

Clinical Laboratory Technician

Program Number: 10-513-1

Associate in Applied Science Degree

Health-Related Professions Cluster

Center of Health and Safety Education

Program offered at Madison Campuses

For information call: (608) 246-6065, (608) 246-6459 or
(800) 322-6282 Ext. 6065 or 6459

About the Program

This program is approved by the National Accrediting Agency for Clinical Laboratory Science (5600 N River Road, Suite 720, Rosemont, IL 60018; 773-714-8880). A combination of fundamental laboratory techniques and clinical experience prepares graduates for work in laboratories serving the health care sector. The final semester of training is in laboratories in Madison and throughout Wisconsin. Students should anticipate the possibility of traveling or relocating to complete the clinical rotation. A list of laboratories used is available in the program director's office. Students are admitted for the fall semester.

Graduates of the program qualify for the American Society of Clinical Pathologists Board Certification exam for medical laboratory technicians, under the direction of the American Society of Clinical Pathologists and the American Society for Clinical Laboratory Science.

Unique Requirements for Admission

- 1) High school graduation, HSED or GED with a C or better average; and
- 2) Two semesters of High school courses with C or better grades in (each) chemistry and biology, (or one semester of each course at the college level with a grade of C or better); and
- 3) **Algebra:** Algebra competency demonstrated **within the last two years** through either satisfactory competency test scores **OR** one semester of college-level Algebra with a satisfactory grade of C or better; and
- 4) Satisfactory score on the COMPASS or equivalent assessment.

Program Requirements

- 1) Caregiver Background Check (CBC)
- 2) Current CPR "Professional Level" certification before beginning the first core courses. Students must maintain current CPR certification while attending the program.
- 3) Physical exam and completed Health History Form on file prior to beginning the first semester clinical rotation.

Planning to pursue a four-year Clinical Laboratory Scientist degree?

Consider the following course substitutions: 20-806-207 and 20-806-208 (Anatomy and Physiology 1 and 2) for 20-806-206; 20-806-209 and 20-806-210 (College Chemistry 1 and 2) for 20-806-201. Both 20-806-208 and 20-806-210 can be used to meet elective requirements.

Curriculum

The courses listed below outline the requirements for graduation for students entering this program in the 2011-2012 academic year. Requirements for graduation may vary depending on the semester in which a student is admitted to their program. Current/continuing students should consult their degree progress report available through their student center (myMadisonCollege) account for specific graduation requirements. Program requirements are subject to change.

FIRST YEAR

First Semester	Credits	Hrs/week Lec-Lab
10-513-110 Basic Lab Skills.....	1	2
10-513-111 Phlebotomy	2	3
10-513-113 QA Lab Math.....	1	2
10-513-114 Urinalysis	2	3
20-806-206 General Anatomy and Physiology*.....	4	5
20-806-201 Gen., Organic & Biological Chemistry*	5	4-2
10-801-195 Written Communication* OR	3	3
20-801-201 <u>English Composition 1*</u>	(3)	(3)
Semester Total	18	

Second Semester

10-513-115 Basic Immunology Concepts.....	2	3
10-513-120 Basic Hematology.....	3	4
10-513-121 Coagulation.....	1	2
10-513-122 Introduction to Blood Bank	2	3
10-513-123 Advanced Blood Bank	2	3
10-801-198 Speech* OR	3	3
10-801-196 Oral/Interpersonal Communications* OR	(3)	(3)
20-810-201 Fundamentals of Speech*	(3)	(3)
20-806-273 <u>Microbiology*</u>	4	3-2
Semester Total	17	

Summer Session

10-809-197 Contemporary American Society* OR	3	3
20-809-203 Introduction to Sociology*	(3)	(3)
10-809-199 Psychology of Human Relations* OR	3	3
20-809-231 <u>Introduction to Psychology*</u>	(3)	(3)
Semester Total	6	

SECOND YEAR

First Semester

10-513-130 Advanced Hematology	2	3
10-513-131 Clinical Chemistry 1	3	4
10-513-132 Clinical Chemistry 2	2	3
10-513-133 Clinical Microbiology	4	7
10-513-180 Body Fluids.....	1	1
<u>Elective</u>	2	2
Semester Total	14	

Second Semester

10-513-140 Advanced Microbiology	2	2
10-513-141 Preclinical Experience	2	0-2
10-513-151 Clinical Experience 1	3	0-20
10-513-152 Clinical Experience 2	4	0-20
10-513-153 Clinical Portfolio	1	0-1
Semester Totals	12	

Notes: *Courses which can be taken prior to entering the program may be taken at college transfer level. Science-based courses (20-806-201, 20-806-273 and 20-806-206) must have been taken within five years prior to program admission to receive credit. **Elective credits may be any combination of associate degree level or college transfer courses and may be taken prior to program admission. 1) A copy of the [essential functions](#) necessary to successfully complete the program of study is available on the program's web site. 2) All program students must meet the health requirements specified on the Madison College Health History Form prior to enrolling in program courses.



Program Courses

10-513-110 Basic Lab Skills 1 credit

Explores health career options and fundamental principles and procedures of the clinical laboratory. Incorporates medical terminology, basic laboratory equipment, safety and infection control procedures, and simple laboratory tests. Prerequisites: successful completion of the following high school courses with a grade of C or better: three years of English, one year of chemistry, one year of general biology, two years of algebra or one year algebra and one year of geometry; a satisfactory score on the COMPASS test or equivalent substitute and acceptance into Clinical Lab Tech program.

10-513-111 Phlebotomy 2 credits

Provides opportunities to perform routine venipuncture, capillary puncture, and special collection procedures. Corequisite: 10-513-110.

10-513-113 QA Lab Math 1 credit

Focuses on mathematical calculations used in the laboratory. Explores concepts of quality control and quality assurance, regulatory compliance requirements, and certification and continuing education programs. Prerequisites: successful completion of the following high school courses with a grade of C or better: three years of English, one year of chemistry, one year of general biology, two years of algebra or one year algebra and one year of geometry; a satisfactory score on the COMPASS test or equivalent substitute and acceptance into Clinical Lab Tech program. Co-requisites: 10-513-110 and 10-513-111.

10-513-114 Urinalysis 2 credits

Perform physical, chemical and microscopic analyses of urine. Explores renal physiology and correlates urinalysis results with clinical conditions. Corequisites: 10-513-110, 10-513-111 and 10-513-113.

10-513-115 Basic Immunology Concepts 2 credits

Provides an overview of the immune system including testing methods for diagnosis of immune system disorders and viral and bacterial infections. Prerequisites: 10-513-110, 10-513-111, 10-513-113 and 10-513-114. Corequisites: 10-513-120, 10-513-121, 10-513-122, 10-513-123 and 20-806-273.

10-513-120 Basic Hematology 3 credits

Covers theory and principles of blood cell production and function. Introduces basic practices and procedures in the hematology laboratory. Prerequisites: 10-513-110, 10-513-111, 10-513-113 and 10-513-114. Corequisites: 10-513-115, 10-513-121, 10-513-122, 10-513-123 and 20-806-273.

10-513-121 Coagulation 1 credit

Introduces theory and principles of coagulation and explores mechanisms involved in coagulation disorders. Emphasis is placed on laboratory techniques used to diagnose disease and monitor treatment. Prerequisites: 10-513-110, 10-513-111, 10-513-113 and 10-513-114. Corequisites: 10-513-115, 10-513-120, 10-513-122, 10-513-123 and 20-806-273.

10-513-122 Introduction to Blood Bank 2 credits

Focuses on basic blood banking concepts and procedures including blood typing and compatibility testing. Prerequisites: 10-513-110, 10-513-111, 10-513-113 and 10-513-114. Corequisites: 10-513-115, 10-513-120, 10-513-123 and 20-806-273.

10-513-123 Advanced Blood Bank 2 credits

Covers advanced blood banking concepts and procedures including workups for adverse reaction to transfusions and disease states. Prerequisites: 10-513-110, 10-513-111, 10-513-113 and 10-513-114. Corequisites: 10-513-115, 10-513-120, 10-513-122 and 20-806-273.

10-513-130 Advanced Hematology 2 credits

Explores mechanisms involved in the development of hematologic disorders. Emphasis is placed on laboratory techniques used to diagnose disorders and monitor treatment. Prerequisites: 10-513-115, 10-513-120, 10-513-121, 10-513-122, 10-513-123 and 20-806-273. Corequisites: 10-513-131, 10-513-132 and 10-153-133.

10-513-131 Clinical Chemistry 1 3 credits

Introduces techniques and procedures for routine analysis using photometric, potentiometric and separation techniques. Covers pathophysiology and methodologies for carbohydrates, lipids, proteins, renal function, and blood gas analyses. Prerequisites: 10-513-115, 10-513-120, 10-513-121, 10-513-122, 10-513-123 and 20-806-273. Corequisites: 10-513-130, 10-513-132 and 10-513-133.

10-513-132 Clinical Chemistry 2 2 credits

Covers pathophysiology and methodologies for liver, bone, cardiac markers, tumor markers, endocrine function, fetal function, miscellaneous body fluids, and toxicology. Includes techniques and procedures for analysis using sophisticated laboratory instrumentation. Prerequisites: 10-513-115, 10-513-120, 10-513-121, 10-513-122, 10-513-123 and 20-806-273. Corequisites: 10-513-130, 10-513-131 and 10-513-133.

10-513-133 Clinical Microbiology 4 credits

Presents the clinical importance of infectious diseases with emphasis on the appropriate collection, handling, and identification of clinically relevant bacteria. Disease states, modes of transmission and methods of prevention and control, including antibiotic susceptibility testing, will be discussed. Prerequisites: 10-513-115, 10-513-120, 10-513-121, 10-513-122, 10-513-123 and 20-806-273. Corequisites: 10-513-130, 10-513-131 and 10-513-132.

10-513-140 Advanced Microbiology 2 credits

Introduces laboratory methods used in the isolation and initial identification of acid-fast organisms, fungi, parasites and anaerobes. Prerequisite: 10-513-133.

10-513-141 Pre-Clinical Experience 2 credits

Provides opportunities to practice the principles and procedures of laboratory medicine in a clinical laboratory setting. Clinical content is reviewed and students run a mock-clinical laboratory from specimen acquisition to result reporting. Resume writing and interviewing techniques are also discussed. Prerequisites: satisfactory completion of 1st – 3rd semester Clinical Laboratory Technician program courses and concurrent enrollment in 10-513-140 and 10-513-151.

10-513-151 Clinical Experience 1 3 credits

Provides opportunities to practice the principles and procedures of laboratory medicine on-site, in a clinical laboratory facility. Students will practice on state of the art instrumentation in the areas of clinical chemistry and hematology, including urinalysis and coagulation. Prerequisite: satisfactory completion of on campus pre-clinical experience. Prerequisites: Satisfactory completion of all courses and co-requisites of 10-513-141 and 10-513-152.

10-513-152 Clinical Experience 2 4 credits

Provides opportunities to practice the principles and procedures of laboratory medicine on-site, in a clinical laboratory facility. Students will practice in the areas of blood banking and microbiology, including serology and immunological procedures. Students also complete a case study for presentation. Prerequisites: Satisfactory completion of all courses and co-requisites of 10-513-141 and 10-513-151.

10-513-153 Clinical Portfolio 1 credits

Students prepare a portfolio of professional experiences, assessments and evaluations, clinical reports, class project summaries, a log of community service or professional activities performed while in the CLT program and resume for CLT employment. This course is graded pass/fail. Prerequisites: Satisfactory completion of all courses and co-requisites of 10-513-151 and 10-513-152.

10-513-180 Body Fluids 1 credits

Covers principles and procedures related to laboratory analysis of body fluids, including serous fluids, cerebral spinal fluid, synovial fluid, and bronchoalveolar lavage (BAL) fluid. The major emphasis of the course is hematologic analysis, including cell counts and differentials. The completion of case studies allows the student to correlate laboratory results with disease states. Prerequisite: of 10-513-120

Career Potential:

- **Clinical Laboratory Technician**
Performs routine laboratory tests on blood, urine, and body fluids to help in the diagnosis and treatment of disease and injury in a hospital, clinic laboratory, or reference laboratory.
- **Laboratory Technician/Research Assistant**
Performs routine and special laboratory tests in a variety of laboratory settings, including research, industrial, environmental and food science labs.

With additional training and/or work experience, graduates may find employment as:

- **Clinical Laboratory Scientist (Medical Technologist)**
- **Medical Microbiologist**
- **Laboratory Computer Sales or Training Specialist**
- **Laboratory Sales/Product Representative**
- **Instrument Service Technician**
- **Quality Control Officer**
- **Biomedical Instrument Specialist**
- **Clinical Research Associate**
- **Safety Officer**
- **Laboratory Science Instructor/Trainer**

More detailed and updated information on this program may be available at:
madisoncollege.org. The college reserves the right to make changes in the regulations and courses announced in this publication without notice.

Madison Area Technical College provides equal opportunity in education and employment.