

ratory therapy. Entrance requirements vary among professional respiratory therapy programs. Not all professional programs accept transfer credits. Therefore, interested students should contact the programs of choice for the most current prerequisite requirements. A list of accredited respiratory therapy programs may be obtained from the American Association for Respiratory Care, 11030 Ables Lane, Dallas, TX 75229 (phone 972-243-2272 and ask for Education).

Students who have completed the following prerequisites may apply to Loma Linda University as a second-year student.

Pre-respiratory Therapy Curriculum for Loma Linda University

Communications—9

INSY110

English—ENGL111, 112

Physical/Natural Sciences/Math—30+

BIOL111, 112

BIOL260

CHEM111, 112

Secondary-level physics or PHYS106

Secondary-level Algebra I & II and/or Geometry with grades of "C" (2.00) or better; College math if necessary (grades not included in 48 minimum credit)

Social Sciences

Psychology or Sociology

PSYC101 or SOCI119

Religion—4

RELG100

Health and Wellness

HLED115 and 2 PE required for BS

Electives—to meet 48-credit requirement

Total Credits Required

48

In addition to the course work, 4-6 clock hours of observation of a respiratory therapist participating in patient care in a hospital setting are required.

ALLIED HEALTH

Halenz Hall, Room 326
(616) 471-3336
medtech@andrews.edu
<http://www.andrews.edu/ALHE>

Faculty

Marcia A. Kilsby, *Chair*

Albert W. McMullen

Richard D. Show, *Graduate Program Director*

Clifford Sutherland

| Academic Programs | Credits |
|-------------------------------------|---------|
| BS in Clinical Laboratory Science | 136-144 |
| BS in Allied Health Administration | 96 |
| MSCLS (Clinical Laboratory Science) | 48 |
| Biomedical | |
| Business | |
| Computer Information Science | |
| Education | |

The Department of Allied Health prepares students who are committed to preserving and protecting the dignity of life and death. They promote values and attitudes consistent with the Seventh-day Adventist Christian lifestyle. They strive to instill in students a life-long personal quest for individual growth and fulfillment and for continual excellence in health-care practice.

Clinical Laboratory Science (Medical Technology)

The degree program includes 3 years of undergraduate (pre-clinical) studies plus one year (4 quarters) of clinical (professional) education.

Pre-clinical Program. The first 3 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 adviser according to the student's career goals and interests.

Clinical (Professional) Program. The year of clinical studies is comprised of 2 quarters of lectures and student laboratories on the Berrien Springs campus and 2 quarters of clinical practicum at an affiliated hospital or clinical laboratory site.

Clinical Experience (Practicums). Students work side-by-side with practicing professionals in patient health care during the final 2 quarters of the clinical year.

Andrews University maintains a number of affiliated 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.

Clinical Year Admission Requirements. An independent admissions process is required for university students who wish to enter clinical studies. Application forms may be obtained from the Department of Allied Health office. Students should complete these applications and return them to

the departmental office by February 15th prior to their anticipated clinical-study year.

Admission requires an overall GPA of 2.50. In the admissions process, the GPAs for the cognate science courses and clinical laboratory science content courses are computed together. This combined GPA must be a minimum of 2.50. Should applications exceed class capacity, preference is given to students with the higher GPAs.

Applicants must be able to meet the program's published *Essential Functions*, copies of which are incorporated into the application packet, and express a willingness to comply with the principles, rules, regulations, and policies of both the university and the program as they relate to the ideals and values of the Seventh-day Adventist Church and the clinical-laboratory-science profession.

All prerequisite course work, including General Education, cognate science, and pre-clinical courses, must be completed prior to entry into the clinical year. A personal interview may be required at the discretion of the Admissions Committee.

In exceptional circumstances, the Admissions Committee may accept students outside the stated policy.

Student Progression in Clinical Year. The clinical year is highly structured and sequential. Enrolled students may not drop a class, audit a class, or earn a grade lower than C- in any class. Students may enter clinical practica only upon satisfactory completion of the first 2 quarters taught at Andrews. Satisfactory completion is defined as a senior-year minimum cumulative GPA of 2.50 and the recommendation of the faculty. A student receiving a cumulative GPA of less than 2.50 may be allowed to advance if the program faculty identifies exceptional circumstances and recommends that the student continue in the program.

Student continuance in the clinical practica is conditional upon acceptable ethical department and exemplary patient-care practices. The hospital supervisors and program faculty are final arbiters in determining student continuance.

Professional Certification. Students who complete the degree program are eligible to write national certification examinations sponsored by the American Society of Clinical Pathologists (ASCP) and the National Certification Agency of Medical Laboratory Personnel (NCA).

Program Accreditation. The Andrews University Program for Clinical Laboratory Sciences holds accreditation from the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)—(773) 714-8880.

CALENDAR (CLINICAL YEAR)

| | |
|----------|--|
| July 30 | Senior Summer Quarter (Clinicals) ends |
| Sept. 12 | Senior Autumn Quarter begins (6 pm) |
| Nov. 12 | Senior Autumn Quarter ends |
| Nov. 15 | Senior Winter Quarter begins |
| Feb. 4 | Senior Winter Quarter ends |
| Feb. 14 | Senior Spring Quarter (Clinicals) begins |
| May 5 | Senior Spring Quarter ends |
| May 8 | Senior Summer Quarter (Clinicals) begin |
| July 28 | Senior Summer Quarter ends |

Undergraduate Programs

BS in Clinical Laboratory Science—190

| | |
|---|-----------|
| General Education requirements (Adjustments for BSCLS) | 50 |
| Computer Science | 0 |
| Mathematics | 4 |
| Physical/Natural Sciences: see cognate sciences below | |
| Religion (or one course per year of residence) | 16 |
| Service | 2 |
| Wellness | 3 |

Cognate Science Requirements 44
 BIOL155; BIOL 156 and 157 (or 111, 112), and 5 credits of relevant BIOL, PHTH, or ZOOL courses; CHEM121, 122, 123, 211, 212, 213.

Major Requirements 84
Prerequisites 15
 MTCH105, 106, 215, 235, 245, 255
Major courses 69
 MTCH345, 400, 401, 402, 410, 411, 412, 413, 421, 422, 431, 432, 433, 441, 442, 443, 451, 452, 454, 461, 462, 490, 495.

Directed electives 8-16
 Students select courses in consultation with and by the consent of their advisers in a planned program to enhance professional preparation. Courses are chosen from biology, business, chemistry, computer science, electronics, and education. Pre-medical/pre-dental students must include PHYS151, 152, 153 General Physics (12 credits).

BS: Allied Health Administration

This degree is designed for health-care professionals seeking to enhance the knowledge they already have and to help them prepare for future career employment requirements. The degree format features a strong general education and administrative/business component and provides an academic foundation for health-care administrative positions. It is open only to individuals holding an associate degree or a two-year certificate in an allied-health professional area with earned certification where applicable in such areas as diagnostic ultrasound, nuclear medicine, physician assistant, radiation therapy, radiologic technology, respiratory therapy, and special procedures in radiologic technology. Admission to the program is by permission of the Department of Allied Health chair.

Degree Requirements 190

- Transfer credits accepted from an AS degree or certificate program—51
- Credits from business and administrative component—41

- ALHE480 Practicum in Administration—4
General Education Requirements 81
 Complete Bachelor of Science General Education requirements. See p. 24.
Business/Administration Courses 41
 ACCT 111, 112, 113, BSAD341, 355, 384, 431, 432, ECON226. Select 8 credits from BSAD374, 436, 444, 460, 497, 498, MKTG310, 444.

Graduate Programs

MS in Clinical Laboratory Science

The Department of Allied Health 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, computer information science, and education.

Admission requirements. In addition to the minimum 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 24 quarter credits of biological sciences, 24 quarter credits of chemistry, and one college-level course in mathematics. Deficiencies must be removed prior to admission to the graduate program.
- Applicants must hold 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 of Clinical Pathologists or The National Certification Agency for Medical Laboratory Personnel sponsored by the American Society of Clinical Laboratory Science.

Individuals lacking professional certification may be granted provisional admission 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 5 academic quarters. The courses include MTCH400, 401, 402, 410, 411, 412, 413, 421, 422, 431, 432, 433, 441, 442, 443, 451, 452, 454, 461, 462, 490, and 495. Students must receive professional certification before completing 24 graduate credits.

DEGREE REQUIREMENTS

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

- Complete a minimum of 48 quarter credits including the core of 21-27 quarter credits, 16-17 quarter credits selected from the emphasis chosen, and 4-11 elective credits.
- Have the graduate program coordinator approve course selections and course sequencing. Students may substitute alternate courses listed in this bulletin with the consent of the coordinator and the approval of the dean of the College of Arts and Sciences.
- No grade lower than C is acceptable in the graduate portion of the program.

- Maintain a minimum cumulative GPA of 3.00 for the graduate portion of the program.

Core courses 21-27

ACCT500 or 610; BSAD500 (Survey of Management: Management) and BSAD 500 (Survey of Management: Marketing) or BSAD515; MTCH521, 522, 523, 525; plus a minimum of 4 graduate religion credits selected in consultation with adviser

A minimum of 16 quarter credits from one of the following options:

Biomedical Emphasis: BCHM401, 402, 412, 413, 423; BIOL419, 444, 445, 446, 447, PHTH417, 427, 447, 457, ZOOL425, 464, 465, 475, 500, 525

Business Emphasis

ACCT610 (if taken as part of the core, the total of 16 credits is attained by an additional course selected from those below.); at least one course chosen from the following: BSAD431, 432, 464, 530, 670; at least two courses chosen from the following: BSAD440, 475, 515, 531, 532, 533, 554, 635, MKTG540, 676

Computer Information Science Emphasis
 COSC475, 565, INSY427, 448, 475, 550, 560, 561, 562

Education Emphasis

At least one course chosen from the following: EDCI486, EDPC514, EDTE424, 465; at least one course chosen from the following: EDAD520, EDCI547, 552, 636, 655, EDFN500, EDRM505

Electives

An additional 4-11 credits chosen in consultation with and approved by the graduate program coordinator. Courses chosen must contribute to the student's academic and professional skills.

Enrollment Continuation Requirements.

A student whose cumulative graduate GPA falls below 3.00 in any given quarter is placed on academic probation. Academic probation students are not allowed to register for or continue participation in MTCH525.

In consultation with the graduate program coordinator, the clinical-laboratory-science graduate faculty determines the student's proposed course load for the following quarter. The faculty's recommendation is referred to the dean/graduate program coordinator of the College of Arts and Sciences for final approval.

A student who does not raise his/her graduate GPA to 3.00 within one full-time equivalent quarter (12 credits) is terminated from the program. Exceptions require the approval of the clinical-laboratory-science graduate faculty and the dean/graduate program coordinator of the College of Arts and Sciences.

Courses

(Credits)

See inside back cover for symbol code.

ALHE440 9 (1-5)
Topics in _____
 Repeatable in different areas. Prerequisite: Permission of Program Director.

ALHE480 (1-12)
Practicum in _____
 Prerequisite: Permission of Program Director.

MTCH105 (1)
Medical Terminology and Introduction to Health Professions

A study of medical terminology and an introduction to the health professions including job descriptions and professional organizations with special emphasis on clinical sciences.

MTCH106 (1)
Introduction to Clinical Sciences Laboratory
Exercises from major clinical laboratory sciences disciplines are performed. Weekly: One 2-hour lab. Prerequisite or corequisite: MTCH105.

MTCH215 \$ (3)
Fundamentals of Hematology and Hemostasis
Introduces the production, maturation, and function of various blood cells. Manual and semi-automated blood-cell counts and indices, different leukocyte counts, erythrocytic sedimentation and special staining techniques. Introduction to the coagulation system with analysis of selected coagulation factors using various analytical techniques. Correlation of clinical and laboratory data in select pathologies. Weekly: 3 lectures and 1 lab.

MTCH235 \$ (4)
Fundamentals of Clinical Microbiology
Orientation to the clinical microbiology laboratory; specimen selection, collection, and transport; microscopic evaluation; stains and sterilization techniques; media and incubation selections; identification of routine and nonroutine microorganisms; susceptibility testing; automation and quality assurance. Weekly: 2 lectures and 2 labs.

MTCH245 \$ (2)
Fundamentals of Immunohematology
An introduction to blood grouping and typing, blood-group antigen systems, compatibility testing, antibody identification, and quality control. Weekly: 1 lecture and 1 lab.

MTCH255 \$ (4)
Fundamentals of Clinical Chemistry
Clinical lab procedures, safety, math, application of statistical procedures in quality control, and principles of clinical laboratory instrumentation. Topics include carbohydrates, lipids, electrolytes, and hepatic function with selected pathologies. Physiology and selected pathologies of the renal and excretory system. Weekly: 3 lectures and 1 lab. Prerequisite: CHEM121.

MTCH345 (4)
Principles of Immunology
Cellular and humoral immune systems of the human organism. Topics include immune cells of the blood and bone marrow, chemical and biological properties of the immune system components, hypersensitivity, transplantation, major histocompatibility complex, tumor immunology, autoimmune disorders, immunodeficiency syndromes, and the principles of immunologic techniques used in the modern immunology laboratory. Weekly: 4 lectures.

MTCH400 (2)
Medical Orientation and Phlebotomy
Phlebotomy techniques; anticoagulants; professional ethics; phlebotomy practicum. Prerequisite: Permission of the instructor.

MTCH401,402 (0)
Clinical Year Seminar I, II
Introduction to clinical laboratory science literature. Preparation and delivery of written and oral presentations on current topics. Required atten-

dance at both Autumn and Winter quarter sessions. A pass/fail grade is assigned. Prerequisite: Permission of Program Director.

MTCH410 (1)
Laboratory Information Systems
Survey of current Laboratory Information Systems (LIS), including database design and maintenance, test requesting, result entry, result reporting, quality control applications, and peripheral devices.

MTCH411,412 (3,3)
Hematology and Hemostasis I, II
Cellular elements of the blood, their maturation, functions and morphologies; abnormal and disease state hematologies; assay methodologies; correlation of patient conditions with results of the assay procedures; coagulation system and problem solving; quality control. Prerequisites: MTCH215 and permission of Program Director.

MTCH413 (6)
Hematology Practicum
Professional health-care laboratory practicum: emphases in patient-care application of hematology and coagulation procedures. Prerequisites: MTCH412 and permission of Program Director.

MTCH421 (2)
Clinical Immunology
Antigen/antibody functions and interactions; detections and analyses; correlation with patient conditions; quality control. Prerequisites: MTCH345 and permission of Program Director.

MTCH422 (1)
Clinical Immunology Practicum
Professional health-care laboratory practicum: emphasizes patient-care applications of immunology. Prerequisites: MTCH421 and permission of Program Director.

MTCH431,432 (4, 4)
Clinical Microbiology I, II
Simulated clinical practice for the separation of normal flora from pathogenic microorganisms encountered in various body sites; emphasis on identification of unusual pathogens, solving case histories, discrepancies and unknowns; study of antimicrobial mode of action and testing; includes medical parasitology, mycology, and virology. Prerequisites: MTCH235 and permission of Program Director.

MTCH433 (7)
Clinical Microbiology Practicum
Professional health-care laboratory practicum: emphasis in patient-care applications of bacteriology, mycology, parasitology, and virology. Prerequisites: MTCH432 and permission of Program Director.

MTCH440 (1-5)
Topics in _____
A study of selected topics in the clinical laboratory sciences. Repeatable in different specialized areas. Prerequisite: Permission of Program Director.

MTCH441,442 (3,3)
Immunohematology I, II
Blood grouping and typing; blood-group antigen systems; compatibility testing; antibody identification; blood component therapy; quality control;

donor processing; donor recruitment; blood-banking records; grouping and compatibility problem solving; patient clinical-state correlations. Prerequisites: MTCH245, 345 and permission of Program Director.

MTCH443 (6)
Immunohematology Practicum
Professional health-care laboratory practicum: emphasis in patient-care applications of immunohematology. Prerequisites: MTCH442 and permission of Program Director.

MTCH451 (4)
Clinical Chemistry I
Carbohydrate, lipid, enzyme, electrolyte, trace element, and protein systems; correlation with normal physiology and selected pathological conditions. Analysis of relevant blood and body fluid constituents. Prerequisite: MTCH255 and permission of Program Director.

MTCH452 (3)
Clinical Chemistry II
Liver function, acid-base balance, gastric system, renal function, endocrinology, toxicology, and therapeutic drug monitoring; correlation with normal physiology and selected pathological conditions. Prerequisites: MTCH451 and permission of Program Director.

MTCH454 (8)
Clinical Chemistry Practicum
Professional health-care laboratory practicum: emphasis in patient-care applications. Prerequisites: MTCH452 and permission of Program Director.

MTCH461 (1)
Clinical Microscopy
Analysis of various body fluids such as serous fluids, synovial fluid, amniotic fluid, and urine. Includes fluid formation, metabolism, identification and correlation of fluid constituents with normal and pathological conditions. Prerequisites: MTCH225 and permission of Program Director.

MTCH462 (1)
Clinical Microscopy Practicum
Professional health-care laboratory practicum; emphasis in patient-care applications of body fluids. Prerequisites: MTCH461 and permission of Program Director.

MTCH490 (2)
Laboratory Management and Education
Discussions in selected areas that include health-care organizational structures; problem solving in the clinical laboratory; development of personnel-evaluation procedures; supply and equipment acquisition; budget preparation and analysis; ethics; and regulatory processes. Prerequisite: Permission of Program Director.

MTCH495 (1-4)
Independent Study/Readings/Research/Project
Topics may be from areas relevant to clinical laboratory practice and must be approved by the Program Director. Repeatable in a different subject area. Independent readings earn S/U grades. Prerequisite: Permission of Program Director.

MTCH496 (1)

Extended Clinical Practicums

An 8-week professional health-care laboratory practicum. Emphasis in patient-care applications. Subject areas are to be coordinated with the Clinical Site Education Coordinator and the Program Director. Graded S/U. Prerequisite: Successful completion of the 24-week clinical practica of the Clinical-Year Program and permission of Program Director.

MTCH521, 522, 523 (1,1,1)**Seminar in Clinical Laboratory Science**

Cooperative research into topics of current interest in the literature. Each quarter the student prepares presentations based on current readings. Faculty and guest lecturers also contribute to the seminar series. Admission by permission of the Graduate Program Coordinator.

MTCH525 (6-12)**Advanced Studies in Clinical Laboratory Science**

Designed in consultation with and coordinated by the area specialty adviser. Cumulative report, presentation, and defense required. Prerequisite: Certification and/or licensure as a clinical laboratory scientist and permission of the Graduate Program Coordinator. Repeatable to 12 credits. Clinical placement depends on clinical site availability.

MTCH595 (1-4)**Independent Study/Readings/Research Project**

Topics may be from immunology, immunohematology, clinical chemistry, hematology, microbiology, other areas of patient-care science, medical technology education, management, or applications especially relevant to clinical laboratories. Repeatable in a different subject area. Independent readings earn S/U grades. Prerequisite: Permission of Graduate Program Coordinator.

ART, ART HISTORY, AND DESIGN

Art Center, Room 202
(616) 471-3279
art-info@andrews.edu
<http://www.andrews.edu/ART/home.html>

Faculty

Gregory J. Constantine, *Chair*
Steven L. Hansen
Cheryl J. Jetter
Robert N. Mason
Rhonda Root

| Academic Programs | Credits |
|---|----------------------|
| BFA: Design and Photography Digital Art and Design Graphic Design Photography | 118 |
| BFA: Visual Arts Ceramics Painting Pre-Art Therapy Printmaking | 118 |
| BA: Art Art History Pre-Art Therapy Visual Art | 47 63 67 |
| BS: Art Education Minor in Art History Minor in Graphic Design Minor in Visual Art | 68 30 32 30 |

It is the mission of the Department of Art, Art History, and Design to develop our God-given creative gifts in order to integrate our personal, spiritual, and professional lives.

Undergraduate Programs

BFA: Design and Photography—118

The Bachelor of Fine Arts degree is recommended for students planning to enter one of the visual-art professions and/or to do graduate work in visual art or art therapy. The studio-oriented BFA program requires 118 credits of visual-art and art-history courses plus the General Education courses. Central to the BFA curriculum is 38-48 credits of advanced design or visual-art work in a single emphasis. The process for entering a BFA program is two-fold. First, students are accepted into the BA degree program of the Department of Art, Art History, and Design. Upon completion of the introductory-level courses and successful BFA review (no later than the end of their sophomore year), students can be accepted into the BFA program.

BFA 16-credit Complementary Area Requirement: Each of the BFA degree emphases has a 3-part curriculum: (1) Art History; (2)

Visual Art Foundation; and (3) Advanced Visual Art. Additional cognates along with the General Education requirements complete the specifications for graduation for the BFA degrees.

BFA students must take courses beyond the introductory level in an area(s) which complement(s) their chosen media emphasis. For example, if the 38-credit emphasis is ceramics (3-dimensional), then the complementary area may be painting and/or printmaking (2-dimensional); and conversely, if the 38-credit emphasis is painting (2-D), then the complementary area may be sculpture and/or ceramics (3-D). The photography emphasis may allow 8 credits of graphic design (ART214 and 414) to be substituted to meet the complementary area requirement. The Graphic Design complementary area is shaped with the student's adviser and may include such areas as computer graphics, photographic arts, marketing, and communication.

Digital Art and Design Emphasis (2-D)

The digital art and design emphasis is recommended for those wishing to combine the study of art and design with the opportunity to explore more extensively computer graphics environments as a medium for visual communication and/or personal artistic expression.

The degree prepares students to enter one of the computer-based visual communication-oriented professions educated as an artist or designer/visual communicator, or to enter graduate studies in electronic visualization.

Art History—16

ART 235, 236, 440, one ARTH elective.

Visual Art Foundation—32

ART104, 105, 106, 207, 208, 300, 304; PHTO 115.

Digital Media Foundation—22

COSC125; DGME180, 255, 310, 320; an elective in consultation with adviser (2 credits).

Advanced Digital Media—48

ART214, 314, 414 (24 credits), 495 Senior Exhibition and Slide Portfolio, 1; DGME320, 355; electives in consultation with adviser (7 credits).

Graphic Design Emphasis (2-D)

The BFA in Graphic Design (design for visual communication) is a specialized curriculum recommended for those who plan to enter one of the visual-communication design or electronic (computer-oriented) visualization professions.

The visual art and design courses develop strong hand-eye coordination skills and a direct feeling for materials and form, along with an understanding of professional design process. The art-history courses develop intellectual breadth and critical perspectives needed to inform the design process. The graphic arts provide a foundation in the technologies of the profession.

Art History—16

ARTH235, 236, 440, ARTH elective

Visual-Art Foundation—36

ART104, 105, 106, 107 or 108, 207, 208, 300; one ARTH elective. Select two from ART304; PHTO115, 206.

Graphic Arts Foundation—18

DGME180, 200, 310; 5 credits of electives chosen in consultation with adviser

Advanced Graphic Design—41

ART214, 314, 414 (32 credits); 495 (Senior exhibition and slide portfolio, 1).