Bachelor of Science in Medical Laboratory Science

STUDENT MANUAL

Medical Laboratory Science Program

College of Health Professions

Grand Valley State University

January 2021
This student manual will be superceded by all versions bearing subsequent dates.

Table of Contents

MEDICAL LABORATORY SCIENCE PROGRAM

MISSION STATEMENT:

The Medical Laboratory Science program provides a learning environment that enables medical laboratory science students to become competent laboratory professionals. Through the acquisition of the theoretical knowledge and the technical skills necessary, medical laboratory science students are able to successfully perform testing and provide quality laboratory services. Embodied in this expertise is the ability to adapt to the changes required by medical advances, newly developed technologies, and the changing needs of health care and society.

VISION STATEMENT:

The medical laboratory science program is committed to preparing well-educated, competent medical laboratory scientists who contribute to the provision of quality healthcare.

CORE VALUES:

- Professional and ethical behavior
- Respect and appreciation of differences
- Life-long learning
- Excellence in teaching, scholarship, service
- Appreciation of personal well-being
- Collegiality and collaboration
- Social responsibility

MEDICAL LABORATORY SCIENCE ACCREDITATION

The Medical Laboratory Science program is accredited by The National Accrediting Agency for Clinical Laboratory Sciences:

NAACLS
5600 N. River Road
Suite 720
Rosemont, IL 60018
Phone: 773-714-8880

MEDICAL LABORATORY SCIENCE PROGRAM GOALS:

The program goals for the Medical Laboratory Science program represent the guiding principles of the curriculum.

Program Goal I: The graduate will demonstrate the entry-level competencies and attitudes necessary for safe, accurate, and effective practice as a Medical Laboratory scientist.

Program Goal II: The graduate will be competent in exercising principles of management, safety, and supervision.

Program Goal III: The graduate will understand the role of professional socialization and collaboration for increased autonomy, credibility, and the further professionalization of the field.

Program Goal IV: The graduate will understand the importance of establishing and maintaining communication with other health care professionals in order to promote a more responsive, patient-focused, health care delivery system.

Program Goal V: The graduate will understand the role of research and scientific inquiry as applied to the practice, education, and leadership of the profession.

MEDICAL LABORATORY SCIENCE STUDENT COMPETENCIES:

The Grand Valley State University Medical Laboratory Science Program graduate will be able to:

- Function as a knowledgeable and competent Medical Laboratory Scientist who uses mature judgment in dealing with medical care problems.
- Function in a medium to large automatic laboratory with minimal orientation.
- Develop and establish procedures for collecting, processing, and analyzing biological specimens and other substances.
- Perform analytical test of body fluids, cells and other substances; integrating and relating data generated by the various laboratory departments while making decisions regarding possible discrepancies.
- Confirm abnormal results, verify quality control procedures, execute quality control procedures, and develop solutions to problems concerning the generation of laboratory data.
- Make decisions concerning the results of quality control and quality assurance measures, and institute proper procedures to maintain accuracy and precision.
- Establish and perform preventive and corrective maintenance on instruments as well as identifying appropriate sources for repairs.
- Develop, evaluate, and select new techniques, instruments, and methods in terms of their usefulness and practicality within the context of a given laboratory's personnel, equipment, space, and budgetary resources.
- Be compassionate and understanding when dealing with patients and staff, keeping patient's well being foremost in mind.
- Function as a team worker within the laboratory and with other hospital departments.
- Recognize responsibility for his/her own continuing education.
- Provide leadership in educating other health personnel and the community.
- Exercise principles of management, safety and supervision.
- Teach laboratory procedures on a one to one basis.
- Apply principles of current information systems.
- Successfully pass the national certification exam.*****

* ***Please note***: The issuing of a Baccalaureate degree in Medical Laboratory Science by GVSU is not contingent upon the student passing an external certification examination.

MEDICAL LABORATORY SCIENCE ESSENTIAL FUNCTIONS

A student must be able to perform the following essential requirements to complete the activities necessary to obtain credit for the clinical education:

- Characterize the color, consistency and clarity of biological specimens or reagents.
- Employ a clinical grade binocular microscope to discriminate among fine differences in structure and color (hue, shading, and intensity) in microscopic specimens.
- Read and comprehend (English) text, numbers and graphs displayed in print and on a video monitor.
- Move freely and safely about a laboratory.
- Perform moderately taxing continuous physical work, often requiring prolonged sitting over several hours.
- Reach laboratory bench tops and shelves, patients lying in hospital beds or patients seated in specimen collection furniture.
- Maneuver phlebotomy equipment to collect laboratory specimens from patients.
- Control laboratory equipment (i.e., pipettes, inoculating loops, test tubes) and adjust instruments to perform laboratory procedures.
- Manipulate an electronic keyboard (i.e., IBM computer keyboard) to operate laboratory instruments and to calculate, record, evaluate, and transmit laboratory information.
- Read and comprehend technical and professional materials (i.e., textbooks, magazine and journal articles, handbooks and instruction manuals).
- Follow oral and written instructions in order to correctly perform laboratory test procedures.
- Clearly instruct patients prior to specimen collection.
- Effectively, confidentially, and sensitively converse with patients regarding laboratory tests.
- Communicate with faculty members, student colleagues, staff and other health care professionals orally and in a recorded format (writing, typing, graphics or telecommunications).
- Be able to manage the use of time and be able to systematize actions in order to complete professional and technical tasks within realistic constraints.
- Possess the emotional health necessary to effectively use her or his intellect to exercise appropriate judgment. The candidate must be able tot provide professional and technical services while experiencing the stresses of task-related uncertainty (i.e., ambiguous test ordering, ambivalent test interruption), emergent demands (i.e., “STAT” test orders), and a distracting environment (i.e., high noise levels, complex visual stimuli).
- Be flexible, creative and adapt to professional and technical change.
- Recognize potentially hazardous materials, equipment and situations and proceed safely in order to minimize risk of injury to self and nearby personnel.
- Be honest, compassionate, ethical and responsible. The student must be forthright about errors or uncertainty. The student must be able to critically evaluate her or his own performance, accept constructive criticism and look for ways to improve (i.e., participate in continuing education activities). The student must be able to evaluate the performance of colleagues and professionals and tactfully offer constructive comments.

If you are unable to meet the Essential Functions, please contact the Program Director to discuss needed accommodations.

MEDICAL LABORATORY SCIENCE PROGRAM

AFFECTIVE BEHAVIOR OBJECTIVES

The following objectives will be assessed in every MLS course:

I. The student will demonstrate good organizational skills by:
- a. Completing assignments by due dates.
- b. Handling multiple tasks efficiently.
- c. Correctly prioritizing multiple tasks.
- d. Working at a pace that is compliant with the acceptable "turn-around-time" expected of entry-level technologists.

II. The student will demonstrate responsibility, dependability, and initiative by:
- a. Completing routine tasks without reminders.
- b. Arriving punctually and departing at appropriate times.
- c. Readily undertaking procedures requested in his/her area of responsibility with little or no additional instruction.
- d. Staying past scheduled hours to complete assigned task in progress, if necessary, or communicating the status to the appropriate person.
- e. Helping others with workload in progress when appropriate.
- f. Showing perseverance when workload or assignments are challenging.
- g. Using slack periods for professional or intellectual growth.

III. The student will demonstrate flexibility and adaptability by:
- a. Changing current activities to meet a more immediate demand, awareness of priorities.
- b. Adapting to new, different or changing requirements.

IV. The student will demonstrate good communication and interpersonal skills by:
- a. Maintaining confidentiality of all patient information and results.
- b. Cooperating with others and willingly accepting assigned responsibilities.
- c. Handling phone calls and communication with patients and health care personnel with efficiency, courtesy, poise and tact.
- d. Demonstrating learning from mistakes and/or misunderstood/mishandled situations by not repeating the same mistakes.
- e. Allowing others to work without frequent conversational interruptions.
- f. Listening attentively, asking questions or giving indications/acknowledgement to assure understanding when instructions/information are given.
- g. Using the computer system with integrity and according to policy.

V. The student will exhibit intellectual curiosity by:
- a. Demonstrating a desire to learn the rationale behind the procedures and seeking the answers independently.
- b. Showing desire to take advantage of learning activities beyond required assignments and, when schedule permits, attends in-services, grand rounds and other educational activities.

VI. The student will exhibit self-confidence according to the following criteria:
- a. Maintains composure with new or difficult situations.
- b. Shows acceptance of constructive evaluation regarding his/her thinking process or actions by making modifications to arrive at proper outcome.
- c. Acts deliberately and systematically when under pressure and projects confidence.

VII. The student will demonstrate good judgment, decision making and problem solving according to the following criteria:

a. Appropriately gathering available data necessary to make a decision or solve a problem.
b. Correctly analyzing gathered data prior to making a decision.
c. Correctly correlating information in problem solving.
d. Recognizing problems he/she cannot handle and seeking help from other laboratory professionals.
e. Automatically checking unexpected or abnormal results.
f. Defusing tense interpersonal situations by being tactful, polite and considerate.

VIII. The student will demonstrate growth and development, both personally and professionally, by:

a. Applying previously learned knowledge and prior experience to current situations.
b. Evaluating own strengths and confidently building on them.
c. Evaluating own weaknesses and setting goals to address them.
d. Carrying our recurring responsibilities with decreasing amount of supervision.

IX. The student will demonstrate competence and comprehension according to the following criteria:

a. Performing procedures accurately.
b. Recognizing abnormal results and following procedure of reporting them.
c. Recognizing errors in procedure, methodology and results and taking the appropriate corrective action.
d. Correctly correlating results with probable diagnosis.
e. Attaining required entrance level competencies.

X. The student will appreciate the importance of adhering to rules and regulations by:

a. Following all safety regulations and dress codes.
b. Leaving work area in clean, orderly condition.
c. Following protocol for equipment operation and maintenance.

GVSU MEDICAL LABORATORY SCIENCE PROGRAM POLICIES

Medical Laboratory Science is a 1½ -year program leading to a Bachelor of Science in Medical Laboratory Science. The issuing of a Baccalaureate degree in Medical Laboratory Science by GVSU is not contingent upon the student passing an external certification or licensure examination.

Academic Standards

Students must complete all MLS professional courses and clinical practicum requirements to be eligible for program completion. All students pursuing a degree in medical laboratory science are required to attain a minimum of 73.0% (C) competency in all MLS professional courses. Students who fail to achieve this level of competency will be offered **ONE** opportunity for remediation (see remediation policy below). Students will be required to repeat all courses not meeting this standard and may be restricted from additional clinical courses, including MLS 450 and MLS 490 until the deficiency has been corrected. In addition, other courses with pre or co-requisites may not be available to students until the deficiencies have been corrected.

Students in the MLS program must earn a minimum of a 73% average in all MLS professional courses in order to continue in the program. Students earning below 73% in a course have a single chance to remediate in that course. Remediation will consist of additional time and work followed by taking a new cumulative final exam in that course. A score of 80% or higher on the remediation exam is required. Students not earning a score of 80% **may not be allowed to continue in the program**. Remediation must take place within one week after the completion of the course. (NOTE: a student may not be allowed to begin his or her clinical rotations until remediation is completed.) Students are responsible for scheduling their remediation exam with the course instructor. The grade on the remediation exam will not be used in the calculation of the final grade in the course. The final remediation/continuation decision will be determined on overall student performance evaluation in a course and on a case-by-case basis.

For MLS 461 (Medical Laboratory Science Simulation Laboratory) regular attendance is essential for the learning process, therefore, each student is expected to attend laboratory during the regularly scheduled time and to be on time. Students are required to participate in and complete each laboratory and are responsible for recording test results, cleaning up after their work is completed, and acting in a safe and professional manner. If a student misses a simulation laboratory session, an alternative and comparable assignment and/or experience may be assigned in replacement of the SIM session missed, at the discretion of the faculty. The student will not pass MLS 461 until the absence is rectified. A maximum of two SIM sessions may be made up with an alternative experience.

In professional clinical courses-MLS 450 and 490, students are required to receive a grade of 80% or better in **each clinical rotation** and 70% or better on **each summary test**. Remediation, in the form of repeating the rotation or exam, is available for students not achieving this level. A maximum of two (2) clinical rotations can be remediated by any one student. If a student fails to pass three clinical rotations with acceptable percentages, they will be removed from the MLS program. Failure to pass a remediation for a single clinical rotation will result in removal from the MLS program. Each rotation's exam can be remediated once, requiring a minimum score of 70%. If upon remediation a student receives a score of less than 70%, they will have one opportunity to

complete an alternative assignment. A second failed remediation exam will result in removal from the program.

Students failing to meet the minimum percentage requirements **for ANY MLS professional course i**ncluding MLS 450 and/or MLS 490 will be allowed to re-apply to the MLS program for the next admission cycle and will be considered using the same criteria as other applicants for admission. If readmitted, students will be required to repeat and pass (based on the stated requirements) MLS coursework as determined by academic review by MLS program director and course faculty.

Grievances and Appeals

Students should submit all grievances and appeals directly to the MLS instructor and include the program director. The policy and procedure for advancing a grievance if a solution is not to the student's satisfaction is defined in the Undergraduate and Graduate Catalog .

Conferences and Seminars

Students are required to attend the annual Spring conference and meeting of the American Society for Clinical Laboratory Science-Michigan (ASCLS-MI) Chapter. Student are also encouraged to attend hospital in service educational programs when offered and appropriate.

Standards of Conduct

1. Students are expected to follow the undergraduate academic policies and regulations as printed in the GVSU Undergraduate Catalog.
2. The principles of truth and honesty are recognized as fundamental to a community of teachers and scholars. The university expects that both faculty members and students will honor these principles during their time at GVSU and in so doing protect the validity of university grades and demonstrate professional behavior attributes. This means that all academic work will be done by the student to whom it is assigned without unauthorized aid of any kind. Instructors, for their part, will exercise care in the planning and supervision of academic work, so that honest effort will be positively encouraged. Students are expected to exhibit behaviors that are consistent with the values of, and nondetrimental to, the university community as described in the GVSU Student Code: Statement of Student Rights and Responsibilities. Program officials will follow the university's disciplinary procedures as outlined in the GVSU Student Code: Statement of Student Rights and Responsibilities.

Integrity of Scholarship and Grades

3. If, during a clinical practicum, a student violates a professional or ethical code of a clinical site, the student's practicum will be terminated immediately. A grade of F will be issued and students will not be allowed to continue in the program.

Dismissal from the University

The Medical Laboratory Science program officials are under no obligation to assist students who have been dismissed from the University, whatever the reason for their dismissal. However, the program officials may initiate a process to decide whether or not to support the student's application for readmission to the University. During this process, the MLS program officials may decide not to

support the student's appeal for readmission. The student then may appeal for reinstatement without the Program's support.

Health and Safety
The students are required to follow the written "Safety Procedures for the Medical Laboratory Science Program".

CLINICAL SITE POLICIES

Developing a skilled medical laboratory scientist depends upon both academic learning in the classroom and on completion of appropriate clinical experiences. Students enrolled in the Medical Laboratory Science program at Grand Valley State University will be assigned a clinical internship and will be required to successfully complete the practicum courses associated with this internship for successful completion of the MLS program and BS degree from GVSU. If more students are enrolled than clinical practicum placements are available, the Program Director and Clinical Coordinator will work towards finding an internship site for the student, until the student can be placed.

The overall principle for all clinical education is that students are expected to conduct themselves in a professional manner at all times. These written policies indicate the exact elements of professional behavior and conduct required for GVSU students. Any exceptions to these written policies will be at the final discretion of the Program Director, with input from Clinical Coordinator and Clinical Instructors.

Clinical Practicum Requirement

Students are required to complete clinical practicum requirements as stated in the GVSU Catalog. The MLS clinical coordinator works with students to ensure clinical placements for all. In the event there are a limited number of clinical sites that do not accommodate all MLS students, the MLS Clinical Coordinator and Program Director will enact the following policy:
Clinical placements will be delegated in the following order:

- MLS students that are closest to graduation will receive a placement first
- A clinical lottery will take place, selecting students at random for available clinical placements
- With the assistance of the MLS Clinical Coordinator, students may elect to secure their own clinical placement with a clinical affiliate not previously associated with the GVSU MLS program.
- Students are eligible for graduation upon completion of all MLS entry level competencies
- If a student has a cancelled rotation, the program will then seek to find students a replacement clinical site first within the health system from which the student previously was placed and then continue to expand clinical placement as needed.
    - Alternate site options, virtual learning opportunities and decreased rotation lengths may be utilized to meet clinical objectives for required and specialty rotations.

- If a site becomes available to precept students it will be offered to the students that still need to fulfill that set of objectives, regardless of where the student has housing.
    - Students may choose to take a rotation out of their housing area or wait for a rotation that is closer to their housing with the knowledge that this will likely delay their graduation."

Students should be aware that prior to the beginning of their clinical courses, they must complete comprehensive health compliance obligations including but not limited to a criminal background check and drug screening. It is the responsibility of the student to comply. If there is illegal activity in the background check/finger printing or if there is evidence of one or more prohibited substances in the drug test, the clinical sites have the right to refuse a student's placement which may negatively impact a student's ability to complete the Medical Laboratory Science program at Grand Valley State University. In addition, individuals who have been charged with or convicted of a crime may not be eligible for national certification by the American Society for Clinical Pathology – Board of Certification. Students to whom this may apply are strongly advised to work with the ASCP-BOC for pre-application review of eligibility for certification from their website at http://www.ascp.org/Board-of-Certification . The ASCP-BOC contact information: Tel: 800-267-2727; Fax: 312-541-4472.

Accidents or Unusual Events

Any accident or unusual circumstance in which students have become involved during their clinical experience must be reported immediately to their clinical instructor.

Attendance

I. The Clinical Instructor for each institution sets:

A. **Daily start time:** Students are expected to be in clinical rotations eight hours per day. Hours are set by the clinical instruction and occur between 7:00 a.m. and 4:30 p.m. Occasionally the clinical instructor may require adjustments to this schedule. For example, the student may be asked to begin before 7:00 am for experiences such as machine warm-up procedures, blood bank inventory, or phlebotomy experiences. These changes in schedule must be acceptable to both the education coordinator and the student by advance agreement.

B. **Clinical instruction:** Students are under the direction of the clinical faculty assigned to them and will perform work duties normally performed by employees only as part of their training and with direct supervision. Patient care is the first priority of the teaching clinical faculty at clinical sites and students should be prepared to offer whatever assistance they can. If the instructor gives students time to study while workload issues are being resolved, students should have academic material available for this purpose.

C. **Clinical schedule:** All changes in clinical schedules must be cleared in advance with the Clinical Instructor at the appropriate institution. Clinical schedules will not be adjusted to accommodate student work schedules.

D. **Break policy:** Students will follow the hospital policy for breaks and lunch. Students are required to check with the Clinical Instructor before leaving the work area. Students may not leave the clinical site during the day without first notifying the Clinical Instructor or the Clinical Instructor's designee.

E. **Winter weather policy:** In the event that the weather or road conditions are too severe to report to the clinical site, the student may choose to use an "excused absence". However, closure of any GVSU campus due to local weather conditions is not an automatic day off from the clinical site. If a student decides that he/she will not be at their clinical site due to road conditions or weather related issues, the student is responsible for contacting the GVSU clinical instructor AND the laboratory preceptor involved at their clinical site to notify them of their absence. In the event a student has used his/her two excused absences, he/she may still opt to stay home for poor weather conditions; however, the day/time missed will be required to be made up.

II. Record of Clinical Education Time

A. Time of arrival and time of departure from the assigned department must be recorded appropriately on the time sheet and the clinical instructor or designee must initial.

B. Falsification of time records is considered cheating and is a breach of university and professional ethics and will merit appropriate disciplinary action.

III. Absence from Clinical Education

All absence from clinical education is classified as excused, unexcused, or tardy. Students must call at least one hour prior to the start time to report any absence due to illness. A voice mail message may be left or if the student speaks with someone in the lab, he/she should obtain the name of the person taking the message. Both the Clinical Instructor at the clinical site AND the Clinical Coordinator at the university must be notified in advance of **any** absences. **If more than two days are missed during the 18-week clinical rotations, the time must be made up.** All make up time must be completed within that rotation. In the event that a student has several excused days of absence from one rotation, those days need to be made up at the discretion of the Clinical Instructor in conjunction with the Clinical Coordinator. Habitual or excessive absences may result in a grade of incomplete for the clinical practicum course.

If, for any reason, the student requires more than the stated time to complete the requirements for an area of clinical rotation, additional days in that area will be scheduled at the end of the school year and the student will receive an "Incomplete" for the course. The grade will be replaced with a letter grade when the requirements for the clinical have been completed.

A. **Excused absences:**

1. Holidays are granted according to the Grand Valley State University academic calendar with the exception of spring break. Students do not get the university spring break during their semester of clinical rotations.

2. Upon advance approval by the Clinical Coordinator, the following excused absences may be granted:
   i. Funeral leave
      - Up to 2 days in case of death in the immediate family.
        - Immediate family is defined as spouse, child, parent, grandparent, brother or sister, brother or sister-in-law, mother or father-in-law, nephew or niece.
      - Proof of death is required in the form of a published notice (newspaper or funeral home announcement), death certificate, or other notice as approved by the Clinical Coordinator.
   ii. Jury duty
   iii. Military duty
   iv. Job Interviews
   v. Dismissal by the Clinical Instructor due to inclement weather (snow or icy driving conditions).
   vi. Attendance at professional meetings or GVSU student activities when approved in advance by the Clinical Coordinator.
   vii. Excused leave of absence may also be granted to individuals in extenuating circumstances as determined by the Clinical Coordinator.
   viii. Illness

B. **Unexcused absences**
   i. If notification is not given the absence will be considered unexcused.
   ii. One occurrence will result in a written warning.
   iii. The third occurrence will result in failure for the course with a letter grade of "F".

C. **Tardiness**
   1. Tardiness is defined as arriving more than 5 minutes late or leaving 5 minutes early. Clinical Instructors may define the exact place where arrival or departure is permitted.
   2. Tardiness of one hour or more is considered an unexcused absence.
   3. Corrective action will be taken for repeated tardiness.
      2nd tardy per semester – verbal warning
      3rd tardy per semester – written warning
      4th tardy per semester – advising with Clinical Coordinator and Program Director required
      5th tardy per semester – failure of course with letter grade of "F"

IV. Criminal Background Check and Drug Screening

The Medical Laboratory Science program requires a criminal background check (CBC) and drug screening on all admitted students prior to clinical placement. Students will use the Castlebranch system for tracking of their health compliance which includes a drug screen and background check. The student will be responsible for all fees associated with initial sign on, as well as for the background check and drug screen. Additionally, prior to clinical placement, students will need to work with their health provider, to ensure infectious disease titers show immunity and required vaccinations are up-to-date (see "Health" below). Student access to their health records will be lifelong and will not end with their time at GVSU. Students placement in clinical practicum courses

(MLS 450 and MLS 490) will only occur after health compliance, negative drug screen, and criminal background check, **at their expense**, has been completed which discloses that they **do not present** a criminal history. A positive criminal background check and/or drug screen may affect a student's eligibility for participation in clinical rotations, and program completion. Please note that participation in clinical rotations is mandatory for degree completion. Further, students already admitted into the MLS program **are required** to self-disclose any criminal charge or plea of no contest that occurs while in the MLS program, within 2 weeks, to the program director, Jeanne Stoddard. A failure to self-disclose any criminal charge will result in immediate removal from the MLS program.

V. Suspension

Students who are suspended from clinical education for any reason may be required to make up the clinical time from the suspension in order to avoid loss of opportunity for achieving clinical competencies necessary for grades. Students may also be suspended without the privilege of making up the time.

VI. Vacations

Vacations during scheduled clinical education time are not permitted.

VII. Breaks

One 15-minute morning and afternoon break and a 30-minute lunch break are standard.

VIII. Computer Access/Results Reporting

Students must follow the clinical site policies for computer access for patient information and reporting. All patient information obtained while interacting with data in the computer system must be kept confidential.

IX. Disciplinary Action Policy

Medical laboratory science students are subject to Clinical Site Policies, which assure the best care of the patients. The following sample list of problems is included to identify some of the "inappropriate behavior" which is not in the best interest of the patients, employees, and/or students. This list is not to be considered all-inclusive.

Fighting (physical violence)
Cheating on an examination
Falsifying student application
Falsifying time card
Criminal activities on hospital property
Insubordination
Breach of confidentiality
Abusive or threatening language
Sexual harassment
Unauthorized soliciting
Excessive tardiness
Carelessness (job performance)
Possession of firearms or other weapons
Falsifying patient documents/lab reports
Theft
Willful damage to hospital property
Intoxication at work
Jeopardizing patient care and welfare
Unprofessional behavior
Possession of intoxicating substances
Punching another student's time card
Excessive absenteeism
Smoking in unauthorized places
Failure to comply with departmental dress code

X. Dress Code Policy

Personal grooming, hygiene and attire reflect the image of the laboratory. Personal neatness, cleanliness and conservative apparel will best convey a professional image. Students should comply with all dress code policies related to laboratory safety. Student dress and appearance should be neat, clean and professional and meet the requirements provided by university laboratory faculty, clinical instructors, and the manager or laboratory director.

Specific Requirements:

1. Students are required to follow the dress code of the clinical site.
2. Identification badge must be worn at all times.
3. Soft-soled, closed-toe, leather shoes must be worn in all analytical and patient care areas. Athletic shoes must be neat and clean and can be worn when in compliance with safety standards. Socks should be worn at all times. Sandals and open-toed shoes are prohibited.
4. Hair must be neat and clean. Long hair (shoulder length) must be tied back. Beards, mustaches and fingernails must be kept trimmed, neat and clean.
5. Street clothes must be professional in appearance in the judgment of the individual's supervisor. Blue jeans, T-shirts and sweatshirts with writing, sweatpants and warm-up pants are not allowed.
6. Clinical facilities have the right to require the removal of jewelry.

XI. Health

1. Tuberculosis Testing:
   All students are required to show proof of 2 negative TB skin tests (or chest x-ray if there is a history of a reactive TB skin test
2. Immunization:
   All students must provide evidence of immunity by serologic titer for measles, mumps, rubella, varicella zoster, and hepatitis B. In addition, all students must have current immunizations for meningitis, tetanus and diphtheria (Td or Tdap), annual influenza, and additional influenza strains if applicable.
3. Students should go to their personal physician, urgent care center or the University health service for all non-emergency medical related problems.

XII. Incidents and Reports

An incident is any event, which is not consistent with the routine operation of the hospital or department or the routine care of a particular patient. It may be an accident, a happening, or a situation that might result in an accident.
All incidents or accidents and the reporting thereof will comply with the clinical site departmental procedure as specified under the preceding "Accident" statement.

In any case, immediate emergency care shall be undertaken and responsible help shall be summoned immediately.

XIII. Insurance

Failure to have health insurance may prohibit a student from a clinical experience which would prevent such individual from graduating with a Medical Laboratory Science degree. If your parents or spouse does not cover hospitalization, there are available low premium one-year plans from outside agencies. The hospital does not carry hospitalization for the students.

XIV. Safety

Students are required to follow the laboratory site safety policies at all times. Safety rules are valuable only when they are followed. Your cooperation and compliance with all safety precautions

is essential and will benefit all those with whom you come in contact. The following general safety rules should be followed:

1. Report or correct any unsafe conditions you observe. It is best to report in writing, your observation and action taken, if any.
2. Remove immediately or mop up any foreign matter found on the floor.
3. Walk, don't run, especially in hallways and on stairs. Keep to the right, using particular caution at intersections.
4. Defective or broken equipment should be reported immediately to your laboratory instructor.
5. Report all injuries immediately to your supervisor and faculty.

XV. Smoking

The clinical sites maintain a smoke free environment. No smoking is allowed on the property.

XVI. Working

Students are not expected to perform service work during their clinical rotation and are not required to perform unsupervised work in a department because of their participation in the GVSU MLS educational program. Employment for pay may be offered to students if there is a job available and the students meet all requirements for employment at the clinical site. This process is totally separate from the GVSU Medical Laboratory Science Program. Students apply for these hours through Human Resources. Students have separate time and attendance cards for work and they may not be punched in as an employee at the same time as scheduled clinical experience hours. Students who need employment are encouraged not to work over 16 hours per week.

XVII. Work Experience Related Injury:

In case of an injury to the student during clinical experience, the clinical site will provide adequate care; however, the student is responsible for any expenses incurred by the treatment of the injury.

XVIII. Transportation:

Students must have available independent transportation to clinical practicum for up to 100 miles (one way) since public transportation is not available at all clinical sites.

MEDICAL LABORATORY SCIENCE SAFETY PROCEDURES AND PROTOCOLS

Read the following safety rules carefully. Notice that they do not include instructions for all possible situations which you may encounter. If you are not sure of how to deal with any material, procedure, or situation, ask your instructor for assistance.

1. Keep all personal items such as coats, notes, books, book bags, purses, etc. away from potentially contaminated laboratory areas. Items such as these must remain outside the laboratory or in designated areas (cubbies or lockers) within the laboratory.
2. Proper hand washing is a very important factor in arresting the transmission of infection and disease. Wash your hands at least:
   a. Upon entering the laboratory.
   b. Before and after performing any procedure involving use of gloves for patient and

personal contact including venipuncture, finger puncture, urine collection, throat culture, etc. Remember that fresh gloves must be used for direct contact with each patient. **NOTE:** Do not ever use gloves with the microscope. Do not use contaminated gloves on "clean" objects such as phone, door knobs, etc.

c. If your hands become contaminated with human blood or other human body fluids.
d. Immediately prior to leaving the laboratory.

Directions for proper hand washing are posted at each sink.

3. Keep fingernails clean and short.
4. Keep long hair tied back.
5. Notify your laboratory partner and/or the instructor if you feel ill, weak or faint, and report any injury to the instructor immediately.
6. DRESS FOR SAFETY
   a. Leather, close-toed shoes are required when working in the laboratory. Cloth shoes, sandals, or shoes that do not cover the entire foot are not permitted.
   b. Shorts and/or skirts that do not come below the knee are also not allowed when working in the lab. Loose fitting clothing, scarves, neckties, and jewelry may be hazardous and should not be worn in the laboratory.
   c. Students will be required to have a laboratory coat for use in the clinical laboratory. Coats are available at the GVSU Bookstore or local supplier, or may be provided by the MLS program. The lab coat must be worn **at all times** when the student is working in the lab and should be buttoned completely to assure maximum personal protection. **YOU WILL NOT BE ALLOWED TO PARTICIPATE IN LABORATORY EXERCISES WITHOUT A LABORATORY COAT**. Do not wear the coat outside of the laboratory.
7. Read the entire assigned laboratory exercise before beginning, and note any special precautions. If you are unsure how to safely perform any portion of the procedure, be certain to ask before proceeding.
8. Do not eat, drink, smoke or chew tobacco, apply cosmetics or contact lenses in the laboratory. Do not moisten labels with your tongue, chew pencils, or lick your fingers when turning pages.
9. Disinfect your work area with 10% bleach or other approved disinfecting agent at the beginning and end of each laboratory period.
10. Make sure to clean up spills containing human blood or other potentially infectious materials immediately. First absorb as much of the spill as possible with paper towels, being sure to wear gloves and avoid touching any broken glass. Then wash the area with soap to remove protein residue. Finally, flood the spill area with 10% bleach or other approved disinfecting agent and allow to stand for 15 minutes. Completely wipe up and clean the area with absorbent paper towels. Dispose of the towels and all clean up materials in a biohazard bag.
11. Never pipette by mouth. Appropriate pipetting devices are available for each laboratory procedure.
12. Do not place dirty pipettes on the bench top. Do not leave pipettes sticking out of reagent bottles, flasks or test tubes. Place them in the appropriate disposal container as directed by your laboratory instructor.
13. Use **UNIVERSAL PRECAUTIONS** when dealing with human blood and human body fluids in the laboratory. This means that you must treat all samples and reagents containing human materials as potentially pathogenic and contaminated.
14. Personal Protective Equipment (PPE)
    a. Use the Biosafety cabinet (BSC) when directed.

b. Wear protective gloves when performing procedures involving human blood or body fluids, including clean up. This includes use of all contaminated laboratory equipment, supplies, instruments, test tube racks, glassware, and etc.
c. Proper PPE should be worn when working with infectious agents, including masks (and/or BSC) when dealing with organisms known to be airborne pathogens.
d. Use Safety goggles or other appropriate face protection (or Flow Sciences splash shield) during any procedure likely to generate droplets containing blood, body fluid, or harmful chemicals.
   Examples include:
   - Opening specimen container
   - Uncapping any vacutainer type blood or urine collection tube
   - Processing specimens by centrifugation
   - Pouring specimens
   - Use of analyzers with tubing
   - Dilution, pouring, or use of disinfectants
   - Disposing of specimens

e. Goggles and face shields should be disinfected prior to each laboratory session by wiping them with 70% isopropanol and allowing them to air dry; goggles must be worn when handling or transferring chemicals for clinical analyses or chemicals used in specimen preparation for analysis.

15. Minimize the production of droplets and aerosols by:
    a. Covering all test tubes before centrifugation
    b. Operating the centrifuge with the cover closed at all times
    c. Leaving the centrifuge cover closed for 15 minutes after tube breakage during centrifugation to allow for settling of airborne material. Disinfect the centrifuge (see #10).
    d. Performing activities such as blending, sonicating and vigorous mixing in covered containers or in a class I or II biological safety cabinet.
    f. Removing the tops from blood tubes using laboratory tissue or wipes to cover the tube and stopper. Open the tube "away" from yourself or anyone else.
16. When handling chemical reagents, carefully read all labels. Consult Material Safety Data Sheets (MSDS) when appropriate. MSDS include:
    a. Identity of the material and manufacturer
    b. Hazardous ingredients/identity information
    c. Physical/chemical characteristics
    d. Fire and explosion hazard data
    e. Reactivity data
    f. Health hazard data
    g. Precautions for safe handling and use
    h. Control measures

    Note: Know the location of SDS for the chemicals used in your laboratory (CHS 421).

17. Label preparation and information required
    Clearly label all sample **specimens** with the following:
    a. Patient name
    b. Birthdate

c. Date of acquisition
d. Time of draw
e. Initials of person performing the blood draw

Clearly label all **reagents** with the following:
a. Contents/Reagent Name
b. Concentration
c. Date of preparation
d. Storage requirements
e. Expiration date
f. Hazard information
g. ID of individual who collected the specimen or prepared the specimen

18. If you must leave the laboratory for any reason, ask someone to assume responsibility for instruments and reagents actively in use. Do not leave an "active" area unattended.
19. Clean, disinfect, and organize your work area before leaving the laboratory. Be sure to dispose of all potentially harmful substances and apparatus properly.
    a. Dispose of all non-sharp items that are contaminated with human blood and/or other human body fluids in biohazard bag.
    b. "Sharps" including needles, lancets, capillary tubes, glass microscope slides, and other glass, etc. that is contaminated with biological material must be placed in rigid plastic safety containers. Place these items directly into the containers without breaking, cutting or bending them. Do **NOT** recap needles! Use the proper technique for detachment directly into the safety container. These containers are autoclaved and sent out for disposal.
    c. Broken glass that is not a potential biological hazard must be placed in the designated puncture resistant cardboard container or contaminated sharps containers depending on the size of the broken pieces.
    d. Human blood, blood products, excretions and secretions must be carefully poured into liquid impervious biohazard bags.
    e. Materials labeled infective will be autoclaved by the laboratory staff.
    f. Laboratory glassware that is not contaminated with biological material must be washed in the prep room dishwasher.
    g. Reusable plastic and glassware should be placed in the appropriate containers for autoclaving prior to washing.
20. Do not handle gas cylinders unless under direct supervision of the instructor. If improperly handled they can become missiles capable of penetrating walls.
21. Keep your hands dry and be sure your feet and body are away from any water when handling electrical equipment. Be aware of an electrical shock victim's potential to conduct current to a rescuer. Check to make sure that reagent containers (especially saline) do not leak and drip on electrical outlets or strips in the laboratory.
22. Be aware of the fire evacuation plan for the laboratory. Remember not to use the elevators during a fire. The stairways are designed to be used as inside fire escapes.
23. Know the location and use of the following items:
    a. Fire extinguisher
    b. Fire alarm
    c. First aid kit
    d. Eye wash station
    e. Shower
    f. Nearest phone

24. In the unlikely event of a laboratory disaster (severe fire, explosion, chemical spill, other):
    a. Help any injured party, removing them from the site if appropriate.
    b. Shut off all flames and source of gas
    c. Evacuate the laboratory, close the doors as you leave
    d. Summon help by telling the laboratory instructor or sounding the fire alarm, leave the area and go directly to a phone dial one of the emergency numbers.

ON CAMPUS EMERGENCIES:	**Dial 9-911**
Police/Fire/Medical	
FOR ALL EMERGENCIES (OFF CAMPUS):	**Dial 911**
GVSU Pew Security (non-emergency)	1-6677
Grand Rapids Fire Dept. (non-emergency)	616-456-3900
Dana Vaughan (MLS laboratory supervisor)	616-331-5624 (W)
Jeanne Stoddard (MLS program director)	616-331-3304 (W)
	616-745-1436 (C)

References

Calumet Public Hospital Safety Manual, 1987.

Department of Biological Sciences Laboratory Safety Manual, 1995.

Federal Register, Vol. 56, No. 235, Friday, December 6, 1991, 29 CFR 1910.1030. OSHA Bloodborne Pathogen Standard.

Hall, K., Jackson, M. and McKinnon, S., *National Safety Council: Bloodborne Pathogens*, Jones and Barlett Publishers, Inc., Boston, 1993.

Med Tech University, *Safety Practices*, 1999

Providence Hospital, Southfield, MI: *Department of Laboratories Barrier Precautions and Universal Blood and Body Fluid Precautions*, 1991.

Rose, Susan L., *Clinical Laboratory Safety*, J.B. Lippincott Co., Philadelphia, 1984.

U.S. Department of Health and Human Services, Public Health Service, Centers for Disease Control, Morbidity and Mortality Weekly Report Supplement: Recommendations for Prevention of HIV Transmission in Health Care Settings, Vol. 36, No. 25.

MEDICAL LABORATORY SCIENCE FACULTY

Lilianne Nelson, MHS, MLS (ASCP)^{CM}
Program Director, Assistant Professor
Medical Laboratory Science
College of Health Professions
Grand Valley State University
428 Center for Health Sciences
301 Michigan St. NE
Grand Rapids, MI 49503
(616) 331-8540
schollli@gvsu.edu

Julie Hall, MHS, MT(ASCP),
Assistant Dean for Undergraduate
Academics/Assistant Professor
Medical Laboratory Science Program
College of Health Professions
Grand Valley State University
124 Center for Health Sciences
301 Michigan St. NE
Grand Rapids, MI 49503
(616) 331-5956
hallju@gvsu.edu

Dana Vaughan, MLS(ASCP)^{CM}
Affiliate Faculty/Laboratory Coordinator
Medical Laboratory Science Program
College of Health Professions
Grand Valley State University
432 Center for Health Sciences
301 Michigan St. NE
Grand Rapids, MI 49503
(616) 331-5624
vaughada@gvsu.edu

Mattie Brechbiel, MS, MLS (ASCP)^{CM}
Affiliate Faculty/Clinical Laboratory Coordinator
Medical Laboratory Science Program
College of Health Professions
Grand Valley State University
430 Center for Health Sciences
301 Michigan St NE
Grand Rapids, MI 49503
brechbim@gvsu.edu

COURSES OF INSTRUCTION AND OBJECTIVES

All course objectives will be distributed to students with individual course syllabi.

MLS 320 GENERAL LABORATORY PRACTICE
An introduction to laboratory sciences, including laboratory safety, instrumentation, quality control, specimen collection (including phlebotomy techniques) and processing. An emphasis will be placed on urine analysis and the clinical application of urine examination. (2 credits)

MLS 350 MANAGEMENT FOR LABORATORY SCIENCE
An introduction to the principles of laboratory management with a focus on underlying managerial concepts that will assist the learner in application of this information to real-life situations. Learning units will cover four areas of management: Basic Principles and Organizational Structure, Human Resources, Finance, and Operations. (2 credits)

MLS 370 PARASITOLOGY AND MYCOLOGY
A study of the structure, function, and diagnostic characteristics of clinically significant parasites and fungi. Emphasis will include discussion of pathogenicity, transmission, and control of these microbes, along with related host response. (4 credits)

MLS 371 PARASITOLOGY AND MYCOLOGY LABORATORY
Parasitology and Mycology laboratory will focus on the study of the structure, function, and diagnostic characteristics of clinically significant parasites and fungi. Specimen collection, microscopic observation and diagnostic procedures for the identification of pathogenic microbes will be emphasized. Diagnostic microbiology I laboratory will focus on the study of the structure, function, and diagnostic (1 credits)

MLS 372 DIAGNOSTIC MICROBIOLOGY
A study of the epidemiology, pathogenesis, and clinical significance of medically important bacterial agents involved in infectious disease processes. Discussion of diagnostic characteristics and methods used for laboratory identification of these organisms will also be emphasized. (3 credits)

MLS 373 DIAGNOSTIC MICROBIOLOGY LABORATORY
Diagnostic Microbiology Laboratory will focus on medical bacteriology specimen collection and diagnostic testing procedures used for the identification of clinically significant bacteria. Emphasis will be placed on application and integration of theory, practical application, and technical performance of laboratory skills in clinical bacteriology. (1 credit)

MLS 400 MOLECULAR DIAGNOSTICS AND VIROLOGY
This course is a comprehensive introduction to the basic principles, theory, and laboratory techniques of the rapidly expanding field of molecular diagnostics. Laboratory application of molecular testing methods, including DNA extraction and PCR, will be practiced. The course

will also cover the structure, function and diagnostic characteristics of clinically significant viruses.

MLS 410 CLINICAL IMMUNOLOGY
This course will examine the principles of the immune response, the mechanisms of immunological disorders and infectious diseases, the methodology used in the detection of immunological conditions, and the correlation of test results to these diseases through lecture material and practical clinical experience. (3 credits)

MLS 416 HEMATOLOGY
A study of normal and abnormal blood cell development, morphology, and function. Blood dyscrasias will be studied with emphasis on the biochemical and morphological changes involved in disease. (3 credits)

MLS 417 CLINICAL HEMATOLOGY LABORATORY
An introduction to a wide variety of hematology clinical laboratory procedures with an emphasis on accurate performance, theoretical basis of tests, and correlation of data to disease. (1 credit)

MLS 422 CLINICAL CHEMISTRY
Biochemical, physiological, and analytic aspects of organic and inorganic substances of clinical interest, including electrolytes, blood gases, proteins, enzymes, lipids, drugs, and hormones are presented through lecture, demonstration, and practical experience.
(4 credits)

MLS 423 CLINICAL CHEMISTRY LABORATORY
Biochemical, physiological, and analytic aspects of organic and inorganic substances of clinical interest, including electrolytes, blood gases, proteins, enzymes, lipids, drugs, and hormones are presented through demonstration, laboratory exercises, and practical experience. (2 credits)

MLS 450 CLINICAL PRACTICUM I
The first of two full-time clinical experiences. Practicing clinical laboratory scientists will supervise and teach students in basic laboratory procedures, including Urinalysis, Immunoserology, Hematology, and Clinical Chemistry. The students will be exposed to patients and usual workload in the hospital laboratory. (1 credit)

MLS 461 MEDICAL LABORATORY SCIENCE SIMULATION LABORATORY
This laboratory course is designed to simulate the clinical laboratory setting and provide students with the hands-on experience and practice needed to build their skill and competency in pre-analytical, analytical and post-analytical testing. Emphasis is placed on the following disciplines: hemostasis, transfusion medicine, hematology, urinalysis, clinical chemistry, immunoserology and microbiology. (1 credit)

MLS 462 TRANSFUSION MEDICINE
In transfusion medicine, students will study human blood group antigens and antibodies. This lecture and laboratory course will examine cellular antigen systems, and teach the principles and techniques required for compatibility testing for blood transfusion and other important transfusion practices. Blood component collection, processing, and distribution will also be discussed. (3 credits)

MLS 463 HEMOSTASIS
This lecture and laboratory course provides an overview of theory and practical application of hemostasis (coagulation), as it relates to the medical laboratory. The coagulation cascade, intrinsic and extrinsic pathways, thrombosis and fibrinolysis will be covered; as well as coagulation laboratory principles and correlation of results with disease states. (2 credits)

MLS 464 BACTERIOLOGY AND ANTIBIOTICS
This lecture and laboratory course is an advanced bacteriology course with a focus on antimicrobial susceptibility testing. Medically important pathogens requiring unusual detection and identification methods, as well as contemporary topics in microbiology, will be discussed. (1 credit)

MLS 490 CLINICAL PRACTICUM II
The second of two full-time clinical experiences. Practicing clinical laboratory scientists will supervise and teach students in advanced laboratory procedures, including Hemostasis, Clinical Chemistry, Microbiology, and Transfusion Medicine. Students will be exposed to patients and usual workload in the hospital laboratory. (5 credits)

MLS 495 ISSUES IN CLINICAL LABORATORY SCIENCE (CAPSTONE)
Exploration of issues that impact health care, particularly the laboratory professional. Includes writings on current issues in the profession, case-study presentations, and practice in teaching methods related to laboratory training and education. Students will work individually and/or in groups to perform literature research and apply it to preparation of a medical laboratory science project including a paper, presentation, and a professional poster. (3 credits)

MEDICAL LABORATORY SCIENCE STUDENT MANUAL
SIGNATURE PAGE

I have received a copy of the current Medical Laboratory Science Student Manual. It is my understanding that if I have any questions concerning material in this handbook I may contact the Grand Valley State University Medical Laboratory Science program director and/or education clinical coordinator for further clarification. I have read, understand and will abide by all the MLS Program Policies as printed in the Student Manual. I know that I am responsible for all the information contained in this handbook as well as any subsequent additions, and that I will be expected to conform to its procedures during my enrollment in the program, including all clinical education.

_____
Printed name

_____ _____
Date Student signature

I hereby give permission to the GVSU MLS Program Director and/or Clinical Coordinator to receive my score from any credentialing examination (NCA, ASCP, etc.)

_____ _____
Date Student signature

I hereby grant permission to the Grand Valley State University Medical Laboratory Science Program to use my image, likeness, and/or voice in any photograph and/or video to be used in any publication, advertising, training, and/or related endeavors, without further consideration. I understand that my name may be used in a caption or credits in relation to any photograph or video as described above.

_____ _____
Date Student signature

I hereby give permission to the MLS Program Director, Education Coordinator, or instructor of my choice (either university or clinical) to submit requested references to possible employers about my MLS academic and/or clinical experience.

_____ _____
Date Student signature

I agree to have a criminal background check and drug screen. I will self-disclose any criminal charge or plea of no contest that occurs while in the MLS program, within 2 weeks, to the program director, Jeanne Stoddard.

_____ _____

Date Student signature

I have read and understand the Medical Laboratory Science Program Safety Procedures and Protocols and agree to follow them.

_____ _____

Date Student signature

I realize that a high level of integrity and moral and ethical behavior are expected of me in all personal academic work and eventually my professional work. I agree that I will demonstrate ethical behavior and honesty in all class work, and laboratory and clinical assignments. I also agree to exhibit honesty and respect in all interaction with my classmates and faculty (university and clinical).

_____ _____

Date Student signature