Medical Laboratory Science

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School of Health Sciences

Bachelor of Science Degree

The BS program in Medical Laboratory Science prepares graduates for a wide range of positions in the clinical laboratory profession. The curriculum includes development of the theoretical knowledge, technical skills, and problem-solving abilities necessary for entry into practice at the technologist level. While enrolled in the program, students experience a supportive learning environment in the Medical Laboratory Science campus laboratories, where the theoretical background introduced during lecture sessions is linked to clinical laboratory practice through the development of technical proficiency. The educational experience includes clinical internships at local affiliated clinical laboratories in which the students are prepared for the transition into the clinical laboratory workplace.

The BS in Medical Laboratory Science is specifically designed to meet the educational requirements for licensure as a Clinical Laboratory Technologist in New York State. As a result, graduates of the program will have the educational background that prepares them for the NYS licensure examination and will be eligible to apply for NYS licensure, a necessity to work in a clinical laboratory in New York State. The BS in Medical Laboratory Science is also designed to meet the accreditation standards outlined by the National Accrediting Agency for Clinical Laboratory Science (NAACLS). Accreditation of the BS program was awarded in 2013 so that graduates of the program are eligible to take the national certification examination offered by the American Society for Clinical Pathology Board of Certification (ASCP-BOC). Passing of this certification examination designates the graduate as MLS (ASCP). Traditionally, both program accreditation and graduate certification eligibility have been necessary components of programs in clinical laboratory science, and the achievement of certification is often a requirement for employment within the field throughout the United States.

All matriculated students must provide evidence of appropriate immunizations, as well as titers for measles, mumps, rubella, varicella, and Hepatitis B. It is strongly recommended that students who test negative for Hepatitis B receive the appropriate vaccine. A Mantoux test for tuberculosis is required on a yearly basis during program enrollment. Each student is also required to participate in a liability insurance policy provided by the college which will afford malpractice coverage during the time enrolled in the MLS curriculum. Students are responsible for providing their own transportation to and from the clinical sites. A laboratory fee that covers a lab coat, personal protective equipment, and other general supplies for use during laboratory sessions will be collected from students enrolled in all laboratory courses offered in the MLS department.

Students enrolled in the MLS program will have the opportunity to participate in the MLS Club on campus.

Please refer to the Safety and Technical Standards in the front section of the College catalog.

Typical Employment Opportunities
Graduates may obtain employment as medical laboratory scientists/clinical laboratory technologists in hospitals, private clinical laboratories, physician office laboratories, research and industry laboratories, and in the sales, development and technical support of clinical laboratory equipment and supplies.

**Medical Laboratory Science (BS) Program Outcomes:**

- Graduates will be prepared with the knowledge and technical skills to obtain a NYS license and national certification at the technologist level of practice.
- Graduates will be proficient in performing the full range of clinical laboratory tests in areas such as hematology, clinical chemistry, immunohematology, microbiology, serology/immunology, coagulation, molecular, and other emerging diagnostics.
- Graduates will be prepared to play a role in the development and evaluation of test systems and interpretive algorithms.
- Graduates will have diverse responsibilities in areas of analysis and clinical decision-making, regulatory compliance with applicable regulations, education, and quality assurance/performance improvement wherever laboratory testing is researched, developed or performed.
- Graduates will possess basic knowledge, skills, and relevant experiences in: Communications to enable consultative interactions with members of the healthcare team, external relations, customer service and patient education; Financial, operations, marketing, and human resource management of the clinical laboratory to enable cost-effective, high-quality, value-added laboratory services; Information management to enable effective, timely, accurate, and cost-effective reporting of laboratory-generated information, and; Research design/practice sufficient to evaluate published studies as an informed consumer.

This program is accredited by the National Accrediting Agency for Clinical Laboratory Science (NAACLS), 5600 N. River Road, Suite 720, Rosemont, IL 60018-5119, www.nacls.org

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**Fall 2019 - Subject to Revision**

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American/Other World/Western Civilization History (GE) 3
Social and Behavioral Science (GE) 3
The Arts (GE) 3
Basic Communication (GE) 3
Foreign Language (GE) 3
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Required: Medical Laboratory Science 
(58 credits)
MLS 105 Medical Laboratory Techniques 2
MLS 227 Immunology and Serology 4
MLS 236 Histological Techniques 1
MLS 320 Hematology I 4
MLS 325W Laboratory Management & Informatics 3
MLS 330 Immunohematology I 4
MLS 340 Clinical Chemistry I 4
MLS 350 Clinical Microbiology I 4
MLS 351 Clinical Microbiology II 4
MLS 420 Hematology II 4
MLS 421 Molecular Pathology 3
MLS 425 Laboratory Research & Education 3
MLS 430 Immunohematology II 3
MLS 440 Clinical Chemistry II 2
MLS 450 Clinical Microbiology III 3
MLS 460L Medical Laboratory Science Capstone 1
MLS 483 Practicum in Molecular Pathology 1
MLS 491 Immunohematology Practicum 2
MLS 492 Clinical Chemistry & Serology Practicum 2
MLS 493 Hematology & Urinalysis Practicum 2
MLS 494 Microbiology Practicum 2

Total Credits: 126

The grade of “C” or better is required in all courses designated “MLS” as well as all science and math courses.

Degree Type: BS
Total Required Credits: 126
Please refer to the General Education, Applied Learning, and Writing Intensive requirement sections of the College Catalog and consult with your advisor to ensure that graduation requirements are satisfied.

Course Descriptions

**EGL 101 Composition I: College Writing (GE)**
This is the first part of a required sequence in college essay writing. Students learn to view writing as a process that involves generating ideas, formulating and developing a thesis, structuring paragraphs and essays, as well as revising and editing drafts. The focus is on the development of critical and analytical thinking. Students also learn the correct and ethical use of print and electronic sources. At least one research paper is required. A grade of C or higher is a graduation requirement. Note: Students passing a departmental diagnostic exam given on the first day of class will remain in EGL 101; all others will be placed in EGL 097. Prerequisite is any of the following: successful completion of EGL 097; an SAT essay score (taken prior to March 1, 2016) of 7 or higher; an SAT essay score (taken after March 1, 2016) of 5 or higher; on-campus placement testing.

**EGL 102 Composition II: Writing About Literature**
This is the second part of the required introductory English composition sequence. This course builds on writing skills developed in EGL 101, specifically the ability to write analytical and persuasive essays and to use research materials correctly and effectively. Students read selections from different literary genres (poetry, drama, and narrative fiction). Selections from the literature provide the basis for analytical and critical essays that explore the ways writers use works of the imagination to explore human experience. Grade of C or higher is a graduation requirement. Prerequisite(s): EGL 101

**BIO 130 Principles of Biology (GE)**
This course deals with biological processes primarily at the molecular and cellular level, and develops the foundations of evolutionary and ecological concepts. There is a study of cell structure, and an examination of cellular composition and metabolic processes including enzyme activity, respiration, and photosynthesis. Principles of genetics are studied at the cellular and molecular level, with reference to current techniques in molecular biology. Evolutionary mechanisms are introduced and ecological concepts are presented as a unifying theme. Note: BIO 130 is the first course in the required two-semester introductory sequence in the Bioscience Curriculum Core. It is also approved in the Natural Sciences General Education Competency Area and can serve as a lower-level laboratory science elective within the Liberal Arts. Note: the laboratory course, BIO 130L is a part of your grade for this course. Corequisite(s): BIO 130L

**BIO 166 Principles of Human Anatomy & Physiology (GE)**
This is a one semester integrated survey of human anatomy and physiology, covering the major physiological and morphological relationships of the human organ systems. The design of this course is appropriate preparation for Dental Hygiene, Medical Laboratory Technology, and certain other allied health professions, but it does not satisfy the requirements of the Nursing Curriculum. The major theme of the course is the integrative pathways and regulatory processes that maintain the homeostasis of the body. Note: BIO 166 does not satisfy the requirements of the Nursing Curriculum and cannot be used as a substitute for either BIO 170 or BIO 171. It is approved in the Natural Sciences General Education Competency Area and can serve as lower-level laboratory science elective within Liberal Arts. Note: the laboratory course, BIO 166L is a part of your grade for this course. Prerequisite(s): High School biology with a lab or BIO 120 or 123 or 130; High School or College chemistry recommended. Corequisite(s): BIO 166L

**BIO 343/344 Genetics with Laboratory**
Students will understand and be able to apply basic principles of genetic analysis. These principles include the Mendelian laws of inheritance, factors that contribute to modification of Mendelian patterns, chromosome organization, genetic variation, the structure of selected eukaryotic and prokaryotic genomes and the analysis of the genetic makeup of populations. Note: Bioscience and/or MLS students taking BIO 343 must also take BIO 344L either during the same semester or after
completion of BIO 343L. Prerequisite(s): (BIO 130, 131, 210, 212, and MTH 110) or (BIO 130, MLS 227 and MTH 110) all with a grade of C- or higher.

**BIO 348/349 Cell Biology with Laboratory**
This course investigates how cells develop, work, communicate, and control their activities. Topics include basic biochemistry and metabolism, DNA structure and function, membrane/organelle function and transport, cell communication, the cytoskeleton, and cell division. At the completion of this course the student should be able to engage in the broad themes of cell and molecular biology, and to relate these concepts to other studies in biology and other disciplines. Note: Bioscience and/or MLS students taking BIO 348 must also take BIO 349L either during the same semester or after completion of BIO 348. Prerequisite(s): (BIO 130, 131, 210 and 212) or (BIO 130 and MLS 227) all with a grade of C- or higher.

**BIO 441 Molecular Biology**
This course provides a detailed explanation of topics in molecular biology including DNA replication, DNA repair and recombination, transcriptional regulation and RNA processing. The course also covers techniques common in molecular biology laboratories, such as PCR, cloning, sequencing, nucleic acid separation and visualization. In addition, the course will discuss model organisms and approaches to study gene function, such as CRISPR/Cas and RNAi. Topics will be presented from both the view of prokaryotes as well as eukaryotes. The lab component of the class will teach molecular biology techniques that will enable students to use RNAi to knock-down gene expression in C. elegans. Scientific journal articles highlighting class topics will be used to supplement class lectures. Note: the laboratory course, BIO 441L is a part of your grade for this course. Prerequisite(s): BIO 348 and BIO 349L with a grade of C- or higher. Corequisite(s): BIO 441L

**CHM 152 General Chemistry I**
The first part of a two semester sequence in General Chemistry Principles with laboratory. This course covers the qualitative and quantitative aspects of scientific measurement, the nature of matter, gases, liquids and solids, energy, atomic theory, properties of elements, chemical bonding, molecular structure and properties, stoichiometry, thermochemistry and solutions. Note: the laboratory course CHM 152L is a part of your grade for this course. Attendance in the laboratory course is required. Approved eye-protection and a laboratory coat are required materials. A student must pass the laboratory course to receive a passing grade in the entire course. Prerequisite(s): MP3 or MTH 116 AND Regents Chemistry or an equivalent High School Chemistry with Laboratory or CHM 124

**CHM 153 General Chemistry II**
A continuation of General Chemistry Principles I, which includes laboratory. Topics include: solutions and their colligative properties, acids and bases, chemical equilibrium, ionic equilibrium, pH, buffers, titration curves, oxidation and reduction balancing, electrochemistry, chemical kinetics, the covalent bond and the shape of molecules. Note: the laboratory course CHM 153L is a part of your grade for this course. Attendance in the laboratory course is required. Approved eye-protection and a laboratory coat are required materials. A student must pass the laboratory course to receive a passing grade in the entire course. Prerequisite(s): CHM 152

**CHM 260 Fundamentals of Organic Chemistry**
A one semester course in organic chemistry designed to provide background in the fundamentals of nomenclature, mechanisms, structures, and synthesis of carbon based compounds. This course is designed for science and health science majors who desire a general rather than a detailed knowledge of the compounds of carbon. Topics to be covered include: structure and bonding, acid/base chemistry, isomerism, stereochemistry, and structure determination. Functional groups to be covered include: hydrocarbons, alcohols, ethers, aldehydes and ketones, carboxylic acids, carboxylic acid derivatives and amines. Laboratory work will include common organic techniques and experiments supporting the principles covered in lecture. Note: the laboratory course CHM 260L is a part of your grade for this course. Attendance in the laboratory course is required. Approved eye-protection and a laboratory coat are required materials. A student must pass the laboratory course to receive a passing grade in the entire course. Prerequisite(s): CHM 153
CHM 380 Biochemistry
A one semester course covering the fundamentals of biochemistry. Topics covered include: the structure and function of important biomolecules such as carbohydrates, lipids, amino acids, proteins and nucleic acids; enzyme kinetics and the use of cofactors and coenzymes; and metabolic pathways including glycolysis, TCA, electron transport system, fatty acid and amino acid pathways. Laboratory work includes current biochemical laboratory techniques such as chromatography and electrophoresis, application of specific topics described above, and analysis of data from laboratory experiments. Note: the laboratory course CHM 380L is a part of your grade for this course. Attendance in the laboratory course is required. Approved eye-protection and a laboratory coat are required materials. A student must pass the laboratory course to receive a passing grade in the entire course. Prerequisite(s): CHM 260 or CHM 271

MTH 110 Statistics (GE)
Basic concepts of probability and statistical inference. Included are the binominal, normal, and chi-square distributions. Practical applications are examined. Computer assignments using Minitab form an integral part of the course. Prerequisite(s): MP2 or MTH 015

MTH 117 Precalculus with Applications
This is a Precalculus course with applications from various disciplines including technology, science, and business. This course uses linear, power, polynomial, exponential, logarithmic, and trigonometric functions to model real world problems. The important characteristics and properties of these functions are investigated. The emphasis is on applications and problem solving. Note: Students completing this course may not receive credit for MTH 129. Prerequisite(s): MP3 or MTH 116

MLS 105 Medical Laboratory Techniques
This course introduces the professional and technical responsibilities of medical laboratory professionals. Topics include phlebotomy, medical terminology, and professional topics such as legal and ethical issues, communication, hospital and laboratory organization, and regulation of educational programs, laboratory facilities, and licensure and certification of laboratory professionals. In the laboratory, phlebotomy techniques are practiced and the routine testing performed in the main areas of laboratory science (Microbiology, Hematology/Coagulation, Immunohematology, Immunology/Serology, Chemistry, and Urinalysis) are explored. Corequisite: MLS 105L

MLS 227 Immunology and Serology
The theory component of this course includes the study of the body’s immune system, the clinical testing methods used to evaluate immune system function, and the disease processes that are diagnosed through the use of serological methods. The chemical properties and physiological behavior of antigens, immunoglobulins, and complement are considered in detail along with the cellular interactions necessary for proper function of the immune system. The laboratory component of the course focuses on the performance and interpretation of serological diagnostic procedures for a variety of immune disorders and infectious diseases. Prerequisite(s): MLS 105, BIO 130, CHM 152 all with a grade of C or higher. Corequisite: MLS 227L

MLS 236 Histological Techniques
This course introduces the basic histological techniques involved in the processing of histology specimens in the anatomic pathology laboratory. The techniques involved in fixation, processing/embedding, microtomy, and staining of laboratory specimens are included. The course is designed as an online theory section accompanied by a ten day full time clinical internship at an off campus affiliated pathology laboratory. Students are responsible for their own transportation to the clinical location. Prerequisite(s): MLS 105 and BIO 130 and (BIO 166 or BIO 171) all with a grade of C or higher.

MLS 320 Hematology I
The theory component of this course focuses on hematopoiesis and the formed elements of blood under normal and abnormal conditions. The development and function of erythrocytes and leukocytes, the pathophysiology of hematology-related disorders, and the laboratory investigation that confirms the presence of benign and malignant disorders will be
discussed. The theory and practice of the complete blood count as a diagnostic tool will be emphasized. In the laboratory setting, principles of automation and technical skills in routine hematology procedures will be developed. Peripheral smears will be reviewed to study the morphology of the cellular components in the blood. Students will apply quality practices, and use both manual and automated technologies. Quality control and patient results will be interpreted, and abnormal results will be correlated with hematological disorders. Venipuncture will be utilized to obtain specimens for study. Prerequisite(s): MLS 105, BIO 130 both with a grade of C or higher. Corequisite(s): MLS 320L

**MLS 325W Laboratory Management & Informatics**

This course presents the principles and practices of quality management in the clinical laboratory, including laboratory administration, supervision, financial and human resource management, safety and problem solving. Regulatory agencies responsible for monitoring laboratory practices will be discussed. Topics will include quality assurance and quality control, implementation of new test methods, equipment evaluation and selection, proficiency testing, laboratory inspection procedures, selection, validation and utilization of laboratory information services specific to clinical and research laboratories. Each student will be required to submit a research topic related to clinical laboratory management and informatics. This is a writing intensive course. Note: Students cannot get credit for MLT 325 and 325W; MLT 325W can be used to fulfill the writing intensive requirement. Note: Offered at the discretion of the Medical Laboratory Technology Department. Prerequisite(s): MTH 110 and EGL 101 both with a grade of C or higher.

**MLS 330 Immunohematology I**

Blood banking theory and practice are integrated in this course which provides the foundation for a two course sequence. Topics covered include blood group genetics, blood group characteristics, antigen-antibody reactions and routine pre-transfusion testing. Identification of unexpected antibodies, compatibility and related problem solving strategies are introduced. Perinatal issues and automation in transfusion practices are covered. The required laboratory component of this course emphasizes the development and proficiency of technologist level technical skills that are required for practice in a transfusion medicine facility. Note: the laboratory course, MLS 330L is a part of your grade for this course. Prerequisite: MLS 227, with a grade of C or higher. Corequisite: MLS 330L.

**MLS 340 Clinical Chemistry I**

This course covers the biochemical analysis of body fluids, with the main focus on serum/plasma constituents. There is an emphasis on the principles of method, analytical procedures, and correlation of data with both abnormal and normal physiological processes for a broad spectrum of available chemistry laboratory tests. The major topics covered in both the laboratory and lecture include carbohydrates, lipids, proteins, enzymes, cardiac function, hepatic function, non-protein nitrogenous components, renal function, electrolytes, and acid base equilibrium. Case studies will be used to correlate test results with patient diagnoses, leading to an understanding of the interrelationship between the various laboratory tests performed and the assessment of the patient in health and disease states. Chemical analyses are performed using manual techniques in the required laboratory portion of the course. Development of technical skills, interpretation and monitoring of quality control, as well as interpretation of patient results are emphasized during the laboratory. Prerequisite(s): BIO 166, CHM 152, CHM 153, and MTH 110 all with a grade of C or higher.

**MLS 350 Clinical Microbiology I**

This course discusses the medically important yeasts and fungi, protozoa and metazoa. Identification of medically important arthropods will also be discussed. Discussion of the Rickettsiaceae and Anaplasmataceae will be included in this course. Antibiotic testing and treatment of these groups of organisms is included. The laboratory emphasis is on the identification of the protozoa, metazoa, arthropods, yeast and, fungi. Staining and culture techniques for identification of these organisms will be discussed and/or performed. In addition, the laboratory covers standard microbiology techniques related to safety in the clinical microbiology laboratory, basic light microscopy, and aseptic technique. Prerequisite(s): BIO 130 and MLS 105 both with a grade of C or higher. Corequisite(s): MLS 350L.
MLS 351 Clinical Microbiology II
The principles of general microbiology including host/pathogen interactions, antibiotic action, and microbial growth are discussed. The role of the clinically important bacteria in infectious disease will be explored. The lecture emphasizes the Staphylococci, Streptococci, Neisseria, Enterobacteriaceae, Pseudomonas and other non-fermenters, Anaerobes, Haemophilus, HACEK organisms, Brucella, Bordetella, Francisella, Pasteurella, Corynebacterium, Listeria, Erysipelothrix, Bacillus, and the Aerobic Actinomycetes. The course emphasizes the identification of microorganisms through biochemical and serological procedures. Automation in the clinical microbiology lab will be discussed. The major groups covered in the laboratory include the Staphylococci, Streptococcus, Enterococcus, Enterobacteriaceae, Pseudomonas and other non-fermenting gram negative rods, Gram positive rods, Anaerobes, and Haemophilus. Each student will receive multiple unknown bacteria to identify. Gram stain and acid fast staining will be performed. Prerequisite(s): MLS 350 with a grade of C or higher Corequisite(s): MLS 351T

MLS 420 Hematology II
This course is a continuation of Hematology I that covers advanced hematology principles and techniques, as well as new topics in the areas of coagulation and body fluids. Routine urinalysis, including renal physiology, in normal and abnormal states with a focus on physical, biochemical, and microscopic findings will be included, as will laboratory analysis of cerebrospinal, synovial, serous, seminal, amniotic, sweat, and fecal specimens. Primary and secondary hemostasis, fibrinolysis, and coagulation-related disorders will be presented, with a focus on the effects of anticoagulant therapy. The required laboratory portion of the course allows for technical development of skills in body fluid analysis, urinalysis, and coagulation studies. A case study style theoretical approach will accompany the continued practice of hematology methods in the lab portion of this course, encouraging problem solving in the diagnosis of hematological disorders. Manual and automated technologies will be incorporated for the processing of patient specimens and quality control. Quality assurance and communication skills will also be emphasized. Prerequisite(s): MLS 320 with a grade of C or higher Corequisite(s): MLS 420L

MLS 421 Molecular Pathology
This course will provide the student with an overview of the applications of DNA analysis in the diagnostic clinical laboratory. Specific examples of the use of molecular techniques will be included in the areas of oncology, hematology, infectious disease, histocompatibility, coagulation and identification. Specimen collection and handling will be discussed as well as the specific methodology used for each application. New applications will be introduced to the course as they are developed and implemented in clinical laboratory settings. Prerequisite(s): BIO 441 with a grade of C or higher

MLS 425 Laboratory Research & Education
This course presents the principles and practices of applied research design, education, and training for clinical laboratory technologists. Research designs, sampling methodologies, collection and analysis of data in the research process will be discussed. Topics related to education include the domains and levels of learning, constructing behavioral objectives, learning outcomes, and clinical training strategies. Strategies for effective communication in the clinical laboratory workplace will also be discussed. Each student will be required to design an applied research study on a topic related to clinical laboratory science. Prerequisite(s): MLS 325 with a grade of C or higher

MLS 430 Immunohematology II
This course presents advanced immunohematology principles and techniques in preparation for practice in the clinical blood bank laboratory. Case study analysis will be used to formulate approaches to solving complex serologic problems. Topics to be addressed include blood group systems, antibody identification techniques, blood donor collection practices, compatibility and investigation of adverse transfusion reactions. Blood bank quality management, ethical and legal issues and alternative technologies in blood banking will be discussed. This course is the culmination of a two course sequence. Prerequisite: MLS 330, with a grade of C or higher.
MLS 440 Clinical Chemistry II
In this course analytical techniques, instrumentation, and automation in the clinical chemistry laboratory will be introduced. Students will study quality assurance, quality control, and troubleshooting techniques. Laboratory-related mathematics will be covered (dilutions, preparing solutions, conversions). Lecture topics will also include vitamins, endocrinology (general, thyroid, adrenal, hypothalamus, and pituitary), therapeutic drug monitoring, and toxicology. Cumulative case studies will be utilized to review Clinical Chemistry topics. Prerequisite(s): MLS 340T with a grade of C or higher

MLS 450 Clinical Microbiology III
This course will use a problem solving approach to build upon the theoretical and technical concepts introduced in Clinical Microbiology I and II. A body’s system approach and case studies will be used to correlate laboratory and clinical information related to infectious diseases and their diagnosis. Laboratory operations specific to clinical microbiology will be covered including the role of the clinical microbiology laboratory in infection prevention and public health. Discussion of recovery and identification of the Mycobacteria, Spirochetes, Chlamydia, Mycoplasma and Ureaplasma will be included. Clinically important viruses and basic viral culture techniques will be discussed along with advanced concepts in antimicrobial testing and resistance detection. Emerging pathogens will be introduced. Prerequisite(s): MLS 350, MLS 351 both with a grade of C or higher

MLS 460L Medical Laboratory Science Capstone
In this capstone course, students will reexamine all subject areas included in the medical laboratory science curriculum. Blood bank, Urinalysis and Body Fluids, Clinical Chemistry, Hematology, Immunology, Microbiology, and Laboratory Operations will be reviewed using an advanced case study approach that encourages critical thinking. Laboratory results will be analyzed, evaluated, and correlated with various disease processes and conditions. An emphasis on quality control and quality assurance will be included throughout the course. For the final capstone project students will create a unique case study that incorporates three or more areas of the medical laboratory. Final projects will be presented, followed by a supplemental assessment, developed by the student teacher to evaluate the gained knowledge/comprehension of the audience. Mock board exams will be completed throughout the semester. Prerequisite(s): MLS 430 and MLS 440 with a grade of C or higher. Corequisite(s): MLS 420 and MLS 450

MLS 483 Practicum in Molecular Pathology
Students practice clinical skills in Molecular Pathology through a ten day clinical internship at an off campus affiliated clinical laboratory under the guidance of clinical laboratory personnel. The clinical coordinators at the affiliated sites will evaluate students for both technical proficiency and professional behavior demonstrated during the internship. Students are responsible for their own transportation to the clinical location. Prerequisite(s): Permission of department chairperson

MLS 491 Immunohematology Practicum
Students practice basic and advanced clinical skills in Immunohematology (Blood Bank) through a twenty-day clinical practicum at an off-campus affiliated clinical laboratory under the guidance of clinical laboratory personnel. The clinical coordinators at the affiliated sites will evaluate students for both technical proficiency and professional behavior demonstrated during the practicum experience. Students are responsible for their own transportation to the clinical location. Prerequisite(s): MLT 330 with a grade of C or higher.

MLS 492 Clinical Chemistry & Serology Practicum
Students practice basic and advanced clinical skills in Clinical Chemistry and Serology through a twenty day clinical practicum at local affiliated clinical laboratories under the guidance of clinical laboratory personnel. The clinical coordinators at the affiliated sites will evaluate students for both technical proficiency and professional behavior demonstrated during the practicum experience. Students are responsible for their own transportation to the clinical location. Prerequisite(s): MLS 227 and MLS 340 all with a grade of C or higher.
**MLS 493 Hematology & Urinalysis Practicum**

Students practice basic and advanced clinical skills in Hematology, Coagulation, and Urinalysis through a twenty day clinical practicum at local affiliated clinical laboratories under the guidance of clinical laboratory personnel. The clinical coordinators at the affiliated sites will evaluate students for both technical proficiency and professional behavior demonstrated during the practicum experience. Students are responsible for their own transportation to the clinical location. Prerequisite(s): MLS 320 and MLS 420 all with a grade of C or higher.

**MLS 494 Microbiology Practicum**

By altering the clinical experience from two shorter length courses to one full length course, the students will benefit from more consecutive experience in the clinical laboratory. Previously, half the clinical experience was spent performing tasks at the MLT AS level, and the other half at the BS MT level, in two separate courses. With this change the students are expected to spend their entire clinical time being trained at the baccalaureate level, thereby strengthening their preparedness for entrance into practice. Prerequisite(s): MLS 350 and MLS 351 and MLS 450 all with a grade of C or higher.

Admission to Farmingdale State College - State University of New York is based on the qualifications of the applicant without regard to age, sex, marital or military status, race, color, creed, religion, national origin, disability or sexual orientation.