Advanced Topics in Organic Chemistry (2)
Study of the principles of modern synthetic organic chemistry with applications from one or more of the following areas: natural product, medicinal, or polymer chemistry. Weekly: 2 lectures. Prerequisite: CHEM232. *Fall*

Advanced Topics in Physical Chemistry (2)
Advanced study of molecular spectroscopy, statistical thermodynamics, chemical dynamics, or the application of quantum mechanics. Prerequisites: CHEM432 or CHEM431 and permission of the instructor.

Independent Research (1-3)
An opportunity for chemistry and biochemistry majors to gain research experience by joining with a faculty member in study of an area of special interest.

Graduate

Topics in Teaching (1-3)
Each time the course is offered, it treats one of the following areas:

- Concepts in Chemistry
  Fundamental ideas of chemistry

CLINICAL & LABORATORY SCIENCES

Halenz Hall, Room 326
269-471-3336
cls@andrews.edu
www.andrews.edu/cls/

BS in Clinical Laboratory Science (BSCLS)	124
BS: Allied Health Administration	65
MS in Clinical Laboratory Science (MSCLS)	32
Biomedical	
Business and Management	
Education	

Mission

The mission of the Department of Clinical & Laboratory Sciences, in harmony with Andrews University and the Seventh-day Adventist Church, is to prepare students for Christian service as clinical laboratory scientists. The CLS [illegible] encourages faculty in professional, educational and spiritual growth. The CLS [illegible] educates students to develop excellence in the skills necessary for a life work of service in quality health care and dedication to improving the human condition. CLS [illegible] will minister to the needs of others by practicing and promoting standards of excellence as clinical laboratory science professionals.

Clinical Laboratory Science (Medical Technology)

The degree program includes three years of undergraduate (pre-clinical) studies plus one year (3 semesters) of clinical (professional) education.

[illegible] The first three years of undergraduate study include General Education, cognate science, and pre-clinical degree requirements. Program options feature directed elective course work selected in consultation with the faculty advisor according to the student's career goals and interests.

[illegible] The year of clinical studies is comprised of lectures and student laboratories on the Berrien Springs campus and clinical practica at an affiliated hospital or clinical laboratory site.

[illegible] Students work side-by-side with practicing professionals in patient health care during the final portion of the clinical year. Andrews University maintains a number of affiliations with clinical institutions across the

country. Student preferences for clinical site assignments are solicited and granted when possible. Final site assignments are made at the discretion of the faculty.

 An independent

Transfer credits accepted from an AS degree or certificate program—

Complete Bachelor of Science General Education requirements.

ACCT 121, 122, BSAD341, 355, 384, ECON226, MKTG310 and management courses selected in consultation with and approval of the advisor.

Graduate Programs

MS Clinical Laboratory Science (32) (MSCLS)

The Department of Clinical & Laboratory Sciences offers a graduate program leading to the Master of Science in Clinical Laboratory Science. In response to the diversity of career skills required by the clinical laboratory scientist (medical technologist), the degree features a variety of program emphases, including concentrations in biomedical sciences, business and management, and education.

Admission Requirements In addition to the general requirements for admission to a graduate program listed in the graduate admission section of this bulletin, the following are departmental requirements:

- Applicants' previous course work must include 16 semester credits of biological sciences, 16 semester credits of chemistry, and one college-level course in mathematics. Deficiencies must be removed prior to admission to the graduate program.
- Applicants must have an overall GPA of at least 3.0 in undergraduate courses and at least 3.0 in the undergraduate cognate science (chemistry, biology, math and clinical laboratory science) courses.
- Applicants must hold United States professional certification and/or licensure in clinical laboratory science (medical technology) acceptable to the admissions committee. Certification may be either general or in one of the recognized areas of specialization. Acceptable certification is usually defined as that offered by the American Society for Clinical Pathology (ASCP) or the National Credentialing Agency for Laboratory Personnel (NCA).
- The required Graduate Record Examination (GRE) for admission is a minimum of 800 Composite (Verbal + Quantitative). Students who do not achieve 800 on their GRE may be accepted under provisional status.

Individuals lacking United States professional certification may request to be admitted on a provisional basis while they pursue the course work required for eligibility to write the national certification examinations. These clinical courses and their prerequisites require a minimum of four academic semesters. The courses include CLSC230, 250, 260, 320, 400, 401, 402, 411, 412, 413, 421, 423, 431, 432, 433, 441, 442, 443, 451, 452, 453, 460, 463, and 493. Students must receive United States professional certification before completing more than 9 graduate credits, and must meet the GPA requirements as stated above. Students may not enroll in CLSC561, CLSC562 or CLSC585 prior to obtaining certification.

Degree Requirements

In addition to meeting the general requirements for graduate degree programs, students must meet the following departmental requirements:

- Complete a minimum of 32 semester credits including the core of 20 semester credits and 12 semester credits selected from the emphasis chosen.
- Have the graduate program coordinator approve course selections and course sequencing. Students may substitute alter

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I d c Cl ca Lab a Sc e ce

Lectures and/or demonstrations presented by each of the departmental faculty members covering the major disciplines in clinical laboratory science. A field trip to visit a clinical laboratory is also included. Weekly: one lecture.

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Med ca Te g

An in-depth study of medical terms and abbreviations relating to diseases, disorders, and drugs. (This course is also available to off-campus students through Distance Learning. Prerequisite: permission of instructor.)

and virology. Prerequisites: CLSC431, CLSC432 and permission of Program Director.

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I [illegible] e a g g

Blood grouping and typing; blood group antigen systems; compatibility testing; antibody identification; quality control and quality assurance; donor recruitment and selection; component preparation; blood-banking records; grouping and compatibility problem solving; patient clinical state correlations. Prerequisites: CLSC260, CLSC320 and permission of Program Director.

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T a f [illegible] Med c e

In-depth study of immunohematology testing results, clinical patient manifestations, blood component therapy and blood product requirements. Prerequisites: CLSC441 and permission of Program Director.

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C ca I [illegible] e a g P ac c [illegible]

Professional health-care laboratory practicum; emphasis in patient-care applications of immunohematology. Prerequisites: CLSC441, 442 and permission of Program Director.

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C ca C e

Carbohydrate, lipid, enzyme, electrolyte, acid-base balance, trace element, protein systems, and gastric functions; correlation with normal physiology and selected pathological correlations. Analysis of relevant blood and body fluids constituents. Prerequisites: CLSC250 and permission of Program Director.

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C ca C e a d B d F d

Liver function, renal function, endocrinology, toxicology, and therapeutic drug monitoring. Analysis of various body fluids such as serous fluids, synovial fluid, amniotic fluid, and urine. Correlations with normal physiology and selected pathological conditions. Prerequisites: CLSC451 and permission of Program Director.

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C ca C e P ac c [illegible]

Professional health-care laboratory practicum. Emphasis on patient-care applications in clinical chemistry. Prerequisites: CLSC451, 452 and permission of Program Director.

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C ca Lab a S e

Survey of current Laboratory Information Systems (LIS) including database design and maintenance, test requesting, result entry, result reporting, quality control applications, and peripheral devices. Discussion in selected areas that include health-care delivery systems; problem solving in the clinical laboratory; human resource management; supply and equipment acquisition; financial management; performance standards and assessment; ethics; and regulatory processes. Prerequisite: permission of Program Director.

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C ca M c c P ac c [illegible]

Professional health-care laboratory practicum. Emphasis in patient-care applications of body fluids. Prerequisites: CLSC452 and permission of Program Director.

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T c

An in-depth study of selected topics in the clinical laboratory sciences. Repeatable in different specialized areas. Prerequisite: permission of Program Director.

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P ac c [illegible] P ec

Designed to be an integral component of the clinical year practica experience. Introduces students to the principles, practices, and performance of clinical laboratory projects expected of practicing