



COLLEGE OF MEDICAL LABORATORY TECHNOLOGISTS OF MANITOBA

245 Lilac Street
Winnipeg, MB R3M 2S2
www.cmltm.ca

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Medical Laboratory Science Refresher Course List

Approved: January 2018

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

- Biochemistry
- Hematology
- Histology
- Phlebotomy
- Microbiology
- Transfusion Science

Please note: This list is a summary of course information. Applicants should contact the institution offering the course(s) for the most up-to-date detailed information/registration protocols. All courses listed are available by distance education.

All refresher/update courses must have an evaluation component. The transcript **MUST** state the number of course hours.

Other courses will be considered for approval by the Board of Assessors when a request and the course outline are submitted to the CMLTM. Pre-approval is required.

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CHEMISTRY

Institution	Outline	Duration	Cost
British Columbia Society of Laboratory Science www.bcsls.net	Back to Basics: Chemistry Module Electrolytes and Glucose Acid-Base Lipids & Toxicology Renal Function QA & Analytical Techniques Enzymology 26 hours, 8 DVDs, 1.5 hour exam	Continuous registration 26 hours	MLT Provincial Society member: \$399.00 Non-member: \$499.00
British Columbia Society of Laboratory Science www.bcsls.net	Back to Basics: Chemistry & Hematology Joint Modules 50 hours, 14 DVDs, 2 - 2.5 hour exam	50 hours	MLT Provincial Society member: \$599.00 Non-member: \$699.00
The Michener Institute http://michener.ca/ce_courses/tutorials-clinical-chemistry-online/	CC859 Tutorials in Clinical Chemistry I An excellent review of several basic clinical chemistry topics in the CSMLS competency profile, this correspondence course addresses: Proteins and electrophoresis Liver function and enzyme testing Renal function and urinalysis testing Carbohydrates and lipid testing Acid-base and electrolyte balance testing Assignments plus exam NOTED: CC859 replaces the former distance education course CC902. Students who have received credit for CC902 cannot receive credit for CC859.	Continuous intake 39 hours	\$399.00 plus textbook
The Michener Institute http://michener.ca/ce_courses/tutorials-clinical-chemistry-ii-online/	CC860 Tutorials in Clinical Chemistry II An excellent review of several clinical chemistry topics in the Medical Laboratory Technology CSMLS competency profile, this correspondence course addresses: Hormones and pituitary function Endocrinology, including: adrenal and thyroid function Parathyroid function and calcium metabolism Therapeutic drug monitoring Toxicology testing Evaluation includes assignment and final written examination.	Continuous intake 39 hours	\$399.00 plus textbook



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Institution	Outline	Duration	Cost
The Michener Institute http://michener.ca/ce_courses/tutorials-clinical-chemistry-iii-online/	CC861 Tutorials in Clinical Chemistry III An excellent review of several advanced chemistry topics in the Medical Laboratory CSMLS competency profile, this correspondence course addresses: 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. Evaluation includes assignments and final written examination.	Continuous intake 39 hours	\$399.00 plus textbook
Northern Alberta Institute of Technology http://www.nait.ca/course/melt504.htm	MELT504 Clinical Chemistry I (Home study) Concern yourself with the analysis of bodily fluids by focusing on the structure, function and metabolism. In a course designed specifically for MLTs and CLXTs, you'll discuss the significance of abnormal levels of chemical constituents and their relation to disease, as well as methodologies used to detect and quantify the components. Major topics covered include carbohydrates, introduction to hepatic function, renal function, electrolytes and enzymes.	50 hours Intake: Jan. – June 2018 May –Oct. 2018	\$300.00
Northern Alberta Institute of Technology http://www.nait.ca/course/melt505.htm	MELT505 Clinical Chemistry II (Home study) Increase your knowledge of ability to use the lessons of clinical chemistry. In this second level course you'll continue studying the various chemical constituents of body fluids based on structure, function and metabolism. The specific focus of the course is on lipids, proteins, electrolytes and acid-base balance, toxicology and endocrinology	No sections currently available	Call NAIT for more information
Northern Alberta Institute of Technology http://www.nait.ca/course/melt507.htm	MELT507 Urinalysis (Home study) This course presents the theory and techniques for chemical testing, microscopic examination and evaluation of physical properties of urine. Correct use and care of the microscope, quality control of procedures, correlation and clinical significance of results are discussed. The last unit covers occult blood and pregnancy screening tests.	30 hours Intake: Jan.-June 2018 Mar-Aug. 2018 May –Oct. 2018	\$300.00 + text



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<p>Southern Alberta Institute of Technology http://www.sait.ca/programs-and-courses/continuing-education/courses/chemical-chemistry-theory-refresher</p>	<p>CHEM-353 Clinical Chemistry Theory Refresher Get back to the basics of metabolism and function of carbohydrates, proteins, lipids, electrolytes and enzymes present in serum, urine, and other body fluids. An emphasis is placed on the clinical significance in relation to abnormal amounts in disease states. Modules plus examination</p>	<p>80 hours 38 weeks</p>	<p>\$395.00 + materials + text</p>
<p>Southern Alberta Institute of Technology http://www.sait.ca/programs-and-courses/continuing-education/courses/uanl/urinalysis-theory</p>	<p>UANL-268 Urinalysis Theory This course covers the anatomy and physiology of the urinary system, as well as chemical and microscopic identification procedures used in performing routine urinalysis.</p>	<p>18 hours 26 weeks</p>	<p>\$275.00</p>
<p>Southern Alberta Institute of Technology http://www.sait.ca/programs-and-courses/continuing-education/courses/chemical-analytical-chemistry-theory</p>	<p>CHEM 313 Analytical Chemistry Theory Exposure to various laboratory analytical principles used to analyze specimens in the clinical laboratory including spectrophotometry, reflectance photometry, chromatography, osmometry, electrophoresis, immunochemistry, general electricity, electrodes and basic automation.</p>	<p>48 hours 26 weeks</p>	<p>\$350.00</p>



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MICROBIOLOGY

Institution	Outline	Duration	Cost
<p>The Michener Institute http://michener.ca/ce_courses/tutorials-microbiology-online/</p>	<p>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. Course objectives:</p> <ul style="list-style-type: none"> • Identify commonly isolated bacterial pathogens found in the majority of clinical specimens • Review basic microbiological and bacterial physiology • Understand the theory and use of gram staining • Discuss the correct use of various media • Differentiate and identify commonly isolated bacterial pathogens <p>Assignments plus final examination</p>	<p>Continuous intake 50 credit hours</p>	<p>\$609.00</p>
<p>Southern Alberta Institute of Technology http://www.sait.ca/programs-and-courses/continuing-education/courses/mbio/clinical-microbiology</p>	<p>MBIO-316 Clinical Microbiology Theory Refresher This course reviews the basic concepts of bacterial anatomy and physiology followed by detailed methods of staining and identification by culture. 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. Emphasis will be on isolation and identification of clinically significant microorganisms. There will also be an introduction to 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 and their clinical significance. Modules plus examination.</p>	<p>88 hours 32 weeks</p>	<p>\$429.00 + materials + S&H</p>



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<p>Canadian Society for Medical Laboratory Science https://learn.csmls.org/topclass/browse.do?c=1385 1-800-263-8277</p>	<p>4920-14 Microbiology Refresher 1: Basic Principles of Microbiology</p> <p>Refresh your theory and knowledge of key principles and procedures in microbiology.</p> <p>23 PEP hours, on-line, exam</p>	<p>Intake- Sept. 1, 2016 12 Weeks</p>	<p>CSMLS Member \$464.00 Non-Member \$695.00</p>
<p>Canadian Society for Medical Laboratory Science https://learn.csmls.org/topclass/browse.do?c=1385 1-800-263-8277</p>	<p>4921-15 Microbiology Refresher 2: Microbial Identification and Susceptibility Testing</p> <p>Refresh your theory and knowledge of key principles and procedures in microbiology.</p> <p>23 PEP hours, on-line, exam</p>	<p>Intake- Sept. 1, 2016 12 Weeks</p>	<p>CSMLS Member \$464.00 Non-Member \$695.00</p>



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HEMATOLOGY

Institution	Outline	Duration	Cost
British Columbia Society of Laboratory Science www.bcsls.net	Back to Basics: Hematology Module White Blood Cells Red Blood Cells Coagulation Body Fluids Platelets and Miscellaneous Tests Quality Assurance 6 DVDs. 1.5 hour exam	24 hours	MLT Provincial Society member: \$399.00 Non-member: \$499.00
British Columbia Society of Laboratory Science www.bcsls.net	Back to Basics: Chemistry & Hematology Joint Modules 14 DVDs, 2 - 2.5 hour exam	50 hours	MLT Provincial Society member: \$599.00 Non-member: \$699.00
Southern Alberta Institute of Technology http://www.sait.ca/programs-and-courses/continuing-education/courses/hema/hematology	HEMA-301 Hematology Theory Refresher This course includes an introduction to the composition and function of blood cells, hematopoiesis, erythrocyte and leukocyte metabolism, production and destruction, classification of anemias and leukemias, etiology and laboratory findings. Various mechanisms involving blood clotting in normal versus abnormal patients with hemorrhagic or thrombotic diseases are also studied. 13 modules and four examinations	80 hours 34 weeks Aug-Dec. 2018	\$395.00 + text
The Michener Institute http://michener.ca/ce_courses/tutorials-hematology-coagulation-online/	HE837 Tutorials in Hematology & Coagulation Refresher course in hematology 55 PEP hours	Continuous enrollment	\$609.00 plus textbook



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HISTOTECHNOLOGY

Institution	Outline	Duration	Cost
<p>CSMLS</p> <p>https://learn.csmls.org/topclass/browse.do?c=1382</p>	<p>Paraffin Tissue Processing 9822-08 Meticulous embedding of tissues ensures sections are accurate representations and directly impacts the examination and interpretation of specimens. You will 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.</p>	<p>Continuous registration. Work at your own pace; must complete course within 12 months of registration. 10 PEP Hours</p>	<p>Member: \$95.00 Non-member: \$145.00</p>
<p>The Michener Institute</p> <p>http://michener.ca/ce_courses/tutorials-histology-online/</p>	<p>HI901 Tutorials in Histology An excellent review of all aspects of histotechnology theory, this course covers:</p> <ul style="list-style-type: none"> • Microanatomy • Routine tissue preparation techniques • General principles of staining • Special techniques and staining methods <p>Assignments plus examination</p>	<p>Continuous intake 55 hours</p>	<p>\$609.00 plus textbook</p>
<p>Southern Alberta Institute of Technology</p> <p>http://www.sait.ca/programs-and-courses/continuing-education/courses/medl/histology</p>	<p>MEDL-366 Histology Refresher Reinforce your knowledge of preparation of tissue sections including gross dissection, fixation, decalcification, processing, embedding, microtomy and cryotomy, general staining techniques. In addition, functional classification of cells and tissue arrangements followed by microanatomy of major organs will be covered. Modules plus examinations.</p>	<p>48 hours 26 weeks Registration accepted July 1 – Aug. 28, 2016</p>	<p>\$345.00</p>
<p>CSMLS</p> <p>https://learn.csmls.org/topclass/browse.do?c=1382</p>	<p>9909-14 Introduction to Immunohistochemistry: Principles and Overview Learn the basic principles and techniques for performing immunohistochemistry and immunofluorescent stain methods. You will examine an overview of various IHC techniques, and discover uses, reagents, precautions and limitations. PEP hours 15.5 (Final exam)</p>	<p>Continuous enrollment</p>	<p>Member \$95.00 Non-member \$145.00</p>



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TRANSFUSION SCIENCE/IMMUNOHEMATOLOGY

Institution	Outline	Duration	Cost
Canadian Society for Medical Laboratory Science https://learn.csmls.org/topclass/browse.do?c=1389	Transfusion Medicine Refresher Course 4336-13 Build upon your initial education in immunohematology and to explore the concepts of immunology, serology and hematology which relate to transfusion practice. You will use a self-directed learning approach, which is the natural learning process for adults, as you achieve the clear objectives set down in this course and make use of the many assembled resources to support your studies.	45 Weeks 45 PEP hours Mar. 2018 Oct. 2018	Members: \$509.00 Non-members: \$764.00 Plus textbook
The Michener Institute http://michener.ca/ce_courses/tutorials-transfusion-science-online/	IH903 Tutorials in Transfusion Science Review the essential aspects of transfusion science, including: Immunoglobulins; complement; immune response; antiglobulin test; crossmatching; blood components; antibody detection and identification; autoimmune hemolytic anemia; blood groups & components; autoimmune hemolytic anemia; and adverse effects of transfusion. Self-study course with tutor support. Research will be done using mainly the Internet. Good computer skills required. Six assignments plus examination.	Online course Continuous intake 50 hours	\$609.00
Northern Alberta Institute of Technology http://www.nait.ca/course/melt521.htm	MELT521; Immunology Introduces the student to the concepts of immunity and the immune response. Discover mechanisms that the body uses to defend against infectious agents as well as immune responses in hypersensitivity, autoimmunity, transplantation and tumor growth.	24 Hours Jan. 1 – Jun 30, 2018 May 1- Oct. 30, 2018	\$245.00
Northern Alberta Institute of Technology http://www.nait.ca/course/melt513.htm	MELT513: Transfusion Medicine Basic Theory Part 1. Refresher course for MLTs seeking CSMLS certification. Topics include Antigen-Antibody reactions; ABO, Rh, Lewis blood group systems; Anti-globulin test; Other blood group systems (warm): Kell, Duffy, Kidd, HLA; compatibility testing; other blood group systems (cold): MN,P,i; Antibody detection, identification and titration.	No sections currently available	For more information call 780.378.6990
Northern Alberta Institute of Technology http://www.nait.ca/course/melt508.htm	MELT508- Transfusion Medicine Homestudy Overview of basic transfusion services in	No sections currently available	For more information call



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melt508.htm	<p>regards to handling and distribution of blood components. Topics include transfusion medicine collection, basic immunohematology, blood donation process, blood components, transportation and receipt of blood products, tagging and issuing blood products, transfusion reactions and investigations, transfusion medicine documentation.</p>		<p>780.378.6990</p>
<p>Southern Alberta Institute of Technology http://www.sait.ca/programs-and-courses/continuing-education/courses/medl/transfusion-medicine</p>	<p>MEDL-360 Transfusion Medicine Theory Refresher Transfusion Medicine provides the theory required to perform basic techniques to detect antigen-antibody reactions, ABO forward and reverse grouping and Rh phenotyping, antiglobulin testing and antibody identification. Topics covered also include quality systems implemented in the blood bank and how to problem-solve ABO discrepancies. 16 lecture modules + 2 lab modules 3 examinations</p>	<p>48 hours 26 weeks</p>	<p>\$525.00 + text</p>