

# MEDICAL LABORATORY SCIENCE, POST-BACCALAUREATE CERTIFICATE

## Program Description

### The Medical Laboratory Science Certification and Post-Baccalaureate MLS Courses

The medical laboratory scientist holds a key position in life-and-death matters involving the diagnosis and treatment of patients. Therefore, the practice of medical laboratory science requires professional certification that is regulated both from within the profession and, in some states, by law. Medical Laboratory Science at Texas A&M University-Corpus Christi is approved through the National Accrediting Agency for Clinical Laboratory Science. In addition to the coursework for the baccalaureate degree, professional certification as a medical laboratory scientist requires the completion of post-baccalaureate courses. A student who has a baccalaureate degree in Biology, Biomedical Sciences, Chemistry, or Microbiology, or who is completing the requirements for such a degree, may obtain one of three post-baccalaureate certifications in medical laboratory science: generalist, clinical chemist, or medical microbiologist. To apply for certification in any area, a student must complete those Pre-Medical Laboratory Science Option courses required for certification in that area. Complete information may be obtained from the medical laboratory science program director.

To apply for medical laboratory science certification examinations, a student must earn a "C" or better in all CLSC courses. Application for certification programs should be made directly to the medical laboratory sciences office. An interview and reference letters may be required. Contact a medical laboratory science faculty mentor for additional information.

## Program Requirements

Code	Title	Hours
<b>Required Clinical Courses</b>		
CLSC 3102	Essentials Laboratory for Clinical Laboratory Science	1
CLSC 3200	Essentials for Applied Laboratory Sciences	2
CLSC 4182	Seminar – Clinical Correlations	1
CLSC 4220	Hematology II	2
CLSC 4200	Professional Skills for Clinical Laboratory Scientists	2
CLSC 4280	Introduction to the Clinical Laboratory Profession	2
CLSC 4297	Professional Practicum I	2
CLSC 4325	Clinical Chemistry I	3
CLSC 4326	Clinical Chemistry II	3
CLSC 4370	Clinical Microbiology I	3
CLSC 4371	Clinical Microbiology II	3
CLSC 4382	Advanced Medical Laboratory Procedures	3
CLSC 4420	Hematology	4
CLSC 4430	Clinical Immunology	4
CLSC 4598	Professional Practicum II	5

CLSC 4599	Professional Practicum III	5
<b>Total Hours</b>		<b>45</b>

## Course Sequencing

Certificate Coordinator: Jean Sparks, PhD, MLS(ASCP)

Students should take the courses in the following sequence to complete in the most timely manner:

<b>Senior</b>		<b>Hours</b>
<b>Fall</b>		
CLSC 4430	Clinical Immunology <sup>1</sup>	(4)
CLSC 4220	Hematology II <sup>1</sup>	(2)
<b>Hours</b>		<b>0</b>
<b>Spring</b>		
CLSC 4420	Hematology	4
<b>Hours</b>		<b>4</b>
<b>First Year</b>		
<b>Fall</b>		
CLSC 3200	Essentials for Applied Laboratory Sciences	2
CLSC 3102	Essentials Laboratory for Clinical Laboratory Science	1
CLSC 4220	Hematology II <sup>1</sup>	2
CLSC 4430	Clinical Immunology <sup>1</sup>	4
CLSC 4370	Clinical Microbiology I	3
CLSC 4325	Clinical Chemistry I	3
<b>Hours</b>		<b>15</b>
<b>Spring</b>		
CLSC 4326	Clinical Chemistry II	3
CLSC 4371	Clinical Microbiology II	3
CLSC 4382	Advanced Medical Laboratory Procedures	3
CLSC 4280	Introduction to the Clinical Laboratory Profession	2
CLSC 4297	Professional Practicum I	2
<b>Hours</b>		<b>13</b>
<b>Summer</b>		
<b>Summer I</b>		
CLSC 4200	Professional Skills for Clinical Laboratory Scientists	2
CLSC 4598	Professional Practicum II	5
<b>Summer II</b>		
CLSC 4599	Professional Practicum III	5
CLSC 4182	Seminar – Clinical Correlations	1
<b>Hours</b>		<b>13</b>
<b>Total Hours</b>		<b>45</b>

<sup>1</sup> Depending on the classification of the student, these courses can be taken either their senior year for students completing a bachelors degree or first year for post-baccalaureate students.

Students seeking the CLS certificate must have completed a BS degree and have taken Genetics, Biochemistry, and Immunology.

## Courses

### CLSC 3102 Essentials Laboratory for Clinical Laboratory Science

#### 1 Semester Credit Hour (1 Lab Hour)

Application of essential practices for clinical laboratory science. Offered fall semester every year.

**Co-requisite:** SMTE 0092.

### CLSC 3200 Essentials for Applied Laboratory Sciences

#### 2 Semester Credit Hours (1 Lecture Hour)

Introduction to general laboratory procedures, laboratory safety and regulations, quality assurance, professional ethics, specimen acquisition, sample maintenance and microscopy. Includes an introduction to the health care, public health and criminal investigation system. Offered fall, spring and summer semesters every year.

**Prerequisite:** BIOL 1407 and CHEM 1412.

### CLSC 3300 Clinical Immunology and Serology

#### 3 Semester Credit Hours (3 Lecture Hours)

This course provides an overview of immunology with emphasis on immune system physiology and detailed examination of the specific cells, cytokines, antibodies, and molecules that comprise the immune system. The course will discuss the diseases of the immune system, transplantation, and serological procedures for diagnosing a variety of immune diseases and infectious diseases. Requires Instructor Approval.

**Prerequisite:** (BIOL 2416\*).

\* May be taken concurrently.

### CLSC 4182 Seminar – Clinical Correlations

#### 1 Semester Credit Hour (1 Lecture Hour)

Informal lectures covering the newest developments in laboratory medicine. Includes discussion of the patient's clinical laboratory results, selection and interpretation of laboratory tests, and presentation of research. Requires permission of instructor and application. Offered summer semester (summer II only) every year.

### CLSC 4200 Professional Skills for Clinical Laboratory Scientists

#### 2 Semester Credit Hours (2 Lecture Hours)

Study of the role of the medical laboratory professional in the health care system. Includes professional ethics, legal responsibility, medical laboratory management, instructional methods, evaluation of clinical laboratory methods, medical laboratory instrument selection, clinical research and current professional topics. Requires permission of instructor and application. Offered summer semester (summer I only) every year.

### CLSC 4220 Hematology II

#### 2 Semester Credit Hours (2 Lecture Hours)

Emphasis on blood coagulation and the interaction of blood vessels, platelets, and certain plasma proteins. Disorders of hemostasis will be discussed along with diagnostic testing.

### CLSC 4280 Introduction to the Clinical Laboratory Profession

#### 2 Semester Credit Hours (2 Lecture Hours)

Studies of the latest instrumentation, instrument selection, basic research, quality assurance and statistics used in the clinical laboratory.

**Prerequisite:** (CLSC 3200, CHEM 4401 and MATH 1442).

### CLSC 4297 Professional Practicum I

#### 2 Semester Credit Hours (2 Lecture Hours)

Supervised learning experience in selected departments of the clinical laboratories.

### CLSC 4325 Clinical Chemistry I

#### 3 Semester Credit Hours (3 Lecture Hours)

Principles and practice of procedures found in general clinical chemistry. Includes the methodology of diagnostic tests and normal and abnormal human physiology as applied to diagnosis of pathological conditions.

**Prerequisite:** CHEM 4401.

**Co-requisite:** SMTE 0092.

### CLSC 4326 Clinical Chemistry II

#### 3 Semester Credit Hours (3 Lecture Hours)

Continuation of CLSC 4325 - Clinical Chemistry I. Emphasis on advanced clinical chemistry topics and procedures.

**Prerequisite:** CLSC 4325.

### CLSC 4370 Clinical Microbiology I

#### 3 Semester Credit Hours (3 Lecture Hours)

Lecture and laboratory studies of common pathogenic bacteria.

Emphasis is on staining, cultural, and differential biochemical characteristics, methods of isolation from body fluids and susceptibility

to therapeutic agents.

**Prerequisite:** BIOL 2421.

**Co-requisite:** SMTE 0092.

### CLSC 4371 Clinical Microbiology II

#### 3 Semester Credit Hours (2 Lecture Hours, 3 Lab Hours)

Lecture and laboratory studies of parasitic, viral, mycological and unusual bacterial human pathogens. Emphasis on methods of isolation from body fluids, identification methods and correlation with pathology.

**Prerequisite:** CLSC 4370.

**Co-requisite:** SMTE 0092.

### CLSC 4382 Advanced Medical Laboratory Procedures

#### 3 Semester Credit Hours (3 Lecture Hours)

Lecture and laboratory studies of the newest development in laboratory diagnostic medicine. Includes advanced clinical chemistry, immunology and molecular diagnostic procedures.

**Prerequisite:** CLSC 4325 and BIMS 4406 or BIOL 4406 and CHEM 4401.

**Co-requisite:** SMTE 0092.

### CLSC 4420 Hematology

#### 4 Semester Credit Hours (4 Lecture Hours)

Studies of the formation, function and identifying characteristics of the cellular elements of human blood and other body fluids in health and diseased states and laboratory studies on blood coagulation. Lecture and laboratory emphasize the enumeration, morphology and staining characteristics of normal and abnormal cells and hemostasis.

**Prerequisite:** BIOL 2416 and CHEM 4401.

**Co-requisite:** SMTE 0092.

### CLSC 4430 Clinical Immunology

#### 4 Semester Credit Hours (4 Lecture Hours)

Theoretical aspects of the immune response and its relationship to the diagnosis of disease and clinical immunohematology. Lecture and laboratory stress the detection, identification and characterization of antibodies, blood grouping and typing, compatibility testing, blood component therapy, HLA testing and diagnosis of pathological conditions.

**Prerequisite:** BIMS 4406 or BIOL 4406.

**Co-requisite:** SMTE 0092.

### CLSC 4598 Professional Practicum II

#### 5 Semester Credit Hours (5 Lecture Hours)

Continuation of CLSC 4297 - Professional Practicum I. Supervised learning experience in selected departments of the clinical laboratories.

**Prerequisite:** CLSC 4297.

**CLSC 4599 Professional Practicum III**

**5 Semester Credit Hours (5 Lecture Hours)**

Continuation of CLSC 4598 - Professional Practicum II. Supervised learning experience in selected departments of the clinical laboratories.

**Prerequisite:** CLSC 4598.