

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

I. Introduction

At this time, OIT's Bachelor of Science in Echocardiography degree is one of only nine in the United States. OIT provides didactic instruction, clinical observations, leadership and personal training, including advanced skills training. Students are required to complete an 11-month externship at specifically chosen echocardiography laboratories. This externship provides the hands-on training and patient load requirements necessary to meet the prerequisite requirements for the certifying board agency, the American Registry of Diagnostic Medical Sonographers (ARDMS).

The first OIT cohort for Echocardiography began in fall 2008 with 14 students and an additional cohort of 17 students began in the fall of 2009. From the beginning of the program in fall 2008 to spring term 2009, the retention rate in the Echocardiography program was 93%. At the beginning of fall term 2009, there were 30 students in the Echocardiography Program.

II. Program Purpose, Educational Objectives, and Student Learning Outcomes

The Echocardiography faculty agreed to adopt the student learning outcomes as suggested by the programmatic accrediting body, the Joint Review Committee of Diagnostic Medical Sonography (JRCDS).

Echocardiography Program Purpose

The OIT Bachelor of Science program in Echocardiography provides students with the knowledge, clinical skills and behaviors to become competent echocardiographers.

Echocardiography Program Educational Objectives

1. The program prepares students to utilize diagnostic techniques, sound judgment and good decision making to provide patient services.
2. The program communicates the importance of becoming credentialed in the profession of echocardiography.
3. The program prepares students who think critically, communicate effectively and exemplify professional ethics.
4. The program conveys the importance of becoming lifelong learners and responsible citizens.

Expected Program Student Learning Outcomes

Graduates from this program will be able to:

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, discretion, and ethics.
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.

Additional Student Learning Opportunities

Students are encouraged to attend American Society of Echocardiography (ASE) conferences when held on the west coast or near their externship sites during the student's senior year.

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

The faculty also confirmed the assessment cycle planned, as listed in Table 1 below.

Echocardiography Degree 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, discretion, and 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		

Table #1. Echo Assessment Cycle

IV. Summary of 2009-10 Assessment Activities

The faculty conducted formal assessment of three student learning outcomes during fall 2009 to spring 2010. Because the Echocardiography program accepted its first cohort of students in fall 2008 and a second cohort in fall 2009, there are no senior level students at this point in time. Assessment activities were conducted on sophomore and junior level courses.

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

Direct Assessment #1

The faculty assessed this outcome in ECHO 385 in spring term using a team project to design an echocardiography lab. The faculty rated the proficiency of students using the performance criteria described in Table #2 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Contribution to Planning	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 4.5 or higher	100%
Attendance/ Participation in Group Meetings	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 4.5 or higher	100%
Communication/ Cooperation	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 4.5 or higher	92%
Contribution to Project	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 4.5 or higher	92%
Contribution to Presentation	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 4.5 or higher	100%

Table #2. Assessment results for PSLO #2, ECHO 385, spring 2010

Students performed above expectations in all categories for PSLO #2. The Echocardiography faculty was most impressed with the almost natural ability of the students to perform well in their teamwork activities. The faculty agreed that feedback from the industry, when this first class of students goes out on extern, will be most valuable in further learning what might be needed to be included in the on-campus teamwork activities in existing courses.

As a result of the data, the Echocardiography faculty agreed to anticipate what industry might have to add in what should be required of their students in the future.

Indirect Assessment #1

The students self-assessed this outcome in ECHO 385 in spring term using a team project to design an echocardiography lab. The students rated their proficiency using the performance criteria described in Table #3 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Contribution to Planning	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 5.0 or higher	100%
Attendance/ Participation in Group Meetings	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 5.0 or higher	100%
Communication/ Cooperation	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 5.0 or higher	100%
Contribution to Project	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 5.0 or higher	100%
Contribution to Presentation	Grading Rubric	1-5 scale per rubric proficiency criteria	90% with 5.0 or higher	92.3%

Table #3. Student self-assessment of PSLO #2, ECHO 385, spring 2010

Students rated themselves above expectations in all categories for PSLO #2. The faculty agreed the students demonstrated excellent enthusiasm about teamwork activity and looked forward to how future students would rate themselves.

As a result of the data, the Echocardiography faculty was impressed with the first indirect assessment activity and the valuable feedback from the students it had provided

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

Direct Assessment #1

The faculty assessed this outcome in ECHO 321 during fall term using an Institutional Student Learning Outcome ethics homework assignment and rubric. The faculty 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
Provisions	Rubric Graded Assignment	1-4 scale for all 3 provisions	90% with 3 or higher for all 3 provisions	92%
Ethical Issue	Rubric Graded Assignment	1-4 Scale	90% with 3 or higher	100%
Parties	Rubric Graded Assignment	1-4 Scale	90% with 3 or higher	100%
Actions	Rubric Graded Assignment	1-4 Scale	90% with 3 or higher	100%
Benefits/Risks	Rubric Graded Assignment	1-4 Scale	90% with 3 or higher	100%

Table #4. Assessment results for PSLO #4, ECHO 321, fall 2009

Students performed at or above expectations in all categories above for PSLO #4. Students in the OIT Echo Program receive quarterly professional evaluations for their knowledge and performance in professional ethics. Expectations have been high and the students appear to have grasped the importance of knowing and applying ethics in their profession.

As a result of the data, the faculty in the Echo Program decided to continue to stress the importance of learning and applying the Code of Ethics required by Society of Echocardiography.

Direct Assessment #2

The faculty also assessed this outcome in ECHO 333 fall term 2009, using the professional evaluation where multiple components of outcome #4 were assessed. The faculty rated the proficiency of students using the performance criteria described in Table #5 below.

Examination of Judgment/Critical thinking and Professional Ethics include the following items:

Judgment/Critical Thinking

- Show appropriate judgment based on sound knowledge.
- Use available data to predict outcome.
- Show ability to troubleshoot.
- Take appropriate action, and make sound decisions in stressful situations.

Professional Ethics

- Show appropriate behavior for a clinical work setting.
- Adhere to the Society of Echocardiography Code of Ethics.
- Show effective communication with the Clinical Instructor.
- Consistently adheres to the hospital HIPPA policies/procedures.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Professional Judgment/ Critical Thinking	Student Competency Evaluation #4, a.	1 – 100% Scale	90% with a score of 90% or better	100%
Professional Ethics	Student Competency Evaluation #4, b.	1 – 100% Scale	90% with a score of 90 or better	100%

Table #5. Assessment results for PSLO #4, ECHO 333, fall 2009

Students performed at or above expectations in both categories above for PSLO #4. Although students in the Echo Program have been taught the Code of Ethics as published by the Society of Echocardiography, most of the professional ethics have been taught by evaluation rather than by direct teaching methods in professionalism.

As a result of the data, the faculty in the Echo Program decided to maintain the current level of rigor in education and evaluation for this learning outcome.

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

Direct Assessment #1

The faculty assessed this outcome in ECHO 376 in winter term using a homework review of Penn State's publication "An Overview of Diversity Awareness." A ten question exam was administered and the faculty rated the proficiency of students using the performance criteria described in Table #6 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target Av. or higher
Cultural Definitions	10 question exam	1 – 2 scale for questions 1 & 6	100% with 1 or more correct answers	100%
Cultural Trends	10 question exam	1 – 3 scale for questions 2, 3, & 4	80% with 2 or more correct answers	100%
Cultural Stereotyping	10 question exam	1 – 2 scale for questions 8 & 9	100% with 1 or more correct answers	100%
Cultural Observations	10 question exam	1 – 3 scale for questions 5, 7 & 10	80% with 2 or more correct answers	92.3%

Table #6. Assessment results for PSLO #9, ECHO 376, winter 2010

Students performed above expectation in all categories. The junior students who participated in this assessment exercise learn the importance of cultural diversity awareness in regard to the field of echocardiography during their sophomore year in the ECHO 225 Patient Management Practices course.

As a result of the data, the faculty of the Echocardiography program decided to continue emphasis in teaching cultural diversity awareness in the ECHO 225 course and will include more homework assignments reviewing future publications regarding cultural diversity awareness.

V. Summary of Student Learning

Assessment results were discussed with Vascular Technology faculty to compare results. They are an excellent comparator program since numerous courses between the two programs are taught concurrently. Assessment results were also discussed with the Distance Education Echocardiography program faculty.

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

Strengths: Students performed above expectations in all categories for PSLO #2. It was obvious to the Echocardiography faculty that students not only engage in teamwork and group activity, but expect it to be included more in all of the ECHO courses as well. It was decided the Echo faculty will dialogue more on how to better integrate teamwork into existing courses.

Areas needing improvement: None at this time

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

Strengths: Students performed above expectations for all performance criteria, including professional judgment/critical thinking and professional ethics. Although faculty in the Echo program has been pleased with the performance of students for this learning outcome, they are very aware of maintaining a high bar for students in order for them to be successful in the field.

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.

Strengths: Students performed above expectations in all performance criteria for cultural diversity awareness. Although the Echo faculty was happy with the students' performance, it was agreed that students want and need more.

Areas needing improvement: The faculty in the Echo program has decided to investigate how to better educate their students for this outcome and will learn how to better prepare themselves to teach cultural diversity awareness.

VI. Changes Resulting from Assessment.

Because the Echocardiography program had all new faculty beginning fall of 2009, and was still building the higher 300 level Echo courses, no "closing the loop" activities had been conducted to date.

Appendix A

Student Learning Outcome-Course Matrices

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

Courses that are shaded below indicate that the SLO above is taught in the course, students demonstrate skills or knowledge in the SLO, and students receive feedback on the performance on the SLO.

I = Introduced; R = Reinforced; E = Emphasized

	Sophomore			Junior			Senior		
Fall	BIO 220	Cardio Phys		BUS 317	HlthCare Mgmt		ECHO 420	Extern	R
	ECHO 320	Cardio Methods		ECHO 333	Echo III				
	PHY 217	Physics of MI		ECHO 321	TEE & Stress				
	WRI 227	Tech Writing		SPE 321	Small Group Comm	I E			
Win	ECHO 231	Echo I		BUS 316	TQM		ECHO 420	Extern	R
	BIO 346	Patho I		CHE 210	Clinical Pharm				
	VAS 210	VAS Physics I		ECHO 376	Survey of Vas Tech				
	Soc Sci	Elective		ECHO 325	Pediatric Echo				
				Hum	Elective				
Spr	ECHO 225	Pt Mgmt	IE	ECHO 385	Lab Mgmt	E	ECHO 420	Extern	R
	ECHO 232	Echo II	IE	ECHO 365	Abd/Renal				
	ECHO 332	Invasive Cardio		ECHO 388	Extern Orient				
	BIO 347	Patho II		Comm	Elective				
	VAS 211	VAS Physics II		Hum	Elective				

Table A1. Student Learning Outcome #3-Course Matrix

**Subject to change as courses are designed and developed.

Appendix A

Student Learning Outcome-Course Matrices

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

Courses that are shaded below indicate that the SLO above is taught in the course, students demonstrate skills or knowledge in the SLO, and students receive feedback on the performance on the SLO.

I = Introduced; R = Reinforced; E = Emphasized

	Sophomore			Junior			Senior		
Fall	BIO 220	Cardio Phys		BUS 317	HlthCare Mgmt		ECHO 420	Extern	E
	ECHO 320	Cardio Methods		ECHO 333	Echo III	E			
	PHY 217	Physics of MI		ECHO 321	TEE & Stress				
	WRI 227	Tech Writing		SPE 321	Small Group Comm				
Win	ECHO 231	Echo I	I E	BUS 316	TQM		ECHO 420	Extern	E
	BIO 346	Patho I		CHE 210	Clinical Pharm				
	VAS 210	VAS Physics I		ECHO 376	Survey of Vas Tech				
	Soc Sci	Elective		ECHO 325	Pediatric Echo				
				Hum	Elective				
Spr	ECHO 225	Pt Mgmt	I E	ECHO 385	Lab Mgmt		ECHO 420	Extern	E
	ECHO 232	Echo II	E	ECHO 365	Abd/Renal				
	ECHO 332	Invasive Cardio		ECHO 388	Extern Orient				
	BIO 347	Patho II		Comm	Elective				
	VAS 211	VAS Physics II		Hum	Elective				

Table A2. Student Learning Outcome #6-Course Matrix

**Subject to change as courses are designed and developed.

Appendix A

Student Learning Outcome-Course Matrices

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 above is taught in the course, students demonstrate skills or knowledge in the SLO, and students receive feedback on the performance on the SLO.

I = Introduced; R = Reinforced; E = Emphasized

	Sophomore			Junior			Senior		
Fall	BIO 220	Cardio Phys		BUS 317	HlthCare Mgmt		ECHO 420	Extern	R
	ECHO 320	Cardio Methods		ECHO 333	Echo III				
	PHY 217	Physics of MI		ECHO 321	TEE & Stress				
	WRI 227	Tech Writing		SPE 321	Small Group Comm				
Win	ECHO 231	Echo I		BUS 316	TQM		ECHO 420	Extern	R
	BIO 346	Patho I		CHE 210	Clinical Pharm				
	VAS 210	VAS Physics I		ECHO 376	Survey of Vas Tech				
	Soc Sci	Elective		ECHO 325	Pediatric Echo	R			
				Hum	Elective				
Spr	ECHO 225	Pt Mgmt	I E	ECHO 385	Lab Mgmt		ECHO 420	Extern	R
	ECHO 232	Echo II		ECHO 365	Abd/Renal				
	ECHO 332	Invasive Cardio		ECHO 388	Extern Orient				
	BIO 347	Patho II		Comm	Elective				
	VAS 211	VAS Physics II		Hum	Elective				

Table A3. Student Learning Outcome #7-Course Matrix

**Subject to change as courses are designed and developed.