)</td><td>100% of students will achieve an average of 85% or higher</td><td>
<table>
<tr><th></th><th>2020</th><th>2019</th><th>2018</th><th>2017</th><th>2016</th></tr>
<tr><td>N</td><td>21</td><td>15</td><td>9</td><td>7</td><td>9</td></tr>
<tr><td>Mean</td><td>97.71</td><td>97.5</td><td>95.3</td><td>99</td><td>98</td></tr>
<tr><td>Range</td><td>86-100</td><td>86-100</td><td>80-100</td><td>95-100</td><td>94-100</td></tr>
<tr><td>%</td><td>100</td><td>100</td><td>89</td><td>0</td><td>0</td></tr>
<tr><td># not met</td><td>0</td><td>0</td><td>1</td><td>0</td><td>0</td></tr>
</table>
</td></tr>
</table>

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

Findings:

Measure A: Core and Concentration Sections of Comprehensive Exam

2020: Unmet, only 82% of students achieved an 80% or better on the both the Core and Concentration sections of the Comprehensive Exam.

81% of students achieved an 80% or higher of the core.

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.

Measure B: RADS 5030 Legal and Ethical Presentation
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.
2016: Met, 100% of students achieved an 80% or higher.

Analysis:
Measure A: Core and Concentration Sections of Comprehensive Exam
Measure A: In 2020 assessment cycle, there were a larger number of students who completed the exam than the year before. Due to COVID-19 and the challenge of securing a live proctor, faculty had to figure out a way to proctor the exam. Faculty decided to allow students to take the exam at home using Respondus lockdown browser. The MSRS coordinator created a Respondus orientation and pre check quiz to make sure students have a good internet connection to include enough bandwidth and a webcam for recording. One of the two students who were not successful on the first attempt could not get her Respondus lockdown browser to work. After many attempts, the MSRS coordinator requested the student to delete the software program and download again. We discovered that the student had the older version of Respondus from a previous course, and this is why she could not get her camera to work. By this time, the student was anxious and stressed due to software issues. After following up with the student, she admitted to not studying properly. The MSRS coordinator met with the student and advised her how to better prepare for her second attempt. The second student who did not pass the exam also took the exam at home. When the MSRS coordinator followed up with this student, she admitted that she did not use the resources and tools available to study for the exam and just went for it.

After reviewing the resources with the MSRS coordinator, the student realized how to better prepare for taking the exam and was successful on her second attempt.

Measure B (RADS 5530 Legal and Ethical Presentation) Measure B is an audio presentation in which students research ethical and legal dilemmas most commonly faced in healthcare. Students share their audio presentations with one another and answer a set of questions per presentation for a grade. Many ethical topics are discussed. While this benchmark was met, the mean remained the same as the year before, and the lowest score was an 86.

Action Plan: In 2020 assessment cycle, during the evaluation of this SLO, faculty discussed ways to help improve the student's success in passing the core section of the comprehensive final exam on their first attempt and also 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 2020, assessment cycle, to improve measure A for students scoring closer to the benchmark score of 80 on the core and concentration sections of the exam, the graduate coordinator developed a list of tips on how to prepare for the comprehensive final exam and posted this resource in RADS 5910. The MSRS coordinator developed a pre-preparation lockdown browser orientation and quiz. The MSRS coordinator changed the exam preparation guidelines to better prepare the students to take the exam at home as result of COVID-19 restrictions. The MSRS coordinator developed a survey for students to complete, which indicates their choice of when to take the exam. The MSRS coordinator sent the students detailed instructions on preparing for the exam and step by step instructions for the day of the exam. The MSRS faculty provided their personal cell phone numbers and were available to call while the student is taking the exam, should they have technical difficulty.

Moving forward in 2021, the MSRS coordinator will post the exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910. The MSRS coordinator will advise students as they enroll in 5910 on how to best prepare for the comprehensive exam. The MSRS coordinator plans to develop an instructional video to better advise students how to prepare for the exam and post this video on both the MSRS resource shell and RADS 5910 course shell. In addition, the MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.

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. In 2021, faculty will provide updated sample presentations for students to review for setting the expectations of the assignment.

Decisions:
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 post the exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910.
- The MSRS coordinator will advise students as they enroll in 5910 on how to best prepare for the comprehensive exam.
- The MSRS coordinator plans to develop an instructional video to better advise students on how to prepare for the exam and post this video on both the MSRS resource shell and RADS 5910 course shell.
- The MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.
- Revise test questions in the exam pool to match revisions of assignments in core and concentration courses.
- The MSRS coordinator will advise students in RADS 5910 how to prepare for the comprehensive exam.
- 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.
- Update sample presentations as a guide for student's expectations

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

Summary of 2020 Assessment for the Master of Science in Radiologic Sciences (MSRS) program.
Overall, out of 12 benchmarks, there were three were not meet. This was an improvement 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. Five means remained the same with only 1% difference. MSRS faculty have action plans to improve all 5 SLOs. Some changes were implemented in the program during the 2020 assessment cycle. The faculty implemented various strategies to improve both met and unmet benchmarks. These strategies were geared towards providing more guidance on assignments and preparing for the comprehensive exam, such as studying tip guidelines, conducting live virtual

sessions, increasing tutorials for conducting research, and updating the comprehensive exam pool. Course assignment dates were moved forward to allow more time for student feedback. Faculty emphasized weighted grades and encouraged more student participation.

Comprehensive summary of key evidence of improvements based on analysis of the 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 2020 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.
    - Developed a list of tips on how to prepare for comprehensive final exam and posted in two different Moodle shells.
    - Added live virtual meetings to help explain assignments and allow students to ask questions.
    - Identified students early on who demonstrate poor writing quality and schedule a meeting in person, or virtually or phone to discuss strategies to improve their writing quality and expected writing level for the graduate program.
    - Encouraged students to attend free library search strategies sessions offered by the library.
    - Scheduled web advising sessions in preparation for the comprehensive exam.
    - Revised test questions in the exam pool to align with course objectives, lesson objectives, and individual assignments.
    - Created new comprehensive exam versions to maintain exam integrity.
    - Added new database search assignment in MS orientation shell.
    - Included 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.
    - Developed a list of recommendations on how to prepare for the comprehensive final exam.
    - Advised students each semester to save syllabi, graded assignments, and add to their portfolio study guide in preparation of comprehensive final.

  - Created new comprehensive exam versions and assigned different versions for students taking the exam in the same semester.
  - Provided 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.
  - Emphasized importance of participation in group presentation assignment in RADS 5110.
  - 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 presentations.
  - Allowed students to review sample presentation assignments.

- SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
  - Added database search assignment in MSRS orientation.
  - Added additional question and answer virtual sessions with guided questions.
  - Encouraged students to participate in the free library database search tutorials offered by the librarian.
  - In RADS 5910, revised assignment deadlines to address students waiting until the last minute to submit their final draft.
  - In RADS 5910, required students to revise their timeline until the schedule is more realistic and reminded students of their proposed timeline.
  - 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.
  - Had 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.
  - Revised test questions in the exam pool to align with course objectives, lesson objectives, individual assignments.
  - Advised students to use their course syllabi, course objectives, and lesson objectives to develop a study guide.
  - Advised students to save all their work for review in preparation for the final exam.
  - Developed new exam versions.

Assessment Cycle 2020-2021

Plan of action moving forward.

Based on the evidence provided from the 2020 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 post the comprehensive exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910.
    - The MSRS coordinator will advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
    - The MSRS coordinator will develop an instructional video to better advise students how to prepare for the exam and post this video on both the MSRS resource shell and RADS 5910 course shell.
    - The MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.
    - Revise test questions in the exam pool to match revisions of course assignments in core courses.
    - Offer live virtual sessions to help explain assignments and allow students to ask questions.
    - Encourage students to attend free library search strategies sessions offered by the library.
    - Schedule web advising sessions in preparation for the comprehensive exam.
    - Add additional resources in the MSRS resource program Moodle shell addressing APA format and research strategies.

- 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 post the comprehensive exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910.
    - The MSRS coordinator will advise students as they enroll in RADS 5910 on how to best prepare for the comprehensive exam.
    - The MSRS coordinator will develop an instructional video to better advise students on how to prepare for the exam and post this video on both the MSRS resource shell and RADS 5910 course shell.
    - Advise students each semester to save their syllabi, graded assignments, and add to their portfolio study guide in the preparation of comprehensive final in weekly announcements.

- The MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.
- Update exam questions and versions to match revisions of updated assignments.
- Submit EBP assignment instructions during registration.

- SLO 3: Demonstrate effective communication skills in professional settings to maintain collegial and collaborative relationships.
  - Provide more resources on creating a presentation and add more details to the guidelines and rubric.
  - Track trends in new measurement tool RADS 5110 group presentations
  - Allow students to review current sample presentation assignments to set the expectations for the quality of assignment.

- SLO 4: Conduct research studies to contribute to and improve the practice of the radiologic sciences.
  - Add a reflection assignment in RADS 5110 to help guide students on an appropriate topic moving forward.
  - Revise assignments in 5110 as to not duplicate work in RADS 5010, but instead better develop their topic with new sections of paper.
  - Offer question and answer virtual sessions with guided questions.
  - Encourage students to participate in the free library database search tutorials offered by the librarian.
  - 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.
  - The MSRS coordinator will post the comprehensive exam preparation tips in MSRS resource shell so students will have access to how to prepare for the exam prior to enrolling in RADS 5910.
  - The MSRS coordinator will advise students in 5910 on how to best prepare for the comprehensive exam.
  - The MSRS coordinator will develop an instructional video to better advise students how to prepare for the exam and post this video on both the MSRS resource shell and RADS 5910 course shell.
  - The MSRS coordinator will keep a master list of current syllabi to share with students for studying for comprehensive exam.
  - Revise test questions in the exam pool to match revisions of assignments in core and concentration courses.

- 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.
- Update sample presentations as a guide for student's expectations