College of Medical Laboratory Technologists of Ontario

MEDICAL LABORATORY SCIENCE REFRESHER COURSE LIST

Courses on this list are approved for Registrants who are eligible to practice in any of the following specialties:

Biochemistry, Histology, Microbiology, Hematology, Phlebotomy, Transfusion Science

Courses on this list are also approved for Applicants who have not been actively engaged in medical laboratory technology. One may complete course(s) relevant to specialty/specialties in which registration is being sought. Please note that this list is a summary of course information. Registrants and Applicants should contact the institution offering the course(s) for the most up-to-date detailed information/registration protocols and costs. All refresher/updating courses must have an evaluation component, and the transcript **MUST** state the number of hours in the course. Fees are approximate as of October 2025.

Other courses that are not listed must be submitted to the CMLTO Registration Committee for consideration for approval prior to enrollment (the course must have an evaluation component and be related to medical laboratory science). For more information, please contact the CMLTO Registration Department by e-mail at registration@cmlto.com.

Distance Education courses identified by 💻 **1 PEP hr = 1 refresher course hr** **1 CEU hr = 10 refresher course hrs**

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GENERAL TOPIC			
Institution	**Outline**	**More Info**	**Duration/ Fee**
CSMLS	**4658-21 INTRODUCTION TO ETHICS AND PROFESSIONALISM FOR MEDICAL LABORATORY SCIENCE** Examine the latest thought and research in the study of ethics as it applies to the laboratory as well as highlight the national and international standards required for the ethical and professional practice of biomedical technology. Explore the latest research from CSMLS references, colleges, and papers on ethics. Professionalism embraces rules of conduct, standards of practice, and support for professional associations. Required competencies necessary to be professional in the field of health care, and the lab, in particular, will be identified.	CSMLS Course Catalogue	January 2025 22 PEP hours 0.88 CPS Credits $329.00 
CSMLS	**9819-18 BODY FLUIDS: SYNOVIAL FLUID** Learn the structure of a common joint and composition of synovial fluid, as well as characteristic laboratory tests. Learn to relate synovial fluid laboratory findings to differentiate non-inflammatory and inflammatory infections, crystal-induced and hemorrhagic diseases.	CSMLS Course Catalogue	Continuous Registration 16.0 PEP hours $99.00 

CSMLS	**9879-18 WHY PHYSICIANS ORDER LABORATORY TESTS: A LABORATORY PERSPECTIVE** The laboratory is continually faced with an increasing workload. The reasons for this are complex, but one of the reasons is that there may not be a consistent approach to laboratory test ordering by physicians. The laboratory needs to understand the needs of the ordering physician. This is so that we can provide the laboratory data as meaningful information back to the physician. There is a continual need for the laboratory to engage in physician interaction to understand why laboratory tests are ordered so that we can achieve the joint goals. Only the ordering physician knows the specific medical needs of his/her patient. The laboratory goes to great lengths to use qualified staff and up-to-date instrumentation in order to provide high-quality test results to physicians. In spite of this, technologists are aware that there are inherent but minimal deficiencies in many test results. It is important that the physicians that interpret test results understand these and other limitations. It is our responsibility to help them. This will lead to a more consistent and appropriate ordering pattern by physicians. Only through this understanding and the regular dialog will physicians be able to enjoy the full benefit of the laboratory service and ultimately influence excellent patient care.	CSMLS Course Catalogue	Continuous Registration 20.5 PEP hours 1.00 CPS Credits $99.00
CSMLS	**9876-15 LABORATORY TESTS FOR CELIAC DISEASE (ADVANCED)** Examine the use of antibodies against transglutaminase, gliadin and endomysium in making the diagnosis of celiac disease.	CSMLS Course Catalogue	Continuous Registration 11 PEP hours 0.55 CPS Credits $99.00

CSMLS	**9866-16 NON-PROTEIN NITROGEN CREATINE, CREATININE, UREA, URIC ACID, AMMONIA (BASIC)** Review non-protein nitrogens, such as creatine, creatinine, urea, uric acid and ammonia - pathways, measurement, detection methods and reference ranges.	CSMLS Course Catalogue	Continuous Registration 11 PEP hours $99.00 
CSMLS	**9877-15 ISCHEMIA MODIFIED ALBUMIN: A NEW SERUM MARKER FOR MYOCARDIAL ISCHEMIA (BASIC)** Explore the development of the ischemia modified albumin test (the albumin cobalt binding test), its use and limitations. This test is able to measure cardiac muscle ischemia prior to necrosis.	CSMLS Course Catalogue	Continuous Registration 6.5 PEP hours $99.00 
CSMLS	**9880-17 LABORATORY ASPECTS OF ALCOHOLISM** This course reviews the topic of alcohol abuse. A review of the chemistry of alcohol metabolism enables an understanding of the effects of alcohol on the body. There are limited laboratory tests available to identify and monitor alcohol consumption, but the more recent understanding of biochemistry, genetics and proteomics is opening exciting areas of study.	CSMLS Course Catalogue	Continuous Registration 17.6 PEP hours 0.90 CPS Credits $99.00 
CSMLS	**9872-15 RHEUMATOID ARTHRITIS - A GUIDE TO THE CLINICAL AND LABORATORY ASPECTS** Explore the clinical findings and criteria for diagnosis, including the pathogenesis and pathology of rheumatoid arthritis. The course outlines the hematological features of the disease and discusses the use of laboratory tests for the detection of inflammation in a patient. The concept of an antibody to human IgG seen with rheumatoid factor and the diagnostic value of many rheumatoid arthritis-associated antibodies will be studied.	CSMLS Course Catalogue	Continuous Registration 16 PEP hours $99.00 

CSMLS	**9833-18 ORGANS OF THE LYMPHOID SYSTEM** Review the nature and structure of organs found in the body and how these organs relate to lymphocyte production and the function of the immune system.	CSMLS Course Catalogue	Continuous Registration 16.5 PEP hours $99.00 
Accreditation Canada (AC) Diagnostics	**A NEW OUTLOOK ON INTERNAL AUDITING** This course, delivered in four 2-hr segments, guides participants through an exciting new interpretation of the internal audit process. Participants are provided with practical advice and handy tools to create an audit plan and conduct an audit as a dynamic, non-threatening and engaging event that will add energy and tangible value. The course isn't just about learning the mechanics of an internal audit for the sole purpose of meeting accreditation requirements, it's about taking the golden opportunity of an internal audit to engage staff, elevate confidence and improve operations. We will guide you on how to transform the internal audit into a valuable, inclusive, empowering, helpful, educational, and fun event. Those who have taken this course experience full days of "Ah Ha" moments and go back to their workplace with new enthusiasm for the sometimes misunderstood and misused internal audit process.	AC Diagnostics Course Catalogue	Various dates 8-hour course offered in four parts $463.50 Early Bird $515.00 Regular price 

Accreditation Canada (AC) Diagnostics	**DOCUMENT DEVELOPMENT & CONTROL** This six-hour seminar offered in three parts clarifies how to create documents and how to control them. Beginning with a powerful exercise in policy creation, we will systematically illustrate how to transform that policy into intent with valuable flow charts, step-by-step procedures, and form templates. Next, we will provide expert advice on how to create a documentation structure that allows those working in your service to find documents quickly. We will then show how to control those documents to create a document structure for staff that is logical and reliable. Participants will return to their workplace with valuable templates, tools, and tips to manage the vast array of documentation needed for a laboratory or diagnostic imaging service and to meet AC Diagnostics or ISO 15189 requirements.	AC Diagnostics Course Catalogue	Various dates 6-hour seminar offered in three parts $382.50 Early bird $425.00 Full price 
Accreditation Canada (AC) Diagnostics	**PROTECTION FROM RISK- PRACTICAL SOLUTIONS** A six-hour seminar offered in three parts to learn with peers exactly how to integrate an effective risk management program into an existing or brand-new quality management system. Participants will work with the instructor to understand the ISO and IQMH requirements. They explore in detail two tools for evaluating risk: the severity/probability grid and the failure-modes-effects-analysis tool, and work with peers to compare those tools for advantages and disadvantages. Participants will clearly understand exactly how risk interrelates to a quality management system; and understand what IQMH teams will expect on assessment. To tie it all together, participants write a policy for risk management.	AC Diagnostics Course Catalogue	Various dates 6-hour seminar offered in three parts $445.50 Early bird $495.00 Full price 

LabCE	**578-087-18 QUALITY CONTROL** Quality Control is a comprehensive course in QC terminology, practices, statistics, and troubleshooting for the clinical laboratory. Designed for those who have little or no experience with quality control but need a firm grounding, this course will help all students quickly and easily identify and correct errors in quality control procedures. Concepts covered include: running assayed and unassayed controls, specificity, sensitivity, Westgard rules, Levey-Jennings charts, Youden plots, and CUSUM calculations. MediaLab also offers an "Introduction to Quality Control" course to complement the more detailed and thorough presentation in this course.	Course information	P.A.C.E. contact hours: 2.00 $25.00 US for individual course 💻
The Michener Institute of Education at UHN	**BPML800 BRIDGING PROGRAM FOR INTERNATIONALLY EDUCATED HEALTH PROFESSIONALS: MEDICAL LABORATORY SCIENCE** In this intensive course, you will gain valuable simulated laboratory experience, intensive theory review, and thorough preparation to write the CSMLS certification exam. The simulated laboratory courses will assist you in obtaining Canadian work experience. This course will also fulfill all refresher course requirements from your Prior Learning Assessment (PLA).	Course information Offered through Ontario Bridging Participant Assistance Program	Start Date: September (Fall) January (Winter) Theory: 146 hours Labs: 225 hours $6355.00
Anderson College of Health, Business, and Technology	**International Educated Medical Laboratory Technologist Bridging Program** This program is intended for internationally-educated MLTs in Canada who have completed the prior learning assessment (PLA) through the CSMLS and are seeking to fill any existing learning gaps and prepare to write the CSMLS entry to practice certification exam.	Course information	38 weeks (4 hrs/day) $10,000.00

The Michener Institute of Education at UHN	**FSQM110 FUNDAMENTALS OF LEADERSHIP EFFECTIVENESS** This course establishes foundational skills necessary for demonstrating leadership effectiveness. Characteristic challenges of leadership are introduced and explored as the course progresses. The perspectives we will explore are personal, team-based, and organizational to support your leadership development.	Course information	12 weeks 4.8 CEU (=48 refresher course hours) $952.00 Domestic $1190.00 International 
The Michener Institute of Education at UHN	**INQM 110 QUALITY MANAGEMENT SYSTEMS: INTRODUCTION** Explore the fundamental principles of Quality Management in a Clinical Laboratory setting, to ensure the Clinical Laboratory meets customer and regulatory requirements through continuous improvement. This introductory course provides the basis for QMS fundamentals which are applied in the remainder of the courses within the Clinical Laboratory Quality Management Program.	Course information	12 weeks 4.8 CEU (=48 refresher course hours) $952.00 Domestic $1190.00 International 
The Michener Institute of Education at UHN	**RMQM 110 QUALITY MANAGEMENT SYSTEMS: RESOURCE MANAGEMENT** This course establishes how to develop the resources required for implementing a Quality Management System.	Course information	12 weeks 4.8 CEU (=48 refresher course hours) Domestic: $952.00 International $1190.00 

The Michener Institute of Education at UHN	**PMQM 110 QUALITY MANAGEMENT SYSTEMS: PROCESS MANAGEMENT** This course explores the fundamental principles and key process that support the Quality System Essentials of Purchasing and Inventory, Process Management and Laboratory Information Systems.	Course information	12 weeks 4.8 CEU (=48 refresher course hours) Domestic: $952.00 International: $1190.00 
The Michener Institute of Education at UHN	**MEQM 110 QUALITY MANAGEMENT SYSTEMS: MEASUREMENT, ANALYSIS & IMPROVEMENT** Measuring and monitoring the output of a process and comparing it to customer expectations forms the basis of performance measurements.	Course information	12 weeks 4.8 CEU (=48 refresher course hours) Domestic: $952.00 International: $1190.00 
Northern Alberta Institute of Technology	**MELT501 SPECIMEN COLLECTION & HANDLING** Often the initial procedure for diagnosis and treatment, specimen collection and handling is the process of obtaining fluids or tissue for laboratory testing. Describe the related theory on anticoagulants and explain problems associated with collecting blood specimens. Explain the collection of urine specimens and other miscellaneous specimens. Determine the appropriate distribution of collected specimens and guide the minimum volumes required.	Course information	Continuous Registration 15 PEP hours $300.00 

Northern Alberta Institute of Technology	**MELT523 GENERAL LABORATORY PRACTICES** This course, which follows the foundations set in MELT 522, allows students to continue to discover the fundamental skills required in a medical laboratory. Gain confidence in the use of water purity, balances, and laboratory math to prepare reagents. Apply your newly acquired knowledge in hospital laboratory systems, community laboratories, public health laboratories, and private laboratories.	Course information	Continuous Registration 40 PEP hours $300.00 
Medical Laboratory Professionals' Association of Ontario (MLPAO)	**MOLECULAR DIAGNOSTICS LABORATORY FUNDAMENTALS** Made by MLTs for MLTs and MLA/Ts, this course connects theoretical knowledge to preanalytical and post-analytical tasks performed in a molecular diagnostics laboratory, including COVID-19 PCR testing. Within the course, there is an emphasis on connecting the theoretical knowledge to the pre-analytical and post-analytical tasks that an MLA/T may perform in the laboratory. The course has 4 modules which should be completed in sequence.	Course information	6 credit hours $79.99 
Medical Laboratory Professionals' Association of Ontario (MLPAO)	**HOW YOU IMPACT YOUR PATIENTS WITH WHAT YOU DO AS AN MLT** This self-paced online course is designed to provide insight into how the work carried out, or not carried out, by Medical Laboratory Technologists (MLTs) impacts patient outcomes.	Course information	14 credit hours $199.00 Member $249.00 Non-Member 

CHEMISTRY			
Institution	**Outline**	**More Info**	**Duration/ Fee**
British Columbia Society of Laboratory Science	**BACK TO BASICS: CHEMISTRY MODULE** ▪ Water and Electrolytes ▪ Disorders of Glucose Metabolism ▪ Evaluation of Acid-Base Status ▪ Lipoprotein Metabolism, ▪ Therapeutic Drug Monitoring & Toxicology ▪ Understanding Medical Laboratory Quality ▪ Kidney Function Tests, Urinalysis and Urinalysis Case Histories ▪ Clinical Enzymology & Biomarkers of Cardiac Injury. Cardiac Markers: Myocardial Infarction	Back to Basics info For more information contact the school at BCSLS@bcsls.net	26 hours DVDs or online $399 BCLS member $499.00 Non-member, Canadian Resident $599.00 Non-member, International 💻
British Columbia Society of Laboratory Science	**BACK TO BASICS: CHEMISTRY & HEMATOLOGY JOINT MODULES** Back to Basics (BtB) has been designed and developed as a refresher course to bring you "back up to speed" with the latest technology, testing, systems, protocols and procedures.	Back to Basics Info For more information contact the school at BCSLS@bcsls.net	26 hours for chemistry24 hours for hematology Together: 50 hrs $599.00 BCLS member $699.00 Non-member Canadian resident $799.00 Non-member, International 💻

CSMLS	**9862-17 LABORATORY ASPECTS OF DIABETES** Learn more about this devastating disease and how the measurement of tests such as glucose, glycohemoglobin and microalbumin are crucial in the monitoring of this and other conditions	CSMLS Course Catalogue	Continuous registration 15.5 PEP hours $99.00 

CHEMISTRY			
Institution	**Outline**	**More Info**	**Duration/ Fee**
The Michener Institute of Education at UHN	**CC859 TUTORIALS IN CLINICAL CHEMISTRY I** An excellent review of several basic clinical chemistry topics in the CSMLS competency profile: ▪ Proteins and electrophoresis ▪ Liver function and enzyme testing ▪ Renal function and urinalysis testing ▪ Carbohydrates and lipid testing ▪ Acid-base and electrolyte balance testing	Course Information	Continuous intake 3.9 CEU (=39 refresher course hours) Domestic: $536.00 International: $670.00 
The Michener Institute of Education at UHN	**CC860 TUTORIALS IN CLINICAL CHEMISTRY II** An excellent review of several clinical chemistry topics in the MLT CSMLS competency profile: ▪ Endocrinology, hormones, and pituitary function ▪ Adrenal function and testing ▪ Thyroid function and testing ▪ Therapeutic drug monitoring ▪ Toxicology testing	Course Information	Continuous intake 3.9 CEU (=39 refresher course hours) Domestic: $536.00 International: $670.00 
The Michener Institute of Education at UHN	**CC861 TUTORIALS IN CLINICAL CHEMISTRY III** An excellent review of several advanced chemistry topics in the MLT CSMLS competency profile: ▪ Photometric measuring systems (including spectrophotometry, atomic absorption photometry, flame photometry, nephelometry, turbidimetry) ▪ Electrochemical measuring systems (including ion selective electrodes, potentiometric, polarographic, amperometric, and coulometric measurement) ▪ Partition and absorption chromatography ▪ Electrophoresis and osmometry ▪ Immunoassays	Course Information	Continuous intake 3.9 CEU (=39 refresher course hours) Domestic: $536.00 International: $670.00 

Northern Alberta Institute of Technology	**MELT504 - Clinical Chemistry** Delve into clinical chemistry. Mastering the theory of this vital discipline empowers healthcare professionals to make informed decisions, leading to better patient outcomes, and overall healthcare efficiency. Discover the significance of abnormal levels of chemical constituents and their relation to disease. Explore analytical methodologies used to detect and quantify components and their clinical implications. Examine carbohydrates as well as an introduction to hepatic function, renal function, electrolytes, and enzymes.	Course Information	50 PEP hours $375.00 
Saskatchewan Polytechnic	**CHEM-1804 Clinical Chemistry Refresher** This course is the study of the principles of measurement and clinical application of the theory necessary to produce valid results to assess proteins, electrolyte and water balance, urinalysis, carbohydrate metabolism, cardiovascular function, renal function, liver function, pancreatic function, blood gases, and therapeutic drug monitoring. The principles of measurement include light measuring, electrochemistry, osmolality, enzymology, immunology, electrophoresis, laboratory automation, and chromatography.	Course Information	Continuous Registration 90 hours $825.00 

Southern Alberta Institute of Technology	**CHEM-104 CLINICAL CHEMISTRY THEORY REFRESHER** Clinical Chemistry Theory Refresher provides the learner with information on the metabolism and function of carbohydrates, proteins, lipids, electrolytes and enzymes present in serum, urine and other body fluids. Emphasis is placed upon the clinical significance of normal and abnormal test results and their correlation with disorders and disease.	Course information	Continuous Registration 80 Contact Hours $575.00 

HEMATOLOGY			
Institution	**Outline**	**More Info**	**Duration/ Fee**
British Columbia Society of Laboratory Science	**BACK TO BASICS: HEMATOLOGY MODULE** ▪ White Blood Cells ▪ Red Blood Cells ▪ Hemostasis ▪ Blood Platelets and Transfusion Science ▪ Fluid Morphology ▪ Quality Assurance in the Hematology Lab	Back to Basics Info For more information contact the school at BCSLS@bcsls.net	24 hours DVDs or online $399.00 BCLS member $499.00 Non-member, Canadian resident $599.00 Non-member, International 
British Columbia Society of Laboratory Science	**BACK TO BASICS:** **CHEMISTRY & HEMATOLOGY JOINT MODULES** As a refresher course to bring you "back up to speed" with the latest technology, testing, systems, protocols and procedures.	Back to Basics Info For more information contact the school at BCSLS@bcsls.net	26 hours for chemistry 24 hours for hematology Together: 50 hrs $599.00 BCLS member $699.00 Non-member Canadian resident $799.00 Non-member, International
CSMLS	**9817-18 INTRODUCTION TO PLATELET STRUCTURE AND FUNCTION** Learn about platelet production, kinetics and regulation, aggregation and understand the effect of drugs on platelets. Platelet factors and the arachidonic acid-prostacyclin pathways are also discussed.	CSMLS Course Catalogue	Continuous Registration 13.2 PEP hours 0.80 CPS credits $99.00 

CSMLS	**9847-18 BODY FLUIDS: SEMINAL FLUID** Review the anatomy, physiology and production of seminal fluid and describe the nature of semen in physical and chemical terms. You will learn about the methods used to evaluate sperm motility and viability and consider common abnormalities. Medicolegal situations are addressed as well as the impact of testing on male infertility.	CSMLS Course Catalogue	Continuous Registration 16.5 PEP hours $99.00
CSMLS	**9875-15 ERYTHROCYTE SEDIMENTATION RATE** Review the theory and logic behind this test and the various methods and modifications used to perform it. When reviewed against modern methods of laboratory testing this test fails to satisfy even the most basic rules of standardization, quality control and quality assurance. In this course the flaws in accepted laboratory methodology and laboratory practice are reviewed in context to its medical applications.	CSMLS Course Catalogue	Continuous enrolment. 10.5 PEP hours $99.00
LabCE	**VARIATIONS IN WHITE CELL MORPHOLOGY – GRANULOCYTES** This course covers all aspects of white blood cell morphology, including identifying changes in morphology in granulocytes. Addresses Barr bodies, Dohle bodies, Auer rods, vacuoles, hypersegmented granulocytes, and hyposegmented granulocytes.	Course information	P.A.C.E. contact hours: 2.00 $25.00 US for individual course, or by subscription

The Michener Institute of Education at UHN More details	**HE837 TUTORIALS IN HEMATOLOGY AND COAGULATION** This online review course is designed for MLT preparing for National certification examinations or cross-training in Hematology and Coagulation. The theory presented herein examines the inheritance pattern, pathophysiology, peripheral blood morphology, and the role of laboratory investigation related to each topic. **Clinical Coagulation** ▪ Hemostasis and an introduction to thrombosis ▪ Introduction to thrombosis and anticoagulant therapy ▪ Disorders of plasma clotting factors ▪ Quantitative and qualitative platelet disorders and vascular disorders	Course information	Continuous registration 5.5 CEU (=55 refresher course hours) Domestic: $803 International: $1004 

HISTOTECHNOLOGY

Institution	Outline	More Info	Duration/ Fee
CSMLS	**9822-18 PARAFFIN TISSUE PROCESSING** Review the basics on the theory and mechanisms of paraffin tissue processing, including dehydration, clearing, infiltration, decalcification and general processing. Improve your problem solving skills as you learn to detect and correct processing errors and deal with disposal of clearing agents and hazards of clearing agents.	CSMLS Course Catalogue	Continuous enrolment. 10 PEP hours $99.00 
CSMLS	**9815-22 THEORY AND MECHANISMS OF HISTOPATHOLOGICAL STAINING** Review the theory and mechanisms of staining, dye classification and tissue demonstration methods and improve your skills and the quality of prepared material.	CSMLS Course Catalogue	Continuous enrolment. 12.5 PEP hours $99.00 
CSMLS	**9816-16 HEMATOXYLIN AND EOSIN (H&E) STAIN** Reinforce your understanding of the H&E stain by examining this stain in detail in terms of theory, practice, category differentiation and trouble-shooting "when things go wrong".	CSMLS Course Catalogue	Continuous enrolment. 11.5 PEP hours 0.50 CPS credits $99.00 

CSMLS	**9909-19 INTRODUCTION TO IMMUNOHISTOCHEMISTRY: PRINCIPLES & OVERVIEW** IHC is a technique routinely used in Anatomic Pathology to identify tissue and cellular components by using antigen- antibody reactions. Identifying these different components can assist the pathologist in diagnosing tissue/cellular abnormality or malignancy and/or etiology. Learn the basic principles and techniques for performing IHC and immunofluorescent stain methods. You will examine an overview of various IHC techniques, and discover uses, reagents, precautions and limitations.	CSMLS Course Catalogue	Continuous enrolment. 16.5 PEP hours 1.60 CPS credits $99.00 
The Michener Institute of Education at UHN	**HI901 TUTORIALS IN HISTOLOGY** An excellent review of all aspects of microanatomy and techniques of histotechnology including: ▪ General principles of staining ▪ Microanatomy ▪ Routine tissue preparation techniques ▪ Special techniques and staining methods	Course information	Continuous intake 5.5 CEU (= 55 refresher course hours) Domestic: $851.00 International: $1064.00 

Saskatchewan Polytechnic	**HSTC-1800 Histotechnology Refresher** You will review classification of cells and tissues, followed by the microanatomical structure of the major organs of the body. The principle and practices of preparing clinical specimens for histological examination including fixation, decalcification, processing, embedding, and microtomy are covered. Also included are descriptions of the principles and practices used in a clinical Histology laboratory to demonstrate cellular and non-cellular elements using special stain techniques.	Course Information	Continuous Registration 70 hours $700.00 
Southern Alberta Institute of Technology	**MEDL- 102 HISTOLOGY** Histology is the study of the microscopic structure of tissues. This course will reinforce your knowledge of preparing tissue sections from clinical specimens including gross dissection, fixation, decalcification, processing, embedding, microtomy and cryotomy. Histology learning and discussion topics include general staining techniques used to demonstrate cellular and non-cellular components in tissue sections; the functional classification of cells and tissue arrangements; and a description of the microanatomical structure of the major organs of the body.	Course information	48.0 PEP hours Continuous registration $549.00 

INFECTION CONTROL			
Institution	**Outline**	**More Info**	**Duration/ Fee**
The Michener Institute of Education at UHN	**ICCE100 Fundamentals in Infection Prevention and Control** Describe the spectrum of transmission and the modes of transmission of infectious organisms. Explain the significance of hospital acquired infections and infectious healthcare-acquired conditions. Summarize the methods in which microbes are categorized and identified. Describe the medical syndromes caused by different types of pathogens. Define a surveillance program for healthcare acquired infections and describe the tools used to implement a surveillance program. Define elements of routine, additional practices, and outbreak control measures	Course information A combination of synchronous sessions and asynchronous course material.	12 weeks Fee: $952.00
Centennial College	**PI-100 INFECTION PREVENTION & CONTROL** Students will learn the planning, implementation, management and evaluation of infection, prevention and control program. It is also designed to provide basic principles to others who may be involved in the prevention and control of infections: e.g. Community health, public health, Long Term Care facilities, homes for the aged, first responders and support services.	Course information Contact: healthstudies.pt@centennialcollege.ca or 416-289-5207	90-hour course $1600.00 (online) 💻
CSMLS	**9813-11 STAPHYLOCOCCI** (English) Examine classification and nomenclature, morphology, isolation and identification procedures, clinical significance and antimicrobial susceptibility of staphylococci.	CSMLS Course Catalogue	Continuous enrolment. 11 PEP hours $99.00 💻

CSMLS	**9830-18 ENTEROBACTERIACEAE** (BASIC) Reinforce your knowledge and skills as you use nomenclature, cultural characteristics, identification techniques and pathogenicity to differentiate *Escherichia, Shigella, Salmonella, Enterobacter* and other clinically significant *Enterobacteriaceae*.	CSMLS Course Catalogue	Continuous enrolment. 8.5 PEP hours $99.00 
CSMLS	**9831-18 ENTEROBACTERIACEAE: MEDIA AND IDENTIFICATION** (BASIC) Continue your study of this challenging family of organisms by considering the differential properties of selective media and other identification techniques. MacConkey, Xylose, Lysine, Deoxycholate, Salmonella-Shigella, Hektoen Enteric, Bismuth Sulfite agars (and many more) are discussed. Learn what results to expect when various biochemical tests such as carbohydrate fermentation, triple sugar iron, ONPG, Voges Proskauer, IMViC Series, and Urea Motility Indole are used, and describe the appearance of those organisms that do grow.	CSMLS Course Catalogue	Continuous enrolment. 8.5 PEP hours $99.00 

MICROBIOLOGY			
Institution	**Outline**	**More Info**	**Duration/ Fee**
CSMLS	**9828-21 MISCELLANEOUS GRAM POSITIVE RODS** (BASIC) Improve your ability to isolate, identify, differentiate, and be better prepared to deal with *Bacillus anthracis, Corynebacterium diphtheria* and *Listeria.*	CSMLS Course Catalogue	Continuous enrolment. 10.5 PEP hours $99.00 
CSMLS	**4878-20 ANAEROBIC BACTERIOLOGY PART 1: Introduction to Anaerobic Bacteriology** Anaerobic bacteria are important causes of many different types of infections and are still the most frequently overlooked of all bacterial infections. Part 1 of this two-part course will give you an introduction to anaerobic bacteriology, review specimen collection and culture requirements and delve into the isolation of anaerobes.	CSMLS Course Catalogue	Continuous enrolment. 17 PEP hours $329.00 
CSMLS	**4879-20 ANAEROBIC BACTERIOLOGY PART 2: Methods and Identification** Part 2 of the two-part anaerobic bacteriology series will explore the identification of anaerobes. This will include advanced identification methods as well as susceptibility testing.	CSMLS Course Catalogue	Continuous enrolment. 20 PEP hours 0.80 CPS credits $329.00 
CSMLS	**9821-12 NEISSERIA AND MORAXELLA** Learn the morphology, growth requirements, identification tests and susceptibility patterns, and pathogenicity to better differentiate *Neisseria* species including *N. gonorrhoeae, N. meningitides* and *Moraxella catarrhalis*.	CSMLS Course Catalogue	Continuous enrolment. 10.3 PEP hours $99.00 

CSMLS	**9804-18 BODY FLUIDS: CEREBROSPINAL FLUID** Review the many laboratory techniques for evaluating cerebrospinal fluid (CSF) including routine procedures and new technologies. This course focuses on cell counting and identification, chemical analyses, significance of lab findings and microbiological tests for meningitis. Brain anatomy and physiology and the production of CSF are also reviewed.	CSMLS Course Catalogue	Continuous enrolment. 21 PEP hours $99.00 
CSMLS	**9814-21 STREPTOCOCCI** Build your confidence and competence in dealing with the pervasive group Streptococci in this module that includes classification and nomenclature, morphology, isolation and identification procedures, clinical significance, and antimicrobial susceptibility.	CSMLS Course Catalogue	Continuous enrolment. 10 PEP hours $99.00 
LabCE CE Info	**READING GRAM STAINED SMEARS FROM CULTURES** This basic illustrated course covers the basics of reading gram-stained smears from cultures. Covers gram positive and gram-negative bacilli; single, pair, chain, and tetrad cell arrangements; and reporting.	Course information	P.A.C.E. contact hours: 1.5 $25.00 US for individual course or by subscription 

The Michener Institute of Education at UHN	**MI905 TUTORIALS IN MICROBIOLOGY** Designed for technologists seeking microbiology certification and those working in a multidisciplinary environment, this correspondence course provides a comprehensive review of medical microbiology. Topics covered: ▪ Commonly isolated bacterial pathogens found in the majority of clinical specimens ▪ Review basic microbiology and bacterial physiology ▪ Understand the theory and use of the gram stain ▪ Discuss the correct uses of various media ▪ Differentiate and identify commonly isolated bacterial pathogens	Course information	Continuous intake 5 CEU (= 50 refresher course hours) Domestic: $851.00 International: $1064.00 
Saskatchewan Polytechnic	**MICR-1900 Microbiology Refresher** This course will provide the information for the isolation, identification, and antimicrobial susceptibility techniques for clinically significant microorganisms from the following body sites: urinary tract, respiratory tract, gastrointestinal tract, ear-eye, genital tract, cardiovascular and central nervous systems, skin/wound/soft tissue, and deep wounds.	Course Information	Continuous registration 75 hours $825.00 

Southern Alberta Institute of Technology	**MBIO-102 CLINICAL MICROBIOLOGY** Reviews the basic concepts of bacterial anatomy and physiology. Areas of clinical significance studied are normal flora and the most common pathogens isolated from the urogenital tract, respiratory tract, gastrointestinal tract, eye/ear, cardiovascular and central nervous systems, and skin/wound/soft tissue sites. Other areas covered include mycology, parasitology, and antimicrobial susceptibility testing including the spectrum of the major drug groups and their pathophysiology, commonly isolated anaerobes and their clinical significance, and miscellaneous uncommon pathogens.	Course information	Continuous registration 88 hours $549.00
LabCE CE Info	**READING & REPORTING GRAM STAINED DIRECT SMEARS** This Basic course helps provide training for technologists who must read gram stain but do not work primarily in the microbiology laboratory. Describes the morphology and Gram stain reactions of bacteria and nonbacterial elements found in gram-stained smears of clinical material.	Course information	P.A.C.E. contact hours: 1.5 $25.00 US or by subscription

TRANSFUSION SCIENCE / IMMUNOHEMATOLOGY / IMMUNOLOGY			
Institution	**Outline**	**More Info**	**Duration/ Fee**
CSMLS	**9812-17 OVERVIEW OF COMMON BLOOD GROUP SYSTEMS (BASIC)** Get reacquainted with modern concepts on various blood group systems.	CSMLS Course Catalogue	Continuous enrolment. 15.45 PEP hours $99.00 💻
The Michener Institute of Education at UHN	**IH903 TUTORIALS IN TRANSFUSION SCIENCE** This course re-acquaints the Medical Laboratory Technologist with a variety of Transfusion Science topics, including Blood Components. This online course consists of a comprehensive package of self-study notes, covering all aspects of Transfusion Science theory including: Immunology; Major blood group systems; Antibody investigation; Compatibility testing; Blood component therapy; Transfusion hazards; Quality control; Hemolytic disorders (HDN, WAIHA, CHD, DIHA)	Course information	Continuous intake 5 CEU (=50 refresher course hours) Domestic: $851.00 International: $1064.00 💻

Northern Alberta Institute of Technology	**MELT521 IMMUNOLOGY** Improve your skills in the laboratory with the fundamental knowledge of antigen-antibody reactions and principles of immunological techniques. Discover mechanisms that the body uses to defend against infectious agents as well as immune responses in hypersensitivity, autoimmunity, transplantation and tumor growth. This course will strengthen your understanding of immunity, hormonal response, antibody structure and specificity, cell-mediated response, and maturation and activation of B and T lymphocytes. Investigate MHC molecules, cellular interactions, effector mechanisms, and the generation of immune diversity to complement your technical knowledge and abilities.	Course information	Continuous Registration 24 PEP hours $325.00 
Saskatchewan Polytechnic	**Transfusion Science Refresher** This course gives an overview of the Transfusion Science knowledge required by an entry level MLT. This course provides a review of blood group systems and the procedures used to detect and identify antigens and antibodies. You will revisit the theory required to diagnose, treat, and prevent hemolytic disease of the fetus an newborn, and diagnose and treat autoimmune hemolytic anemias. Also covered is the theory needed to provide compatible products for transfusion and investigate adverse effects of transfusion.	Course Information	Continuous registration 70 hours $754.00 

Southern Alberta Institute of Technology	**MEDL-104 TRANSFUSION MEDICINE** This course will provide the theory required to perform basic techniques to detect antigen-antibody reactions, to perform ABO forward and reverse grouping and Rh phenotyping, as well as to perform antiglobulin testing (direct and indirect). Topics covered will also include how to problem-solve ABO discrepancies and a discussion on quality systems implemented in the blood bank and how to problem-solve ABO discrepancies.	Course information	Continuous registration 48 hours $549.00 

OTHER			
Institution	**Outline**	**More Info**	**Duration/ Fee**
Association for Diagnostics & Laboratory Medicine (Formerly AACC) www.myadlm.org	**POINT-OF-CARE SPECIALIST CERTIFICATE PROGRAM** This program was developed to prepare point-of-care coordinators and POC specialists for their critical role and to promote standardized best practices. It provides a comprehensive curriculum for successful practice in the hospital, clinical, and doctor's office point-of-care testing. The program is composed of eight courses: • POC Regulations • POC Quality Management • POC Policies and Procedures • POC Instrument Selection and Validation • POC Connectivity and IT • POC Education and Training • POC Administration • POC Communication • POC Final Exam	The program is composed of eight courses. Course information	Credit: 13 hours Level: Intermediate Price: $515.00 Member Price: $265.00 Program consists of eight courses. Each course can be completed online in approx. 1-2 hours and contains a lecture, slides and transcripts, and a quiz. Also has a comprehensive 50 question multiple choice exam and additional resources for download.