

**Oregon Institute of Technology
Medical Imaging Technology Department
Vascular Technology Program Assessment
2007-08**

I. Introduction

The Vascular Technology Program began in 1992 and is one of the four current on-campus Medical Imaging programs at Oregon Institute of Technology. Enrollment trends from 2002 – 2006 have varied from 60 to 89 students in the program. For the year of 2006 – 2007, there were 82 students enrolled in the program. From beginning of the program to the end of Spring term, 2007, the average retention rate in the Vascular Technology program has been 77%. In the 2004 Cohort of students scheduled to graduate in 2007, retention was 74%. The Job placement for the class of 2007 was 83%, and the remaining 17% were attempting to find jobs on the West Coast. The graduate salary range for the graduating class of 2006 was \$49,000 to \$70,000 per year with a mean of \$59,229 per year.

II. Program Purpose, Objectives and Student Learning Outcomes

The Vascular Technology faculty met one time formally and multiple times informally during the fall 2007 and agreed to adopt the student learning outcomes as suggested by the programmatic accrediting body known as the, “Joint Review Committee of Diagnostic Medical Sonography.” The final version is listed below.

Vascular Technology Program Purpose

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

Program Educational Objectives

1. The program prepares students to utilize diagnostic techniques, sound judgement 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

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 vascular anatomy.
6. The student will demonstrate knowledge and understanding of vascular physiology, pathology, and pathophysiology.
7. The student will demonstrate knowledge and understanding of vascular physical principles and instrumentation.
8. The student will demonstrate knowledge and understanding of clinical vascular 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 in the Vascular Technology Program are given the opportunity to twice yearly attend conferences through the Vascular Association of Southern Oregon in Medford, OR. Students are also encouraged to attend the Annual Society of Vascular Ultrasound conferences when held on the West Coast or near their extern sites during the student's senior year.

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

The following are the nine main outcomes which will be assessed at a rate of three each per year on a three-year cycle, as listed in Table #1 below.

Vascular Technology Student Learning Outcomes Assessment Schedule	2007 - 2008	2008 - 2009	2009 - 2010
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.	X		
5. The student will demonstrate knowledge and understanding of human gross anatomy sectional anatomy and normal and abnormal vascular anatomy.	X		
6. The student will demonstrate knowledge and understanding of vascular physiology, pathology, and pathophysiology.			X
7. The student will demonstrate knowledge and understanding of vascular physical principles and instrumentation.		X	
8. The student will demonstrate knowledge and understanding of clinical vascular 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, Vascular Technology Education Cycle

Student learning outcomes for the 2007 – 2008 assessment cycle are further detailed in Appendix A, Table A1, and correlated with the Vascular Technology curriculum map in Appendix A, Table A2.

IV. Summary of 2007-08 Assessment Activities

Vascular Technology Faculty conducted a formal assessment of one student learning outcome during fall term 2007, one during Winter term 2008 and on during Spring term 2008.

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

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. For student learning outcome #4, two direct assessment activities were conducted.

Direct Measure#1

A Professionalism Exam was administered on 4/16/08 to 22 students with 14 questions (3 answers per question) targeting professional judgment and discretion.. The questions are taken directly from the student Professional Evaluation used to evaluate students throughout their learning experience in the Vascular Technology program. This activity is regarded as an assessment of both long term and short term memory components. Evaluation of the exam was based on 5 applicable categories of professionalism as indicated in Table #2 on the next page.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target Av. or higher
Organization Skill, Quantity of Work and Quality of Work.	Questions from VAS 225 Professional Examination	1 to 9 scale per 9 answers possible	80% of students with 7.0 average or higher	77%
Performance under Pressure, Perseverance and Self-Confidence	Questions from VAS 225 Professional Examination	1 to 9 scale per 9 answers possible	80% of students with 7.0 average or higher	68%
Attitude toward Criticism, Towards Assigned task and Initiative.	Questions from VAS 225 Professional Examination	1 to 9 scale per 9 answers possible	80% of students with 7.0 average or higher	82%
Punctuality/ Attendance, Appearance and Academic Integrity	Questions from VAS 225 Professional Examination	1 to 9 scale per 9 answers possible	80% of students with 7.0 average or higher	86%
Student Relationship and Teamwork and Knowledge of Policies and Procedures.	Questions from VAS 225 Professional Examination	1 to 6 scale per 6 answers possible	80% of students with 5.0 average or higher	68%

Table #2, SLO #4: Professionalism Exam

Students performed at expectations in two areas and below expectations in three areas in the table above. In the first category, students scored lowest in their knowledge of Quantity of Work, in the second category they scored lowest in Performance under Pressure and in the fifth category they scored lowest Student Relationship and Teamwork. Although components of professional judgment and discretion are taught and evaluated at OIT, the vascular technology faculty find educating beyond many student's sense of "entitlement" and poor work ethic, a most difficult challenge in the student population that now regularly attends the OIT campus.

As a result of the data, the OIT vascular technology faculty has agreed to increase emphasis in all of the courses listed in Table A5 regarding the balance of Quantity of Work with the Quality of Work. In addition, emphasis will be placed in the same courses regarding the proper attitude to maintain during Performance under Pressure and how students can be better involved in Student Relationships and Teamwork. It is also worth mentioning that students many times have knowledge of professional judgment and discretion, but do not always exhibit it when put in high pressure situations. For this reason, professional judgment and discretion will continue to be evaluated during lab practicals.

Direct Measure#2

Rank 26 senior extern students performance on their Student Professional Evaluation Forms from industry as collected in student files of VAS 420, Fall Term 2007. Evaluation of the forms was based on 5 applicable categories of professionalism as indicated in Table #3 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target Av. or higher
Organization Skill, Quantity of Work and Quality of Work.	Questions from VAS 420 Professional Evaluation	1 to 12 scale per 12 answers possible	80% of students with 11.0 average or higher	85%
Performance under Pressure, Perseverance and Self-Confidence	Questions from VAS 420 Professional Evaluation	1 to 12 scale per 12 answers possible	80% of students with 11.0 average or higher	82%
Attitude toward Criticism, Towards Assigned task and Initiative.	Questions from VAS 420 Professional Evaluation	1 to 12 scale per 12 answers possible	80% of students with 11.0 average or higher	88%
Punctuality/ Attendance, Appearance and Patient Relationship	Questions from VAS 420 Professional Evaluation	1 to 12 scale per 12 answers possible	80% of students with 11.0 average or higher	92%
Staff Relationship and Teamwork, Knowledge of Policies and Procedures.	Questions from VAS 420 Professional Evaluation	1 to 8 scale per 8 answers possible	80% of students with 7.0 average or higher	96%

Table #3, SLO #4: Professionalism Exam

Senior extern students performed at or above expectations in all categories in the table above. Despite the fact that many of these students do have a sense of “entitlement” and poor work ethic, the repetitiveness of on campus professional evaluations and the rigor of professional demands on extern does indeed teach professionalism.

As a result of the data, the vascular technology faculty, although challenged by how professionalism should be taught, are most grateful the extern experience brings students to a point of possessing a most acceptable degree of professional judgment and discretion. In addition, the vascular technology faculty concurs in regard to the value of maintaining the simulation of high pressure situations in lab practicals.

Further detail of activities for ISLO Critical Thinking and SLO #4 can be found in Appendix B which is sub-tabbed:

B1 – VAS 225 Professionalism Exam

B2 – Extern Fall 2007 Professional Evaluation

B. Student Learning Outcome #5: The student will demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal vascular anatomy.

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 A5. For outcome #5, one indirect and two direct assessment activities were conducted.

Indirect Measure

A survey was administered to 21 junior students asking them to evaluate/rank their knowledge of Vascular Anatomy in the VAS 365 Abdominal Vascular Disease course on 11/12/07. The survey was designed with 5 categories of vascular anatomy and asked students to rate themselves on a 5 point scale per category as indicated in Table #4 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Cerebrovascular Normal & Cross Sectional Anatomy	Student Anatomy Survey	1 to 5 scale	Class average of 4.0 or higher	3.19
Upper Extremity Normal & Cross Sectional Anatomy	Student Anatomy Survey	1 to 5 scale	Class average of 4.0 or higher	3.52
Abdominal Normal & Cross Sectional Anatomy	Student Anatomy Survey	1 to 5 scale	Class average of 4.0 or higher	4.76
Lower Extremity Normal & Cross Sectional Anatomy	Student Anatomy Survey	1 to 5 scale	Class average of 4.0 or higher	4.38
Vascular Anatomy in relation to gross human anatomical landmarks	Student Anatomy Survey	1 to 5 scale	Class average of 4.0 or higher	3.95

Table #4, SLO #5: Student Anatomy Survey

In analyzing the data, students rated themselves lowest in categories for which they have not taken additional/upper level VAS prefix courses which reinforce their knowledge of vascular anatomy. For example, students are currently enrolled in the VAS 365 Abdominal Disease course and they rated their knowledge of abdominal vascular anatomy the highest.

Additional time and emphasis will be added to the VAS 214 Vascular Anatomy course based on a midpoint assessment exam should bolster the confidence of students in all categories. Students will be informed of the importance of maintaining long term memory of vascular anatomy for the field of Vascular Technology.

Direct Measure #1

An exam was administered composed of select/condensed questions from a VAS 214 Vascular Anatomy final exam to 21 junior students in the VAS 365 Abdominal Disease class on 11/12/07. This activity is designed to evaluate student long term retention in that an excess of a full year has passed from the time the students were first given the information to when this exam was administered. The exam questions were grouped into the same 5 categories as was the above mentioned indirect measure survey as indicated in Table #5 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results - % with 4.0 Av. or higher	Results - % with 3.0	Results - % with 2.0 Av. or less
Cerebrovascular Cross sectional and vascular Anatomy	Questions from VAS 214 Final Examination	1 to 5 scale per 5 questions given	80% of students with 4.0 average or higher	28.6%	38.1%	33.3%
Upper Extremity Cross sectional and vascular Anatomy	Questions from VAS 214 Final Examination	1 to 5 scale per 5 questions given	80% of students with 4.0 average or higher	19%	47.6%	33.3%
Abdominal Cross sectional and vascular Anatomy	Questions from VAS 214 Final Examination	1 to 5 scale per 5 questions given	80% of students with 4.0 average or higher	100%	0%	0%
Lower Extremity Cross sectional and vascular Anatomy	Questions from VAS 214 Final Examination	1 to 5 scale per 5 questions given	80% of students with 4.0 average or higher	23.8%	28.6%	47.6%
Vascular anatomy in relation to gross human anatomy	Questions from VAS 214 Final Examination	1 to 5 scale per 5 questions given	80% of students with 4.0 average or higher	33.3%	23.8%	42.9%

Table #5, SLO #5: VAS 214 Final Examination

Evaluation of the data revealed students performed beyond expectation in the Abdominal Cross sectional and vascular anatomy category. Students, however, performed poorly in identifying right from left in cross sectional anatomy. Students failed to correctly identify upper extremity venous sequential anatomy. There was a general lack of student ability to identify vascular anatomy in relation to specific gross human anatomical landmarks and other vascular anatomy.

As a result of the data, additional time and emphasis will be added to the VAS 214 Vascular Anatomy course reviewing the cross sectional (C/S) drawings from the current “Vascular Scanning” textbook. More C/S drawings will be included in exams as well. More emphasis and time will be spent with two dimensional drawings and anatomical models in regard to upper extremity venous sequential anatomy. More time will be spent in both lecture and lab relating normal vascular anatomy to gross human anatomical landmarks and other vascular anatomy. Additionally, faculty in the Vascular Technology program agree, that random anatomy questions should be included in exams in the VAS 245 and VAS 246 courses.

Direct Measure #2

Rank 23 senior extern students performance on their Student Competency Evaluation Forms, Section 1, “knowledge of human gross and sectional anatomy,” from industry as collected in student files of VAS 420, 2006 – 07 yearly surveys & records. Evaluation of the forms was based on 4 applicable categories of vascular anatomy as indicated in Table #6 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Cerebrovascular Normal, Human Gross & Cross Sectional Anatomy	Extern Student Competency Evaluation Form, Section 1.a) &1.b)	1 to 8 scale	Class average of 7.0 or higher	7.783
Upper Extremity Normal, Human Gross & Cross Sectional Anatomy	Extern Student Competency Evaluation Form, Section 1.a) &1.b)	1 to 8 scale	Class average of 7.0 or higher	7.913
Abdominal Normal, Human Gross & Cross Sectional Anatomy	Extern Student Competency Evaluation Form, Section 1.a) &1.b)	1 to 8 scale	Class average of 7.0 or higher	7.826
Lower Extremity Normal, Human Gross & Cross Sectional Anatomy	Extern Student Competency Evaluation Form, Section 1.a) &1.b)	1 to 8 scale	Class average of 7.0 or higher	7.696

Table #6, SLO #5: Extern Student Competency Evaluation Form, Section 1.a) &1.b)

Evaluation of the data revealed students performed above expectation in all categories. Students on extern are driven to daily recall vascular anatomy due to the variety of vascular exams they perform. Lab protocols also reinforce recall of vascular anatomy and provide validated reasoning for remembering vascular anatomy.

As a result of the data, the success of students on extern will be echoed by including more complete vascular exam protocol assignments for on campus students in all VAS 200 and 300 level prefix laboratory courses.

Further detail of activities for SLO #5 can be found in Appendix B which is sub-tabbed:

B3 – Student Anatomy Survey

B4 – VAS 214 Final Examination

B5 – Extern Competency 1, a) & 1, b).

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

Direct Measure

The Vascular Technology faculty conducted an analysis of where SLO #8 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 A5.

Rank 23 senior extern students performance on their Student Competency Evaluation Forms, Section 2, “knowledge of physiology, pathology and pathophysiologic testing,” from industry as collected in student files of VAS 420, 2006 – 07 yearly surveys & records. Evaluation of the forms was based on 6 applicable categories of lower extremity arterial vascular testing as indicated in Table #7 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Obtains and evaluates pertinent patient history	Extern Student Competency Evaluation Form, Section 2.a)	1 to 4 scale	80% of Class with 3.0 average or higher	100%
Performs physical examination and evaluates its results	Extern Student Competency Evaluation Form, Section 2.b)	1 to 4 scale	80% of Class with 3.0 average or higher	100%
Performs appropriate physiological tests and evaluates results	Extern Student Competency Evaluation Form, Section 2.c)	1 to 4 scale	80% of Class with 3.0 average or higher	100%
Correctly recognizes and identifies patient pathology	Extern Student Competency Evaluation Form, Section 2.d)	1 to 4 scale	80% of Class with 3.0 average or higher	100%
Extends standard testing protocols as required by the findings	Extern Student Competency Evaluation Form, Section 2.e)	1 to 4 scale	80% of Class with 3.0 average or higher	100%
Reviews data from previous examination or findings from other modalities	Extern Student Competency Evaluation Form, Section 2.f)	1 to 4 scale	80% of Class with 3.0 average or higher	100%

Table #7, SLO #8: Extern Student Competency Evaluation Form, Section 2.a) through f)

Senior extern students performed above expectations in all categories. Of the SLO's in the VT program, SLO #8 targets Critical Thinking more than any other. At the core of demonstrating knowledge and understanding of clinical vascular diagnostic procedures and testing, is the critical thinking skill of correlating abnormal spectral Doppler waveforms with patient pathology. Although students on campus demonstrate difficulty with this critical thinking skill, the daily activities of performing exams on real patients, according to industry, tends to perfect this skill in our senior students.

As a result of the data, emphasis will be maintained in the variety and rigor of exams required of students on extern

Further detail of activities for SLO #8 can be found in Appendix B which is sub-tabbed: B6 – Extern Competency 2,a) - 2, f).

Additional Assessment - Institutional Student Learning Outcome (ISLO): Critical thinking and problem solving.

The Vascular Technology faculty conducted an analysis of where ISLO: Criticala thinking and problem solving 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 A6.

Direct Measure

A case study was administered 2/29/08 to 21 students with six select short answer (S..A.) questions specifically targeting spectral Doppler waveform analysis. Although the case study was originally written for the VAS 246 Peripheral Arterial Disease course, the questions regarding the case were altered to reflect critical thinking in regard to spectral waveform analysis. This activity is regarded as an assessment of both long term and short term memory components for this group of students. The S.A. questions were graded on a 1 to 4 scale according to the ISLO rubric categories listed in Table #8 next page.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with 3.0 Av. or higher
1. Identifies and explains problem/question/issue	Question from VAS 246 Case Study	1 to 4 scale per rubric proficiency criteria.	80% of students with 3.0 average or higher	57%
2. Identifies all the empirical and theoretical contexts relevant to all the main stakeholders.	Questions from VAS 246 Case Study	1 to 4 scale per rubric proficiency criteria.	80% of students with 3.0 average or higher	52%
4. Evaluates assumptions	Questions from VAS 246 Case Study	1 to 4 scale per rubric proficiency criteria.	80% of students with 3.0 average or higher	57%
5. Evaluates evidence	Questions from VAS 246 Case Study	1 to 4 scale per rubric proficiency criteria.	80% of students with 3.0 average or higher	29%
6. Evaluates implications, conclusions and consequences.	Questions from VAS 246 Case Study	1 to 4 scale per rubric proficiency criteria.	80% of students with 3.0 average or higher	33%

Table #8, ISLO Critical thinking and problem solving: Case Study

Students performed below expectation in all categories. Of greatest concern is the poor performance in the *Evaluates Evidence and Evaluates implications, conclusions and consequences* categories. In both categories, students were able to correlate abnormal spectral waveforms to presenting pathologies, but students were weak in their critical thinking skills of correlating other factors that might produce the abnormal waveforms. In the other categories, students failed to critically assess how details of all components of patient history and abstract findings might influence the spectral waveforms presented in the case study.

In our lectures and labs, we spend considerable time emphasizing how to correlate abnormal spectral waveforms to presenting pathologies. This assessment activity has demonstrated we need to spend more time on the **emphasis of other factors** that might produce abnormal spectral waveforms. In lab, we will emphasize the critical thinking skill of considering all details of the patient history and physical exam. In lecture, we will emphasize what might produce abnormal spectral waveforms such as low cardiac output, extrinsic vessel compression and aneurysmal vessels. In addition, we will discuss how multiple pathologies can produce normal spectral waveforms.

Further detail of activities for ISLO Critical Thinking can be found in Appendix B which is sub-tabbed:

B7 - VAS 246 Case Study

V. Evidence of Student Learning

During the 2007-08 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.

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

Strengths: Senior extern students performed at or above expectations for all performance criteria, including organization skills, quantity and quality of work, performance under pressure, professional attitudes, punctuality and attendance, staff and team relationships, and knowledge of policies and procedures.

Areas needing improvement: None at this time.

Student Learning Outcome #5: The student will demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal vascular anatomy.

Strengths: Senior extern students performed above expectations for all performance criteria, including cerebrovascular, upper extremity, abdominal, and lower extremity recall for normal, human gross, and cross-sectional anatomy. Junior students, however, demonstrated proficiency in abdominal anatomy only.

Areas needing improvement: While senior extern students perform above expectations, the program faculty want to ensure that junior students are proficient in all aspects of anatomy as they enter their externships.

Plans for improvement: The program faculty will place greater emphasis on anatomy in VAS 214, Vascular Anatomy, by adding additional lecture and lab components on anatomy, and adding more cross-sectional drawings on exams. In addition, they will add random anatomy questions to exams in VAS 245 and VAS 246 to reinforce recall. The program will re-assess junior students on anatomy in fall 2008.

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

Strengths: Senior extern students performed above expectations for all performance criteria, including taking patient histories, performing and evaluating physical examinations, performing and evaluating physiological tests, identifying patient pathology, performing standard testing protocols, and reviewing data from previous findings.

Areas needing improvement: None at this time.

Appendix A

Assesment cycle for the three student learning outcomes to be assessed in the 2007– 2008 academic are listed for specific courses and activities in Table A1.

Vascular Technology Student Learning Outcomes for 2007 - 2008	Assessment Measures
4. The student will employ professional judgment and discretion.	Administer professional judgment and discretion rubric components as a part of a VAS 225, 2008 Professionalism Exam. Measure student performance as per Professional Evaluations received from the VAS 420 Fall term 2008.
5. The student will demonstrate knowledge and understanding of human gross anatomy sectional anatomy and normal and abnormal vascular anatomy.	Administer a survey to students asking them to evaluate/rank their knowledge of Vascular Anatomy in VAS 365, 2007. Administer select/condensed questions from VAS 214 Vascular Anatomy Final in the VAS 365, 2007 Abdominal Disease class. Rank extern student performance on Student Competency Evaluation Forms, Section 1., from industry collected in student files of VAS 420 2006 – 2007 yearly surveys & records.
8. The student will demonstrate knowledge and understanding of clinical vascular diagnostic procedures and testing	Rank extern students performance on Student Competency Evaluation Forms, Section 2., from industry as collected in student files of VAS 420 2006 – 2007 yearly surveys & records.
Additional Assessment - Institutional Student Learning Outcome: Critical Thinking and Problem Solving	A case study covering advanced hemodynamics to be administered in VAS 366 Spec. Circ. Prblms., 2008.

Table A1, 2007 – 2008 assessment cycle

Assesment cycle for the three student learning outcomes to be assessed in the 2007– 2008 academic are listed in relation to the Vascular Technology curriculum map in Table A2 .

Vascular Technology Courses for Assessment 2007 – 2008 as per Student Learning Outcome (SLO).		
	Sophomore Year	SLO to be Evaluated
Vascular Anatomy	*VAS 214	
Cardiovascular Physiology	*BIO 220	
Radiographic Vascular Anatomy	*VAS 335	
Vascular Physical Principles & Instrumentation I	*VAS 210	
Peripheral Venous Disease	*VAS 245	
Vascular Physical Principles & Instrumentation II	*VAS 211	
Patient Management Practices	*VAS 225	#4
Peripheral Arterial Disease	*VAS 246	
	Junior Year	
Echocardiography	*VAS 321	
Abdominal Vascular Disease	*VAS 365	#5
Special Circulatory Problems	*VAS 366	
Survey of Abdominal Sonography.	*VAS 375	
Cerebrovascular Disease	*VAS 367	
Vascular Laboratory Management.	*VAS 385	
Externship Orientation.	*VAS 388	
	Senior Year	
Vascular Technology Extern Summer Term	*VAS 420	
Vascular Technology Extern Fall Term	*VAS 420	#4
Vascular Technology Extern Winter Term	*VAS 420	
Vascular Technology Extern Spring Term	*VAS 420	
Vascular Technology Extern Yearly Surveys & Records	*VAS 420	#5, #8
American Registry of Diagnostic Medical Sonographers		

Table A2, 2007 – 2008 assessment cycle

Student Learning Outcome #4: The student will employ professional judgment and discretion. Table A3 demonstrates the mapping of this outcome to Vascular Technology courses.

Vascular Anatomy Course	Fall	Winter	Spring	Summer
Sophomore Year				
VAS 214	X			
BIO 220				
VAS 335				
VAS 210				
VAS 245		X		
VAS 211				
VAS 225			X	
VAS 246			X	
Junior Year				
VAS 321				
VAS 365	X			
VAS 366		X		
VAS 375				
VAS 367			X	
VAS 385				
VAS 388				
Senior Year	X	X	X	X

Table A3. Student Learning Outcome #4-Course Matrix

Student Learning Outcome #5: The student will demonstrate knowledge and understanding of human gross anatomy sectional anatomy and normal and abnormal vascular anatomy. Table A4 demonstrates the mapping of this outcome to Vascular Technology courses.

Vascular Anatomy Course	Fall	Winter	Spring	Summer
Sophomore Year				
VAS 214	X			
BIO 220				
VAS 335				
VAS 210				
VAS 245		X		
VAS 211				
VAS 225				
VAS 246			X	
Junior Year				
VAS 321				
VAS 365	X			
VAS 366		X		
VAS 375				
VAS 367			X	
VAS 385				
VAS 388				
Senior Year	X	X	X	X

Table A4. Student Learning Outcome #5-Course Matrix

Student Learning Outcome #8: The student will demonstrate knowledge and understanding of clinical vascular diagnostic procedures and testing. Table A5 demonstrates the mapping of this outcome to Vascular Technology courses.

Vascular Anatomy Course	Fall	Winter	Spring	Summer
Sophomore Year				
VAS 214	X			
BIO 220	X			
VAS 335				
VAS 210				
VAS 245		X		
VAS 211				
VAS 225				
VAS 246			X	
Junior Year				
VAS 321				
VAS 365	X			
VAS 366		X		
VAS 375				
VAS 367			X	
VAS 385				
VAS 388				
Senior Year	X	X	X	X

Table A5. Student Learning Outcome #8-Course Matrix

Additional Assessment - Institutional Student Learning Outcome: Critical thinking and problem solving. Table A6 demonstrates the mapping of this outcome to Vascular Technology courses.

Vascular Anatomy Course	Fall	Winter	Spring	Summer
Sophomore Year				
VAS 214	X			
BIO 220	X			
VAS 335				
VAS 210				
VAS 245		X		
VAS 211				
VAS 225				
VAS 246			X	
Junior Year				
VAS 321				
VAS 365	X			
VAS 366		X		
VAS 375				
VAS 367			X	
VAS 385				
VAS 388				
Senior Year	X	X	X	X

Table A6. ISLO Critical thinking and problem solving