Course Assessment Report
Washtenaw Community College

Discipline	Course Number	Title
Radiography	124	RAD 124 04/05/2016-Principles of Radiographic Exposure
Division	Department	Faculty Preparer
Health Sciences	Allied Health	William Nelson
Date of Last Filed Assessment Report		

I. Assessment Results per Student Learning Outcome

Outcome 1: Identify the x-ray interactions that occur with matter.

- Assessment Plan
    - Assessment Tool: Departmental multiple choice final exam administered using Blackboard.
    - Assessment Date: Fall 2013
    - Course section(s)/other population: Only one section of this course is offered per year.
    - Number students to be assessed: ~38
    - How the assessment will be scored: Test questions will be selected from the final exam based on content stated in the learning outcome.
    - Standard of success to be used for this assessment: 75% of the responses to these questions will be correct.
    - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2015		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
50	24

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

There were only 24 students enrolled in the lecture course. I believe the system is adding the 3 lab sections to the enrollment number.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students took the final exam on the same day.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Final exam administered using Blackboard.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
The final exam was divided into random blocks based on subject material presented throughout the semester. One random block included questions in the area of x-ray interactions. Using the Item Analysis tool in Blackboard, I was able to view the question related to this subject, the exact number of students assigned these questions, and the average score. The average score for these questions - 81.4%. The standard was met.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Theoretical understanding of how a photon that does not possess mass interacts with matter that does possess mass is not easy. Students must visualize in their head how a photon can interact with the electrons or nucleus of an atom. In our profession, this is an initial concept (among many) that must be understood if a student is going to learn how x-rays are used to produce a radiographic image.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

For one of the random block questions ***"Which of the following has an influence on K-shell electron binding energy?"***, 62% of the students provided the correct response. The students assessed with this tool are in their second semester of program. I am encouraged by the results because I know they will continue to learn about this concept not only in this class, but in other courses with increased complexity. I will continue to update my presentations based on current research and the use of available media. Time in lab allows for advanced discussion on this subject.

Outcome 2: Calculate the appropriate exposure factors necessary to produce an optimal exposure to the image receptor.

- Assessment Plan
    - Assessment Tool: Departmental multiple choice final exam administered using Blackboard.
    - Assessment Date: Fall 2013
    - Course section(s)/other population: Only one section of this course is offered per year
    - Number students to be assessed: ~38
    - How the assessment will be scored: Test questions will be selected from the final exam based on content stated in the learning outcome.
    - Standard of success to be used for this assessment: 75% of the responses to these questions will be correct.
    - Who will score and analyze the data: Departmental faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2015		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
50	24

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

There were only 24 students enrolled in the lecture course. I believe the system is adding the 3 lab sections to the enrollment number.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students took the final exam on the same day.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Final exam administered using Blackboard.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes
The final exam was divided into random blocks based on subject material presented throughout the semester. One random block included questions in the area of prime exposure factors. Using the Item Analysis tool in Blackboard, I was able to view the question related to this subject, the exact number of students assigned these questions, and the average score. The average score for these questions - 76%. The standard was met.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

Students must understand how to calculate exposure factors to use the appropriate amount of ionizing radiation when performing radiographic procedures. These calculations require the manipulation of tube output (kVp and mAs), distance, and exposure time. To be successful in the clinical setting, understanding these calculations is paramount.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

For one of the random block questions **"An x-ray exposure of 200 mR is recorded at a distance of 40 inches. If the same technical factors are used,**

what will the exposure be if the distance is increased to 72 inches?" 62% provided the correct response. I am not discouraged that the standard was not met for this particular question. Radiographic exposure calculations can be a difficult concept to understand for first year students. The use of practice questions in this area administered via Blackboard and during lab is an option.

Outcome 3: Identify the factors that influence the production of scatter radiation.

- Assessment Plan
    - Assessment Tool: Departmental multiple choice final exam administered using Blackboard.
    - Assessment Date: Fall 2013
    - Course section(s)/other population: Only one section of this course is offered per year.
    - Number students to be assessed: ~38
    - How the assessment will be scored: Test questions will be selected from the final exam based on content stated in the learning outcome.
    - Standard of success to be used for this assessment: 75% of the responses to these questions will be correct.
    - Who will score and analyze the data: Departmental Faculty

1. Indicate the Semester(s) and year(s) assessment data were collected for this report.

Fall (indicate years below)	Winter (indicate years below)	SP/SU (indicate years below)
2015		

2. Provide assessment sample size data in the table below.

# of students enrolled	# of students assessed
50	24

3. If the number of students assessed differs from the number of students enrolled, please explain why all enrolled students were not assessed, e.g. absence, withdrawal, or did not complete activity.

There were only 24 students enrolled in the lecture course. I believe the system is adding the 3 lab sections to the enrollment number.

4. Describe how students from all populations (day students on campus, DL, MM, evening, extension center sites, etc.) were included in the assessment based on your selection criteria.

All students took the final exam on the same day.

5. Describe the process used to assess this outcome. Include a brief description of this tool and how it was scored.

Final exam administered using Blackboard.

6. Briefly describe assessment results based on data collected for this outcome and tool during the course assessment. Discuss the extent to which students achieved this learning outcome and indicate whether the standard of success was met for this outcome and tool.

Met Standard of Success: Yes

The final exam was divided into random blocks based on subject material presented throughout the semester. One random block included questions in the area of beam restriction and the appropriate use of radiographic grids. Using the Item Analysis tool in Blackboard, I was able to view the question related to this subject, the exact number of students assigned these questions, and the average score. The average score for these questions - 86%! The standard was met.

7. Based on your interpretation of the assessment results, describe the areas of strength in student achievement of this learning outcome.

The production of scatter radiation is a byproduct of all radiographic procedures. Scatter creation can have an impact on patient dose and image quality. This is another important concept for students to understand during their first semester of clinical training.

8. Based on your analysis of student performance, discuss the areas in which student achievement of this learning outcome could be improved. If student met standard of success, you may wish to identify your plans for continuous improvement.

The lab sessions aligned with this course are very helpful to demonstrate certain aspects of image production. Using our energized labs, students are able to participate in experiments that show how scatter radiation is produced and how it can have an impact on the final image. We will continue to use these labs for this purpose.

II. Course Summary and Action Plans Based on Assessment Results

1. Describe your overall impression of how this course is meeting the needs of students. Did the assessment process bring to light anything about student achievement of learning outcomes that surprised you?

I enjoy teaching radiologic imaging physics. I also understand that for a first year student in their first full semester of academic training, this subject can be daunting. I believe this course is successful in meeting the needs of the students and preparing them for more advanced and complex subject material. The assessment data did not surprise me. I've been teaching this class for many years and I know the trends. I also understand the need for improvement and this is something I strive for every year.

2. Describe when and how this information, including the action plan, was or will be shared with Departmental Faculty.

During our next department meeting (August 18th, 2016).

3. Intended Change(s)

Intended Change	Description of the change	Rationale	Implementation Date
No changes intended.			

4. Is there anything that you would like to mention that was not already captured?

5.

III. Attached Files

Faculty/Preparer:	William Nelson	**Date:**	06/27/2016
Department Chair:	Connie Foster	**Date:**	06/29/2016
Dean:	Valerie Greaves	**Date:**	07/02/2016
Assessment Committee Chair:	Michelle Garey	**Date:**	08/03/2016