

## Course Outcomes Assessment

**Course/Program Title:** DHY 104 Dental Radiology

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### **Expected Learning Outcomes:**

1. Illustrate proficiency in exposing, processing, and mounting analog and digital film radiographs.
2. Develop positive patient management techniques, as applied to dental radiography.
3. Describe the attributes of dental x-rays in relation to the benefit versus the risk of radiation exposure.

### **Assessment: (How do or will students demonstrate achievement of each outcome? Please attach a copy of your assessment electronically.)**

1. Radiology Lab Projects: We currently use a self-evaluation worksheet that is completed by the students and then graded by the faculty to measure student performance. The points distribution on the evaluation sheet was revised for 2017-18 with greater deductions taken for non-diagnostic images.
2. Patient Education Paper: Students submit a paper that answers common patient questions regarding x-rays and x-ray safety.
3. Comprehensive Final Exam: Cumulative 150 point exam that covers lecture and lab material from the entire semester.

### **Validation: (What methods have you used or will you use to validate your assessment?)**

1. Lab Projects: Grades on lab projects are compared to data from previous semesters, two adjunct faculty calibrate with the lead instructor to grade projects. **(90% of students achieve an average of 75% or higher on all lab projects)**
2. Patient Ed Paper: This project is evaluated using a grading rubric that includes evidence based answers, persuasive tone, and writing mechanics. **(85% of students achieve an average of 75% or higher on patient education paper)**
3. Comprehensive Final: The final exam is constructed based on current radiographic practices and board exam content. An item analysis is conducted by the lead instructor to validate the exam. **(90% of students achieve an average of 75% or higher on the final exam)**
4. National Dental Hygiene Board Exam pass rates.

### **Results: (What do your assessment data show? If you have not yet assessed student achievement of your learning outcomes, when is assessment planned?)**

I have chosen to compare data from the first four cohorts to analyze student achievement.

1. Student performance on examinations is consistent from year to year within 2.6%. **(19/20 or 95% of students achieved a 75% or higher on the final exam)**

2. This performance benchmark goal was not met; 4 out of 20 students earned less than 75% of the Patient Education Paper. However, the class average was 2.7% higher than last year. CREDO modules for information literacy and how to search for evidence based articles were added to the course in an attempt to improve student's written communication skills. The execution of those modules did not go as planned due to software limitations that were unknown before implementation. I was unable to view any of the student submissions for the 4 modules that were assigned and could not assess their impact on student learning. **(16/20 or 80% of students achieved a 75% or higher on this project)**

3. Lab Projects: The grading system for lab projects was redesigned to reduce grade inflation by deducting more points for non-diagnostic films. In past years, lab grades have been greatly inflated and did not accurately reflect student's ability to produce diagnostic radiographs. The changes made for this year did lower student averages on lab radiographs by 3.84%; however, there is still room for improvement in this area. **(20/20 or 100% of students achieved a 75% or higher on this project)**

4. National Board Dental Hygiene Exam Scores: The NBDHE provides a d-value representing the standardized difference between your school's average standard score and the national average standard score. Based on the 17/20 students who took the exam between May and November 2017, HCC was -0.42 standard deviations below the national average for the Radiology portion of the exam.

- A d-value representing the standardized difference between your school's average raw score (i.e., average number correct) and the national average for each of the disciplines covered on the examination. *Please note that a d-value is a standardized value representing the distance between your school's average and the national average in standard deviation units. A positive d-value of 1.0 indicates that your school average is **one standard deviation above** the national average. A d-value of -1.0 indicates that your school average is **one standard deviation below** the national average. A d-value of 0 would indicate that your school's average falls directly on the national average.*

The data for the 4 measures discussed above is presented in the following table.

Cohort	Lab Project Ave	Patient Ed Paper Ave	Final Exam Ave	NBDHE Result
Fall 14 (n=18)	95.37%	90.81%	82.91%	-0.18
Fall 15 (n=20)	94.79%	93.96%	81.91%	-0.42 (n=17)
Fall 16 (n=16)	97.94%	86.5%	84.54%	N/A
Fall 17 (n=20)	94.10%	89.20%	85.00%	N/A

**Follow-up: (How have you used or how will you use the data to improve student learning?)**

1. Lab Project Grading: The revisions to the lab radiograph grading instrument are more reflective of the quality of the work produced by students. Faculty calibration to discuss rigor of grading is the next step in reducing grade inflation. The overall grading schema of DHY 104 has

been changed so that lab coursework is 40% of the total course grade (decreased from 60%), lecture course work is 55% (increased from 45%) of the total course grade and Engagement is 5% of the total course grade. The range of final course grades ranged from 98.03%-85.00% with 18 A's and 2 B's. The grade distribution could further be improved if the program grading scale is changed to equal ranges for A, B and C between 100% and 75%.

2. The questions on the Patient Education Project were evaluated this year to make sure they were still relevant and 2 CREDO modules were added in an effort to improve written communication. If CREDO modules are used in the future they will need to be taken from the CREDO software and re-created in Moodle so that I can view and evaluate student learning. Students could benefit from being required to turn in a rough draft of their paper and/or works cited page to improve the outcome on this project. However, this would place more demands on the instructor's already limited time. Students will continue to be encouraged to utilize the Student Success Center and spend more time proof-reading their papers.

3. Exams will be re-evaluated for content validity compared to NBDHE content as well as matching course content. I do not anticipate changes to the number or distribution of exams.

4. Based on the 17/19 students who took the exam between May and November 2017, HCC was -0.42 standard deviations below the national average for the Radiology portion of the exam. Current NBDHE radiography content should be explored further. My goal for next year is to see HCC's Radiology scores improve to at least equal the national average for the Class of 2018. A greater emphasis on radiographic interpretation and critical thinking may help improve student outcomes.

**Budget Justification: (What resources are necessary to improve student learning?)**

No additional resources are needed at this point.