

Phlebotomy Curriculum – Comparison Tool for Standards – December 2002
Revised 3/6/03

Explanation:

This document is intended to provide, in table format, a review of a variety of standards that currently exist for the practice of phlebotomy. The initial indicators (column 1) were selected from the *Standards of Approved Educational Programs for the Phlebotomist* and are the general competencies that are delineated in the document. The second column uses the details of the competencies that follow the general competencies. The third column integrates the knowledge and competencies required by the State of California; within the column there is also an indication as to whether the information is considered to be basic (*) or advanced (**). Columns four and five bring in standards from National Committee for Clinical Laboratory Standards (NCCLS).

Column six illustrates the location of information in this curriculum that supports each of the standards enumerated in columns one through four. The curriculum citation is listed by the **module**, **topic**, and **objective**.

Sources:

Indicators and Initial Competencies:

The Standards of Approved Educational Programs for the Phlebotomist. (2001) National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

Additional Competencies:

Phlebotomy Certification Standards. (2002) State of California – Health and Human Services Agency, Department of Health Services.

H3-A4 Procedures for the Collection of Diagnostic Blood Specimens. (1998) NCCLS, 4th edition, Vol. 17; 18. (Note: This document contains much more detail than is illustrated here. When identifying curriculum content, the original document was used for comparison.)

H4-A4 Procedures and Devices for the Collection of Diagnostic Blood Specimens by Skin Puncture; Approved Standard – Fourth Edition. (1999) National Committee for Clinical Laboratory Standards (NCCLS), 4th edition, Vol. 19:18 (Note: This document contains much more detail than is illustrated here. When identifying curriculum content, the original document was used for comparison.)

Levels of Knowledge as Required by the State of California:

1. Basic phlebotomy curriculum, consisting of a minimum of 20 hours lecture and testing. = * in the document below.
2. Advanced phlebotomy curriculum, consisting of a minimum of 20 hours of lecture and testing. = ** in the document below.

Phlebotomy Curriculum – Comparison Tool for Standards – November 2002

NAACLS Indicator	NAACLS Competency	State of California	H3-A4 Procedures	H4 - A4 procedures	Location in Curriculum
Demonstrate knowledge of the health care delivery system and medical terminology.	1.1 Identify the health care providers in hospitals and clinics and the phlebotomist's role as a member of this health care team				1.2.4 Phlebotomist's role 1.2.7 Patient service areas
	1.2 Describe the various hospital departments and their major functions in which the phlebotomist may interact in his/her role.		<p>5 Facilities</p> <p>5.1 Outpatient Area: Factors to consider when planning outpatient facilities include: accessibility to ambulatory patients, to patients confined to wheelchairs, and to the medical laboratories; size; lighting; public address system; and patient registration desk. An outpatient area may induce the following facilities:</p> <ul style="list-style-type: none"> •Large waiting room •Sub waiting rooms •Venipuncture room •Recovery room <p>5.2 Hospital Area: A central venipuncture area should be designed to include:</p> <ul style="list-style-type: none"> •Central desk •Cart area •Storage area •Counter space •Sampling time recorder 		1.2.6 Lab/Pathology departments and functions 1.2.7 Patient service areas
	1.3 Describe the organizational structure of the clinical laboratory department.				1.2.5 Members of laboratory team
	1.4 Discuss the roles of the clinical laboratory personnel and their qualifications for these professional positions.				1.2.5 Members of laboratory team
	1.5 List the types of laboratory procedures performed in the various sections of the clinical laboratory department.				1.2.6 Laboratory/pathology departments and their functions.
	1.6 Describe how laboratory testing is used to assess body functions and disease.				3.3 Body Disorders and diagnostic tests

NAACLS Indicator	NAACLS Competency	State of California	H3-A4 Procedures	H4 - A4 procedures	Location in Curriculum
	1.7 Use common medical terminology.	*Basic anatomy and physiology of body systems with emphasis on the circulatory system, and appropriate medical terminology.			3.1 Medical Terminology
Demonstrate knowledge of infection control and safety	2.1 Identify policies and procedures for maintaining laboratory safety.				Module 4 Safe Environment
	2.2 Demonstrate accepted practices for infection control, isolation techniques, aseptic technique and methods for disease prevention.	*Basic infection control, universal precautions and safety	10.7 Isolation 10.7.1 Isolation systems 10.7.2 Isolation room		4.1 Infection control practices 4.1.10 Types of isolation 4.1.11 Disinfection, asepsis, and sterilization
	2.2.1 Identify and discuss the modes of transmission of infection and methods for prevention.	**Advanced infectious disease control and biohazards (**			4.1 Infection control practices 4.2 Biological hazards and waste
	2.2.2 Identify and properly label biohazardous specimens.				4.2 Biological hazards and waste
	2.2.3 Discuss in detail and perform proper infection control techniques, such as handwashing, gowning, gloving, masking, and double-bagging.				4.1.6 Component of an effective infectious control program. 4.1.7 Effective infection control methods
	2.2.4 Define and discuss the term “nosocomial infection.”				4.1.8 Types of infections
	2.3 Comply with federal, state and locally mandated regulations regarding safety practices.			10.3 Lancet disposal • Used, disposable skin puncture lancets placed into a rigid, puncture-resistant container with a lid • Prominent biohazard label	Module 4 Safe Environment
	2.3.1 Use the OSHA Standard Precautions.				4.1.5 Organizations that regulate infection control
	2.3.2 Use prescribed procedures to handle electrical, radiation, biological and fire hazards.				4.2 Biological hazards and waste 4.3 Electrical safety practices 4.4 Fire safety practices 4.5 Radiation safety practices
	2.3.3 Use appropriate practices, as				4.6.3 Guidelines for working

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	outlined in the OSHA Hazard Communication Standard, including the correct use of the Material Safety Data Sheet as directed.				with chemicals 4.6.5 MSDS 4.6.6 MSDS
	2.4 Describe measures used to insure patient safety in various patient settings, i.e., inpatient, outpatient, pediatrics, etc.		10.8 Emergency situations 10.8.1 Syncope (fainting) 10.8.2 Nausea 10.8.3 Vomiting 10.8.4 Convulsions 10.8.5 Incident reports		4.1.5 Standard Precautions 4.1.11 Disinfectant, asepsis & sterilization 4.3.2 Electrical Safety 5.7 First Aid 5.8.4 Safety rules when in patient rooms 10.1.6 Risk management
Demonstrate basic understanding of the anatomy and physiology of body systems and anatomic terminology in order to relate major areas of the clinical laboratory to general pathologic conditions associated with the body systems.	3.1 Describe the basic functions of each of the main body systems, and demonstrate the basic knowledge of the circulatory, urinary, and other body systems necessary to perform assigned specimen collection tasks.	*Basic anatomy and physiology of body systems with emphasis on the circulatory system, and appropriate medical terminology.			Module 3 Basic anatomy & physiology
	3.2 Identify the veins of the arms, hands, legs, and feet on which phlebotomy is performed.	**Anatomical site selection and patient preparation			3.4 Circulatory System 7.4 Anatomical site for venipuncture 7.5 Preparation of site for venipuncture 7.6 Performing venipuncture
	3.3 Explain the functions of the major constituents of blood, and differentiate between whole blood, serum and plasma.				7.6 Performing venipuncture 3.5.2 Blood components
	3.4 Define hemostasis, and explain the basic process of coagulation and fibrinolysis.	**Anticoagulation theory			3.5.4 Coagulation Process
	3.5 Discuss the properties of arterial blood, venous blood, and capillary blood.			13.1 Skin puncture blood vs. Venous blood • Skin puncture blood has a lower concentration of potassium, total protein, and calcium - not glucose.	3.5.4 State the differences b/w arterial, venous, and capillary blood components.
Demonstrate understanding of the importance of specimen collection and specimen integrity in the delivery	4.1 Describe the legal and ethical importance of proper patient/sample identification.	*Proper identification of patient and specimens, and importance of accuracy in overall patient care.			1.4 Legal and ethical issues facing the phlebotomist 7.1 Proper patient identification

NAACLS Indicator	NAACLS Competency	State of California	H3-A4 Procedures	H4 - A4 procedures	Location in Curriculum
of patient care.					
	4.2 Describe the types of patient specimens that are analyzed in the clinical laboratory.				Module 8 Blood specimens Module 9 Non-blood specimens
	4.3 Define the phlebotomist's role in collecting and/or transporting these specimens to the laboratory.		7.19 Fill the tubes if syringe and needle are used 7.20 Dispose of puncturing unit 7.21 Label blood collection tubes and record time of collection		Module 8 Blood specimen handling Module 9 Non-blood specimens labeling and handling
	4.4 List the general criteria for suitability of a specimen for analysis, and reasons for specimen rejection or recollection.				7.7.9 Factors affecting arterial blood specimen 8.1.3 Factors that affect specimen quality 8.1 Central specimen processing
	4.5 Explain the importance of timed, fasting and stat specimens, as related to specimen integrity and patient care.		10.1 Timed intervals		5.1.3 Processing physician orders for patients 7.3.3 Test collection priorities
Demonstrate knowledge of collection equipment, various types of additives used, special precautions necessary and substances that can interfere in clinical analysis of blood constituents.	5.1 Identify the various types of additives used in blood collection, and explain the reasons for their use.			10.5 Order of draw <ul style="list-style-type: none"> Differs from venipuncture If multiple specimens are to be collected, the EDTA specimen is drawn first to ensure adequate volume and accurate hematology test results Specimens requiring serum are collected last 	6.2 Tube additives and purposes 7.2.6 Types of additives used in blood collection
	5.2 Identify the evacuated tube color codes associated with the additives.			10.6 Microcollection device filling, closure, and mixing <ul style="list-style-type: none"> With devices that contain anticoagulants, the devices should be immediately capped and the blood mixed well to prevent clotting. 	6.1 Evacuated tubes for blood collection 6.2 Tube additives and purposes 7.2.6 Types of additives used in blood collection
	5.3 Describe substances that can interfere in clinical analysis of blood constituents and ways in which the phlebotomist can help				7.3.2 Factors affecting basal state

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	avoid these occurrences.				
	5.4 List and select the types of equipment needed to collect blood by venipuncture, capillary, and arterial puncture.		<p>6 Supplies: The following checklist describes the supplies that should be available at any location where venipunctures are performed routinely:</p> <p>6.1 Utility carts designed to roll smoothly and silently over all types of services</p> <p>6.2 Blood collecting trays should be lightweight and easy to handle with enough space and compartments</p> <p>6.3 Venipuncture chairs designed for the maximum comfort and safety of the patient plus easy accessibility for the phlebotomist</p> <p>6.4 Beds or other reclining surfaces should be available.</p> <p>6.5 Latex or nitrile gloves provide barrier protection</p> <p>6.6 Needles packaged in individual color-coded containers</p> <p>6.7 Sterile syringes of appropriate size for drawing blood</p> <p>6.8 Holders used for evacuated tubes and needles.</p> <p>6.9 Evacuated blood collection tubes</p> <p>6.10 Tourniquets</p> <p>6.11 Antiseptics</p> <p>6.12 Gauze pads</p> <p>6.13 Puncture-resistant disposal container</p> <p>6.14 Ice</p> <p>6.15 Adhesive bandages</p> <p>6.16 Warming devices</p> <p>6.17 A file of tests explaining which tube is to be used and indicating minimum volume requirements; special handling; and precautions</p>		Module 6 Blood collection equipment
	5.5 Identify special precautions				3.3.2 Disorders in nervous

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	necessary during blood collections by venipuncture, capillary, and arterial puncture.				<p>system due to phlebotomy</p> <p>7.3.5 Factors to consider before blood collection</p> <p>7.3.3 Factors to consider in site selection</p>
Follow standard operating procedures to collect specimens	6.1 Identify potential sites for venipuncture, capillary, and arterial punctures.	*Proper selection and preparation of skin puncture site, including selection of antiseptic	7.9.2 Preferred veins	<p>6 Sites for collecting skin-puncture blood</p> <p>Blood <u>can be</u> obtained from the:</p> <ul style="list-style-type: none"> • palmar surface of the finger's distal phalanx • lateral or medial plantar surface of the heel • plantar surface of a big toe • in infants less than one year old, heel puncture is generally performed; older children and adults, the palmar surface of the finger's last phalanx is most frequently used. <p>Blood <u>must not</u> be obtained from the:</p> <ul style="list-style-type: none"> • earlobe • central area of an infant's heel • fingers of a newborn • swollen or previously punctured site, because accumulated tissue fluid will contaminate the blood specimen 	<p>3.4.5 Major vessels used in Phlebotomy</p> <p>7.4 Venipuncture sites</p> <p>7.7 Arterial puncture procedures</p> <p>7.8 Skin puncture procedures</p>
	6.2 Differentiate between sterile and aseptic techniques.			<p>8 Technique for cleansing the skin-puncture site</p> <p>8.1 Isopropanol – the skin-puncture site must be cleansed with a 70% aqueous solution of isopropanol (70% v/v)</p> <p>8.2 Cleansing the site</p> <ul style="list-style-type: none"> • After cleansing the site, allow the area to air dry • Residual alcohol causes 	<p>4.1.11 Disinfection, asepsis, and sterilization</p> <p>7.5 Preparation of the anatomical site</p>

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				rapid hemolysis and can have adverse effects on tests results	
	6.3 Describe and demonstrate the steps in the preparation of a puncture site.		7 Venipuncture procedure 7.1 Step 1: Prepare accession order 7.2 Identify patient 7.3 Verify patient diet restrictions 7.4 Assemble supplies and put on gloves 7.5 Approaching the patient 7.6 Positioning the patient 7.7 Verify paperwork and selection of blood collection tubes 7.8 Ensure the patient's hand is closed	5 Skin-Puncture Technique (1) Prepare the accession order (2) Identify the patient (3) Verify the patient diet restrictions, as appropriate (4) Verify that the patient is free of latex allergies (5) Wash hands and put on gloves (6) Assemble the supplies (7) Reassure the patient (8) Position the patient (9) Verify the paperwork and select the microcollection device (10) Choose the puncture site (11) Warm the puncture site (12) Clean the puncture site (13) A new, sterile skin-puncture device must be used for each patient (14) Inspect the skin puncture device and other equipment	7.5 Preparation of venipuncture site 7.7 Arterial puncture procedure 7.8 Skin puncture procedure
	6.4 List the effects of tourniquet, hand squeezing and heating pads on capillary puncture and venipuncture.		7.11 Apply tourniquet .1 Precautions .2 Location .3 Blood pressure cuff	7 Procedure for warming the skin site prior to puncture (arterialization) 7.1 Warming the skin-puncture site is essential when specimens for pH and blood gases are collected	7.2.4 Tourniquet effects 7.8.2 Equipment to perform skin punctures
	6.5 Recognize proper needle insertion and withdrawal techniques including direction, angle, depth and aspiration, for arterial puncture and venipuncture.			9 Skin-puncture technique 9.1 Depth – in small or premature infants, the heel bone may be no more than 2.0 mm beneath the plantar heel skin surface; puncturing deeper may risk	7.6.3 Proper vs improper needle positioning 7.7.7 Arterial blood withdrawal techniques

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				bone damage 9.2 Blood vessel location– major vessels are located at the dermal-subcutaneous junction, which is .035 to 1.6 mm beneath the skin surface 9.3 Skin-puncture devices <ul style="list-style-type: none"> • numerous designs are available • select the correct depth and length of cut characteristics • scalpel blades must not be used 	
	6.6 Describe and perform correct procedure for capillary collection methods on infants and children.		8 Venipuncture in children	1.1 Pediatric Patients: Blood specimens by skin puncture are especially important in pediatrics. Puncturing deep veins in children may cause: <ul style="list-style-type: none"> • cardiac arrest • hemorrhage • venous thrombosis • reflex arteriospasm and gangrene of an extremity • damage to surrounding tissues or organs • infection • injury from restraining the infant or child 	7.1.7 Infant Identification 7.8.4 Site indication for children 7.8.7. Capillary collection by heelstick
	6.7 Identify alternate collection sites for arterial, capillary and venipuncture. Describe the limitations and precautions of each.		7.9.2 Preferred veins and alternatives 7.9.4.3 Alternative sites for veins	1.2 Adult patients: Skin puncture is especially applicable for: <ul style="list-style-type: none"> • severely burned patients • extremely obese patients • patients with thrombotic tendencies • patients performing tests at home • point of care testing 1.3 Patients for whom skin puncture may be inappropriate: <ul style="list-style-type: none"> • dehydrated 	3.4.5 Major vessels used in phlebotomy 7.3 Factors to consider before blood collection 7.4.3 Procedure for locating veins 7.7.3 Arterial puncture 7.8.3 Site indication for capillary puncture

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				<ul style="list-style-type: none"> poor peripheral circulation from other causes (e.g. shock) 	
	6.8 Name and explain frequent causes of phlebotomy complications. Describe signs and symptoms of physical problems that may occur during blood collection.	**Risk factors and appropriate response to complications which may arise from phlebotomy.			7.3.5 Patient complications 7.3.6 Specimen complications 7.7.8 Arterial puncture complications 7.8.6 Limitations and precautions for capillary puncture
	6.9 List the steps necessary to perform an arterial, venipuncture and/or capillary puncture in chronological order.	*Blood collection equipment, types of tubes and additives, proper order of draw when additives are required, special precautions		10 Skin-puncture specimen collection technique 10.1 First-drop elimination <ul style="list-style-type: none"> Wiped away with a gauze pad since it is most likely to contain excess tissue fluid. 10.2 Blood specimen collection <ul style="list-style-type: none"> There are a variety of microcollection devices Drop of blood flows into device by capillary action Flow of blood is enhanced by holding the puncture site downward and applying gentle intermittent pressure to the surrounding tissue “milking” must not be applied to avoid hemolysis or tissue-fluid contamination 	7.6.2 Venipuncture steps 7.7.7 Arterial steps 7.8.7 Capillary Steps
	6.10 Follow standard operating procedures to perform a competent/effective venipuncture on a patient.	*Post-puncture care; and appropriate disposal of sharps, needles and waste	7.9 Select vein site 7.10 Cleanse venipuncture site 7.11 Apply tourniquet 7.12 Inspect needle and equipment 7.13 Perform venipuncture 7.14 Release the tourniquet 7.15 Ensure the patient’s hand is open 7.16 Place the gauze pad 7.17 Remove the needle		Module 7 Blood collection process 7.4.3 Locating vein 7.5.2 Cleaning site 7.6.2 Steps of venipuncture 7.6.3 Post puncture care

NAACLS Indicator	NAACLS Competency	State of California	H3-A4 Procedures	H4 - A4 procedures	Location in Curriculum
	6.11 Follow standard operating procedures to perform a competent/effective capillary puncture on a patient.		7.18 Bandage the arm	5 Skin puncture technique (continued) (15) Puncture the skin with a disposable lancet (16) Properly dispose of the lancet in a puncture-resistant disposal container (17) Wipe away the first drop of blood with a dry gauze pad (18) Collect the specimen in the chosen container (19) Seal the specimen container (20) Administer a clean gauze pad, and apply direct pressure to the wound site.	7.8.7 Skin puncture techniques
Demonstrate understanding of requisitioning, specimen transport and specimen processing.	7.1 Describe the standard operating procedure for a physician requesting a laboratory analysis for a patient. Discuss laboratory responsibility in responding to physician requests.				5.1.3 Processing physician orders for patients
	7.2 Instruct patients in the proper collection and preservation for various samples, including blood, sputum, and stools.				Module 8 Blood specimen handling Module 9 Non-blood specimen handling
	7.3 Explain methods for transporting and processing specimens for routine and special testing.		7.22 Chill the specimen (only for certain specimens) 7.23 Send the blood collection tubes to proper laboratories		8.1 Specimen handling
	7.4 Explain methods for processing and transporting blood specimens for testing at reference laboratories.				8.4 Reference Laboratories
	7.5 Describe the potential clerical and technical errors that may occur during specimen processing.	**Recognition of, and corrective actions to take, with problems in test requisitions, specimen transport and processing			8.2.5 Precautions for processing specimens
	7.6 Identify and report potential pre-analytical errors that may occur during specimen collection, labeling, transporting, and processing.	**Knowledge of pre-analytical sources of error in specimen collection, transport, processing and storage		5 Skin puncture technique (continued) (21) Label the specimen container in direct view of the patient or guardian to	7.3.5 Specimen complications 8.2.5 Precautions for processing specimens

NAACLS Indicator	NAACLS Competency	State of California	H3-A4 Procedures	H4 - A4 procedures	Location in Curriculum
				verify identification, and record time of collection; remove gloves before proceeding to the next patient (22) If an insufficient sample has been obtained because the blood has stopped flowing, the puncture may be repeated at a different site, using a fresh lancet (23) Report the source and nature of the specimen in accordance with institutional policy	
	7.7 Describe and follow the criteria for specimens and tests results that will be used as legal evidence, i.e. paternity testing, chain of custody, blood alcohol levels, etc.				9.1.5 Chain of custody for forensic/legal reasons
Demonstrate understanding of quality assurance and quality control in phlebotomy.	8.1 Describe the system for monitoring quality assurance in the collection of blood specimens.	**Quality assurance in phlebotomy necessary to provide accurate and reliable laboratory test results			10.1.5 Quality Assurance
	8.2 Identify policies and procedures used in the clinical laboratory to assure quality in the obtaining of blood specimens.				7.3.7 Quality Control 10.1.2 Define quality
	8.2.1 Perform quality control procedures.				7.3.7 Quality control 10.1.4 Describe quality control
	8.2.2 Record quality control results.				7.3.7 Quality control 10.1.4 Describe quality control
	8.2.3 Identify and report control results that do not meet predetermined criteria.				7.3.7 Quality control 10.1.4 Describe quality control
Communicate (verbally and nonverbally) effectively and appropriately in the workplace.	9.1 Maintain confidentiality of privileged information on individuals.				5.3.4 Methods of releasing lab results
	9.2 Value diversity in the workplace.				2.6 Diversity in the workplace

NAACLS Indicator	NAACLS Competency	State of California	H3-A4 Procedures	H4 - A4 procedures	Location in Curriculum
	9.3 Interact appropriately and professionally with other individuals.	**Application of basic concepts of communication, interpersonal relations, stress management, professional behavior, ethics and legal implications of phlebotomy			Module 2 Customer service 2.1.4 Mission statement 2.2.4 Personal qualities and professional conduct
	9.4 Discuss the major points of the American Hospital Association's Patient's Bill of Rights or the Patient's Bill of Rights form the institution.				2.1.4 Patient's Bill of Rights 7.1 Procedure for proper patient identification
	9.5 Model professional appearance and appropriate behavior.				2.2.5 Professional appearance
	9.6 Follow written and verbal instructions in carrying out testing procedures.				2.3 Communication skills
	9.7 Define the different terms used in the medicolegal aspect for phlebotomy and discuss policies and protocol designed to avoid medicolegal problems.	**Legal issues related to blood collection			1.4 Legal/Ethical Issues
	9.8 List the causes of stress in the work environment and discuss the coping skills used to deal with stress in the work environment.				2.4 Conflict management 2.5 Stress management
	9.9 Demonstrate ability to use the computer information systems necessary to accomplish job functions.				6.2 Information management

**Phlebotomy Curriculum
Comparison Tool for Basic/Advanced Content
December 2002**

State of California Requirements	Curriculum Location	Number of hours
Basic Content		
Basic anatomy and physiology of body systems, with emphasis on the circulatory system, and appropriate medical terminology.	3.1-3.5 (minus anticoagulation 3.5.4) 7.3.2, 7.6.8	8 hrs
Basic infection control, universal precautions and safety.	4.1.1-3, 4.1.5, 4.1.7 (all but C) 4.1.10, 4.1.11, 4.3 - 4.6, 4.8 8.1.4, 8.2.2	3 hrs 35 min
Proper identification of patient and specimens, and importance of accuracy in overall patient care.	5.1-2 7.1.1-7, 7.3.3	3 hrs 30 min
Proper selection and preparation of skin puncture site, including selection of antiseptic.	7.3.4, 7.5, 7.8	2 hrs 45 min
Blood collection equipment, types of tubes and additives, proper order of draw when additives are required, special precautions.	6.1-3 7.2	4 hrs 15 min
Post puncture care; and appropriate disposal of sharps, needles and waste.	4.1.7C, 4.7 7.6.4	1 hr
TOTAL BASIC HRS = 22.8		
Advanced Content		
Advanced infectious disease control and biohazards.	4.1.4, 4.1.6, 4.1.8, 4.1.9, 4.2	1 hr
Anatomical site selection and patient preparation.	7.4, 7.7, 7.6.2	2 hrs 15 min
Anticoagulation theory	3.5.4	30 min

State of California Requirements	Curriculum Location	Number of hours
Risk factors and appropriate response to complications, which may arise from phlebotomy.	7.3.6, 7.3.7, 7.6.3	1 hr
Recognition of, and corrective actions to take, with problems in test requisitions, specimen transport and processing.	8.1.2, 8.2.5, 7.6.3	35 min
Knowledge of preanalytical sources of error in specimen collection, transport, processing and storage.	8.1.3, 8.2.3, 8.2.4, 8.3, 8.4 9.1, 9.3	3 hrs 15 min
Quality assurance in phlebotomy necessary to provide accurate and reliable laboratory test results.	5.3 7.3.8 10.1-3	2 hrs
Application of basic concepts of communication, interpersonal relations, stress management, professional behavior, ethics and legal implications of phlebotomy.	1.4 2.1-6	9 hrs
Legal issues related to blood collection.	7.3.5	15 min
TOTAL ADVANCED HRS = 21.35		

Additional Basic Hrs

1.1-3 - 2 hrs

7.6.2 - 45 min

7.5-7 - 10 hrs

12 hrs 45 min