**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

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

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 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 t
shown below in Table 1.

## Radiologic Science Outcome Assessment

| | 2013-2014 | 2014-201 |
|---|---|---|
| | Term/Course | |

## 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:**

Thank you... I really appreciate the explainations. I understand... And I didon'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 |

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.

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?

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.

What follows are typica

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 thier 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.