Indiana University-Indianapolis Diagnostic Sonography Program

Program Student Learning Outcomes
Adult Cardiac Concentration

Academic Years in this Report: 2021, 2022, 2023, 2024, 2025, 2026

Date of Report Completion: October 2022, March 2023, October 2023, March 2024, October 2024, March 2025, October 2025, March 2026, October 2026

Grey Highlight = March Assessment Peach Highlight= October Assessment

Goal #1: Graduates will demonstrate clinical competency.

Outcome	Course	Assessment Tool	Benchmark	Results
Students will effectively perform diagnostic ultrasound procedures. (Psychomotor)	RADI-E 453 Echocardiography Clinical Practicum III (2nd year FA) *Course RADI-R 484 Clinical Practicum DMS III for Class of '23 and previous	Q16 of clinical eval "Overall Clinical Competence and Performance Evaluation Criterion"	Minimum class average score of 3.5 out of 4.0	4.0 (Class '21) 4.0 (Class '22) 4.0 (Class '23) 3.9 (Class '24) 4.0 (Class '25)
Analysis and Action Plan Class '21: New program outcome. Benchmark is equivalent to a B, which we felt was a good starting point. We will review class of '22 results to determine if results are still within the benchmark. We will consider changing the benchmark next year. Class '22: Results are at the highest evaluation level. This is a very talented cohort of students. We will keep the benchmark but will look at next year's results to determine if the 4.0 score is due to grade inflation from clinical site or if it's from student talent. Class '23: There is only one student in this cohort. She had excellent clinical skills. Class '24. Result is slightly lower than previous years, however it is an average between 2 students vs 1 student last year. This result is still an excellent score. We will continue to monitor this benchmark because we will have predominantly non-radiography background students next year. We don't know how this will affect our benchmarks. Class '25: Results are at the highest evaluation score. We expected this student to score highly because of her skills. We will continue to monitor this benchmark next year since we will have predominantly non-radiography background students and the largest number of students we've had in a single cohort. We don't know how this will affect our benchmarks.				
Students will demonstrate appropriate knowledge of ultrasound procedures (Cognitive)	RADI-E 420 Echocardiography Procedures I (1st year FA) *RADI-R 351 Ultrasound Principles for Class of '23 and previous	Average score of all tests	Minimum class average of 85%.	86.2% (Class '21) 84.5% (Class '22) 94.5% (Class '23) 86.1% (Class '24) 94.12% (Class '25) 91.28% (Class '26)
Analysis and Action Plan Class'21: New program outcome. Benchmark reflects all tests which covers all material specific to procedures taught for that course. We will review class of '22 results to determine if this benchmark still reflects the outcome. Class'22: Results decreased from last year. One of the two students struggled to catch on to echo concepts during the fall semester. She also missed several classes, therefore her test scores averaged well below the benchmark. We will continue to monitor this benchmark to determine if the decrease in the benchmark was due to this one student or if the grade average trend is above the benchmark. Class '23: This result is based on one student in the cohort. No significant changes had been made to reflect this higher average. We will continue to monitor the results to determine a more consistent benchmark. Class '24: On at least one test, the students did not read the textbook chapter as instructed. This significantly lowered that test score, effecting their overall test grade. **Action Plan:** A reminder statement that all reading material will be used for tests will be added to the course syllabus for each course moving forward. *March 26, 2024: All instructors were advised of this action plan.* Class '25: **Action Plan Completed:** The reminder statement was added to the syllabus. Although this average is based on one student, she is an excellent, strong academic student. We will continue to monitor this benchmark because we will have predominantly non-radiography background students next year. We don't know how this will affect our benchmarks. Class '26: The results are lower than last year. This is the largest echo cohort this program has ever had, so the average test scores are over a greater number of students. We noticed there was a traditional bell curve in the test scores. There were 2 students whose average test score was at or below the benchmark. We currently do not see an association between test scores and whether the student is a radiographer or a non-radiographer.				

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Goal #2: Graduates will demonstrate effective communication skills.

Outcome	Course	Assessment Tool	Benchmark	Results
Students will use effective oral communication skills with patients and clinical staff. (Affective)	*RADI-E 452 Echocardiography Clinical Practicum II (1st year SP) *Course RADI-R 382 Clinical Practicum DMS II for Class of'23 and previous	Average score from Ultrasound Clinical Eval Q7 "Interpersonal Skills with Patients" and Q8 "Interpersonal Skills with Staff/Other Medical Personnel"	Minimum class average score of 3.5 out of 4.0	4.0 (Class '21) 4.0 (Class '22) 4.0 (Class '23) 3.87(Class '24) 3.83 (Class '25) 3.83 (Class '26)

Analysis and Action Plan

Class '21: These skills were evaluated as one question in the clinical evaluation. We believe this does not reflect each of these as separate communication skills. We will separate this criterion into 2 criteria for '22. The benchmark reflects a B score, which we felt was a good starting point.
Class '22: The criteria were separated in the clinical evaluation to better reflect these as separate communication skills. The class average remained the same at 4.0. No action needed on this benchmark at this time but will continue to monitor over the next several years to determine if 3.5 is too low for this benchmark.
Class '23: No action needed on this benchmark at this time but will continue to monitor over the next several years to determine if 3.5 is too low for this benchmark. Our students come with a background in healthcare before program start, therefore already understand professional communication. We will consider raising the benchmark to 3.75 after evaluating class of '24 results.
Class '24: The results are lower than last year but still above the benchmark. We decided to keep the 3.5 benchmark due to the lower score this year.
Class '25: The results are similar to last year. We will continue to monitor the benchmark.
Class '26: The results are the same as last year. We had 7 students in this cohort, which is the largest echo program cohort we've had, which shows this to be consistent regardless of class size. We instituted multiple patient care and team interaction role modeling assignments for the class of '27. We will evaluate if these assignments have any effect on this result.

Students will demonstrate effective written communication skills (Cognitive)	RADI-S 410 Sonography Orientation (1st year SU) *Course RADI-R 360 Introduction to DMS Projects for Class of '23 and previous	I Ought to Research That! Assignment	Minimum class average score of 22 out of 25 points	N/A (Class '21) 22.0 (Class '22) 25.0 (Class '23) 25.0 (Class '24) 23.0 (Class '25) 23.9 (Class '26) 24.2 (Class '27)

Analysis and Action Plan

Class'21: This assignment was not instituted in 2021. The outcome could not be assessed because there was no written assessment tool available. Will institute a written assignment to assess students' ability to demonstrate effective written communication skills.
Class '22: New program assessment tool. We chose this benchmark as it reflected a B grade, which we felt was a good starting. The class average just meets the benchmark. One of the two echo students did not follow the directions of the assignment and submitted the assignment late, therefore obtained a very low score on the assignment. With only 2 echo students, the average was based on 2 students, which lowered the average significantly. When compared to the medical sonography student class average (24.5) for the same assignment, we believe this low average will not continue.
Class '23: This result is based on one student in the cohort. We will continue to monitor the results for consistency.
Class '24: The results stayed consistent with last year's benchmark. We will continue to monitor the benchmark.
Class '25: This result is based on one student in the cohort. We will continue to monitor the benchmark.
Class '26: The result is slightly higher than last year. There were 7 students in this cohort vs. 1 student in the last cohort. We will continue to monitor the benchmark.
Class '27: The results are minimally higher. We will continue to monitor this benchmark.

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Goal #3: Graduates will think critically and apply problem solving skills in a scanning environment.

Outcome	Course	Assessment Tool	Benchmark	Results
Students will think critically, and problem solve imaging strategies to obtain high quality images. (Psychomotor)	*RADI-E 433 Echocardiography Lab III (2nd year FA) *RADI-R 461 DMS Lab III for Class of '23 and previous	Echocardiography Skills Assessment	Class average score of 90%	94.1% (Class '21) 97.5% (Class '22) 98.2% (Class '23) 94.2% (Class '24) 93.0% (Class '25)

Analysis and Action Plan

Class '21: We chose the last semester lab skills assessment for the outcome as it represents their ability to complete an echocardiogram right before they graduate from the program. We started with a benchmark of a 90% class average score as it represents a B grade. Both students scored above the benchmark.
Class '22: The average score was 3% points higher than last year. There was a change in lab instructor since the year before. The current lab instructor teaches in a more organized and structured manner. We will monitor these results to determine if the increased scores could be due to either the instructor or the student talent for this cohort.
Class '23: This student was a highly motivated student to scan well and was a quick learner. We will continue to monitor the benchmark to determine if the benchmark is appropriate.
Class '24: This result is slightly lower than last year, but still well within the benchmark. We will continue to monitor this benchmark because we will have predominantly non-radiography background students next year. We don't know how this will affect our benchmarks.
Class '25: We had just one student in this cohort. The results are slightly lower than in past years. This student was evaluated by a different lab instructor and therefore the score may reflect instructor grading variability. We will continue to monitor the benchmark.

Students will evaluate images for differential diagnoses. (Cognitive)	*RADI-E 432 Echocardiography Lab II (1st year SP) *Course RADI-R 363 DMS Lab II for class of '23 and previous	Anatomy/Pathology In-Class Assignments	Minimum class average score of 90% for all Anatomy/Pathology assignments.	N/A% (Class '21) 97.6% (Class '22) 91.7% (Class '23) 95.2% (Class '24) 97.36% (Class '25) 93.72% (Class '26)

Analysis and Action Plan

Class '21: Echocardiography students were not given any anatomy/pathology assignments. It was decided that we would institute these assignments for echocardiography students for additional review of pathologic conditions outside of the principles course (called Procedures starting 2023). We chose to pattern the assignments and the outcome/benchmark to the medical sonography cohort for consistency between the cohorts.
Class '22: New anatomy/pathology assignments were created and instituted since last year. These assignments start in the 1st year spring semester and continue into the 2nd year fall semester. We chose the class average score of 90% as this represents a B grade. The result is well above the benchmark therefore, we will continue to monitor the benchmark and the assignments for any changes that may need to occur.
Class '23: Results are lower than last year. These assignments were moved from senior summer semester to junior spring semester. Since we had only 1 student in this cohort, we will monitor whether this decrease is because of the change in semesters or if this is based on this student's knowledge.
Class '24: Results are higher than last year. Since there was an increase in class average the move to spring semester did not seem to negatively affect student scores. We will continue to monitor the benchmark.
Class '25: The results are higher than last year. There is only 1 student in this cohort. We will continue to monitor the benchmark.
Class '26: There were 7 students in this cohort, which is the largest echo cohort this program has had. 2 students struggled with these assignments while the other 5 hit a benchmark similar to previous 2 years.

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Goal #4: Graduates will demonstrate professional values.

Outcome	Course	Assessment Tool	Benchmark	Results
Students will demonstrate appropriate professional values in the clinical setting. (Affective)	RADI-E 451 Echocardiography Clinical Practicum I (1st year FA) *Course RADI-R 381 Clinical Practicum: Diagnostic Sonography I for Class of '23 and previous	Average score from Ultrasound Clinical Eval Q3 "Student works as a Team Member" and Q4 "Student is Respectful and Considerate"	Minimum class average score of 3.5 out of 4	3.7 (Class '21) 4.0 (Class '22) 4.0 (Class '23) 3.94 (Class '24) 3.87 (Class '25) 3.97 (Class '26)

Analysis and Action Plan

Class '21: We started with a benchmark of 3.5 as this is a B grade. The evaluation questions are question 11 and question 16 in this cohort's evaluation. The evaluation will be revised to better clarify the criterion and to modify or add questions to reflect clinical skills.
Class '22: The evaluation has been changed. The questions are now questions 3 and 4 on the current evaluation. The score has increased from last year. We will monitor whether this is due to the student talent or from better clarification of the criterion.
Class '23: No action needed on this benchmark at this time but will continue to monitor over the next several years to determine if 3.5 is too low for this benchmark. Our students come with a background in healthcare before program start. We will consider raising the benchmark after evaluating class of '24 results.
Class '24: After considering the benchmark standard, we decided to keep the benchmark for now and continue to monitor.
Class '25: No action needed on this benchmark at this time. We will continue to monitor this benchmark because we will have predominantly non-radiography background students next year. We don't know how this will affect our benchmarks.
Class '26: The result went up slightly. This is the largest echo cohort the program has had, plus the most clinical sites that we've had (some were 1st time clinical sites). Considering these changes, we are pleased with the results. We will continue to monitor the benchmark.

Students will demonstrate an understanding of ethical obligations as described in the ARDMS Code of Ethics and Scope of Practice. (Cognitive)	RADI-S 410 Sonography Orientation (1st year SU) *Course RADI-R 360 Introduction to DMS Projects for Class of '23 and previous	Scope of Practice, Clinical Standards, and Code of Ethics Assignment	Minimum class average of 22 out of 25 points	N/A (Class '21) 23.5 (Class '22) 25 (Class '23) 24.5 (Class '24) 24.0 (Class '25) 24.3 (Class '26) 24.0 (Class '27)

Analysis and Action Plan

'21: There was no outcome that addressed the students' cognitive ability to understand their obligations to the Code of Ethics or Scope of Practice. As a new Program Director, I will add an outcome and institute an assignment to assess this skill.
'22: This outcome was added, and an assignment created in R360 to specifically address the Code of Ethics and Scope of Practice NEC curriculum guidelines. We chose a benchmark of 22 as this reflects a B grade. We will continue to monitor the results to determine if the benchmark aligns with student score trends.
Class '23: This result is based on one student in the cohort. We will continue to monitor the results for consistency.
Class '24: Results are slightly lower, but there are 2 students in this cohort rather than 1 in the class of '23. We will continue to monitor the benchmark.
Class '25: Results are based on one student in the cohort but still stayed relatively consistent. We will continue to monitor the benchmark.
Class '26: Results remain consistent with previous years. We will continue to monitor the benchmark.
Class '27: Results are similar to previous years. We will continue to monitor the benchmark.

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Goal #5: Graduates will have the knowledge of professional development opportunities.

Outcome	Course	Assessment Tool	Benchmark	Results
Students will demonstrate knowledge of professional development resources. (Cognitive)	*RADI-S 410 Sonography Orientation (1st year SU) *Course RADI-R 360 Introduction to DMS Projects for Class of '23 and previous	Professional Development Resource Scavenger Hunt Assignment	Minimum class average score of 90%	N/A (Class '21) 100% (Class '22) 100% (Class '23) 100% (Class '24) 100% (Class '25) 96.2% (Class '26) 100% (Class '27)

Analysis and Action Plan

Class'21: There was no outcome that addressed the students' cognitive ability to understand resources available for professional development. As a new Program Director, I will add an outcome and institute an assignment to assess this skill.

Class '22: This outcome was added, and an assignment created in R360 to specifically address the professional development resources NEC and Accreditation curriculum guidelines. We chose a benchmark of 90% as this reflects a B grade. We will continue to monitor this new outcome and benchmark for any possible modifications.

Class '23: This result is based on one student in the cohort. We will continue to monitor the results for consistency.

Class '24: Results stayed consistent with previous years. We will continue to monitor the benchmark.

Class '25. Results stayed the same as last year. We will monitor for another year before deciding if the benchmark needs to be adjusted.

Class '26. Results are lower than previous years; however, this is the first year we've had a cohort of 7 students. This would increase the likelihood of some students scoring lower than other students. We will continue to monitor the benchmark.

Class '27: Results are back up. We will continue to monitor this benchmark.

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Goal #6: To prepare competent entry-level sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains for the Adult Cardiac concentration.				
Outcome	**Course**	**Assessment Tool**	**Benchmark**	**Results**
Students will successfully complete the program in 18 months. (Affective)	N/A	Number of students recommended for graduation.	70% of students who entered the program will graduate on time.	100% (Class '21) 100% (Class '22) 100% (Class '23) 100% (Class '24) 100% (Class '25)
Analysis and Action Plan Class '21: The benchmark was set to reflect the accreditation standard for student retention. The program has seen historically very low rate of student drop off rates. We anticipate the student retention rate will remain high. Class'22: The student retention rate was consistent with our historical trends. We anticipate the student retention rate to remain high. Class '23: The student retention rate stayed consistent, however there was only one student in this cohort. Class '24: The student retention rate was consistent with historical trends. We will continue to monitor this benchmark because we will have predominantly non-radiography background students next year. We don't know how this will affect our benchmarks. Class '25: The student retention rate has remained consistent with historical trends. We will continue to monitor this as we enroll predominantly students who do not have a radiography background.				
Students will express confidence in the overall quality of skills learned while in the program. (Affective)	N/A	Post-Graduation Survey question 22 "Overall program quality and preparation as an entry-level sonographer" rating question.	80% of students will rate the program as Good or Excellent	87.5% (Class '21) 100% (Class '22) 100% (Class '23) 100% (Class '24) 100% (Class '25)
Analysis and Action Plan Class '21: We chose to include the 'Good' ranking in this benchmark since some people rarely use the highest rating on surveys. Also, this cohort had a change of Program Director in the middle of their program, therefore we weren't sure how that may have impacted students' ranking of the program. The previous Program Director did not hold an echocardiography credential and therefore did not institute labs, skills assessments, and various other assignments for the echocardiography cohort. Class '22: This was the first class to start and end with the new Program Director, however many changes were made during their time in the program to align the curriculum with adult cardiac accreditation and NEC educational guidelines. We were unsure how all these changes would affect the overall ranking of the program. The 100% Excellent rating indicates changes made were well received by the students. Class '23: There was only one student in this cohort. Being a solo student could have made it difficult for the student since she did not have a study partner or lab partner. Class '24: The results show consistent favorability of the program and its ability to prepare them for the workforce. We will continue to monitor the benchmark. Class '25: The results show consistent favorability of the program. We will continue to monitor the benchmark.				