



















CVT Course Number	SLO Number	SLO Description	FA 2015	Spr 2016	FA 2016	Spr 2017	FA 2017	Spr 2018	FA 2018	Spr 2019	FA 2019	Spr 2020
CVT 211	1	Record, measure and calculate blood flow velocity from conventional pulsed wave, continuous wave and color-flow Doppler tracings in accordance with criteria established by the American Society of Echocardiography and the instructor.		x								
CVT 212	1	Demonstrate and contrast the selection, preparation and clinical application of balloon and laser angioplasty devices in accordance with criteria established by the instructor.		x								
CVT 213	1	Describe and define symptoms and pathology associated with chronic venous disease; define the rationale and methods of noninvasive venous reflux testing; and perform venous duplex ultrasonography, as well as reflux photoplethysmography.		x								
	2	Describe and define symptoms and pathology associated with miscellaneous vascular disorders and testing: Raynaud's syndrome, thoracic-outlet syndrome, transcutaneous oxygen measurement, and vasculogenic impotence testing.		x								
	3	Describe and define symptoms and pathology associated with abdominal arterial and venous disease; define the rationale and methods of ultrasound visceral-artery assessment; and perform abdominal artery duplex ultrasonography.		x								
	4	Describe and perform test validation calculations as used in the vascular laboratory.		x								
	5	Describe and define prescribed concepts in ultrasound physics and instrumentation.		x								
CVT 215	1	Develop and practice good patient interactive skill, helping to calm fears explaining procedures and generally making the patient's test a positive experience.		x								
CVT 217	1	Define and calculate specified statistical parameters used to report data in the medical literature.		x								

CVT Course Number	SLO Number	SLO Description	FA 2015	Spr 2016	FA 2016	Spr 2017	FA 2017	Spr 2018	FA 2018	Spr 2019	FA 2019	Spr 2020
	2	Research and report on assigned topics in Cardiovascular Technology from the medical literature.		X								
	3	Set up, calibrate and operate specified medical instrumentation.		X								
	4	Describe current concepts in the diagnosis and treatment of specified cardiovascular disease from data presented by physicians and other professionals from the scope of practice.		X								
<b>**Will assess when offered**</b>												
CVT 218	1	Record, measure and calculate prescribed clinical data from surface and intracardiac electrocardiograms.		X								
<b>**Will assess when offered**</b>												
CVT 225	1	Record, measure and calculate prescribed hemodynamic data for interpretation by the physician.		X								
<b>**Will assess when offered**</b>												
CVT 230	1	Distinguish characteristics of normal and abnormal cardiac anatomy and physiology in preparation for the national registry exam.		X								
<b>**Will assess when offered**</b>												

CVT Course Number	SLO Number	SLO Description	FA 2015	Spr 2016	FA 2016	Spr 2017	FA 2017	Spr 2018	FA 2020	Spr 2021
<b>CVT 100</b>	<b>1</b>	Utilize mathematical concepts of fractions, decimals, fundamental algebraic operations and scientific notation to analyze and calculate the hemodynamics of the cardiovascular system.		X						
	<b>2</b>	Analyze and calculate hemodynamic function indices of force, energy, velocity and pressure within the cardiovascular system, given data from cardiac catheterization, cardiac ultrasound or vascular studies.		X						
	<b>3</b>	Define, calculate and describe the clinical application of Poiseuille's Law, the Law of LaPlace and the Bernoulli effect as used in the evaluation of the cardiovascular system.		X						
	<b>4</b>	Define the methods of calculation and the clinical relationships of pressure, pressure gradients and resistance in the cardiovascular system.		X						
	<b>5</b>	State and define the clinical applications of air-cuff, strain-gauge, impedance and photoplethysmography in the evaluation of the vascular system.		X						
<b>CVT 101</b>	<b>1</b>	Describe the Standard Anatomic Position as used in descriptive human anatomy and positioning.		X						
	<b>2</b>	Define prescribed medical terminology as related to the clinical practice of Cardiovascular Technology		X						
	<b>3</b>	Describe the position of the heart within the thorax, the types of cardiac tissue, and the chambers and structural components of the human heart.		X						
	<b>4</b>	Define and describe the clinical application of cardiovascular hemodynamics in the diagnosis and treatment of cardiovascular disease.		X						
	<b>5</b>	Describe the location and function of the arteries and veins of the central circulation.		X						
	<b>6</b>	Describe the microstructure of the myocardium and their relationship to Starling's Law of the Heart.		X						
	<b>7</b>	Analyze and correlate the clinical significance of hemodynamic pressure recordings from the cardiac catheterization laboratory.		X						
	<b>8</b>	Describe the general characteristics of the anatomy of the vascular system as related the cardiovascular diagnostics and treatment.		X						

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<b>CVT 102</b>	<b>1</b>	State and define prescribed concepts associated with the laws that govern electricity and magnetism.		X						
	<b>2</b>	State and define principles of electrical safety associated with medical instrumentation in the clinical environment.		X						
	<b>3</b>	Describe the basic components of a simple electrical circuit and define the concepts of resistance, capacitance and inductance.		X						
	<b>4</b>	Describe the principles associated with calibration, measurement, random error, non-random error and their relationship to performing clinical diagnostic tests.		X						
	<b>5</b>	Describe the categories and characteristics of biomedical signal detectors.		X						
	<b>6</b>	Perform laboratory exercises in measurement theory, graphing techniques and basic electrical circuit analysis.		X						
	<b>7</b>	Construct simple electrical circuits and calculate the values for resistance, voltage and current in series and parallel circuits.		X						
	<b>8</b>	Describe the components, calibration techniques and clinical application of the electrocardiograph. Perform, record and calculate prescribed parameters of the standard 12-lead electrocardiogram.		X						
<b>CVT 103</b>	<b>1</b>	Describe the theoretical concepts and the clinical technique for measurement of the systemic blood pressure.		X						
	<b>2</b>	Use a sphygmomanometer and stethoscope to measure and record systemic blood pressure. Measure heart rate and calculate pulse pressure and mean pressure.		X						
	<b>3</b>	Record ultrasound images of the carotid artery system and other prescribed structures associated with vascular duplex imaging in the evaluation of cardiovascular disease.		X						
	<b>4</b>	Record an ultrasound image of the heart and great vessels associated with echocardiographic imaging in the evaluation of cardiovascular disease.		X						

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	5	Define and exhibit principles of patient communication to demonstrate compassion, patient understanding and patient comfort in the clinical environment during the performance of clinical diagnostic testing.		X						
CVT 104	1	Given an anatomical diagram of the heart, identify the electrical conduction system in accordance with criteria established by the instructor.		X						
CVT 105	1	Record a standard 12-Lead electrocardiogram in accordance with criteria established by the instructor.		X						
CVT 106	1	Identify and describe the pathophysiology of prescribed cardiac arrhythmias and heart blocks.		X						
<b>**Will assess when offered**</b>										
CVT 107	1	Describe the professional role of the Cardiovascular Technologist as observed in a clinical setting.		X						
CVT 108	1	Identify and describe the pathophysiology of prescribed advanced cardiac arrhythmias and heart blocks.		X						
CVT 110	1	Describe parameters of diagnostic ultrasound and perform calculations relating these parameters to clinical situations, including frequency, period, wavelength, intensity, attenuation, refraction, dynamic range and resolution.		X						
	2	Describe the components of ultrasound scanning instrumentation, including signal processing, data storage, and methods of display.		X						
	3	Describe the piezoelectric effect and the construction of ultrasound transducers. Define the components of the ultrasound beam and the parameters that influence beam resolution.		X						
	4	Define the principles of and instrumentation used in Doppler ultrasound in the medical diagnostic setting and the evaluation of blood flow.		X						

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<b>CVT 111</b>	<b>1</b>	Describe the anatomic structures, the timing of impulse delivery to the myocardium and impulse velocities associated with the specialized conduction system of the heart.		X						
	<b>2</b>	Describe the factors associated with the formation and propagation of the action potential spike within the myocardium and the factors which elicit action potential spikes in the normal heart.		X						
	<b>3</b>	Describe the waves, segments, intervals and normal timing increments of the standard 12-lead electrocardiogram.		X						
	<b>4</b>	Describe the genesis and identify the morphology of specified cardiac arrhythmias and heart blocks as detected by the standard electrocardiogram.		X						
	<b>5</b>	Describe the anatomic listening posts utilized in the evaluation of heart sounds and murmurs.		X						
	<b>6</b>	Describe the genesis and physiologic events associated with the production of the first, second, third and fourth heart sounds.		X						
	<b>7</b>	Describe the genesis, physiologic events, pathophysiology and clinical significance of prescribed cardiac murmurs, clicks, bruits, heaves and rubs.		X						
	<b>8</b>	Describe the process and identify the structures associated with the embryonic formation of the heart and great vessels.		X						
	<b>9</b>	Describe the structural changes, pathophysiology, clinical findings and interventional procedures associated with prescribed congenital malformations of the heart.		X						
	<b>10</b>	Describe the pathophysiology, clinical findings and diagnostic modalities used to evaluate prescribed cerebrovascular and peripheral vascular disease.		X						
<b>CVT 112</b>	<b>1</b>	Describe and define elements of the instrumentation chain: Signal detection, amplification, signal processing, and display and recording devices.		X						

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	2	Describe the rationale, procedures, and instrumentation utilized in cardiovascular diagnostic procedures: Noninvasive cardiac testing, cardiac catheterization and hemodynamic measurements, Intraoperative monitoring, radiologic examinations and nuclear cardiology procedures		X						
	3	Describe the types and function of prescribed cardiac pacemakers and cardioverter/defibrillators.		X						
	4	Perform and interpret electrocardiograms on multiple types of recording formats: Alternate 12-Lead Formats, exercise stress testing and signal-averaged electrocardiograms.		X						
<b>**Will assess when offered**</b>										
CVT 113	1	Describe and demonstrate the technique for moving a patient between a hospital bed, a wheelchair, hospital gurney or exam table, utilizing proper body mechanics.		X						
	2	Using duplex Doppler ultrasound imaging, interrogate and record images of the carotid artery system. Measure and calculate hemodynamic indices from the recording as prescribed by the instructor.		X						
	3	Record a two-dimensional, apical long-axis ultrasound image of the heart and great vessels.		X						
	4	Describe principles of infectious disease control and practice techniques to prevent the introduction or spread of infectious disease in the clinical environment.		X						
<b>**Will assess when offered**</b>										
CVT 114	1	Define prescribed terms, abbreviations, symbols and units of measurement commonly used in conjunction with cardiovascular pharmaceuticals.		X						
	2	Describe legal issues associated with cardiovascular pharmaceuticals and the role of the Cardiovascular Technologist.		X						
	3	Describe commonly used medication delivery methods and calculate dosages of prescribed pharmaceuticals.		X						
	4	Describe the relationship between normal renal function, blood-volume maintenance and diuretics.		X						
	5	Describe common blood-clotting disorders and their control or maintenance with prescribed pharmaceuticals.		X						

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	6	Describe commonly prescribed medications used for the treatment of cardiovascular diseases.		X						
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CVT 120	1	Describe the appropriate and expected professional relationships between the Cardiovascular Technologist, the patient, the physician and other members of the allied healthcare team.		X						
	2	Describe the role of the Health Information Patient Privacy Act (HIPPA) in relation to the professional role of the Cardiovascular Technologist.		X						
	3	Describe the fundamental operations of a Cardiac Catheterization Laboratory associated with diagnostic and interventional cardiology procedures.		X						
	4	Describe the fundamental operations of a Noninvasive Cardiovascular Laboratory associated with the performance of cardiac ultrasound procedures.		X						
	5	Describe the fundamental operations of a Vascular Diagnostics Laboratory associated with vascular duplex imaging and Doppler interrogation of the vascular system.		X						
<b>**Will assess when offered**</b>										
CVT 198	1	Practice specific skills necessary to meet identified need.		X						
CVT 200	1	Compare and contrast components of the medical history and physical examination to clinical findings in cardiovascular disease.		X						
	2	Describe the elements involved in clinical research and the techniques for reporting and interpreting data in the medical literature.		X						
	3	Set up, calibrate and operate specified medical instrumentation in the performance of noninvasive and vascular diagnostic testing.		X						
CVT 201	1	Recognize factors in the medical history and physical examination that impact the performance of a standard echocardiogram.		X						
	2	Perform a standard echocardiogram using M-Mode, 2D and Doppler modalities.		X						



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	3	Calculate specified hemodynamic indices from the echocardiogram according to criteria established by the American Society of Echocardiography and the instructor.		x						
	4	Describe the expected medical history and physical examination findings in patients with specified acquired and congenital heart disease.		x						
CVT 202	1	Demonstrate and contrast proper calibration, measurement of quality assurance procedures for blood pressure transducer in monitoring systems using criteria established by the operator's manual and the instructor.		x						
	2	Describe the principles of the practice of sterile technique for vascular access procedures.		x						
	3	Describe the configuration and clinical utilization of prescribed instrumentation used in diagnostic and therapeutic procedures in the Cardiac Catheterization Laboratory.		x						
	4	Differentiate normal from abnormal findings in hemodynamic indices, blood chemistry, hematologic, and blood gas analysis studies.		x						
CVT 203	1	Identify and define concepts of vascular anatomy and physiology related to vascular diagnosis.		x						
	2	Describe and define symptoms and pathology associated with cerebrovascular disease; define the rationale and methods of noninvasive cerebrovascular testing, and perform carotid duplex ultrasonography.		x						
	3	Describe and define symptoms and pathology associated with venous thrombotic disease; define the rationale and methods of noninvasive venous testing and perform lower-extremity venous duplex Ultrasonography.		x						
	4	Describe and define symptoms and pathology associated with peripheral arterial disease, define the rationale and methods of noninvasive cerebrovascular testing; and perform arterial duplex Ultrasonography, as well as lower-extremity segmental pressure with Doppler waveforms.		x						

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<b>CVT 205</b>	<b>1</b>	Calibrate and operate specified cardiovascular diagnostic instrumentation in the clinical setting.		<b>x</b>						
<b>CVT 207</b>	<b>1</b>	Compare and contrast components of the medical history and physical examination to clinical findings in cardiovascular disease.		<b>x</b>						
	<b>2</b>	Describe the elements involved in clinical research and the techniques for reporting and interpreting data in the medical literature.		<b>x</b>						
	<b>3</b>	Set up, calibrate and operate specified medical instrumentation in the performance of invasive diagnostic testing and intervention.		<b>x</b>						
<b>CVT 208</b>	<b>1</b>	Describe the principles and clinical application of fluoroscopy and cineangiography in diagnostic and interventional cardiology.		<b>x</b>						
	<b>2</b>	Describe the principles and clinical application of contrast injection used in the diagnosis of congenital and acquired heart disease.		<b>x</b>						
	<b>3</b>	Identify and describe prescribed angiographic views utilized in the Cardiac Cath Lab setting utilizing clinical case presentations by the instructor.		<b>x</b>						
	<b>4</b>	Identify and describe the clinical application of prescribed contrast agents used in diagnostic cardiology.		<b>x</b>						
<b>CVT 210</b>	<b>1</b>	Define and calculate specified statistical parameters used to report data in the medical literature.		<b>x</b>						
	<b>2</b>	Research and report on assigned topics in Cardiovascular Technology from the medical literature.		<b>x</b>						
	<b>3</b>	Set up, calibrate and operate specified medical instrumentation.		<b>x</b>						
	<b>4</b>	Describe current concepts in the diagnosis and treatment of specified cardiovascular disease from data presented by physicians and other professionals from the scope of practice.		<b>x</b>						

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	4	Describe and perform test validation calculations as used in the vascular laboratory.		x						
	5	Describe and define prescribed concepts in ultrasound physics and instrumentation.		x						
CVT 215	1	Develop and practice good patient interactive skill, helping to calm fears explaining procedures and generally making the patient's test a positive experience.		x						
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CVT 225	1	Record, measure and calculate prescribed hemodynamic data for interpretation by the physician.		X						
<b>**Will assess when offered**</b>										
CVT 230	1	Distinguish characteristics of normal and abnormal cardiac anatomy and physiology in preparation for the national registry exam.		X						
<b>**Will assess when offered**</b>										