Oregon Institute of Technology
Medical Imaging Technology Department
Vascular Technology Program Assessment
2017-2018

I. Introduction

The Vascular Technology Program officially began in 1992 and is one of the five current on-campus Medical Imaging programs at Oregon Institute of Technology. Enrollment trends from 2002 – 2017 have varied from 50 to 89 students per year in the program. By fall term of 2017, there were 57students enrolled in the program. For the class of 2017, retention was 85% and attrition was 15%

- The number of students who entered the VT program for the cohorts of graduating classes from 1994 to 2017 was 600. Of those 600 students, 461 have graduated.
- Overall retention has therefore been 76.8% and attrition has been 23.2%

- Core VT program course failure rates per the 600 students accepted were as follows:o 3.7% or 22 failures in VAS246, Peripheral Arterial Disease
  - 2.5% or 15 failures in VAS420, Externship.
  - 1.8% or 11 failures in BIO 220, Cardiovascular Physiology.
  - 1.6% or 10

II. Program Purpose/Mission Statement, Goals, Objectives and Student Learning Outcomes

The Vascular Technology faculty met one time formally and multiple times since from the fall 2007 to fall 2017 and have consistently agreed to adopt the student learning outcomes as suggested by the programmatic accrediting body known as the, "Joint Review Committee on Education in Diagnostic Medical Sonography." The final version is listed below.

Closing the Loop items: from the faculty meeting conducted spring term 2016, planned improvements from previous assessment include:

Vascular Technology Program Purpose/Mission Statement

The Bachelor of Science program in Vascular Technology provides students with the knowledge, clinical skills and behaviors to become competent vascular technology professionals.

Program Goal(s)

"To prepare competent entry level vascular technologists in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains."

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 vascular technology.
3. The program prepares students who think critically, communicate effectively and exemplify professional ethics.
4. The program conveys the importance of becoming life-long learners and responsible citizens.

Student Learning Outcomes

The students will demonstrate:

1. the ability to communicate effectively in oral, written and visual forms.
2. the ability to work effectively in teams.
3. an ability to provide basic patient care and comfort.
4. professional judgment and discretion including ethics.
5. knowledge and understanding of human gross anatomy sectional anatomy and normal and abnormal vascular anatomy.
6. knowledge and understanding of vascular physiology, pathology, and pathophysiology.
7. knowledge and understanding of vascular physical principles and instrumentation.
8. knowledge and understanding of clinical vascular diagnostic procedures and testing
9. an understanding of diverse cultural and humanistic traditions in the global society.

Additional Student Learning Opportunities

Students in the Vascular Technology Program are given the opportunity to every other year attend

As a result of the data, and what has been learned as a result of conducting this assessment, the vascular faculty agreed to maintain the increased level of emphasizing the importance of pathology identification in all VAS prefix courses.

Direct Assessment #2

The faculty also assessed this outcome with 13 students in the VAS 420 Extern course from the 2017–2018 academic year using random student competencies as assessed by

As a result of the data, the vascular technology faculty had agreed to maintain the high standards required for on campus (MIT 231 & 232) courses. The professor for both courses was commended for the unique graphics adopted to make difficult concepts easier to understand and was encouraged to develop or discover more through Internet sources.

Indirect Assessment #1

The faculty assessed this outcome with 17 students in VAS 420 Extern course using student 2016-2017 exit surveys which asked them to rate how well the OIT Vascular Technology program and their extern site prepared them for learning outcome #7. The students rated their proficiency using the performance criteria described in Table #7 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target Av. or higher
Student rating of how OIT prepared them for outcome #7.	Exit Survey	% scale per category used	80% with a score of 3.0 or better	100%
Student rating of how their extern site prepared them for outcome #7.	Exit survey	% scale per category used	80% with a score of 3.0 or better	94.1%

Table #7

Students rated both Oregon Tech and their extern sites above expectations for performance criteria. As evidenced by the results of Table #10, students do highly value the knowledge they receive at Oregon Tech and during their extern experience.

As a result of the data, the vascular program will continue to compare student satisfaction for PSLO #7 in concurrent years.

C. Student Learning Outcome #8. The student will demonstrate knowledge and understanding of clinical vascular diagnostic procedures and testing.

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

Direct Assessment #1

The faculty assessed this outcome using the ISLO Critical Thinking assignment presented to 15 students in the VAS 367 course, Spring term, 2018. A rubric designed to evaluate a diagnostic midterm lab case study rated student performance on a 1-0 point scale. The faculty rated the proficiency of students using the rubric the assignment in Table #8 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Accurately interprets ultrasound spectral waveforms Considers all possible causes of patient vascular condition from history and	VAS 367 midterm case study quest. 1,3	1 – 10 Scale	80% with a score of 6 or higher	80%

Direct Assessment #2

Indirect Assessment #1

The faculty assessed this outcome in VAS 420, from the student 2016-17 exit surveys of 17 students, asking them to rate how well the OIT Vascular Technology program and their extern site prepared them for this learning outcome #8. Student rating is described in Table #10 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target Av. or higher
Student rating of how OIT prepared them for outcome #8.	Exit Survey	% scale per category used	90% with a score of 3.0 or better	94.1%
Student rating of how their extern site prepared them for outcome #8.	Exit survey	% scale per category used	90% with a score of 3.0 or better	94.1%

Table #10, assessment results for SLO #8 in VAS 420, 2012-13 exit surveys

Students rated themselves at or above expectations in rating how well they were prepared for PSLO #8 from both Oregon Tech and their clinical extern sites.

Over the years, the vascular faculty was sometimes dismayed at how didactically, students would not fully understand the concepts of hemodynamics as they related to patient pathology while students were on campus. The faculty has since concluded there are some aspects of these concepts not fully understood until applied with real living patients. As mentioned above, the vascular faculty agreed to maintain the same levels of high expectations for students in the future.

D. Essential Student Learning Outcome: Inquiry & Analysis

The faculty assessed this outcome in VAS 420, from the student 2017-18 case study discussion and conclusion sections of 10 randomly selected students. Student were rated according to a rubric provided by the communication department and is described in Table #11 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Identify	Provided rubric	1 – 4 Scale	80% with a score of 3 or higher	100%
Investigate	Provided rubric	1 – 4 Scale	80% with a score of 3 or higher	100&
Support	Provided rubric	1 – 4 Scale	80% with a score of 3 or higher	93.3%
Evaluate	Provided rubric	1 – 4 Scale	80% with a score of 3 or higher	100%
Conclude	Provided rubric	1 – 4 Scale	80% with a score of 3 or higher	100%

Table #11 ESLO Inquiry & Analysis results

Students performed at or slightly above expectations for PSLO #8 in all categories.

Although the vascular faculty are many times frustrated by student reluctance to cite sources in the APA format we require, our students perform above average work in regard to inquiry and analysis. Perhaps this is driven by the fact that student has reporting on an actual living and breathing patient who the student did indeed perform an ultrasound vascular exam on. We the faculty actually look forward to reading the discussions sections as we too learn from the extern students' research. As a result of this assessment activity, the vascular faculty has determined the level of rigor required for extern case studies will be maintained.

V. Evidence of Student Learning

During the 2017-18 academic year, the program faculty formally assessed the student learning outcomes summarized below. Additional details on these assessment activities can be found in the attached assessment report and in department records.

VI. Changes Resulting from Assessment.

As a result of assessment activities conducted in 2010 to present for PSLO #1, it was determined students need to both write preliminary reports better and to communicate better orally to doctors when on extern. In addition, the vascular faculty had agreed there should be more of a requirement for visual communication as well. In the junior level courses the faculty had included more requirements of preliminary report writing in conjunction with presentations of case studies housed on-campus. And interestingly enough from the Class of 2018 exit evaluations, some of the students actually made comment to increase requirements for all components of preliminary report writing.

As a result of the assessment activities conducted in 2011 for PSLO #8, it was determined to have greater dialogue with students both in the sophomore orientation and in the VAS 388 Extern Orientation course regarding the fact that exposure to vascular pathology on campus would be non-existent other than in theory and observation at Sky Lakes Medical Center. The bulk of exposure to pathology would be engaged while on extern. Students in sophomore orientation had been informed of this better and greater dialogue had been engaged in the VAS 388 course. Some students responded with a greater level of fear and apprehension for the process and yet some seemed to feel the process would not be a problem. Although the value of this dialogue was hard to assess, while the faculty was making extern visitations, students did seem a bit more at ease with the process.

VII. Qualitative Assessment:

Although quantitative assessment has been the most paramount charge in the development of assessment criteria, the qualitative assessment recommendations the vascular faculty have received from our industry affiliate extern professionals was regarded highly. Some of those recommendations include:

- Scanning skills/technique – Each had bad habits that were hard for them to break. Considering they have had two years of access to machines, it is hard to understand why each struggled with things like:
    - Obtaining and maintaining a good, full long axis image on a typical straight segment of vessel.
    - Demonstrating they can keep the probe stable while walking the Doppler through a segment.
    - Holding the probe properly. All came in scanning with a grip at the butt end of the probe instead of near the base where they could better stabilize the probe to help with something like item 2 above.
    - Heel toeing the probe to improve image or better align Doppler.
    - Transitioning from sagittal to transverse without putting both hands on the probe.
- Physiologic testing
    - Unable to readily locate and/or optimize Doppler signals in vessels at the ankle/foot.

    - Unable to locate and optimize CFA and Pop Doppler signals.
    - Cuff wrapping. Inconsistency from limb to limb and one level to the next.
    - Pressure measurement. Challenges staying on a vessel and slowly releasing cuff pressure (manual sphygmo) for accurate measurement.
    - PVR basics. Understanding of the waveforms as well as understanding that, unlike with the Doppler waveform analysis, you have to have gain settings the same to compare PVR waveforms accurately.
    - Digit assessment. Similar issues to above, individuals struggle with releasing cuff pressure in a slow and smooth manner to get an accurate pressure. We do toes on probably 90% of our ABI and SEGS exams.
- Protocol familiarity
    - I know you can't force this upon students, but I have stressed it to each of the last incoming students that they should familiarize themselves with some of the basic protocols that we will be focusing on during the first term (Lower venous, carotid, and ABI/physiologic testing).

This information had been reviewed and many changes made as a result in the vascular program that were never reported in quantitative assessment. In this report however, the vascular faculty is convinced it should at least be mentioned.

Appendix A1

SLO #6: The student will demonstrate knowledge and understanding of vascular physiology, pathology, and pathophysiology.

	Sophomore			Junior		Senior
Fall	BIO 220	Cardio Physio	I	BUS 317	Health Care	

Appendix A2

SLO #7: The student will demonstrate knowledge of vascular physical principles and instrumentation.

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	Sophomore			Junior			Senior		
Fall	BIO 220	Cardio Physio		BUS 317	Health Care		VAS 420	Extern	E
	BIO 346	Patho Physio		SPE 321	Sm Group				
	PHY 217	Phy of MI		VAS 337	Survey Echo				
	VAS 214	Vas Anatomy		VA 365					

Appendix A3

SLO #8. The student will demonstrate knowledge and understanding of clinical vascular diagnostic procedures and testing.

	Sophomore			Junior			Senior		
Fall	BIO 220	Cardio Physio	I E	BUS 317	Health Care		VAS 420	Extern	R E
	BIO 346	Patho Physio		SPE 321	Sm Group				
	PHY 217	Phy of MI		VAS 337	Survey Echo				
	VAS 214	Vas Anatomy	I E	VAS 365	Abd Vas	I E			
				Soc Sci	Soc Sci elective				
Win	BIO 347	Patho Phys II		BUS 316	TQ in Health		VAS 420	Extern	R E
	VAS 210	Vas Prin Inst I		CHE 210	Clin Pharm				
	VAS 245	Peri Ven Disease	I E	VAS 366	Circ Probs	I E			
	VAS 335	Radio Vas Anat		VAS 375	Abd Sono				
				HUM Elec	Hum elective				
Spr	VAS 211	Vas Prin Inst II		VAS 367					