

**Oregon Institute of Technology
Medical Imaging Technology Department
Echocardiography Degree Completion Program Assessment
2009-2010**

I. Introduction

The Echocardiography Degree Completion program was implemented in fall 2003 as an online program. The program was originally developed at the request of students. Students who are accepted into the Echocardiography Degree Completion program are already registered Cardiac Sonographers working in the field and have passed their national registry exam in Cardiac Ultrasound. There have been 24 graduates as of June 2009 and the program is in its sixth year. This program has seen steady growth since it started with more than 100 students currently enrolled.

II. Program Purpose, Objectives and Student Learning Outcomes

The Echocardiography faculty reviewed the mission, objectives, and student learning outcomes in fall 2009 and reaffirmed them without changes. The faculty have agreed to continue with the student learning outcomes as suggested by the programmatic accrediting body known as the, “Joint Review Committee of Diagnostic Medical Sonography.” The current version is listed below.

Echocardiography Degree Completion Program Purpose

The OIT echocardiography degree completion program enables registered professionals in echocardiography to further their knowledge and skills necessary for career advancement, to become effective communicators, problem solvers, critical thinkers, responsible managers and leaders, and to value lifelong learning.

Program Educational Objectives

The program prepares students to:

1. Utilize diagnostic techniques, sound judgment and good decision making to provide patient services.
2. Be leaders in the field of echocardiography who contribute to the field on a local, regional or national level.
3. Think critically, communicate effectively and exemplify professional ethics.
4. Become lifelong learners and responsible citizens.

Student Learning Outcomes

1. The student will demonstrate the ability to communicate effectively in oral, written and visual forms.
2. The student will demonstrate the ability to work effectively in teams.
3. The student will demonstrate an ability to provide basic patient care and comfort.
4. The student will employ professional judgment and discretion.
5. The student will demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.
6. The student will demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.
7. The student will demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.
8. The student will demonstrate knowledge and understanding of clinical echocardiography diagnostic procedures and testing.
9. The student will demonstrate an understanding of diverse cultural and humanistic traditions in the global society.
10. The student will be able to perform scholarly research and to contribute that knowledge to the field of echocardiography.

III. Three-Year Cycle for Assessment of Student Learning Outcomes

The faculty will assess the program outcomes on a rotational basis on a three-year cycle, as shown in Table #1 below.

ECHO Technology Student Learning Outcomes Assessment Schedule	2009-2010	2010-2011	2011-2012
1. The student will demonstrate the ability to communicate effectively in oral, written and visual forms.		X	
2. The student will demonstrate the ability to work effectively in teams.	X		
3. The student will demonstrate an ability to provide basic patient care and comfort.			X
4. The student will employ professional judgment and discretion including ethics.	X		
5. The student will demonstrate knowledge and understanding of human gross anatomy sectional anatomy and normal and abnormal cardiovascular anatomy.		X	
6. The student will demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.			X
7. The student will demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.			X
8. The student will demonstrate knowledge and understanding of clinical echocardiography diagnostic procedures and testing.		X	
9. The student will demonstrate an understanding of diverse cultural and humanistic traditions in the global society.	X		
10. The student will be able to perform scholarly research and contribute that knowledge to the field of echocardiography.			X

Table #1. Degree Completion Echo Assessment Cycle

IV. Summary of 2009-10 Assessment Activities

The Echocardiography Degree Completion Program faculty conducted formal assessment of three student learning outcomes during 2009-2010.

A. Student Learning Outcome #2: The student will demonstrate the ability to work effectively in teams.

The Echocardiography faculty conducted an analysis of where this outcome is reflected in the curriculum. The mapping of this outcome in the Echocardiograph curriculum can be found in Appendix A, Student Learning Outcome-Course Matrices Table A1.

Direct Assessment #1 and #2 Faculty Scoring of Team Performance

The faculty assessed this outcome in ECHO 385 in fall term 2009 (14 students) and winter term 2010 (5 students). Students were grouped into teams and worked on a team project, which resulted in a presentation. The faculty rated the proficiency of students using an institutional rubric and performance criteria described in Table #2 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Identify and achieve goal/purpose.	Grading Rubric	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Winter 100%
Assume roles and responsibilities as appropriate.	Grading Rubric	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Winter 100%
Interact appropriately with team/group members.	Grading Rubric	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 87% Winter 100%
Recognize and help reconcile differences among team/group members.	Grading Rubric	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 87% Winter 87%
Share appropriately in work of team/group.	Grading Rubric	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Winter 75%
Develop strategies for effective action.	Grading Rubric	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 94% Winter 100%

Table #2. Team Project ECHO 385 Fall Term 2009

Strengths: The students met expectations for all performance criteria.

Weaknesses: One team reported that not all the students shared in the work.

Actions Taken: As a result of the data, the OIT Echocardiography faculty felt it is important to survey the students following all teamwork activity to make sure that all students are participating. Without the post activity reflection the faculty would not have known that a student did not participate,

Indirect Assessment #1 Student Scoring of Team Performance

As an accompanying indirect assessment to the winter term assessment (#2) above, the students were asked to rate how well their team functioned on the same performance criteria, as described in Table #3 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Identify and achieve goal/purpose.	Student Rating	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Winter 100%
Assume roles and responsibilities as appropriate.	Student Rating	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Winter 95%
Interact appropriately with team/group members.	Student Rating	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Winter 100%
Recognize and help reconcile differences among team/group members.	Student Rating	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Winter 10%
Share appropriately in work of team/group.	Student Rating	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Winter 95%
Develop strategies for effective action.	Student Rating	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Winter 100%

Table #3. Student Rating of Team Performance, ECHO 385, Winter Term 2010

Strengths: The student results paralleled and supported the faculty results.

Weaknesses: None at this time

Actions Taken: As a result of the data, the OIT Echocardiography faculty felt comfortable that the students had a good understanding of teamwork. No action is necessary at this time.

Direct Assessment #3 Employer Evaluation of Team Performance

The faculty also surveyed the employers of externship students in ECHO 420A in fall 2009 (two students), winter 2010 (three students-one survey was not returned), and spring 2010 (three students) to assess the quality of team performance the student demonstrates on-the-job. The employers rated the proficiency of students using the performance criteria described in Table #4 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Recognizes role as an Echo lab team member.	Employer survey	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Win 100% Spr 100%
Demonstrates initiative in Echo team effort	Employer survey	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Win 100% Spr 100%
Gathers appropriate quality assurance data for Echo lab team effort	Employer survey	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Win 100% Spr 100%
Works effectively as a team member on Echo lab projects	Employer survey	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Win 100% Spr 100%

Table #4. Employer Survey ECHO 420A Fall Term 2009.

Strengths: Based on employer surveys, the students performed at expectations in each performance criteria for teamwork on the job.

Weaknesses: None at this time.

Actions Taken: None required at this time.

B. Student Learning Outcome #4: The student will employ professional judgment and discretion including ethics.

The Echocardiography Degree Completion faculty conducted an analysis of where this outcome is reflected in the degree completion curriculum. The mapping of this outcome in the Echocardiography Degree Completion curriculum can be found in Appendix A2.

Direct Measure #1 Instructor Assessments of Student Professional Behavior in the Academic Environment

The OIT Echocardiography faculty rated externship students in ECHO420A in fall 2009 (two students), in winter 2010 (three students) and in spring 2010 (three students), using an institutional rating form. There were two performance criteria that could not be measured due to this class being offered online. The instructor was unable to measure punctuality and professional appearance. The results of these assessments are shown in table 5 below.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Timeliness of work	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Quality of work (course expectations)	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Quality of work (work product)	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 92% Win 100% Spr 100%
Attitude toward feedback	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Attitude toward assigned tasks	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Punctuality (not measurable in online course)	Rating Form	0-2 rating scale	80% at 1 or 2	N/A
Attendance (discussions online)	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Academic Integrity	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Interpersonal skills.	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr
Knowledge of classroom policies and procedures	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Work ethic	Rating Form	0-2 rating scale	80% at 1 or 2	Fall 100% Win 100% Spr 100%
Appearance	Rating Form	0-2 rating scale	80% at 1 or 2	N/A

Table 5. Faculty assessment of student behavior in the academic environment, ECHO 420A.

Strengths: The students met expectations for all performance criteria.

Weaknesses: None at this time

Actions Taken: As a result of the data, the OIT Echocardiography faculty felt comfortable that the students had a good understanding of professional behavior in the academic environment. No action is necessary at this time.

Direct Measure #2 Employer Surveys of Student Professional Behaviors at Work

A survey was completed and returned by the employers of externship students in ECHO 420A in fall term 2009 (two students), in winter 2010 (three students-one survey was not returned) and in spring 2010 (three students). The results are shown in Table #6 below.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
Timeliness of work	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Quality of work (work expectations)	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Quality of work (work product)	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Attitude toward feedback	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Attitude toward assigned tasks	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Punctuality	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Attendance	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Integrity	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Interpersonal skills.	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Knowledge of work policies and procedures	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
Work ethic	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% S Spr 100%
Appearance	Employer survey	1 - 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%

Table 6. Professional Judgment and Ethics, Fall Term 2009 in ECHO 420A.

Strengths: Based on employer surveys, the students performed at expectations for each performance criteria on the job.

Weaknesses: None at this time

Actions Taken: As a result of the data, the OIT Echocardiography faculty felt comfortable that the students had a good understanding of professional behavior at work. No action is necessary at this time.

Direct Measure #2 Ethics Homework Assignment

An ethics homework assignment was given out to externship students in ECHO 420A in fall term 2009 (two students), in winter 2010 (three students), and in spring 2010 (three students). This homework was part of an institutional assessment and was graded and included as part of the student’s grade. Results can be found in Table 7 below.

Performance Criteria	Assessment Method	Measurement Scale	Minimum Acceptable Performance	Results
1. Using code of ethics, describes ethical issue(s)	Ethics Homework, Rubric	1 – 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
2. Describes parties involved and discusses their points of view.	Ethics Homework, Rubric	1 – 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
3. Describes and analyzes possible/ alternative approaches	Ethics Homework, Rubric	1 – 4 scale	80% at 3 or 4	Fall 100% Win 100% Spr 100%
4. Chooses an approach and explains the benefits and risks.	Ethics Homework, Rubric	1 – 4 scale	80% at 3 or 4	Fall 50% Win 100% Spr 100%

Table 7. Ethics Homework, Fall Term 2009 in ECHO 420A.

Strengths: Based on a grading rubric, the students met all performance criteria.

Weaknesses: None at this time

Actions Taken: As a result of the data, the OIT Echocardiography faculty felt comfortable that the students had a good understanding of ethics. No action is necessary at this time.

C. Student Learning Outcome #9: The student will demonstrate an understanding of diverse cultural and humanistic traditions in the global society.

The Echocardiography faculty conducted an analysis of where this outcome is reflected in the curriculum. The mapping of this outcome in the Echocardiography curriculum can be found in Appendix A, Student Learning Outcome-Course Matrices Table A3.

Direct Assessment #1

The faculty assessed this outcome in ECHO 385 in fall term using a cultural awareness assignment and grading rubric with 14 students. The faculty rated the proficiency of students using the performance criteria described in Table 8 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Understands implications of language barriers	Grading Rubric	1-4 scale	80% with 3.0 or higher	100%
Knows importance of avoiding demonstration of prejudice	Grading Rubric	1-4 scale	80% with 3.0 or higher	100%
Recognize cultures have different traditions in medicine	Grading Rubric	1-4 scale	80% with 3.0 or higher	100%
Recognize how cultural differences can influence hiring practices	Grading Rubric	1-4 scale	80% with 3.0 or higher	100%

Table #8. Cultural Awareness Assignment

Strengths: Based on a grading rubric, the students performed at expectations in each performance criteria of cultural awareness.

Weaknesses: None at this time.

Actions Taken: None required at this time.

Direct Assessment #2

The employers of externship students were also surveyed to assess how each student demonstrates a working knowledge of culture awareness and diversity on-the-job. These surveys occurred in ECHO 420A in fall term 2009 (three students), in winter 2010 (three students-one survey was not returned), and in spring 2010 (three students). The employer ratings and the performance criteria used are shown in Table #9 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Appropriately works with interpreters to gather patient history	Employer Survey	1 – 4 Scale	80% with a score of 3.0 or better	Fall 100% Win 100% Spr 100%
Avoids demonstration of prejudice	Employer Survey	1 – 4 Scale	80% with a score of 3.0 or better	Fall 100% Win 100% Spr 100%
Recognize cultures have different traditions in medicine	Employer Survey	1 – 4 Scale	80% with a score of 3.0 or better	Fall 100% Win 100% Spr 100%
Recognize how cultural differences can influence hiring practices	Employer Survey	1-4 scale per rubric proficiency criteria	80% with 3.0 or higher	Fall 100% Win 100% Spr 100%

Table #9. Employer Survey

Strengths: Based on a survey, the students performed at expectations in each performance criteria of cultural awareness.

Weaknesses: None at this time.

Actions Taken: As a result of the data, the OIT Echocardiography faculty felt comfortable that the students had a good understanding of cultural awareness. No action is necessary at this time.

V. Summary of Student Learning

During the 2009-2010 academic year, the program faculty formally assessed the student learning outcomes summarized below. Advisory council members were called on 5/29/2010 to review the assessment report. The council is made up of five graduate students who completed either the echo or vascular degree completion program. In addition, a department meeting was held on 5/28/2010 to discuss strengths and weaknesses in student learning.

Student Learning Outcome #2: The student will demonstrate the ability to work effectively in teams.

The goal of this assessment was to determine if students were able to work effectively in teams in the classroom and on the job. Students were assessed (fall, winter and spring quarters) directly by institutional rubric and performance criteria, indirectly by self-assessment survey using the same performance criteria and by employer survey aimed to assess the quality of team performance the student demonstrates on-the-job.

Strengths: The areas of observed strengths included the ability to work effectively in teams in the classroom and on the job in the following areas: 1) assumes roles and responsibilities, 2) good interaction, 3) resolves differences, 4) shares work load, and 5) develops strategies.

Areas needing improvement: None at this time. However, there was one team member in fall term who did not contribute as fully as the other team members. As a new ongoing practice, students will fill out a self-assessment on team performance at the end of every quarter to ensure all students participate.

Student Learning Outcome #4: The student will employ professional judgment and discretion including ethics.

Students were assessed directly (fall, winter and spring quarters) on professional behaviors using an institutional rating form with performance criteria and by an employer survey using the same institutional rating form and performance criteria. In addition, students were assessed directly on an ethics assignment using a grading rubric and performance criteria developed by the institution. The goal was to determine if students employ professional judgment with discretion including ethics in the classroom and on the job.

Strengths: The areas of observed strengths included the ability to employ professional judgment using discretion and ethics in the classroom plus on the job in the following areas: 1) timelessness of work, 2) quality of work, 3) attitude toward feedback, 4) attitude toward assigned tasks, 5) punctuality (only measured on the job), 6) attendance, 7) integrity, 8) interpersonal skills, 9) knowledge of work policies and procedures, 10) work ethic, 11) appearance (only measured on the job), 12) using code of ethics describes ethical issues, 13) describes ethical points of view, 14) analyzes ethical situations and 15) chooses an ethical approach.

Areas needing improvement: None at this time.

Student Learning Outcome #9: The student will demonstrate an understanding of diverse cultural and humanistic traditions in the global society.

Students were assessed (fall and winter quarters) directly using a grading rubric with performance criteria and by employer survey to determine if students have an understanding of diverse cultures and humanistic traditions in the global society.

Strengths: Observed strengths in cultural and humanistic awareness were found in the following areas: 1) understands implications of language barriers, 2) knows importance of avoiding prejudice, 3) recognizes cultures have different traditions in medicine, 4) recognizes how cultural differences can influence hiring practices, and 5) when on the job works with interpreters to gather patient information.

Areas needing improvement: None at this time.

Appendix A

Appendix A1

Curriculum Map for Echocardiography Degree Completion Program

Student Learning Outcome #2: The student will demonstrate the ability to work effectively in teams.

Courses that are shaded below indicate that the SLO is taught in the course, students demonstrate skills or knowledge in the SLO, and students receive feedback on their performance on the SLO. The following codes indicate the level of emphasis of the SLO in the course. I= Introduced, R= Reinforced, E=Emphasized

BUS 316	Total Quality in Health Care	3	
BUS 317	Health Care Management	3	
CHE 210	Clinical Pharmacology	3	
ECHO 325	Pediatric Echo	3	
ECHO 332	Invasive Cardiology	3	
ECHO 334	Echo IV	4	
ECHO 365	Abdominal/Renal Testing	4	
ECHO 376	Survey of Vascular Testing	3	
ECHO 385	Echo Lab Management	3	IE
ECHO 420A	Echo Externship A	8	
ECHO 420 B	Echo Externship B	7	
ECHO 421	Echo Senior Project	4	
SPE 321	Small Group & Team Comm	3	IE
	Comm Gen Ed elective	3	

Appendix A2
Curriculum Map for Echocardiography Degree Completion Program

Student Learning Outcome #4: The student will employ professional judgment and discretion including ethics.

Courses that are shaded below indicate that the SLO is taught in the course, students demonstrate skills or knowledge in the SLO, and students receive feedback on their performance on the SLO. The following codes indicate the level of emphasis of the SLO in the course. I= Introduced, R= Reinforced, E=Emphasized

BUS 316	Total Quality in Health Care	3	
BUS 317	Health Care Management	3	
CHE 210	Clinical Pharmacology	3	
ECHO 325	Pediatric Echo	3	R
ECHO 332	Invasive Cardiology	3	
ECHO 334	Echo IV	4	
ECHO 365	Abdominal/Rental Testing	4	IE
ECHO 376	Survey of Vascular Testing	3	IE
ECHO 385	Echo Lab Management	3	IE
ECHO 420A	Echo Externship A	8	R
ECHO 420 B	Echo Externship B	7	R
ECHO 421	Echo Senior Project	4	R
SPE 321	Small Group & Team Comm	3	
	Comm Gen Ed elective	3	

Appendix A3
Curriculum Map for Echocardiography Degree Completion Program

Student Learning Outcome #9: The student will demonstrate an understanding of diverse cultural and humanistic traditions in the global society.

Courses that are shaded below indicate that the SLO is taught in the course, students demonstrate skills or knowledge in the SLO, and students receive feedback on their performance on the SLO. The following codes indicate the level of emphasis of the SLO in the course. I= Introduced, R= Reinforced, E=Emphasized

BUS 316	Total Quality in Health Care	3	
BUS 317	Health Care Management	3	
CHE 210	Clinical Pharmacology	3	
ECHO 325	Pediatric Echo	3	
ECHO 332	Invasive Cardiology	3	
ECHO 334	Echo IV	4	
ECHO 365	Abdominal/Rental Testing	4	
ECHO 376	Survey of Vascular Testing	3	
ECHO 385	Echo Lab Management	3	
ECHO 420A	Echo Externship A	8	
ECHO 420 B	Echo Externship B	7	
ECHO 421	Echo Senior Project	4	
SPE 321	Small Group & Team Comm	3	
	Comm Gen Ed elective	3	