Oregon Tech
Medical Imaging Technology Department
Echocardiography Program
2016-2017 Assessment

I. Introduction

Oregon Tech's Bachelor of Science in Echocardiography degree is one of only a few B.S. Degree programs in echocardiography in the United States. Oregon Tech provides didactic instruction, clinical observations, and individual, hands-on training - including basic and advanced training in imaging skills needed *"To prepare competent entry-level adult cardiac sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains"*.

Students are required to complete a final 11-month clinical externship at specifically chosen echocardiography laboratories. Externship provides the hands-on training and patient load requirements necessary to meet the prerequisite requirements of the certifying board agency, the American Registry of Diagnostic Medical Sonographers (ARDMS), to be able to sit for the registry exam in adult echocardiography. Occasionally, a student may have the opportunity to complete an additional directed clinical externship in pediatric echocardiography, and be qualified to sit for both the ARDMS adult and pediatric echocardiography registry exams.

The first Oregon Tech cohort for Echocardiography began fall 2008, with 14 students, and additional cohorts of 17 students in the fall of 2009, 20 students in the fall of 2010, 20 students in the fall of 2011, 24 admitted fall 2012, 20 admitted fall 2013, 20 admitted fall 2014, 20 admitted fall 2015, and 22 admitted fall 2016. June 2017 student selections for fall 2017 MIT enrollment in Echocardiography will add the latest cohort of 20 students, with one additional student pending reentry spring 2018.

Upon 2017 graduation, total current enrollment is 57 students, including those anticipated as being accepted for fall 2017 entry into the Echocardiography Program. All graduates known to have applied for registry exams through either ARDMS or CCI, have passed the Adult Echocardiography Registry. Several prior graduates have additionally passed and become registered in Pediatric Echocardiography, and Vascular Ultrasound. 98% of graduates (through the 2016 graduates) have worked or are working as cardiac sonographers, either per diem or in scheduled positions. Annual salaries reported varied from $25,000 to $84,000.

One of the major goals of the Echocardiography program (along with Diagnostic Medical Sonography, and Vascular Technology) has been to seek JRC-DMS/CAAHEP Programmatic Accreditation. The JRC-DMS self-study was submitted fall 2014, the JRC-DMS site visit occurred May 2015, and finalized submission of documentation for the accreditation process was completed by the end of June 2015, and all three ultrasound programs received CAAHEP Initial Accreditation in September 2015.

Retention/Attrition, credentialing success, and placement outcomes for the last three years are reported on the OIT Echocardiography website in Program OUTCOMES:

http://oregontechsfcdn.azureedge.net/oregontech/docs/default-source/academic-excellence/program-outcomes/echo-outcomes-2013-15_079bd1cb-032c-4dce-9821-7d7301ccfff8.pdf?sfvrsn=cede9060_6

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

The Echocardiography faculty agreed to adopt the student learning outcomes as suggested by the Joint Review Committee on Education in Diagnostic Medical Sonography (JRCDMS).

Echocardiography Program Purpose

The Oregon Tech Bachelor of Science program in Echocardiography provides students with the knowledge, clinical skills, values and behaviors to become competent cardiac sonographers.

Minimum Expectations: The program will meet the following goal, defining minimum expectations:

"To prepare competent entry-level adult cardiac sonographers in the cognitive (knowledge), psychomotor (skills), and affective (behavior) learning domains"

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 life-long learners and responsible citizens.

Expected Program Student Learning Outcomes

Graduates from this program will be able to:

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

Additional Student Learning Opportunities, and Programmatic Input

Students have been encouraged to attend meetings sponsored by northwest regional chapter of the American Society of Echocardiography (the Willamette Valley Society of Echocardiography - WVSE) held quarterly in Portland, and try to attend other regional society conferences held near their externship sites throughout the year.

Clinical Instructor input was accessed through late 2016 conference calls, and discussions covered the logistics of student documentation and updated verbal evaluation of the Trajecsys externship reporting system, areas of didactic concern, modifications to the current externship Competencies, and overall success of the program. Continuing modifications will be directed towards an update of the Competency Evaluations used on externship, better reflecting current practice models, and towards elimination many of the scoring areas that more properly fit within the Echocardiography Professional Evaluation. CME's will be made available through SDMS for clinical site staff directly involved in the hands-on training for students on their Clinical Externship, started during the 2016 – 2017 Externship year. Echocardiography Clinical Instructors will be invited to the spring 2018 Clinical Instructor Workshop, and all programs will combine CI inputs and suggestions.

The program Advisory Board/Committee will meet via teleconference spring/summer 2016. Results and input from the discussions will be made available as needed. The program's Medical Director was frequently updated on the progress of the program's development, provided input as needed, and visited campus and gave lectures to the junior and sophomore classes spring 2016. The Medical Director's overview and assessment of the program was a part of the JRC-DMS accreditation site visit, May 2015. An Advisory Board/Committee meeting will be convened spring term 2018.

Much of the externship assessment material has been incorporated within the Trajecsys reporting system, and full details of all externship scoring is available on-line as needed.

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

The faculty also confirmed the assessment cycle planned, as listed in Table #2 below.

Echocardiography Degree Student Learning Outcomes Assessment Schedule	2016-17	2017-18	2018-19	2019-20	2020-21	2021-2022
1. The student will demonstrate the ability to communicate effectively in oral, written and visual forms.	X(1)			X(1)		
2. The student will demonstrate the ability to work effectively in teams.	X(4)			X(4)		
3. The student will demonstrate an ability to provide basic patient care and comfort.		X			X	
4. The student will employ professional judgment and discretion, including ethics.			X(3)			X(3)
5. The student will demonstrate knowledge and understanding of human gross anatomy sectional anatomy and normal and abnormal cardiovascular anatomy.	X			X		
6. The student will demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.		X(2)			X(2)	
7. The student will demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.		X(5)			X(5)	
8. The student will demonstrate knowledge and understanding of clinical echocardiography diagnostic procedures and testing			X			X
9. The student will demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			X(6)			X(6)

Table #1. Echocardiography Degree Assessment Cycle – (number) indicates a PSLO that incorporates proposed ESLO's. The pattern is subject to modification.

IV. Summary of 2016-17 Assessment Activities

A. Essential Student Learning Outcome #1 (PLSO #1): The student will demonstrate the ability to communicate effectively in oral, written and visual forms.

Written Communication
The performance criteria for written communicate are:

1. Writing is clear, focused and understandable.
2. Order & structure are clear with satisfying introduction and conclusion.
3. Document is well supported.
4. Voice and wording are appropriate and compelling.
5. Standard writing conventions are used effectively.

Oral Communication
The performance criteria for oral communication are:

1. Content is supported, informative and persuasive.
2. Presentation is well organized with smooth transitions.
3. Topic is well understood and conveyed with enthusiasm.
4. Delivery is effective and poised.

Direct Assessment #1
The faculty assessed this outcome in ECHO 321 in fall term using a Journal Article Review/Presentation Grading Rubric for the writing assignment and oral presentation grading. The faculty rated the proficiency of 20 junior students using the performance criteria described in Table 2 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Proper format	Grading Rubric	0-10 scale per rubric proficiency criteria	90% with 8 or higher	85% scored 8 or higher
Adequate coverage of material	Grading Rubric	0-10 scale per rubric proficiency criteria	90% with 8 or higher	100% scored 8 or higher
Utilization of Proper Grammatical Style	Grading Rubric	0-5 scale per rubric proficiency criteria	90% with 4 or higher	100% scored 5
Oral presentation – demonstration of understanding, professional terminology utilized, effective delivery	Grading Rubric	0-24 scale per rubric proficiency criteria	90% with 19 or higher	100% scored 19 or higher

Table #2 Assessment Results for ESLO #1 written and oral communication, fall 2016

Strengths: 100% of students performed at minimum acceptable levels for the following performance criteria:

- Writing is clear, focused and understandable, with proper grammatical conventions followed in the professional literature.

- Journal article is adequately presented.
- Oral presentations adequately communicated a level of understanding of the material presented.

Weaknesses: Minimum acceptable performance was not obtained for the following performance criteria: utilization of proper format. Three students did not use the provided format.

Action: As a result of the data, improvement is needed in appropriate utilization of support, style and conventions in written communication when presenting reviews of professional Journal Articles. In 3 cases, standard writing conventions were particularly deficient, even though examples of proper style were provided to the class. Proper style will be emphasized more forcefully in future classes requiring article reviews.

Direct Assessment #2
The faculty assessed the *written communication* outcome in ECHO 420 fall term 2016 using the Echocardiography Externship fall term case study grading rubric. The faculty rated the proficiency of 18 senior students using the performance criteria described in Table 3 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Case Study Content	Grading Rubric	1-15 scale per rubric proficiency criteria	90% with 12.0 or higher	100%
Organization (overall presentation)	Grading Rubric	1-15 scale per rubric proficiency criteria	90% with 12.0 or higher	100%
Style (Discussion)	Grading Rubric	1-10 scale per rubric proficiency criteria	90% with 7.0 or higher	100%
Delivery (grammar, spelling, terminology)	Grading Rubric	1-10 scale per rubric proficiency criteria	90% with 7.0 or higher	94%
Visual aids	Grading Rubric	1-10 scale per rubric proficiency criteria	90% with 7.0 or higher	100%

Table #3 Assessment Results for ESLO #1 written communication, fall 2016

Strengths: Minimum acceptable performance was achieved for all performance criteria.
- Content is supported, informative & persuasive
- Well-designed visuals are utilized & integrated in to speech.
- Presentation is well organized with smooth transitions.
- Topic is well understood & conveyed with enthusiasm.
- Delivery is effective, and at a level expected of students in the clinical setting.

Weaknesses: While minimum levels were reached, review of case study presentations, and the need for utilization of proper grammar, spelling, and terminology will be emphasized during the

Externship Preparation classes in spring term each year. Example of adequate case studies will be made available for review.

Direct Assessment #3

The faculty also reviewed Clinical Instructors assessment of this outcome at Externship sites fall term 2016 using the Student Competency Evaluations available to sites via the Trajecsys reporting system. The Clinical Instructors rated the proficiency of 18 senior students using the performance criteria described in Table 4 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Maintains clinical records	Student Monthly Logs	0-100%	90% with a score of 80 or better	100% scored 80 or better
Exhibits accuracy and consistency in all labeling and calculations	Student Competency Evaluation	0-100%	90% with a score of 80 or better	100% scored 80 or better
Educates patients regarding echo procedure	Student Competency Evaluation	0-100%	90% with a score of 80 or better	100% scored 80 or better

Table #4 Student Competency Evaluation Results for ESLO #1, fall 2016

Strengths: Minimum acceptable performance was achieved for all the performance criteria specified.

Weaknesses: All students performed at or above expected level. Current Professional Evaluation template in Trajecsys does not adequately state competency requirements.

To better reflect data needed for assessment, the Professional Evaluation template will be reviewed and modified. To match these modifications, additional mock study evaluation and reporting will be introduced in the ECHO 321, 333, and 334 classes. More thorough utilization of the electronic report package in the CoreSound PACS will be instituted.

Indirect Assessment #1
This outcome was assessed in exit surveys evaluating the Echocardiography Program, completed by both senior students and clinical sites, at points nearing or upon completion of clinical externship in ECHO 420, spring term 2017. Nineteen Clinical Instructors reporters at externship sites participated in the program evaluation, 17-18 students completed Echocardiography Program Exit Surveys. The criteria and results are provided in Table 5 below.

Evaluation scale: (1) Poor (2) Satisfactory (3) Good (4) Excellent (n/a) Not applicable

Performance Criteria	**Assessment Methods**	**Measurement Scale**	**Minimum Acceptable Performance**	**Results - % Rating Minimal Acceptable Performance**
The student will demonstrate the ability to communicate effectively in oral, written, and visual forms	Student Program Evaluation	1-4 evaluation scale	90% with 3 or higher	88% rated the program at 3 or better
The student will demonstrate the ability to communicate effectively in oral, written, and visual forms	Clinical Site Program Evaluation	1-4 evaluation scale	90% with 3 or higher	100% rated the program 3 or higher

Table #5 Exit survey results for ESLO #1, spring 2017

Strengths: Both students and clinical sites rated the Echocardiography Program as meeting acceptable levels of performance in providing students with an educational setting that allowed the students to demonstrate the ability to communicate effectively.

Weaknesses: While no significant weakness was identified, continuing emphasis on, and expansion on opportunities to practice and improve on communication skills will be provided in core echocardiography classes.

B. Essential Student Learning Outcome #4 (PLSO #2). The student will demonstrate the ability to work effectively in teams.

Direct Assessment #1

The faculty assessed this outcome in ECHO 333 in fall term. Student group presentations were assigned, with groups aware that the assignment would be graded utilizing the Oregon Tech ISLO Team and Group Work Rubric. Twenty Echocardiography juniors participated in the assessment. The faculty rated the proficiency of students using the performance criteria described in Table #6 below.

Performance Criteria	Assessment Methods	Measurement Scale	Minimum Acceptable Performance	Results
Identify and achieve goal/purpose	ISLO Rubric	Score of 1 – 4 (no/limited proficiency – high proficiency	80% with 3 or higher	All students scored 3 or higher
Assume roles and responsibilities	ISLO Rubric	Score of 1 – 4 (no/limited proficiency – high proficiency	80% with 3 or higher	All students scored 3 or higher
Communicate effectively	ISLO Rubric	Score of 1 – 4 (no/limited proficiency – high proficiency	80% with 3 or higher	All students scored 3 or higher
Reconcile differences	ISLO Rubric	Score of 1 – 4 (no/limited proficiency – high proficiency	80% with 3 or higher	All students scored 3 or higher
Shares work appropriately	ISLO Rubric	Score of 1 – 4 (no/limited proficiency – high proficiency	80% with 3 or higher	All students scored 3 or higher
Develops strategies/actions	ISLO Rubric	Score of 1 – 4 (no/limited proficiency – high proficiency	80% with 3 or higher	All students scored 3 or higher
Cultural adaptation	ISLO Rubric	Score of 1 – 4 (no/limited proficiency – high proficiency	80% with 3 or higher	All students scored 3 or higher

Table #6. SLO #2, ECHO 333 ISLO results, fall 2016

Students performed at and above the expected level of performance. Students exhibited minimal variation in ratings assigned to themselves, and to others in their respective teams.

As a result of the data, the student presentations will continue to be incorporated, with additional emphasis on accurate self/peer evaluation. Peer review needs further study, as students are observed as perhaps reluctant to critically rate their peers. Individual student contributions need to be assessed utilizing a redesigned scoring rubric, with closer overview.

Direct Assessment #2

The faculty assessed this outcome in ECHO 420 from the 2016–2017 academic year using spring 2017 student competencies for echocardiography as assessed by industry. Eighteen students participated in the assessment. The faculty rated the proficiency of students using the performance criteria described in Table #7 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Student recognizes his/her role as a student and displays initiative in helping in the daily echocardiography lab team effort.	Echo 420 Spring Competency (various)	1 – 10 Scale	80% with 8 or higher	100%
Student is willing to gather appropriate data for the team effort of quality assurance.	Echo 420 Spring Competency (various)	1 – 10 Scale	80% with 8 or higher	100%
Student ability to function as a two person team with their clinical trainer.	Echo 420 Spring Competency (various)	1 – 10 Scale	80% with 8 or higher	100%

Table #7. ESLO #2, ECHO 420 extern competencies results

Students performed at or above the desired level of proficiency in terms of team effort not only in the Echocardiography lab as a whole, but also as bedside imaging teams with observing clinical staff.

As a result of the data, an understanding of what constitutes team participation, and the expected performance in the clinical setting will continue to be emphasized in the Externship Preparation class, spring quarter. Individual student performance will be addressed based on input provided from Clinical Instructors and data obtained in the quarterly Competencies.

Indirect Assessment #1

The faculty assessed this outcome in ECHO 420 from the student 2016-17 exit surveys asking them to rate how well the OIT Echocardiography program prepared them for learning outcome #2. The students rated their proficiency using the performance criteria described in Table #8 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Ability to work effectively in teams (OIT preparation)	Exit Survey	1 – 4 Scale	80% with a score of 3.0 or better	100%

Table #8, ESLO #2 ECHO 420 student self-assessment/exit survey results.

Students rated the program as providing adequate preparation and training to effectively work in teams.

As a result of this assessment activity, oral presentations will be continued, and additional reporting of case studies will be emphasized in the junior level courses. In the Externship Preparation class, the position of the staff sonographer (and the student) as a team member will be emphasized, with examples of behaviors that contribute to team efforts and goals provided during discussion. Beginning 2018-2019, student presentation of case studies to their respective echocardiography lab will be tested as a requirement.

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

The performance criteria for this outcome are:

1. Student is able to associate anatomical landmarks in the region of interest with cardiac anatomy.
2. Student is able to accurately identify cross sectional cardiac anatomy in ultrasound images as well as in radiologic, CT and MRI images for quality assurance.
3. Student recognizes the sonographic appearance of normal and abnormal cardiac anatomy.

Direct Assessment #1
The faculty assessed this outcome through Competency Evaluations completed by Clinical Instructors on 18 senior students during ECHO 420 externship winter term 2017. The proficiency of students was rated using the performance criteria described in Table 9 below.

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target. or higher
Associates anatomical landmarks with cardiovascular anatomy	Student Competency Evaluation	0-100%	90% with a score of 80 or better	100%
Identifies cross sectional anatomy for QA	Student Competency Evaluation	0-100%	90% with a score of 80 or better	100%
Recognizes normal and cardiovascular anatomy	Student Competency Evaluation	0-100%	90% with a score of 80 or better	100%

Table #9 Assessment Results for PSLO #5, winter 2017

Strengths: Students performed at or above the minimum acceptable level of performance.

Weaknesses: Cross sectional anatomy for QA is infrequently used within many working echocardiography labs, and will be reassessed as to whether it needs continued inclusion in this SLO.

As a result of the data, the faculty in the Echo Program decided to continue assessing SLO#5 through externship Competency Evaluations. The evaluation format will be revised over the 2018-2019 externship year, to better reflect industry input on competency items more pertinent to cardiovascular ultrasound imaging.

Indirect Assessment #1
This outcome was also assessed in exit surveys evaluating the Echocardiography Program, completed by both senior students nearing or upon completion of their clinical externship in ECHO 420, spring term 2017. Nineteen Clinical Instructors at externship sites participated in the program evaluation. The criteria and results are provided in Table 10 below.

Evaluation scale: (1) Poor (2) Satisfactory (3) Good (4) Excellent (n/a) Not applicable

Performance Criteria	Assessment Methods	Measure Scale	Minimum Acceptable Performance	Results -% with Target or higher
Associates anatomical landmarks with cardiac anatomy	Student Program Evaluation	1-4 evaluation scale	90% with a score of 3 or better	100% rated the program 3 or higher
Recognizes normal and abnormal cardiac anatomy	Clinical Site Program Evaluation	1-4 evaluation scale	90% with a score of 3 or better	93% rated the program 3 or higher

Table #10 Exit survey results for PSLO #5, spring 2017

Strengths: The Echocardiography Program was rated by both the externship students and their clinical sites as meeting acceptable levels of performance in providing students with an educational setting promoting the acquisition of clinical knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.

Weaknesses: While no significant weakness was identified, continuing emphasis on, and expansion on opportunities to practice and improve on imaging and interpretation skills will be provided in core echocardiography classes.

The Curriculum Map/Assessment Matrix for the Echocardiogram Program follows in Appendix A

Note: As revised Oregon Tech ESLO requirements and assessments are modified and deployed during the next two academic years, matrices will be modified to reflect changed assessment patterns.

Appendix A - 2016-17 Program Assessment Report

Echocardiography B.S.

Curriculum Map

Table A2 Curriculum Map

Three-year Cycle for Assessment of Program Learning Outcomes

STUDENT LEARNING OUTCOME	2016-17	2017-18	2018-19
1. Demonstrate the ability to communicate effectively in oral, written and visual forms.	F, P, C		
2. Demonstrate the ability to work effectively in teams.	F, P, C		
3. Demonstrate an ability to provide basic patient care and comfort.		F, P, C	
4. Demonstrate professional judgment, discretion, and ethics.			F, P, C
5. Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.	F, P, C		
6. Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.		F, P, C	
7. Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.		F, P, C	
8. Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.			F, P, C
9. Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			F, P, C

***Assessment of Program Student Learning Outcomes (2 Directs, 1 Indirect)**

***Assessment of Communication Essential Student Learning Outcome (1 Direct Oral, 1 Direct Written)**

F - Foundation
P - Practice
C - Capstone

Freshman Year

N/A

Sophomore Year

	BIO 220	**BIO 346**	**BIO 347**
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.			
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.			
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.			
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.	F	F	F
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.		F	F
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.			
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.			
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			
OIT-ESLO 2016-17.1.A Communicate effectively orally.			
OIT-ESLO 2016-17.1.B Communicate effectively in writing.			

	ECHO 225	ECHO 231	ECHO 232
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.	F	F	P
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.			
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.	F	F	P
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.		F	P
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.		F	P
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.		F	P
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.			F
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			
OIT-ESLO 2016-17.1.A Communicate effectively orally.			
OIT-ESLO 2016-17.1.B Communicate effectively in writing.			

	ECHO 320	ECHO 332	MIT 231
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.			
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.			
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.			
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.		P	
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.	P		
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.			F
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.	F		
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			
OIT-ESLO 2016-17.1.A Communicate effectively orally.			
OIT-ESLO 2016-17.1.B Communicate effectively in writing.			

	MIT 232	PHY 217	WRI 227
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.			F
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.			
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.			
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.			
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.			
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.	P	F	
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.			
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			
OIT-ESLO 2016-17.1.A Communicate effectively orally.			
OIT-ESLO 2016-17.1.B Communicate effectively in writing.			

Junior Year

	CHE 360	ECHO 321	ECHO 325
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.		P	P
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.			
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.			
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.		P	F
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.		P	F
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.		P	
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.		P	
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			
OIT-ESLO 2016-17.1.A Communicate effectively orally.		P	P
OIT-ESLO 2016-17.1.B Communicate effectively in writing.		P	P

	ECHO 333	ECHO 334	ECHO 376
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.	P	P	
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.	P		
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.	P	P	
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.	P	P	F
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.			F
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.			
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.			
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			
OIT-ESLO 2016-17.1.A Communicate effectively orally.			
OIT-ESLO 2016-17.1.B Communicate effectively in writing.			

	ECHO 385	ECHO 388	SPE 321
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.	P	P	F
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.	P		F
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.			
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.			
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.			
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.			
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.			
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.	F	P	
OIT-ESLO 2016-17.1.A Communicate effectively orally.			
OIT-ESLO 2016-17.1.B Communicate effectively in writing.	P		

	Business Elective Upper Division	Communication Elective	Humanities Elective
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.	P	P	
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.			
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.			
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.			
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.			
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.			
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.			
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.			
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.			F, P
OIT-ESLO 2016-17.1.A Communicate effectively orally.		F, P	
OIT-ESLO 2016-17.1.B Communicate effectively in writing.		P	

Senior Year

	ECHO 420	Student Exit Survey
OIT-BECH 2016-17.1 Demonstrate the ability to communicate effectively in oral, written and visual forms.	C	C
OIT-BECH 2016-17.2 Demonstrate the ability to work effectively in teams.	C	C
OIT-BECH 2016-17.3 Demonstrate an ability to provide basic patient care and comfort.	C	C
OIT-BECH 2016-17.4 Demonstrate professional judgment, discretion, and ethics.	C	C
OIT-BECH 2016-17.5 Demonstrate knowledge and understanding of human gross anatomy, sectional anatomy, and normal and abnormal cardiovascular anatomy.	C	C
OIT-BECH 2016-17.6 Demonstrate knowledge and understanding of cardiovascular physiology, pathology, and pathophysiology.	C	C
OIT-BECH 2016-17.7 Demonstrate knowledge and understanding of cardiovascular physical principles and instrumentation.	C	C
OIT-BECH 2016-17.8 Demonstrate knowledge and understanding of clinical echocardiographic diagnostic procedures and testing.	C	C
OIT-BECH 2016-17.9 Demonstrate an understanding of diverse cultural and humanistic traditions in the global society.	C	C
OIT-ESLO 2016-17.1.A Communicate effectively orally.	C	C
OIT-ESLO 2016-17.1.B Communicate effectively in writing.	C	C