



Sanford Medical Laboratory Science Program

Accredited by the National Accrediting Agency
for Clinical Laboratory Sciences

Mission Statement

The Sanford Medical Laboratory Science Program is committed to providing didactic and practical instruction which will allow our students to acquire the knowledge, skills and attitudes necessary to attain a high level of competency in the practice of medical laboratory science.

The Medical Laboratory Science Program is one of the educational programs at Sanford USD Medical Center. It is accredited by the National Accrediting Agency for Clinical Laboratory Sciences.

The majority of students enrolled in the program are college seniors on affiliation from their respective colleges to complete the requirements for the Clinical Laboratory/Medical Laboratory Science degree. Other students are those who have obtained a baccalaureate degree prior to entry. All accepted students will be subject to a background check.

Graduates of this program, with baccalaureate degrees requirements met, are eligible to take the American Society for Clinical Pathology (ASCP) Board of Certification exam, or an equivalent certification exam. Granting of the program certificate is not contingent upon the student passing any type of external certification or licensure exam. However, becoming certified is highly recommended and often required by medical facilities.

About Sanford Health

Sanford Health, the largest rural health system in the United States, is dedicated to transforming the health care experience and providing access to world-class health care in America's heartland. Headquartered in Sioux Falls, South Dakota, the organization serves over 2 million patients and more than 415,000 health plan members across 320,000 square miles. The integrated health system includes 58 medical centers, 289 clinic locations, 145 Good Samaritan senior living centers, 4,500 Sanford physicians and advanced practice providers, 1,100 active clinical trials and studies, and five world clinic locations around the globe.

The Sanford USD Medical Center in Sioux Falls has been consistently named a Top 100 Hospital in the nation. With 545 beds and 4,000 employees, our comprehensive care includes emergency air transport, neonatal and pediatric intensive care, transplant services and specialty centers in children's care, heart, cancer, neuroscience, sports medicine and women's health. The Sanford USD Medical Center is the only Level I Adult and Level II Pediatric Trauma Center in South Dakota verified by the American College of Surgeons.

About Sanford Health

Our Mission

To care, comfort and cure.

Our Vision

To be the premier rural health system in the United States.

Our Values

Service - Doing our best every day to uphold and care for others.

Courage - Having the strength to persevere, problem solve and take action.

Humility - Respecting others and knowing there is more to learn.

Stewardship - Safeguarding the resources that have been entrusted to us.

Family – Honoring the commitment we have to each other through it all.

Sanford Health Culture

At Sanford Health, we believe quality health care should be available close to home for everyone, everywhere.

From our roots in the Midwest, we are proud to set the standard for delivering world-class care. By building on the talents, experiences and beliefs of our employees, we aim to improve the lives of patients and residents throughout the diverse communities we serve. Through our shared commitment we can become the nation's most connected, widest-reaching health care system, shrinking the distance between every patient and their best, healthiest life.

The Clinical Laboratory

The Laboratory is located on the 1000 level of the West Patient Building on the Sanford USD Medical Center campus. It covers an area of approximately 17,200 square feet, and includes both clinical and anatomic laboratory departments, processing rooms for the Blood Bank, and a classroom which is utilized for didactic instruction. Pathology services are provided by the Sanford Pathology Department and the Sanford School of Medicine Pathology Residency Program, located adjacent to the laboratory.

The Laboratory is equipped with state-of-the-art instrumentation, which allows our laboratory personnel to perform a wide variety of high-complexity tests accurately, precisely, and on a timely basis. Areas of testing include chemistry, hematology, coagulation, flow cytometry, urinalysis, immunology, immunohematology, and histology. High-complexity microbiology testing is performed at the Sanford infectious diseases laboratory which is also located in Sioux Falls.

Laboratory Administration

Medical Director

Kim Bohy, MD, Sanford Pathology

Laboratory Administrative Director

Taryn Smith, BS, MLS (ASCP)^{CM}

Department Supervisors

Kim Bennett, BS, MLS (ASCP)^{CM}

Adrian Holzer, BS, MLS (ASCP)^{CM}

Trina Borchardt, BS, MLS (ASCP)^{CM}

Richard Krum, HT (ASCP)

Becky Carter, PBT (ASCP)

Program Administration

Medical Director

DesiRae Muirhead, MD, Sanford Pathology

Program Director

Meredith Loosbrock, MSA, MLS (ASCP) ^{CM}

Program Faculty

Meredith Loosbrock, MSA, MLS (ASCP) ^{CM}

Lacey Hewitt, BS, MT (ASCP)

Alycia Green, BS, MLS (ASCP) ^{CM}

Austin Haack, BS, MLS (ASCP) ^{CM}

Ashley Martinez, BS, MLS (ASCP) ^{CM}

Adjunct Faculty: Pathology Department and clinical staff specialists

Advisors and Affiliates

Mark Larson, PhD, Augustana University

Kari Potter, MS, MLS (ASCP) ^{CM}, University of South Dakota

Zachary Varpness, PhD, Northwestern College

Brian Lowery, MS, University of Sioux Falls

Kay Rasmussen, PhD, Mount Marty University

Tony Greenfield, PhD, Southwest Minnesota State University

Rachel Cohen, PhD, Minnesota State University Mankato

Tony Jelsma, PhD, Dordt University

Annie Moore, PhD, Morningside University

Entrance Requirements

Prerequisite Credits

The applicant must either be a college graduate or be enrolled in an affiliated “3 plus 1” program which grants credit for the work completed during the clinical program year at the hospital.

Prior to entering the program, the student must have completed all pre-clinical course requirements at his/her college or university. The “3 plus 1” student must be eligible for a baccalaureate degree upon satisfactory completion of the clinical program.

The minimal pre-clinical course and credit requirements* are:

- 16 semester hours of chemistry. This includes organic and/or biological chemistry.**
- 16 semester hours of biological sciences to include anatomy and physiology, microbiology with a lab**, immunology (2 credit min.), as well as genetics and/or molecular biology is required.
- One course of college level mathematics, and statistics.

** The chemistry and biological science courses must be acceptable toward a major in those fields or in medical laboratory science, or be certified by the college/university as equivalent. Survey courses do not qualify as fulfillment of the prerequisites. Remedial mathematics courses will not satisfy the mathematics requirement. Required classes must be completed with a letter grade of C or higher.*

***Organic/biochemistry, immunology, and microbiology course credits must be earned within the last seven years. Applicants with credits past seven years will need to update their knowledge in those fields prior to admission.*

- A. Due to individual affiliate course structures, appropriate refresher courses may vary. Students must discuss available course options with their advisor and inform the program director to ensure program acceptance of the selected course(s). A grade of “C” or higher must be achieved in each course.*
- B. Credit may also be obtained by challenge examinations, if such challenge examinations are available from the affiliate institution. If a grade is given, it must be a “C” or higher. Challenge examinations will be arranged between the student and the affiliate university.*
- C. Professional field experience may be considered as appropriate competency in these courses. Field experience will be evaluated by the program director on a case by case basis.*

Non-US student applicants without a BS/BA degree must be enrolled in an affiliated college, and have a minimum of 24 semester hours or credits of undergraduate coursework completed within the US at the time of application. Non-US applicants with a BS/BA degree completed outside the US, and with all prerequisite coursework completed, will be required to have a minimum of 8 semester hours or credits of relevant science coursework completed in the US at the time of application. Students with foreign degrees must have their transcripts evaluated by an appropriate US agency. All students with English as their second language must successfully complete the TOEFL exam. Each non-US applicant must possess the appropriate VISA and documentation allowing them to complete the clinical program. Sanford MLS program does not provide VISA sponsorship.

Other recommended courses are:

Parasitology	Computer Science
Instrumentation	Physics

Academic and Technical Requirements

Applicants must have a minimum cumulative and scientific grade point average (GPA) of 2.80 (on a scale of 0-4.0). Science GPAs are calculated from completed required pre-requisite courses at the time of application. Original and repeated course grades are included in GPA calculations for applicants. Applicants with GPA's below 2.80 may submit an application, however they will be evaluated and considered only after candidates with GPA's of 2.80 or higher have been processed.

For acceptance, the applicant must have sufficient visual, motor and intellectual function to correctly identify microscopic cellular structure; operate instruments and read printouts; enter computer data accurately; calculate, evaluate and explain laboratory results and quality control statistics; and obtain and handle specimens safely. The successful applicant must also have the ability to function effectively in stressful situations, and interact and communicate positively with patients and other healthcare professionals. A detailed description of these essential requirements (standards) is available on the website and from the Program Director. It is provided so that potential applicants can independently evaluate their ability to fulfill the expected requirements of a clinical laboratory scientist/medical technologist.

It is required that all applicants read and sign the essential requirements form providing this description at the time of application.

Application

Application Procedure

Application information may be obtained from our website, www.sanfordhealth.org/student-programs/medical-laboratory-science-program. **Applications are accepted August 1 to October 1** for the class starting the following July. Interviews are completed during October/November and student selection is usually completed by late December.

Application Evaluation

The evaluation of an applicant is based upon the GPAs, interview(s), references, and a statement of the applicant’s expectations and goals. These are scored and carry the following weight-values:

Science GPA	20%
Cum. GPA	20%
Academic progress	10%
Interview(s)	30%
References	15%
Applicant’s statement	5%

Accepted students must continue to maintain a grade of "C" or higher in all required coursework. Additional considerations include: criminal background check, ties to Sanford Health, and ties to the community or surrounding area.

Advanced Placement

Applicants with previous clinical laboratory experience, such as MLTs, will be evaluated on an individual basis regarding a reduced clinical rotation schedule once accepted into the program. This will require proof of competency in the areas of reduced clinical time to the satisfaction of the Faculty and the MLS Program Director. Applicants will need to have completed a BS/BA degree and meet all prerequisite requirements by the program start date. Any exception will be at the discretion of the MLS Program Director, and with clinical instructor(s) consultation. The didactic portion of the program does not allow for advanced placement.

Progress Requirement

During the clinical year, students must maintain a minimal grade of C. For graduation, a student must have that grade, or better, in each of the subjects. The grading system is based upon the student's attaining minimum competency for career entry.

MLS Program Grading Scale

A	93-100%	or	4.00 quality points
A-	90-92%	or	3.67
B+	87-89%	or	3.33
B	83-86%	or	3.00
B-	80-82%	or	2.67
C+	77-79%	or	2.33
C	73-76%	or	2.00
C-	70-72%	or	1.67
Failing	<70%		

Transcript grades are calculated by the following breakdown (excluding Mgmt):

40% Final Bench Grade + 50% Final Didactic Grade + 10% Final Comprehensive Exam

Grading in the didactic portion of the program is based upon written examinations, assignments, or research paper. The didactic grade average in each subject is utilized in the calculation of final grades. Progress in the practical portion (bench performance) of the program is evaluated after each rotation through a department. The grade received on the final rotation through each department is utilized in the calculation of final grades. **No credit is given for partial completion of the course.**

Causes for Dismissal or Probation

On the Basis of Grades:

- A policy on academic status is in place and will be distributed to all incoming students. Failure of more than 2 exams could result in dismissal from the program.
- Grade evaluations are made periodically throughout the program year. Students not maintaining the minimal allowed average are placed on academic probation. Not maintaining an average grade of "C" by the two-week break could result in dismissal from the program.

Progress records are maintained throughout the year and are available to the student at any time.

On the Basis of Conduct:

- Theft, immoral conduct, fighting, willful destruction of property on hospital grounds.
- Use or being under the influence of alcohol or illegal drugs within the institution.
- Cheating on school examinations or dishonesty in the performance or reporting of the procedures within the laboratory.
- Inconsiderate treatment of patients or discussion of confidential information with unauthorized persons.
- Excessive unexcused absenteeism and/or tardiness.
- Any other act classified as criminal.
- Unwillingness or inability to meet the "essential requirements" of the program

Students dismissed for reasons of either grades or conduct will not be allowed reentry into the program.

Appeals Procedure

An appeals procedure is available for use by any student having a grievance based upon seemingly unfair treatment. According to the procedure, a grievance not settled between the parties immediately involved may be appealed to the Program Director of the school, then to the Medical Director of the school and, finally, to the Executive Director over Laboratory Services.

Expenses

Tuition	\$10,300 inclusive of books. Tuition is due in full by the program start date. Tuition is to be paid to Sanford USD Medical Center by the student. Affiliated universities/colleges are not allowed to pay Sanford on behalf of the student.
Deposit	\$300 (Due upon acceptance of placement offer. Non-refundable and applicable to tuition).
Lab Coat	Water resistant lab coats worn while working in clinical testing areas are provided by Sanford USD Medical Center
Rooms	Students are responsible for their own living quarters
Meals	Available at moderate cost in the hospital cafeteria
Transportation	Students are required to have a <u>valid driver's license as well as reliable personal transportation</u> for travel to and from Sanford USD Medical center and outreach locations. These are the student's financial responsibility.

Refunds

Students who withdraw from the program will be allowed a tuition refund based upon the following schedule:

First Week	80%less deposit
Second Week	60%less deposit
Third Week	40%less deposit
Fourth Week	20%less deposit
No Refund Thereafter	

Note: No Credit will be granted for partial completion of the program.

Financial Aid

Scholarships and Loans

Students who will be attending the Sanford MLS Program on affiliation from one of the programs affiliated colleges/university will work with their home school’s Financial Aid department to determine their aid package. This may include a combination of scholarships, federal loans and grants, and private loans.

Important Note: For those students attending our program independently and with BS/BA degrees already completed, federal financial aid is currently not available for the Sanford MLS program. These students will need to seek private funding to meet tuition and living expense needs. In addition, federal loan deferments may or may not be allowed during the program year. Throughout the program year, various scholarship opportunities arise through Sanford, professional societies, and medical corporations that students may qualify to apply for.

Part-Time Work

Sometimes Phlebotomy, Microbiology assistant, or POC positions are available. Hourly rates of compensation are available when and if these positions are available. Outside work involving more than a minimal number of hours per week is strongly discouraged.

Health Requirements and Services

Prior to the start of the clinical program, students will be required to provide proof of immunization for: MMR (measles/mumps/rubella), Varicella (chicken pox), Tuberculosis (TB), and Hepatitis B; Td/Tdap (Tetanus-Diphtheria/Tetanus-Diphtheria-Pertusis) is recommended but not required at this time. A seasonal InfluenzaA vaccination or proof of exemption will be required in the fall of program attendance. A health assessment and drug screen may both or individually be required. More information regarding immunizations and health assessment will be sent to accepted students about 2 months prior to the program start date. Cost responsibility should be presumed to be the student's responsibility.

o Biohazard Exposure

The medical laboratory science program utilizes actual patient specimens from the clinical laboratory for learning opportunities and labs. During orientation students are instructed on safety in the lab and handling of potentially infectious specimens. Since the potential hazards are unknown, all specimens should be treated as if they were potentially infectious. Students are under the direct supervision by the clinical instructor or responsible technical staff member in the clinical laboratory. Appropriate personal protective equipment and work practice controls must be utilized at all times. If any illness, injury, or exposure occurs during program hours, students will be directed to the appropriate department or facility for treatment. The student is responsible for health care costs and insurance coverage.

Program Calendar

The Program spans from July to May. The weekly schedule follows a Monday through Friday pattern. Students are allowed five days or 40 hours of personal time for illness or personal need. Additional time missed, or time missed during a shorten rotation, must be made up. There is a two-week winter break provided toward the end of December. Exact program dates and timeline change with each program year and will be provided to accepted students. Recognized holidays follow the hospital holiday schedule and include: July 4th, Labor Day, Thanksgiving, Christmas Day, New Year's Day and Memorial Day. The Program also allows the Friday after Thanksgiving off unless a student needs to make up missed time. Time off around Easter is provided when the schedule allows.

The Program consists of didactic classroom lectures, bench instruction and clinical testing in each department, student laboratory sessions and some independent study. Hours are approximately from 7 a.m.-4 p.m. Monday through Thursday. Hours on Friday are from 7 a.m.-approximately noon. Three hours of didactic lecture are scheduled between 1 and 4 p.m. Monday through Thursday. Some bench areas may require students to come in earlier than 7 a.m. Other rotations may require bench instruction to take place in the evening hours. Students are provided with a weekly rotation schedule for the entire program year during orientation week. There are multiple rotations through each of the four major departments: Hematology, Chemistry, Microbiology, Blood Bank, as well as enrichment rotations. There are usually two or three students assigned to each main department at a time, but each student is being instructed on and learning the testing techniques of a different subsection within that main department. Bench instructors oversee the bench instruction in their respective departments, but students will also work with other staff members at times.

General Program Affective Objectives/ Expected Behaviors:

In both the classroom and clinical setting, the Medical Laboratory Science student will:

1. Display emotional stability, remain calm, and exercise good judgment under stressful situations.
2. Communicate effectively, both orally and in writing, with patients, visitors, fellow students, instructors, and staff. This includes relaying and receiving information.
3. Work productively and efficiently, both independently and in a team environment. Utilize time management and organizational skills for maximum benefit.
4. Demonstrate honesty, integrity, and empathy with patients, visitors, fellow students, instructors, and staff.
5. Behave in an ethical manner by following all established rules, policies, and procedures; taking ownership of errors and responsibility for his/her actions.
6. Project a professional image in dress and demeanor.
7. Maintain a positive and professional attitude, even under difficult circumstances.
8. Remain flexible and adaptive to change.
9. Take ownership for his/her learning, by completing assignments as directed and by coming prepared for class and clinical bench rotation each day.
10. Demonstrate and promote pride in the Medical Laboratory Science profession.

Program Goals

1. Provide a Medical Laboratory Science Program that meets or exceeds the standards developed by the National Accrediting Agency for Clinical Laboratory Science (NAACLS)
2. Maintain affiliations with regional colleges and universities by providing a curriculum that allows students to complete their bachelor degree in the field of Medical Laboratory Science
3. To provide students with the clinical education and professional development to succeed in the field of laboratory science, complete certification, and provide a foundation for healthcare career advancement
4. Provide high quality, well prepared graduates to help meet staffing needs locally, regionally, and at the national level

Values

Program faculty is encouraged to serve as positive, ethical role models for our students, and to be a constant source of encouragement and motivation. The values faculty strive to instill are:

- **Respect:** for patient, colleague, team, and self
- **Accountability:** for our actions, attitudes, and words
- **Integrity:** honesty, ethics, and adherence to policy
- **Trust:** support one another individually and as a team
- **Excellence:** strive to be the best in quality, efficiency, and cost
- **Passion:** enthusiasm for the work and the patient's overall experience
- **Advancement:** the pursuit of continued personal and organization growth

Competencies

At career entry, graduates will be able to demonstrate following competencies:

Professional Skills and Knowledge

- Perform phlebotomy procedures according to proper protocol
- Perform analytical laboratory tests from low to high complexity with skill, accuracy, and timeliness following Standard Operating Procedures (SOPs)
- Conduct routine instrumentation maintenance following SOP

- Analyze and review quality controls employing quality assurance principles and practices to ensure the accuracy of test results
- Perform, evaluate, and improve pre-analytical, analytical, and post-analytical procedures for optimum quality of laboratory results
- Troubleshoot quality control issues, sample integrity problems, and instrumentation issues utilizing a combination of critical thinking, maintenance procedures, and continuous quality improvement guidelines
- Review patient results for acceptability, follow-up action, or additional testing as indicated
- Utilize information technology to perform and report results, access information, analyze data, and communicate with members of the health care team
- Comply with all regulatory requirements and policies of the facility
- Explain the significance of various laboratory tests in the diagnosis and treatment of disease, as well as, preservation of health
- Employ, with guidance, knowledge of method and instrument selection evaluation practices to determine implementation of new procedures and acquisition of new instrumentation, or investment in information technology, with consideration of budget, space, and staff
- Utilize education terminology and techniques to train/educate users and providers of laboratory services
- Management skills in basic financial management, human resources management, regulation and policy, safety and supervision

Professional Attributes

- Maintains a positive attitude and emotional stability under pressure
- Adapts to changing workflows, the dynamics of the healthcare field, and the needs of the laboratory customer
- Works productively, efficiently, and accurately; both independently and as a team member
- Communicates effectively and professionally with colleagues, team, visitors, and patients
- Consistently performs in an honest, ethical, and professional manner
- Strives to grow as a professional through continuing education and professional involvement

Course Descriptions

Clinical Microscopy/Urinalysis, 2 semester hours

Lecture, supervised laboratory instruction, quality control, instrumentation, computer applications and experience in body fluids and urine in regard to chemical and cellular composition. Anatomy and physiology, theory of renal function in health and disease.

Clinical Hematology/Coagulation, 8 semester hours

Lecture, supervised laboratory instruction, quality control, instrumentation, computer application and experience in the analysis of cellular elements of the blood and bone marrow, both normal and abnormal, and the hemostatic mechanisms of the blood.

Clinical Microbiology, 10 semester hours

Lecture, supervised laboratory instruction, quality control, instrumentation, computer applications and experience in the isolation and identification of pathogenic organisms and their susceptibility to antimicrobial agents. Includes bacteriology, mycology, parasitology, and virology.

Clinical Serology/Immunology, 2 semester hours

Lecture on antigen/antibody structure-function-interactions, supervised laboratory instruction, quality control, instrumentation, computer applications and experience in applying the principles of immunology to serologic diagnosis.

Clinical Chemistry/Immunoassay/Body Fluids,

11 semester hours

Lecture, supervised laboratory instruction, quality control, computer applications, instrumentation and experience in medically oriented biochemistry as applied to normal and abnormal physiology and analyses of body constituents. This course also includes analysis of special body fluids such as amniotic, synovial, cerebrospinal and pleural fluids.

Clinical Immunohematology, 6 semester hours

Lecture, supervised laboratory instruction, quality control, instrumentation, computer applications and experience in theory and practice of immunohematology as applied to blood transfusion, component theory, autoimmune diseases, immunologic diagnostic procedures and blood component preparation and administration.

Management and Supervision, 1 semester hour

Lectures and/or seminars on theory and techniques of laboratory oriented management practices utilized in planning, organizing, directing, controlling and supervising a clinical laboratory facility.

Educational Methodologies, Included in management

Lectures and/or seminars on the principles of education. Includes methods of instruction, writing objectives and evaluation devices for didactic and clinical practice

Introduction to Research, Included in management

Faculty guided study, research, scientific writing, case study presentations and/or projects in specialty area(s) of clinical laboratory science.

Specialized Units (Special Topics) Orientation to Medical Laboratory Science

A. **Introduction**

Introduction to basic techniques, principles of safety, infection control, professional ethics, personal and professional responsibilities in the clinical laboratory. Review of program rules and regulations. Introduction to clinical significance of laboratory procedures in diagnosis and treatment.

B. **Phlebotomy**

Anatomy and physiology of the arm, blood collection techniques from the vein, capillary, artery and difficult draw sites. Specimen variables and handling techniques. Interactive communication skills with patients and para-professionals.

C. **Computer Applications in the Clinical Lab**

An introduction to techniques, principles and concepts common in laboratory data processing systems. Utilization of computers in the laboratory and within instruments.

D. **Laboratory Mathematics/Quality Assurance**

Laboratory oriented mathematics with emphasis on performing calculations related to units of measure, pH, Beer's Law and calibration curves, Henderson-Hasselbach equation, enzyme activity, renal clearance and hematology calculations. Principles and practices of quality assurance. Includes statistical techniques, method evaluation and pipette calibration. Critical thinking will be emphasized.

Credit for the Specialized Units of Instruction is included in the described courses.

Statement of Policy

Sanford’s educational programs are equal opportunity programs. Any questions of discrimination on the basis of age, sex, race, color, creed, disability or national origin shall be directed to:

President
Sanford USD Medical Center
P.O. Box 5039
1305 W. 18th Street
Sioux Falls, SD 57105
(605) 333-1000
www.sanfordhealth.org

Sanford USD Medical Center Laboratory Science Program is accredited by the:

National Accrediting Agency
for Clinical Laboratory Sciences
(NAACLS)
5600 N. River Rd, Suite 720
Rosemont, IL 60018-5119 (773)
714-8880
Fax: (773) 714-8886
www.naacls.org

Our Website:

Link: <https://www.sanfordhealth.org/student-programs/medical-laboratory-science-program>

The website presents a brief overview of the program along with the following attachments:

- Program outcome measures
- Clinical brochure
- Application and reference forms
- Essential requirements guide

For more information or program policies, please contact:

Meredith Loosbrock, Sanford MLS Program Director
meredith.loosbrock@sanfordhealth.org | (605) 333-7104

Policies available upon request:

- Academic Status
- Advance Placement
- Appeals
- Attendance and Punctuality
- Compassionate Leave
- Conduct
- Guarantee of Applied Experience
- Privacy of Student Records
- Retention of Student Records
- Service Work

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