

Radiologic Science Degree Completion Program

2014-2015 Assessment Report

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Oregon Institute of Technology
Medical Imaging Technology Department
Radiologic Science Degree Completion Program Assessment
2014-2015

I. Introduction

The Radiologic Science (RDSC) Degree Completion Program began in 1996 and is one of four degree completion programs offered by the Department of Medical Imaging Technology at Oregon Institute of Technology.

The structure of the program allows registered radiologic technologists (RT) to pursue their Bachelor of Science degrees without coming to campus. This is accomplished by using the medical facilities where students are employed (or of their choice) as sites for temporary clinical practice, to fulfill the requirements of courses with labs, and the external capstone course, RDSC 411.

Eighty-nine credits are granted for the core radiography curriculum for registered technologists in good standing with the American Registry of Radiologic Technology (ARRT). A 62 credit block of math, communications, science, and remaining general education credits are taken from OIT for courses available online, or at a college in the student's locale. The remaining block of 50 credits is taken online from OIT.

During the early years of the program enrollment was slow, with little increase. The creation of a dedicated distance education office was greatly beneficial in promoting the program. From the Fall of 2002, through the Fall of 2007, the number of students coming into the program were 8, 8, 8, 12, 25, and 29, respectively. The number of graduates from 2002 through 2006 were 1, 2, 3, 1, and 4, respectively. As of spring, 2011, eight were notified of being eligible to graduate. Spring of 2012 will see another seven.

II. Mission, Objectives, and Student Learning Outcomes

Radiologic Science Degree Completion Program Mission Statement:

The mission of the Radiologic Science Degree Completion Program is to provide ARRT registered Radiologic Technologists a Bachelor of Science degree from a distance education program that furthers the student's knowledge, clinical practice, and performance of examinations while practicing competent patient care and safety in the advanced modalities of Radiologic Technology.

Program Objectives:

1. Maintain a degree completion curriculum with emphasis on special modalities.
2. Provide a BS degree in Radiologic Science with a core of courses directly applicable to the technologist-student seeking advancement or a leadership role in the profession.
3. Further the distance student's practice of providing compassionate healthcare in the clinical setting
4. Prepare graduates to obtain positions in the advanced modalities, management, sales, applications, education, and other career options available to Bachelor of Science degree graduates.
5. Place students in the clinical setting of various modalities, enabling them to gain hands-on experience and form new networks.
6. Provide a quality degree program that recognizes the achievement of passing the national registry.
7. Address quality of healthcare issues through the continued learning of working professionals.
8. Provide a meaningful capstone experience in one or more advanced imaging modalities.

Student Learning Outcomes:

1. Demonstrate knowledge of concepts & principles associated with the operation of special modality imaging machines & equipment.
2. Identify arteriographic anatomy and cross sectional images of the head, neck, and torso, for specific accuracy and spelling.
3. Demonstrate magnetic field precautions and radiation safety for self, staff, and patients as set forth by the ALARA standards.
4. Demonstrate professional judgment and appropriate interpersonal communication with colleagues and superiors.
5. Perform clinical examinations in Computed Tomography, Magnetic Resonance, Arteriography, and Mammography or Quality Assurance at the level of competency.
6. Identify major disease processes diagnostic to advanced modality examinations

III. SLO Three Year Assessment Cycle

A three-year cycle for the assessment of the program’s student learning outcomes is shown below in Table 1.

Radiologic Science Outcome Assessment	2013-2014 Term/Course	2014-2015 Term/Course	2015-2016 Term/Course	
1. Demonstrate knowledge of concepts & principles associated with the operation of special modality imaging machines & equipment (Alternates:CT, Mamm, QA)		S		
2. Identify arteriographic anatomy and cross sectional images of the head, neck, and torso, for accuracy and spelling.		F		
3. Demonstrate magnetic field precautions and radiation safety for self, staff, and patients as set forth by the ALARA standards. (Alternates: CT, CIT,Mamm)	W		W	
4. Demonstrate professional judgment and appropriate interpersonal communication with colleagues and superiors.	F		F	
5. Perform clinical examinations in Computed Tomography, Magnetic Resonance, Arteriography, and Mammography or Quality Assurance at the level of competency	S		S	
6. Identify major disease processes diagnostic to advanced modality examinations		W		

Table 1. Three year Assessment Cycle

A. Fall, Winter, Spring 2014-15, BIO 335: Cross Sectional Anatomy

Student Learning Outcome #2. *Identify arteriographic anatomy and cross sectional images of the head, neck, and torso, for accuracy and spelling.*

The course which addresses this outcome is cross sectional anatomy. Due to the small class sizes all three terms of cross sectional were combined for a total of 16 students. The unit tests are short answer. Complete identification of anatomy and correct spelling is graded and based on strictly objective criteria.

Direct Assessment: Unit Scores

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Unit 1 ave scores	short answer	% correct	75%	85.8%
Unit 2 ave scores	short answer	% correct	75%	94.2%
Unit 3 ave scores	short answer	% correct	75%	88.%
Unit 4 ave scores	short answer	% correct	75%	90.%
Unit 5 ave scores	short answer	% correct	75%	85%

Table 2. Direct Assessment Results for SLO #2, Fall, Winter, Spring 2014-15, Cross sectional anatomy

Indirect Assessment: Unsolicited Student Comments from Messages to Instructor.

Unfortunately couldn't find enough time to devote to studying the last couple weeks got crazy busy for our family! I really enjoyed the class and learning the anatomy, and I will definitely keep the notes from the head for future reference.

Thanks for the fun and informative term, I had a good time going through the course.

I have just taken my first test and i did not manage my time very well. I will work on that for the next test

Thank u so much for all the understanding. It was a rough start to the term and I am glad I was able to pull through... I am pleased with the outcome overall! Thanks again! Enjoy the break also!

I enjoyed this class very much. Thank you for your time and patience. I was stressing towards the end. Lesson learned, never put off what I can do little by little. During this class, My Dean asked me to fill in for a college professor who went out on surgery. I was stretched thin, but was able to bring in my "homework" from your class to the class he had me cover. Case presentations and board review. It worked out.

wow, I needed almost every minute on the head! good thing for doing baby heads, otherwise I'd be completely lost. thanks for all your understanding, and thanks for all the cool info! Next Im doing my second externship class, which includes observing lots of MRIs, so its good timing for me.

Thank you Professor Gary, I loved your class, i learned a lot from it. you have been very helpful thank you again

Thank you very much, I have really enjoyed this portion of my degree It helps to understand the pathology locations and scanning skills needed to help with the diagnostic images.

Thank you... I really appreciate the explanations. I understand... And I didn't really Sagittal was missing a t as for the others it helps understand where I went wrong. Thank you for understanding

Strengths, Weaknesses, Actions.

Scores remain high. Problems with low scores on the first test have significantly improved since the first assessed average of 69%. No further corrections are deemed necessary.

B. Winter 2014-15, RDSC 356: Magnetic Resonance Imaging.

Student Learning Outcome #6. *Identify major disease processes diagnostic to advanced modality examinations*

The course most closely associated with this objective is RDSC 336: *Radiographic Pathology*. When surveyed in 2010-2011 test scores and grades were exceptionally high. The level of difficulty was examined and deemed adequate. Student comments were good and case studies reflected interest and enthusiasm for the topic of radiographic pathology, as is typical for this audience. The second course that has been assessed for this objective is RDSC 336: *Essentials of Pathophysiology* which also has a good record of student satisfaction and completion success. The same instructors are teaching the course, and a reexamination at this time would not be expected to yield any new information of value.

A course not previously associated with this objective is RDSC 356, Magnetic Resonance Imaging. This course has a steep learning curve in conceptual physics and grades are typically C or B, bolstered by assignments that moderate test scores. In 2011-2012 the assessment of the MRI course relative to SLO #3 indicated a need to expand course content and add test questions accordingly. However, broadening the content did not address low scores.

There is a disparity between the course on campus and the distance education version, found in lab exercises. Students on campus give oral presentations on disease processes, of which there are 15 to choose from. Distance students fulfill their lab requirements by spending time in the MR department but currently there is not a requirement to report on cases they have witnessed.

The need to address this disparity and to add content that relates pulse sequences to pathology in a meaningful way was made evident by examining the course winter term. As the course progressed each module was evaluated for the connection to pathologies, and the opportunity to introduce them at appropriate locations in the material.

Direct Assessment of Material in Modules and tests

# of times pathology is directly related to scanning techniques	# of times pathology appears on tests	# of opportunities to connect pathology to techniques
3	0	> 10

Table 3. Pathology in the content modules

Do to the nature of the course pathology is not absolutely required, and texts on the theory of MR do not typically make that connection, at least in any detail. However, when the project of inclusion is completed for the next distance offering, tying various disease processes to scanning will be intended to accomplish two significant results. First, to relate the physics of MR to clinical practice in a meaningful way, and secondly, to provide a diversion from the theoretical content that is less interesting, and make it more so by connecting it to clinical practice. Test questions will provide a direct assessment.

In addition, to lessen the disparity between the on-campus and distance versions of the course, a requirement for a report similar to a case study will be added to the visitations in the MR department, and will provide an indirect means of assessment.

Strengths, Weaknesses, Actions.

Although an atypical assessment, this survey indicates an opportunity to add elements to the course, before the next offering, that promise to make the experience more relevant and more interesting. The action to accomplish that will be editing the online modules, tests and syllabus to that end.

IV. 2014 – 2015 Assessment Activities

C. Fall, Winter, Spring 2014-2015, RDSC 365 Quality Assurance/Quality Control & RDSC 411 Externship

Student Learning Outcome #1. *Demonstrate knowledge of concepts & principles associated with the operation of special modality imaging machines & equipment*

Seven students completed the course in QA/QC.

The last assessment of this course was conducted by a different instructor, and was directly assessed by test scores and a review of selected test questions. The course was significantly reformatted before being offered this spring. Changes included:

1. Removing four chapters of text reading and testing on material that covered film and film processing, which is dated in the digital era. In the event a student should need this information it was made an option.
2. Adding three chapters on the modalities of CT, MRI and ultrasound to supplant the chapters on film.
3. Removing three open book tests, each 50 questions that covered multiple chapters of mixed topics in the text.

4. Adding 20 question open book quizzes to each chapter.
5. Opening seven weeks of *Discussions* in Blackboard for students to share thoughts and experiences.
6. Peer evaluation by critiquing another student's term paper.

A term paper assignment was retained, and remained the seminal project in the course. Due to quizzes being open book, scores do not reflect retention of materials and are not relevant to assessment.

The best indication of meeting this objective comes from student comments, questions and answers to other students found in the discussions.

Direct Assessment of Student Learning: *Discussions*

I knew that we had a comprehensive QC program at my institution, but was impressed with the information I got. I only included what I could fit on one page. There are other measures that are made for non-ionizing imaging resources, as well as QC that is performed by vendors.

I read all the other posts and hope this helps some of you with limited QC programs. I have the privilege of working with a very brilliant medical physicist and QC technologist and am happy to share information with anyone.

I was able a few times during my student clinical rotations to help perform the Mammography QA and I have to say that is a lot of testing on one machine weekly. I cannot remember much of it other than there were a few different phantoms and a lot of data to record.

We have a physicist at our facility who trained our QC tech and he comes for key portions of the inspection. One of the benefits of working at a large university hospital. We log all our fluoro time and doses in EMR as well as track the IR and CT dose in Radimetrics. It's great that you were able to institute tracking at your facility.

Can you share your method for the repeat analysis? We don't have one and I struggle to figure out how to implement with CR/DR when techs can just 'discard' images without much tracking. Do you send all images to PACS and not allow the techs to select what gets sent?

I'm glad you mentioned the annual lead test. When I started at my facility they only performed "visual" inspections of lead. I instituted a fluoro inspection of the lead and we removed about 1/3 of the lead from service due to damage and cracks that would have never been noticed on a visual inspection.

Wow, that is interesting. You live in Oregon, right? I know the big complaint from my partner here is that she hates doing the QC on the x-ray machine because absolutely nobody checks it. For me, I tend to think of it as an insurance policy... just in case something crazy does happen. What I've noticed about our system lately is that we're having to use a lot more technique (like 70 @ 8 for an ankle) and the S# will still be at the high end of acceptable. We told our field engineer and he said that its not necessarily an increase in actual dose. He says the s# is the most indicative of patient dose. Have you heard this? We do have a box that measures output for each exposure, but I don't exactly remember the differences in output between then and now.

My thought exactly Aaron! Shouldn't 70 @ 8 always be 70 @ 8??? The algorithms for processing may be off, but the output should be the same. We have a new machine, and the engineer says that the output is

consistent, but I feel like he's wrong. That's the problem, because i feel like i don't understand it enough, and because he's so insistent, he must be right. Right?

Happy to see that your facility keeps up on C-Arm QC, and weekly at that! Prior to working where i do now I worked for a surgery center/ group of ortho docs. For the longest time nobody wanted to do anything other than record "c-arm time" in the OR logs, which really bugged me. This is typically used by hospitals to charge for tech time, and really have nothing to do with dose. I finally began a log of keeping each patients dose, and then giving them to each RN for their record. It was a good system because I was the only rad tech, but still... took us a long time to get everyone on board. I am surprised your facility tests their own output, because that was something we had field engineers do semi-annually, and a physicist annually, but I'm not even sure what the regulations are

When it's time for the analysis, I just go in to the settings, select which date and run the report. A report is automatically generated with the % and each reason. I export the report on to a thumb drive and print it for our records. Hope this answers your question.

Wow, you got a lot more detail into one-page than I did. We "voluntarily" run the phantoms daily on our CT scanners. It is only required weekly, but, for the finicky Siemens at least, it helps the technicians track down sources of errors. Staying in practice by trading off weekly is very smart. I only run the actual QC's occasionally and have to go by the book.

It's true that few departments have individuals assigned to do performance testing on their xray equipment. In CT and fluoroscopy (therefore IR also) running phantoms is still a daily/weekly task for technologists. Outside of this, we use DoseWatch to monitor high dose CT and IR exams, maintain repeat logs in diagnostic and check lead semi-annually. As busy as we are, I'm glad it's not harder than this!

I couldn't agree with you more. I searched all of our departments and outside of mammo and MRI, the technologist has no interaction with QA/QC, it's all performed by service these days. Which works! Unless, of course you are taking this class! It is good to know the background and general information regarding QA/QC. It's just hard when you can't find much of what you are learning in the actual facility. I, too, feel the same. Glad it's not just me.

Wow! I can't imagine having to carry films on an airplane to go process

Your experience sounds like an adventure! I love it. It must have been very satisfying to serve all those remote communities to the best of your abilities. With experiences like yours going to DR must have been an amazing experience.

Our version of "when in doubt, burn it out" is "better hot than not". Sometimes you get a hypersthenic patient that needs a portable KUB and they are on a vent in the ICU and require 2 additional helpers to get a CR plate under them...most technologists would prefer to not have to come back to repeat images for under exposure. This would also apply to those pesky PACU post-op cross-table hips that the silly surgeons order even though they just saw it under fluoro in the OR and there are already images saved in PACS...sometimes I really hate that providers are allowed to order CYA imaging exams

Comments from Critiques of Other Student's Term Papers

I would just watch some of your transitions as well as when you are making your points. I felt like your voice could get a little casual. Also be sure to watch for small grammatical errors or redundancies.

Thanks for the critique. Much appreciated. I am going to make some changes and possibly add a few things to an appendix. Depends on what I am able to find on the share-drive at work.

I made some suggestions for wording and format. We perform this at our facility and use colored dots (which we date/initial) to indicate the month it was cleaned for easy identification. We never get it done in one day, that may work for you as well.

Thank you Delane for the critique. I will be making some changes to the wording like you suggested. I like the colored dots idea as well!

Thanks for the comments on my paper. I will be re-wording the couple of sentences which, as you pointed out, do not entirely make sense. Concerning a lack of citations for two or three items, this was because they are mentioned in the Introduction. Where these bits of information are referred to again in the body of the report, I have, hopefully, fleshed them out, as well as provided references.

I've made what I hope are some worthwhile comments on your draft report and it is attached below. It's seems incredible that any imaging department, especially one associated with the federal government, would have *no* QA/QC program in place. This certainly left you with plenty of subject matter for this assignment!

Well written! I didn't have much to assist with, as I thought it was very well done. I just had some grammatical suggestions.

Thanks I see what you mean I will definatly work some of my bugs out of this paper. I appreciate your comments and am already working on some changes.

Indirect Assessment: Removal of film and film processing chapters and tests.

Although film and processing is included in four chapter of the newly released (2015) 5th edition of the text, it was assumed to be the right time to remove it from this course. That assumption was tested by making it an option, and offering the modalities which many technologists work in as their preference.

# of students choosing film	# of students choosing CT	# of students choosing MRI	# of students choosing Ultrasound
0	3	1	3

Table 4. Assessment Results for SLO #1 in QA/QC Spring, 2015

RDSC 411: Clinical Externship. Direct Assessment of Student Learning through Self Reporting.

A second course in the degree completion program where machines and equipment operation are major components of the outcomes is the externship. Numerical scores from clinical instructor evaluations would be one means to assess student learning, but as is typical (and expected) these numbers were high and do not address the specifics of progress as well as the students themselves do in their weekly self reports during the course of the term.

What follows are typical student messages that convey their experiences, frustrations and successes as they get hands on training on million dollar imaging devices and ancillary equipment, most of which is a first time experience.

My third week was quite busy. I spent another 20 hours in the CT department and participated and performed many exams. During week three I successfully "comped" a CT chest with and without IV contrast, the ordering doctor was looking to r/o a dissection. I also reviewed some x-sectional anatomy. I plan to continue working diligently and getting as many exams under my belt as possible

I have been keeping busy performing as many CT exams as I can get. I am feeling comfortable with most of our routine exams. After I finish this program I will be studying for the CT registry. Im moving right along in the required comps for completing the class. This week I scanned and comped a CT lumbar spine without contrast. The doctor was looking for a compression fracture to the lower spine and we were able to obtain images for their request. I am feeling proficient at starting IV's, when I am helping in the "outpatient" core, most of the IV's are started by the techs, unless the patient already has a port access. This means most of our starts are 22g, unless we are doing an "angio" study then our policy requires at least a 20g IV. I have noticed different body habitus types can sometimes be less or more difficult to start an IV. Patient hydration also plays an important role in how easily a vessel will appear as well.

Well we are getting close to the end of the term. I am feeling like I have had lots of hands on time in CT. I feel comfortable scanning most all exams we see with the exception of only a few rare exams that I would still need to look up in the protocol book. Im feeling like I could scan without supervision, so I think I am right where I should be in my externship progress

The exam went as planned, introductions were made, the patient was informed about the procedure, all equipment and supplies were made available, the imaging RN sedated the patient, the area of interest was localized, and the radiologist proceeded to place a small drain into the patients area that had collected puss. Along with this interesting exam I did many other exams that are more "routine" at this point. I feel like I have seen a nice variety of simple to complex exams here at the hospital I chose to finish my externship at.

A highlight was scanning a shoulder. Getting use to the GE buttonology is a bit difficult. Just need more time in the seat. Late last week and this week, I am training at a different facility. Gaining more experience preparing patients, starting IV's, and putting them on the table with the correct coil/antennae combination. This facility has a newer GE 1.5T 450.

I'm training at a different facility within my company. Last week (6), I scanned a knee (with a lot of help from Tech), started numerous IV access', and injected plenty of Gad.

We use Magnavist for breast imaging and Multihance for all other C+ exams. It is rare for a patient to have a reaction to gad, but we had one patient last week who experienced a mild (hives) reaction. We assessed and turned her over to Imaging RN, who monitored her for 30 mins. Hope to get some more practice exams under my belt this week.

Week 7 went very good. Spent approximately 35 hrs in MR. Limited time scanning, however, I am getting very comfortable with gaining IV access, screening patients, and rooming/tableing them. I can turn over the table also.

Applications came in on Friday to work with the Techs on the changes. I also spent some time with the GE Field Engineer going over some of the back room equipment.

I participated in approximately 50 cases. I hope to get in some major scanning time over the next two weeks. I will concentrate on routine brain, breast, and extremity cases. I have not completed any exams yet, so there is a lot of work to be done between now and mid June.

GE Applications will be at my site in mid April, so I hope to get in on some of that training. I feel comfortable with patient care, IV access, power injection and hand injection of Gad, and turning over the room for different exams. Now, I just need some consistent scanning time. The site I work at is busy, so I have to work in my scanning time as best I can. Additionally, I received 1.5 hrs of Breast Biopsy training from Hologic. We learned how to set up the room equipment, Bx tray, Bx machine, and plan of attack. We used a roast stuffed with several olives as a phantom. Fun stuff!

Observed, practiced and completed a couple QA procedures. Spent time with the GE Field Engineer going over some of the computer room equipment. I intentionally began working with different techs to get varied perspective on scan parameters and technique. I feel this was helpful. I have continued to study MR physics. I feel like I live and breathe magnetic dipoles at this stage in life! I am finding the challenge of MRI enjoyable.

An unintended benefit of the clinical experience is the networking aspect. I am getting much positive "face time" with a few people with whom I will need good rapport later.

I feel week three continued my growth in MR. I still feel overwhelmed- but I am confident in my progress. I found myself having to reread many of the physics concepts yet again, but this time I feel that things are coming together better.

I am feeling much more comfortable with the respiratory gating. There is certainly a difference between knowing what resp gating does and understanding how to get the machine to do what you want! Certainly more learning this week! Still not overwhelmed with "new" scans. There was a difficult patient that required repeat- I was able to see the benefit / cost of using the fast "3minute brain" scan parameters. I was also able to see a hand MRI this week, this is one of the few new things I have been able to see. It was a terrible infection post animal bite. I am really enjoying MR. I have begun the dialog with my supervisor to continue modality training. It looks promising to continue.

This week I was able to spend some time with Becky the lead mammography tech. She showed me the mammography equipment and how to perform a basic mammogram. She showed me the different compression paddles and described how and when to use each one. She described correct patient positioning for each view, which for a screening study would be 2 different views for each breast.

I haven't completed any comps yet, as I feel I need to observe more exams before I feel confident enough to interact with the patients. I'm still being a bit of a fly on the wall, just listening to the explanation of the exam by the techs and listening to how they answer questions by the patients.

I've decided that I need to be more aggressive in arranging to be available when mammogram exams become available. I need to meet with my supervisor to arrange this.

This week I spent more time in mammography learning the equipment. I was able to observe about 5 more exams, one of which was on a patient that had breast implants. I saw how challenging these exams can be. Not only is it typically more painful, but there are four additional views required. I have been practicing what I'm going to say to the patients when I personally perform their mammogram. There is a lot of information to get from the patient and a lot of dialogue between the tech and the patient. Understandably, it's because of the intimacy of the exam, the fear of breast cancer that a lot of women experience, and the anxiety related to the breast compression.

Overall, I'm feeling pretty good about where I'm at in the externship. I am a bit nervous about performing my first exam, but I feel that I'll do well. I'm ready to start completing the competencies, and once I do, I feel that my confidence will be higher.

Now that I have about 8 comps under my belt, I'm finding they are coming a bit easier. However, each patient is unique, as well as their breast tissue. I'm finding that each breast has its own "feel", so to speak. And each tissue requires a different technique to manipulate it into place under the compression paddle. This is a new revelation for me. I didn't realize there was such diversity in breast tissue! They are teaching me well and explaining tips that will help me get through the process. I'm getting closer to completing my comps and have been fortunate enough to do almost all of them on my own time. I have a few more weeks to go and I'm confident that I'll be able to complete my course work in this one term. So, I'm happy.

Finally, I was able to get my last comp!!! I can't tell you how happy I am. Also, the women that I performed the final mammos on were extremely pleasant, willing to help me, and very encouraging. It was a great experience. After the last patient left, the mammo techs and I were all high-fiving each other and jumping up and down. It was a great accomplishment!

I'm very glad I made it through this term. It was very challenging, but all is well.

Today was the last day for clinicals this quarter. And boy was it a busy one! We had a virtual colonoscopy, A wrist, an abd/pel with & w/o contrast, a c-spine, a L-spine and a hand. A good last day (for this quarter). I am really impressed with my instructors and their knowledge! I'm off on all sorts of adventures during this break and will return refreshed and ready to roll! I hope everyone has a great break! See you next quarter!

Strengths, Weaknesses, Actions.

Student reports demonstrate the opportunities for hands on training that these courses are designed to provide. They also demonstrate student learning and satisfaction with their progress. No actionable deficiencies noted.

V. Summary of Student Learning Outcomes

The program faculty conducted formal assessment of three student learning outcomes during 2014-2015.

A. Fall, Winter, Spring 2014-15, BIO 335: Cross Sectional Anatomy

Student Learning Outcome #2. *Identify arteriographic anatomy and cross sectional images of the head, neck, and torso, for accuracy and spelling.*

No actionable deficiencies noted.

B. Winter 2014-15, RDSC 356: Magnetic Resonance Imaging.

Student Learning Outcome #6. *Identify major disease processes diagnostic to advanced modality examinations*

Course content will be edited to incorporate pathology relative to scanning techniques.

C. Fall, Winter, Spring 2014-2015, RDSC 365 Quality Assurance/Quality Control

Student Learning Outcome #1. *Demonstrate knowledge of concepts & principles associated with the operation of special modality imaging machines & equipment*

No actionable deficiencies noted.

VI. Changes Resulting from 2013-2014 Assessment

No need for changes were noted.

Student learning outcomes have been mapped to the curriculum as shown in Appendix A.

Appendix A
SLO-Curriculum Matrix

Course	Term	SLO 1	SLO 2	SLO 3	SLO 4	SLO 5	SLO 6
BIO 335 x-sec	3		X				
BIO 336 Patho	F						X
RDSC 326 CIT	S	X	X	X			
RDSC 354 Mamm	S	X		X		X	
RDSC 355 CT	F	X		X		X	
RDSC 356 MRI	W	X		X			
RDSC 365 QA	S	X					
RDSC 366 R path	S						X
RDSC 411 extern	3				X	X	