

CLS



Andrews  University



Do you have an inquisitive mind? Do you enjoy fast-paced, challenging environments? How about using cutting-edge technology to help people? If you love science and medicine, but aren't sure what your options are, consider Clinical Laboratory Science (CLS). By choosing a degree in CLS, you can become a vital member of the healthcare team.

Choose to major in CLS and become a skilled professional. CLS combines the challenges and rewards of science and medicine, and integrates the use of sophisticated analytical technology. CLS professionals perform precise laboratory testing to assist in the diagnosis and treatment of disease, maintenance of health and wellness, testing for environmental and forensic investigations, and more. In aiding physicians to collect, analyze and interpret information, CLS professionals help provide the best care for all patients. Since laboratory testing is the foundation on which the majority of medical decisions are made and the demand for testing continues to increase, CLS is a relevant, practical and meaningful career choice.

We offer a four-year Bachelor of Science in Clinical Laboratory Science

(BSCLS) degree, and CLS certificate or categorical certificates in five distinct areas of CLS for degree-holding students. We provide excellent instruction, giving you the knowledge and skills you need to connect with a profitable and engaging career. Our graduates tell us their CLS background is one of the best preparations for medical and dental school. Other career options include healthcare administration, industry, research and development, management and education.

Where you go to school affects how well prepared you are for your life's work. Go ahead—take the first step toward a successful career and connect with us to receive a Christian education that will assist you in finding your niche in the world of science and medicine, preparing you to offer service to humanity.



MISSION STATEMENT

Service to others is an integral part of the Seventh-day Adventist Christian philosophy. Thus, the development of programs in healthcare by Andrews University is a natural outgrowth of the institutional thrust. This concept finds its fulfillment through the education of students who develop excellence in the skills necessary for quality healthcare and dedication to improving the human condition.

The Department of Clinical & Laboratory Sciences is committed to assisting students in acquiring the academic foundation necessary for life work in healthcare. The faculty endeavors to prepare students who are committed to preserving and protecting the dignity of life and death. They seek to promote the values and attitudes consistent with the Seventh-day Adventist Christian lifestyle and strive to instill in the students a lifelong personal quest for individual growth, fulfillment and continual excellence in healthcare practice.

Choose Andrews For starters, consider Andrews University's reputation for solid academics, favorable student-to-teacher ratio, supportive academic atmosphere and tradition for cultural diversity. And this is just the beginning! The Department of Clinical and Laboratory Sciences (CLS) also offers:

- › **A curriculum that allows for maximum career branching.** Our program allows you to prepare for work as a clinical laboratory scientist, and also provides one of the best preparations for medical, dental or graduate school.
- › **A guaranteed clinical experience.** An important part of your educational experience is a clinical practica at one of our affiliate hospitals or clinical laboratories. At Andrews, your learning is hands-on!
- › **An excellent professional preparation.** For years our graduates have enjoyed a 100% hiring rate and consistently perform well on national certification examinations.
- › **A specialized, experienced faculty.** Along with several CLS specialty certifications, our faculty represents over 75 years of clinical experience in combination with extensive teaching experience.
- › **An emphasis on Christian values.** Because service to others is an integral part of our Christian philosophy, our goal is to help you acquire and develop the skills you need for excellence in healthcare along with a dedication to improving the human condition. Our department is actively involved with international healthcare outreach.
- › **A stimulating academic environment.** Our students enjoy learning through case histories, computer-assisted instruction, student laboratories and classroom presentations with enthusiastic teachers sharing their expertise.

**What is a clinical laboratory scientist?**

A clinical laboratory scientist is a healthcare professional who investigates, determines and interprets the physiological data status of patients. He or she uses sophisticated analytical instruments to test blood and body fluids. CLS requires quick, accurate work to detect physiological changes. Often, the CLS is the first to detect the changes that signal a disease or change in a patient's condition. Although CLS professionals have limited direct patient contact, they are essential and central figures in investigation, monitoring, prevention, diagnosis and treatment of patients' health conditions.

What do CLS majors study?

CLS is a four-year degree program. CLS majors concentrate on the clinical aspects of biology, chemistry, microbiology, hematology, immunology and immunohematology. The CLS disciplines (or areas of interest) include:

- Hematology and hemostasis
- Immunology/serology
- Immunohematology/transfusion medicine
- Body fluids
- Clinical microbiology
- Mycology
- Clinical chemistry
- Parasitology

What personal qualifications should I have?

Many types of people and personalities enter the CLS profession. However, there are certain character traits and qualities which aid in greater academic and professional success. An individual considering a career in CLS should have:

- | | |
|---------------------------|----------------------------------|
| ➤ Mature judgment | ➤ Scientific curiosity |
| ➤ Personal integrity | ➤ Attention to detail |
| ➤ Manual dexterity | ➤ Effective communication skills |
| ➤ Visual acuity | |
| ➤ Orientation to accuracy | |

**Preparation for CLS**

To prepare for undergraduate study in CLS, you should develop good study habits, take college prep math and science courses in high school, and develop good computer skills.

Will I be able to find a job?

The demand for clinical laboratory scientists continues to grow because of an increasing demand for diagnostic laboratory procedures. The U.S. Bureau of Labor Statistics projects the employment of CLS professionals will increase by 14% through the year 2016, which will produce 43,000 job vacancies.

How much will I make?

The starting wages for CLS professionals are competitive and increasing each year. The actual salary depends heavily on geographical area and cost of living. In 2006, the U.S. Bureau of Labor Statistics lists the median wage as \$51,720/year. Salaries increase as experience is gained and additional responsibilities are added.

"CHOOSING CLS AS MY MAJOR WAS THE BEST THING THAT I HAVE EVER DONE. I WAS ABLE TO QUICKLY GET A GOOD PAYING JOB IN HEALTHCARE UPON GRADUATING AND I ALSO FELT VERY WELL PREPARED FOR MY SECOND YEAR OF MEDICAL SCHOOL BECAUSE HALF OF MY CLASSES WERE A REPEAT OF MY SENIOR YEAR AT ANDREWS UNIVERSITY."
 —ALWYN HARRIOTT, BSCLS '98





CAREER OPPORTUNITIES

In traditional settings, a CLS may fulfill technical/scientific duties as well as supervisory and laboratory management responsibilities. Expanded roles for a CLS may include consultation services for other laboratory professionals, physicians, dentists and industry. Many CLS professionals work in hospital laboratories. Other career and employment opportunities are in:

- › MEDICINE
- › PHYSICIAN'S OFFICE LABORATORIES
- › COMMERCIAL FIRMS
- › PUBLIC HEALTH CENTERS
- › HIGHER EDUCATION
- › GOVERNMENT AGENCIES
- › PUBLIC POLICY DEVELOPMENT
- › PHARMACEUTICAL COMPANIES
- › TRANSPLANTATION TECHNOLOGY
- › MANAGEMENT/ADMINISTRATION
- › EDUCATION
- › REGULATORY AGENCIES
- › INFECTION CONTROL
- › CONSULTING
- › FORENSICS (CRIME LABS)
- › DENTISTRY
- › CLINICS
- › RESEARCH FACILITIES
- › VETERINARY CLINICS
- › INDUSTRIAL LABORATORIES
- › HEALTHCARE ADMINISTRATION
- › MEDICAL/TECHNICAL WRITING
- › BIOMEDICAL/DIAGNOSTIC COMPANIES
- › LABORATORY INFORMATION SYSTEMS
- › ANDROLOGY/EMBRYOLOGY (FERTILITY CLINICS)
- › QUALITY ASSURANCE
- › PRODUCT DEVELOPMENT
- › ENVIRONMENTAL & FOOD TESTING
- › TECHNICAL SUPPORT

What is professional certification?

To become certified, students first complete the degree program. Upon completion of the program, students are eligible to write the national exams offered for 1) medical technologists, sponsored by the American Society for Clinical Pathology (ASCP), and 2) clinical laboratory scientists, sponsored by the National Certification Agency for Laboratory Personnel (NCA). Some states also require a state license in order to practice as a clinical laboratory scientist.

What is professional membership?

As a student, you are encouraged to enroll in a professional organization. Membership entitles you to all privileges and benefits designated to student members, including professional journals and announcements of local, regional and national meetings. Clinical laboratory scientists most commonly join the American Society for Clinical Laboratory Science (ASCLS) and the American Society for Clinical Pathology (ASCP). More information on these organizations is available on the web at www.ascls.org or www.ascp.org.

What about graduate study?

Our graduates have performed very well in their medical and dental studies, demonstrating that CLS is one of the best pre-medicine or pre-dentistry majors. Others have pursued graduate studies in such areas as biomedical research, health care management, public health, law and education.

PROGRAM INFO

Our Program

The Andrews University Clinical Laboratory Science undergraduate program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).* Depending on your academic status (outlined below), there are several degree and certificate options that include the BSCLS, Categorical Certificate, and Certificate in CLS (Senior Clinical Year). All students who complete the CLS degree or certificate requirements are eligible to sit for the national certification exams.

*NAACLS, 8410 W. Bryn Mawr Ave., Suite 760, Chicago, IL 60631-3415; phone: 773.714.8880; fax: 773.714.8886; email: info@naacls.org; or the web: www.naacls.org.

Bachelor of Science in Clinical Laboratory Science (BSCLS)

The complete degree program includes three years of pre-clinical studies, plus one year (three semesters) of professional clinical education. Pre-clinical studies consist of 77 credits in required general education, cognate science, elective and CLS prerequisite courses. During junior (third) year, students must apply for and be accepted into the Clinical Year. The Clinical Year consists of 24 credits in lecture and student laboratories and 23 credits earned through clinical practica. In the clinical practica, students work side by side with practicing laboratory professionals in patient health care at one of our affiliate hospitals or clinical laboratory sites, which are located across the U.S.

Entering Freshman

If you have never attended a college or university, Andrews considers you an entering freshman. This means you will follow the four-year BSCLS program track.

Transfer Student

If you are a student transferring from another college or university as a first (freshman), second (sophomore), or third (junior) year student, or if you already hold a two-year associate degree in Medical Laboratory Technology or Clinical Laboratory Technology, the University considers you a transfer student. This means you will be placed in the BSCLS program track according to your transferable course work.

APPLICATION INFO

How do I apply?

All students, except guest students from affiliate colleges and universities, must apply to Andrews University by completing an Andrews University undergraduate application. Applications are available through Enrollment Management (800.253.2874) or on the web at www.andrews.edu/future. Guest students are considered to be students of the affiliate institution and therefore are not required to submit an undergraduate application.

Application to the CLS Program

In addition to the application to the University, all students must apply directly to the Department of Clinical & Laboratory Sciences for admission to the Clinical (Senior) Year. This also includes transfer, guest, post-baccalaureate and categorical students.* These applications are available through the department only. The deadline for the Clinical Year program applications is typically mid-January.

**Refer to pages 10–11 for description of categories*

**"I CHOSE CLS AS MY MAJOR BECAUSE IT COMBINED AND APPLIED THE AREAS OF STUDY THAT I LOVE IN AN EXCITING AND CHALLENGING WAY."
—CATHARINE ROOS, CLASS OF 2004**





PROGRAM OPTIONS

Guest Student Senior Clinical Year

If you are working towards a degree in CLS at one of our affiliate Seventh-day Adventist colleges or universities and plan to attend Andrews University for the Senior Clinical Year only, Andrews considers you a guest student. Guest students must come to Andrews having completed all degree requirements except the Senior Clinical Year. The Senior Clinical Year consists of 24 credits in lecture and student laboratories, followed by 23 credits of clinical practica. Guest students earn a certificate in CLS from the Andrews University Program by completing the Senior Clinical Year. All credits required to complete his or her degree are transferred back to the home institution. The student then receives his or her degree from the home university/college. To confirm the affiliate status of your school, please visit our website.

Post-baccalaureate Student Second Degree or Certificate in Clinical Laboratory Sciences (Clinical Year Program)

If you hold a baccalaureate (bachelor's) degree in any discipline and meet the prerequisite requirements (16 semester credits in biological sciences, 16 semester credits in chemistry and one college-level math class), and want to either 1) complete a second bachelor's degree in CLS, or 2) complete the full CLS certificate program, Andrews considers you a post-baccalaureate student.

The Clinical Year consists of 24 credits in lecture and student laboratories, followed by 23 credits of clinical practica. Post-baccalaureate students may either earn a certificate in CLS or may elect to receive a second degree. All students who complete this program, whether with a degree or with a certificate, are eligible to write national certification examinations.



PROGRAM OPTIONS

Categorical Student

If you have earned a baccalaureate (bachelor's) degree and want to earn certification in only one CLS specialty area, Andrews considers you a categorical student. Your bachelor's degree may be in any discipline as long as the prerequisite requirements of 16 semester credits in biological sciences, 16 semester credits in chemistry and one college-level math class are met.

The certification programs range from 8–19 semester credits in classroom, laboratory and practica depending on the specialty area selected. Once the student completes the program, he or she must write and pass the national certification exam in the specialty area to become certified. Categorical certification education is available in the following CLS areas:

- Technologist in blood banking (13–16 credits)
- Technologist in chemistry (16–19 credits)
- Technologist in hematology (13–16 credits)
- Technologist in immunology (8 credits)
- Technologist in microbiology (13–19 credits)

Master of Science in Clinical Laboratory Science

The Department of Clinical and Laboratory Sciences offers a graduate program: the Master of Science in Clinical Laboratory Science (MSCLS). In response to the diversity of career skills required by the CLS profession, the degree features a variety of program emphases, including biomedical sciences, education, and business and management. Connect with the Department of Clinical and Laboratory Sciences or the office of Graduate Admissions for more information.



CONTACT

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CURRICULUM GUIDES:

CLICK TO SEE GUIDE

- Clinical Laboratory Sciences:
Category Certification
- Bachelor of Science: Clinical Laboratory
Sciences For post Baccalaureate:
Second Degree
- Clinical Laboratory Sciences: Certificate in
CLS Program For Post-Baccalaureate: Not
Seeking Second Degree
- Bachelor of Science: Clinical Laboratory
Science For Students From Affiliate
Universities/Colleges
- Bachelor of Science: Clinical Laboratory
Science For First Year College Students
(Entering Freshman)



CLS CATEGORICAL CERTIFICATION

Who can enroll in a categorical certificate program?

Any individual who meets the following criteria may apply to a categorical certificate program.

- Holds a conferred baccalaureate (bachelor's) degree from an accredited (or U.S. equivalent) college or university.
- Has an overall Grade Point Average (GPA) of 2.50 or higher.
- Has a science course GPA of 2.50 or higher.
- Has completed 16 semester credits of biological science, 16 semester credits of chemistry, and one college-level mathematics course or will complete these prerequisites prior to enrollment in the program.

Why categorical certification?

Earning a certificate in a Clinical Laboratory Science (CLS) specialty area qualifies you to take the national certification examination* in that area. Those who pass the examination in the specialty area(s) become certified to practice as a Technologist in:

- Blood Banking
- Chemistry
- Hematology
- Immunology
- Microbiology

* Sponsored by the American Society for Clinical Pathology (ASCP).

Are these programs accredited?

The categorical certificate programs are offered through the university's Clinical Laboratory Science Program accreditation by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):

8410 W. BRYN MAWR AVE., SUITE 760

FAX: 773.714.8886

CHICAGO, IL 60631-3415

EMAIL: INFO@NAACLS.ORG

PHONE: 773.714.8880

WEB: WWW.NAACLS.ORG

What courses will I take in the Blood Banking certificate program?

Following is an outline of the Technologist in Blood Banking program. The Blood Banking practicum commences immediately following the on-campus courses and student laboratories. The full-time structured Blood Banking practicum under Marcia Kilsby's direction concludes at the end of May.

Technologist in Blood Banking

Categorical Certification Structured Curriculum		Total Credits	13-16CR
SUMMER			
CLSC260	FUNDAMENTALS OF HUMAN BLOOD BIOLOGY		3CR
CLSC260	FUND OF HUMAN BLOOD BIOLOGY LAB.		0CR
CLSC320	PRINCIPLES OF IMMUNOLOGY*		3CR
FALL			
CLSC441	IMMUNOHEMATOLOGY		3CR
CLSC441	IMMUNOHEMATOLOGY LABORATORY		0CR
SPRING			
CLSC442	TRANSFUSION MEDICINE		1CR
CLSC442	TRANSFUSION MEDICINE LABORATORY		0CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR

* Required if an equivalent course has not been taken previously.

What courses will I take in the Chemistry certificate program?

Following is an outline of the Technologist in Chemistry program. The Chemistry practicum commences immediately following the on-campus Chemistry courses and student laboratories. The full-time structured Chemistry practicum under Richard Show's direction concludes at the end of May.

Technologist in Chemistry

Categorical Certification Structured Curriculum		Total Credits	16-19CR
SUMMER			
CLSC250	FUNDAMENTALS OF CLINICAL CHEMISTRY		3CR
CLSC250	FUNDAMENTALS OF CLINICAL CHEM LAB.		0CR
CLSC320	PRINCIPLES OF IMMUNOLOGY*		3CR
FALL			
CLSC451	CLINICAL CHEMISTRY		4CR
CLSC451	CLINICAL CHEMISTRY LABORATORY		0CR
SPRING			
CLSC452	CLINICAL CHEMISTRY & BODY FLUIDS		2CR
CLSC452	CLINICAL CHEMISTRY & BODY FLUIDS LAB.		0CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR

* Required if an equivalent course has not been taken previously.

What courses will I take in the Hematology certificate program?

Following is an outline of the Technologist in Hematology program. The Hematology practicum commences immediately following the on-campus courses and student laboratories. The full-time structured Hematology practicum under Albert McMullen's direction concludes at the end of May.

Technologist In Hematology

Categorical Certification Structured Curriculum		Total Credits	13-16CR
SUMMER			
CLSC260	FUNDAMENTALS OF HUMAN BLOOD BIOLOGY		3CR
CLSC260	FUND. OF HUMAN BLOOD BIOLOGY LAB.		0CR
CLSC320	PRINCIPLES OF IMMUNOLOGY*		3CR
FALL			
CLSC411	HEMATOLOGY		3CR
CLSC411	HEMATOLOGY LABORATORY		0CR
SPRING			
CLSC412	HEMOSTASIS		1CR
CLSC412	HEMOSTASIS LABORATORY		0CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR

* Required if an equivalent course has not been taken previously.

What courses will I take in the Immunology certificate program?

Following is an outline of the Technologist in Immunology program. The Immunology practicum commences immediately following the on-campus courses and student laboratories. The full-time structured Immunology practicum under Karen Reiner's direction concludes at the end of May.

Technologist In Immunology

Categorical Certification Structured Curriculum		Total Credits	8CR
SUMMER			
CLSC320	PRINCIPLES OF IMMUNOLOGY		3CR
FALL			
CLSC421	CLINICAL IMMUNOLOGY		2CR
CLSC421	CLINICAL IMMUNOLOGY LABORATORY		0CR
SPRING			
CLSC423	CLINICAL IMMUNOLOGY PRACTICUM		1CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR



What courses will I take in the Microbiology certificate program?

Following is an outline of the Technologist in Microbiology program. The Clinical Microbiology practicum commences immediately following the on-campus Clinical Microbiology courses and student laboratories. The full-time structured Immunology practicum under Karen Reiner's direction concludes at the end of May.

Technologist in Microbiology

Categorical Certification Structured Curriculum		Total Credits	13-19CR
SUMMER			
CLSC230	FUNDAMENTALS OF CLINICAL MICROBIOLOGY*		3CR
CLSC230	FUND OF CLINICAL MICROBIOLOGY LAB.*		0CR
CLSC320	PRINCIPLES OF IMMUNOLOGY*		3CR
FALL			
CLSC431	CLINICAL MICROBIOLOGY		4CR
CLSC431	CLINICAL MICROBIOLOGY LABORATORY		0CR
SPRING			
CLSC432	SPECIAL MICROBIOLOGY		2CR
CLSC432	SPECIAL MICROBIOLOGY LABORTORY		0CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR

* Required if an equivalent course has not been taken previously.

CONNECT

Details on courses for the Clinical Laboratory Science major as well as general education requirements for the degrees are available on our website, www.andrews.edu/cls or in the *Andrews University Bulletin*. Apply online or download an application at www.connect.andrews.edu.

DEPARTMENT OF CLINICAL AND
LABORATORY SCIENCES

PHONE: 269.471.3336

WEB: ANDREWS.EDU/CLS

EMAIL: CLS@ANDREWS.EDU

ENROLLMENT MANAGEMENT

PHONE: 800.253.2874

WEB: CONNECT.ANDREWS.EDU

EMAIL: ENROLL@ANDREWS.EDU



BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCES (BSCLS) (FOR POST BACCALAUREATE: 2nd Degree)

This Program is for individuals who already hold a baccalaureate degree, want to earn a second bachelor's degree, and be eligible to write the national certification examinations sponsored by the American Society for Clinical Pathology (ASCP) and the National Credentialing Agency for Laboratory Personnel (NCA).

Is the program accredited?

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):

8410 W. BRYN MAWR AVE., SUITE 760

FAX: 773.714.8886

CHICAGO, IL 60631-3415

EMAIL: INFO@NAACLS.ORG

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What prerequisites and general courses do I need?

For students already holding a bachelor's degree (post-baccalaureate) the requirements of the BSCLS program depend on academic history. Most post-baccalaureate students satisfy general requirements upon admission, but may still need to complete some courses particularly if the bachelor's degree is in a non-science discipline. Refer to the following table for prerequisite and general education requirements.

Prerequisite Requirements*	Total Credits	38CR
BIOLOGICAL SCIENCES		16CR
CHEMISTRY		16CR
MATHEMATICS (One college level math course)		3CR
RELIGION (if not taken as part of first degree Gen. Ed. requirements)		3CR

** All prerequisite coursework must be completed before admission to the clinical program will be granted. Students who did take a religion course as part of the general education requirements for their first baccalaureate degree will also need to take one religion course*

What is the structure of the program?

The clinical program consists of 24 credits in clinical studies (didactic portion), followed by 23 credits of clinical practicum. The didactic portion of the program features preparatory classroom and student laboratory experience, which begins in August and continues through the middle of the Spring Semester. During the clinical practica portion, students are assigned to a clinical affiliate where they receive hands-on experience working with CLS professionals. Clinical practica takes place from the middle of the Spring Semester to the end of July. Clinical site placement decisions are made before Christmas break.

What CLS courses will I take?

As a 2nd degree CLS major, you will need the following courses to graduate with the BSCLS degree.

Preclinical Coursework		Total Credits	12CR
CLSC230	FUNDAMENTALS OF CLINICAL MICROBIOLOGY*	3CR	
CLSC250	FUNDAMENTALS OF CLINICAL CHEMISTRY*	3CR	
CLSC260	FUNDAMENTALS OF HUMAN BLOOD BIOLOGY*	3CR	
CLSC320	PRINCIPLES OF IMMUNOLOGY*	3CR	

*Must be completed during the Summer Semester, prior to entering the clinical program, if equivalent courses have not been taken previously.

Senior Year (Clinical Year) - 1st Semester		Total Credits	16CR
CLSC401	CLINICAL YEAR SEMINAR I	0CR	
CLSC411	HEMATOLOGY	3CR	
CLSC421	CLINICAL IMMUNOLOGY	2CR	
CLSC431	CLINICAL MICROBIOLOGY	4CR	
CLSC441	IMMUNOHEMATOLOGY	3CR	
CLSC451	CLINICAL CHEMISTRY	4CR	

Senior Year (Clinical Year) - 1st Portion of 2nd Sem.		Total Credits	8CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (LECTURE & STUDENT LAB SEGMENT ONLY)		
CLSC402	CLINICAL YEAR SEMINAR II		0CR
CLSC412	HEMOSTASIS		1CR
CLSC432	SPECIAL MICROBIOLOGY		2CR
CLSC442	TRANSFUSION MEDICINE		1CR
CLSC452	CLINICAL CHEMISTRY AND BODY FLUIDS		2CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR

Senior Year (Clinical Year) - 2nd Portion of 2nd Sem.		Total Credits	8CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (CLINICAL PRACTICUM SEGMENT OF COURSE)		2CR
CLSC433	CLINICAL MICROBIOLOGY PRACTICUM		5CR
CLSC463	CLINICAL MICROSCOPY PRACTICUM		1CR

Senior Year (Clinical Year) - Summer Semester		Total Credits	15CR
CLSC413	CLINICAL HEMATOLOGY & HEMOSTASIS PRACT		4CR
CLSC423	CLINICAL IMMUNOLOGY PRACTICUM		1CR
CLSC443	CLINICAL IMMUNOHEMATOLOGY PRACTICUM		4CR
CLSC453	CLINICAL CHEMISTRY PRACTICUM		5CR
CLSC495	INDEPENDENT PROJECT		1CR

How do I progress into the Clinical Practica?

Students may enter clinical practica only upon satisfactory completion of the didactic portion of the program. Satisfactory completion is defined as a didactic cumulative Grade Point Average (GPA) of at least 2.50 and the recommendation of the faculty.



CURRICULUM GUIDE

Where could my Clinical Site Assignment be?

Students rank clinical site preferences on a preference selection form provided by the department. Although students are not guaranteed their first choice in clinical assignments, careful consideration is given to each student's preferences. Assignments also depend upon recommendations made by the faculty and the educational coordinators of the clinical affiliates. Each student is responsible for providing his/her own transportation for clinical practica. We strongly advise that each student have his/her own car for this purpose. Currently affiliated institutions are*:

ADVENTISTS HEALTH SYSTEMS, MIDWEST REGION –

HINSDALE HOSPITAL
ELISA COFFEE MEMORIAL HOSPITAL
GRANDVIEW MEDICAL CENTER
HUGULEY MEMORIAL MEDICAL CENTER
LA PORTE HOSPITAL
LAKELAND REGIONAL HEALTH SYSTEM
LEESBURG REGIONAL MEDICAL CENTER
MEMORIAL HEALTH CARE SYSTEMS
PORTER ADVENTIST HOSPITAL
SAINT JOHN'S HEALTH SYSTEMS
SHAWNEE MISSION MEDICAL CENTER
SOUTH BEND MEDICAL FOUNDATION

HINSDALE, IL
FLORENCE, AL
DAYTON, OH
FORT WORTH, TX
LA PORTE, IN
ST. JOSEPH, MI
LEESBURG, FL
CHATTANOOGA, TN
DENVER, CO
ANDERSON, IN
SHAWNEE MISSION, KS
SOUTH BEND, IN

** Affiliated institutions that take students for clinical practica vary from year to year. Additional affiliates are added from time to time.*

CONNECT

Details on courses for the Clinical Laboratory Science major as well as general education requirements for the degrees are available on our website, www.andrews.edu/cls or in the *Andrews University Bulletin*. Apply online or download an application at www.connect.andrews.edu.

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CLINICAL LABORATORY SCIENCES: CERTIFICATE IN CLS PROGRAM (FOR POST-BACCALAUREATE: Not Seeking 2nd Degree)

The Certificate Program is for individuals who already hold a baccalaureate degree and want to be eligible to write the national certification examinations sponsored by the American Society for Clinical Pathology (ASCP) and the National Credentialing Agency for Laboratory Personnel (NCA), but do not want to earn another bachelor's degree.

Is the program accredited?

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):

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FAX: 773.714.8886

CHICAGO, IL 60631-3415

EMAIL: INFO@NAACLS.ORG

PHONE: 773.714.8880

WEB: WWW.NAACLS.ORG

What are the prerequisite requirements?

Applicants to the certificate program must meet prerequisite academic criteria before admission to the program will be fully granted. Conditional acceptance may be granted if the student expresses intent to make up missing prerequisite courses in the summer semester before the program begins. Each student must have the following prerequisites before entering the program:

Prerequisite Requirements	Total Credits	35CR
BIOLOGICAL SCIENCES		16CR
CHEMISTRY		16CR
MATHEMATICS (One college level math course)		3CR

What is the structure of the program?

The clinical program consists of 24 credits in clinical studies (didactic portion), followed by 23 credits of clinical practicum. The didactic portion of the program features preparatory classroom and student laboratory experience, which begins in August and continues through the middle of the Spring Semester. During the clinical practica portion, students are assigned to a clinical affiliate where they receive hands-on experience working with CLS professionals. Clinical practica takes place from the middle of the Spring Semester to the end of July. Clinical site placement decisions are made before Christmas break. Following is an outline of the courses you will take in the certificate program.

Preclinical Coursework		Total Credits	12CR
CLSC230	FUNDAMENTALS OF CLINICAL MICROBIOLOGY*	3CR	
CLSC250	FUNDAMENTALS OF CLINICAL CHEMISTRY*	3CR	
CLSC260	FUNDAMENTALS OF HUMAN BLOOD BIOLOGY*	3CR	
CLSC320	PRINCIPLES OF IMMUNOLOGY*	3CR	

*Must be completed during the Summer Semester, prior to entering the clinical program, if equivalent courses have not been taken previously.

Senior Year (Clinical Year) - 1st Semester		Total Credits	16CR
CLSC401	CLINICAL YEAR SEMINAR I	0CR	
CLSC411	HEMATOLOGY	3CR	
CLSC421	CLINICAL IMMUNOLOGY	2CR	
CLSC431	CLINICAL MICROBIOLOGY	4CR	
CLSC441	IMMUNOHEMATOLOGY	3CR	
CLSC451	CLINICAL CHEMISTRY	4CR	

Senior Year (Clinical Year) - 1st Portion of 2nd Sem.		Total Credits	8CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (LECTURE & STUDENT LAB SEGMENT ONLY)		
CLSC402	CLINICAL YEAR SEMINAR II	0CR	
CLSC412	HEMOSTASIS	1CR	
CLSC432	SPECIAL MICROBIOLOGY	2CR	
CLSC452	CLINICAL CHEMISTRY & BODY FLUIDS	2CR	
CLSC460	CLINICAL LABORATORY SYSTEMS	2CR	

Senior Year (Clinical Year) – 2nd Portion of 2nd Sem.		Total Credits	8CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (CLINICAL PRACTICUM SEGMENT OF COURSE)	2CR	
CLSC433	CLINICAL MICROBIOLOGY PRACTICUM	5CR	
CLSC463	CLINICAL MICROSCOPY PRACTICUM	1CR	

Senior Year (Clinical Year) - Summer Semester		Total Credits	15CR
CLSC413	CLINICAL HEMATOLOGY & HEMOSTASIS PRACT	4CR	
CLSC423	CLINICAL IMMUNOLOGY PRACTICUM	1CR	
CLSC443	CLINICAL IMMUNOHEMATOLOGY PRACTICUM	4CR	
CLSC453	CLINICAL CHEMISTRY PRACTICUM	5CR	
CLSC495	INDEPENDENT PROJECT	1CR	

How do I progress into the Clinical Practica?

Students may enter clinical practica only upon satisfactory completion of the didactic portion of the program. Satisfactory completion is defined as a didactic cumulative Grade Point Average (GPA) of at least 2.50 and the recommendation of the faculty.

Where could my Clinical Site Assignment be?

Students rank clinical site preferences on a preference selection form provided by the department. Although students are not guaranteed their first choice in clinical assignments, careful consideration is given to each student's preferences. Assignments also depend upon recommendations made by the faculty and the educational coordinators of the clinical affiliates. Each student is responsible for his/her own transportation for clinical practica. We strongly advise that each student have his/her own car for this purpose. Currently affiliated institutions are*:

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 FORT WORTH, TX
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 ST. JOSEPH, MI
 LEESBURG, FL
 CHATTANOOGA, TN
 DENVER, CO
 ANDERSON, IN
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* Affiliated institutions that take students for clinical practica vary from year to year. Additional affiliates are added from time to time.



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BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCE: BSCLS (For Students From Affiliate Universities/Colleges)

Is the program accredited?

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):

8410 W. BRYN MAWR AVE., SUITE 760

FAX: 773.714.8886

CHICAGO, IL 60631-3415

EMAIL: INFO@NAACLS.ORG

PHONE: 773.714.8880

TWEB: WWW.NAACLS.ORG

What is my status on the Andrews campus?

Once you are accepted into the clinical program via our affiliation agreement with your home university/college and enrolled, you are considered a regular student of Andrews University for housing and accounting reasons. You are, however, still considered a student of your home school because all credits you earn at Andrews will be applied to your degree requirements at your university/college.

Where do I pay my tuition costs?

All tuition for the senior year is paid to your home institution, not to Andrews. The amount is charged according to the tuition established by your university/college. The charge is equivalent to three semesters at your school.

What about non-tuition costs?

Actual expenses generated at Andrews, such as food, lodging, textbooks and professional fees, are paid to Andrews directly. Only tuition is charged through your home institution.

Can I get financial aid from Andrews?

All financial aid should be processed through your home university/college. Andrews does not provide financial aid for affiliate guest students.

Can I work while in school?

Yes, depending upon your citizenship/visa status. However, students are encouraged to work no more than 10-15 hours per week.

Is there a class size limit?

Up to 24 students are accepted into the clinical year program. The student laboratory ratio is never more than 13 students to one instructor. In the clinical practica, the ratio is typically one to one.

Who grants my degree?

You will receive your degree from your home university/college and will be a graduate of that institution.

Can I receive an Andrews University degree?

It is possible to transfer to Andrews by completing a university application through the Admissions Office.

What is the structure of the Senior Clinical Year?

Students complete 47 credits in the Senior Clinical Year. The Senior Clinical Year is divided into two parts: the clinical studies (didactic portion) and the clinical practica. Clinical studies begin each fall and continue until the middle of Spring Semester. Clinical site placement decisions are made at the end of Fall Semester. The clinical practica begins in mid-Spring Semester and concludes at the end of Summer Semester.

Prerequisite Sciences must Include:

	Total Credits	35CR
BIOLOGICAL SCIENCES		16CR
CHEMISTRY		16CR
MATHEMATICS (One college level math course)		3CR

Preclinical Coursework

	Total Credits	12CR
CLSC230	FUNDAMENTALS OF CLINICAL MICROBIOLOGY*	3CR
CLSC250	FUNDAMENTALS OF CLINICAL CHEMISTRY*	3CR
CLSC260	FUNDAMENTALS OF HUMAN BLOOD BIOLOGY*	3CR
CLSC320	PRINCIPLES OF IMMUNOLOGY*	3CR

*Must be completed during the Summer Semester, prior to entering the clinical program, if equivalent courses have not been taken at affiliate university/college.

Senior Year (Clinical Year) - 1st Semester

		Total Credits	16CR
CLSC401	CLINICAL YEAR SEMINAR I		0CR
CLSC411	HEMATOLOGY		3CR
CLSC421	CLINICAL IMMUNOLOGY		2CR
CLSC431	CLINICAL MICROBIOLOGY		4CR
CLSC441	IMMUNOHEMATOLOGY		3CR
CLSC451	CLINICAL CHEMISTRY		4CR

Senior Year (Clinical Year) - 1st Portion of 2nd Sem.

		Total Credits	10CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (LECTURE & STUDENT LAB SEGMENT ONLY)		2CR
CLSC402	CLINICAL YEAR SEMINAR II		0CR
CLSC412	HEMOSTASIS		1CR
CLSC432	SPECIAL MICROBIOLOGY		2CR
CLSC442	TRANSFUSION MEDICINE		1CR
CLSC452	CLINICAL CHEMISTRY & BODY FLUIDS		2CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR

Senior Year (Clinical Year) – 2nd Portion of 2nd Sem.

		Total Credits	8CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (CLINICAL PRACTICUM SEGMENT OF COURSE)		2CR
CLSC433	CLINICAL MICROBIOLOGY PRACTICUM		5CR
CLSC463	CLINICAL MICROSCOPY PRACTICUM		1CR

Senior Year (Clinical Year) - Summer Semester

		Total Credits	15CR
CLSC413	CLINICAL HEMATOLOGY & HEMOSTASIS PRACT		4CR
CLSC423	CLINICAL IMMUNOLOGY PRACTICUM		1CR
CLSC443	CLINICAL IMMUNOHEMATOLOGY PRACTICUM		4CR
CLSC453	CLINICAL CHEMISTRY PRACTICUM		5CR
CLSC495	INDEPENDENT PROJECT		1CR



How do I progress into the Clinical Practica?

Students may enter clinical practica only upon satisfactory completion of the didactic portion of the program. Satisfactory completion is defined as a didactic cumulative Grade Point Average () of at least 2.50 and the recommendation of the faculty.

Where could my Clinical Site Assignment be?

Students rank clinical site preferences on a preference selection form provided by the department. Although students are not guaranteed their first choice in clinical assignments, careful consideration is given to each student's preferences. Assignments also depend upon recommendations made by the faculty and the educational coordinators of the clinical affiliates. Each student is responsible for providing his/her own transportation for clinical practica. We strongly advise that each student have his/her own car for this purpose. Currently affiliated institutions are*:

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** Affiliated institutions that take students for clinical practica vary from year to year. Additional affiliates are added from time to time.*

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**BACHELOR OF SCIENCE IN CLINICAL LABORATORY SCIENCES (BSCLS)
FIRST YEAR COLLEGE STUDENT (Entering Freshman)**

Is the program accredited?

This program is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS):

8410 W. BRYN MAWR AVE., SUITE 760
CHICAGO, IL 60631-3415
PHONE: 773.714.8880

FAX: 773.714.8886
EMAIL: INFO@NAACLS.ORG
WEB: WWW.NAACLS.ORG

What classes will I take?

The BSCLS program consists of three years of pre-clinical studies, and one year (3 semesters) of clinical studies. The program includes 61 credits in CLS courses, 26 credits in required science cognate courses, and 37 credits in general education courses. Students make all course selections in consultation with a faculty advisor. Following is a suggested four-year plan for the BSCLS program.

Freshman Year - 1st Semester		Total Credits	15-16CR
BIOL165	FOUNDATIONS OF BIOLOGY I		4-5CR
ENGL115	ENGLISH COMPOSITION I		3CR
STAT285	ELEMENTARY STATISTICS**		3CR
CLSC110	MEDICAL TERMINOLOGY		1CR
CLSC105	INTRO TO CLINICAL LAB SCIENCE		1CR
RELT100	GOD & HUMAN LIFE		3CR

Freshman Year - 2nd Semester		Total Credits	13-14CR
BIOL166 or BIOL111	FOUNDATIONS OF BIOLOGY II -OR- ANATOMY & PHYSIOLOGY I***		4-5CR
INFS110	INTRO TO COMPUTER TOOLS		3CR
COMM104	COMMUNICATION SKILLS		2CR
GEN ED	BEHAVIORAL / SOCIAL SCIENCE COURSE*		3CR
HLED120	FIT & WELL		1CR

**CURRICULUM GUIDE**

Sophomore Year - 1st Semester		Total Credits	16CR
CHEM131	GENERAL CHEMISTRY I		4CR
CLSC230	FUNDAMENTALS OF CLINICAL CHEMISTRY		3CR
GEN ED	RELIGION COURSE		3CR
CLSC320	PRINCIPLES OF IMMUNOLOGY		3CR
ENGL215	ENGLISH COMPOSITION II		3CR

Sophomore Year - 2nd Semester		Total Credits	16CR
CHEM132	GENERAL CHEMISTRY II		4CR
CLSC230	FUNDAMENTALS OF CLINICAL MICROBIOLOGY		3CR
GEN ED	RELIGION COURSE		3CR
GEN ED	ARTS AND HUMANITIES		3CR
DIR ELECT	DIRECTED ELECTIVE+		3CR

Junior Year - 1st Semester		Total Credits	14-15CR
CHEM231	ORGANIC CHEMISTRY I		3CR
CHEM241	ORGANIC CHEMISTRY I LAB		1CR
GEN ED	RELIGION COURSE		3CR
DIR ELECT	PHSY141: GEN PHYS IF PREMED OR PREDENT		4CR
SCI ELECT	UPPER DIVISION BIOLOGIC SCIENCE COURSE#		3-4CR

Junior Year - 2nd Semester		Total Credits	14-15CR
CHEM232	ORGANIC CHEMISTRY II		3CR
CHEM242	ORGANIC CHEMISTRY II LAB		1CR
CLSC260	FUNDAMENTALS OF HUMAN BLOOD BIOLOGY		3CR
DIR ELECT	PHSY142: GEN PHYS IF PREMED OR PREDENT		4CR
DIR ELECT	DIRECTED ELECTIVE+		3CR

**CURRICULUM GUIDE**

Senior Year (Clinical Year) - 1st Semester		Total Credits	16CR
CLSC401	CLINICAL YEAR SEMINAR I		0CR
CLSC411	HEMATOLOGY		3CR
CLSC421	CLINICAL IMMUNOLOGY		2CR
CLSC431	CLINICAL MICROBIOLOGY		4CR
CLSC441	IMMUNOHEMATOLOGY		3CR
CLSC451	CLINICAL CHEMISTRY		4CR

Senior Year (Clinical Year) - 1st Portion of 2nd Sem.		Total Credits	8CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (LECTURE & STUDENT LAB SEGMENT ONLY)		
CLSC402	CLINICAL YEAR SEMINAR II		0CR
CLSC412	HEMOSTASIS		1CR
CLSC432	SPECIAL MICROBIOLOGY		2CR
CLSC442	TRANSFUSION MEDICINE		1CR
CLSC452	CLINICAL CHEMISTRY & BODY FLUIDS		2CR
CLSC460	CLINICAL LABORATORY SYSTEMS		2CR

Senior Year (Clinical Year) - 2nd Portion of 2nd Sem.		Total Credits	8CR
CLSC400	SPECIMEN PROCUREMENT & PROCESSING (CLINICAL PRACTICUM SEGMENT OF COURSE)		2CR
CLSC433	CLINICAL MICROBIOLOGY PRACTICUM		5CR
CLSC463	CLINICAL MICROSCOPY PRACTICUM		1CR

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CLSC413	CLINICAL HEMATOLOGY & HEMOSTASIS PRACT		4CR
CLSC423	CLINICAL IMMUNOLOGY PRACTICUM		1CR
CLSC443	CLINICAL IMMUNOHEMATOLOGY PRACTICUM		4CR
CLSC453	CLINICAL CHEMISTRY PRACTICUM		5CR
CLSC495	INDEPENDENT PROJECT		1CR

Total Credits Needed For Graduation: 124*Service Fieldwork is completed through 23 credits of clinical practica.*

- * Check AU bulletin for listing of acceptable general education course choices.
- ** Statistics preferred for AU students. Any college-level math course is acceptable for transfer students.
- *** BIOL111 and 112 may be taken, however, these courses do not qualify for pre-medical or pre-dental requirements.
- + Directed electives are chosen in consultation with and approval by a faculty advisor. These courses are selected to enhance professional preparation. Choices include biology, chemistry, computer science, electronics, education or business. Pre-med and pre-dent students must take PHYS141 and 142: General Physics I and II (BCR).
- # Relevant BIOL, PHTH or ZOOLOG course chosen in consultation with a faculty advisor.

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