COLLEGE OF MEDICAL LABORATORY TECHNOLOGISTS OF ONTARIO
ORDRE DES TECHNOLOGISTES DE LABORATOIRE MÉDICAL DE L'ONTARIO

MEDICAL LABORATORY SCIENCE REFRESHER COURSE LIST

Updated/Revised: March 16, 2009

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

Biochemistry	Histology	Microbiology
Hematology	Phlebotomy	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 refresher/updating courses must have an evaluation component and the transcript **MUST** state the number of hours in the course.

Shaded areas are available by distance education

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NOTE: Other courses will be considered for approval by the Registration Committee when a request and the course outline are submitted to the CMLTO.

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 20 hours, 10 DVDs, 1.5 hour exam	Continuous registration	MLT Provincial Society member: $295.00 Non-member: $385.00
British Columbia Society of Laboratory Science www.bcsls.net	**Back to Basics:** **Chemistry & Hematology Joint Modules** 32 hours, 16 DVDs, 2.5 hour exam		MLT Provincial Society member: $415.00 Non-member: $540.00
McMaster University www.mcmaster.ca	**BIOCHEM 3H03 Clinical Biochemistry** An outline of clinical chemistry; its relation to disease and relevance to health care **Prerequisites**: BIOCHEM 3D03; or BIOCHEM 2EE3 and 3G03; or a grade of at least C + in BIOCHEM 2EE3; or HTH SCI 2E03	3 lecture hrs/wk WINTER	
The Michener Institute www.michener.ca	**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 NB. CC859 replaces the former distance education course CC902. Students who have received credit for CC902 cannot receive credit for CC859.	Continuous intake	$320.00

Institution	Outline	Duration	Cost
The Michener Institute www.michener.ca	**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 Endochronology, including: adrenal and thyroid function Parathroid function and calcium metabolism Therapeutic drug monitoring Toxicology testing Evaluation includes assignments and final written examination.	Continuous intake	$320.00
The Michener Institute www.michener.ca	**CC861Tutorials in Clinical Chemistry III** An excellent review of several advanced chemistry topics in the Medical Laboratory Technology CSMLS competency profile, this correspondence course addresses: Photometric measuring systems (including spectrophotometry, atomic absorption photometry, flame photometry, nephlometry, 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	$320.00
The Michener Institute www.michener.ca	**AOML401 Simulated Clinical Work Experience – Clinical Chemistry** This course has been designed to help prepare internationally educated medical laboratory technologists for the national certification examination and for practice of their profession in Ontario. The course will be conducted at The Michener Institute for Applied Health	This course is scheduled on Thursday/Friday evening and Saturday/Sunday (alternate weeks). Was offered in Sept/Oct 2008	$750.00

Institution	Outline	Duration	Cost
	Sciences using the laboratories and clinical instrumentation currently used by the full time Medical Laboratory Science Program students. This course uses a "hands-on" approach to provide the learner with practical exposure to laboratory techniques and clinical instrumentation used in clinical chemistry laboratories. On successful completion of this course the learner will be able to: Apply the principles of universal precautions and safe laboratory practice. Apply the principles of Quality Assurance to laboratory analysis. Perform biochemical specimen examinations using manual and automated laboratory techniques. Validate the results of specimen examinations Correlate laboratory test results with the primary disorders of the human body systems.		
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS09 Analytical Techniques 1 Theory** Students will have an opportunity to review many aspects of Qualitative and Quantitative Biochemical Techniques, including such topics as electrophoresis and chromatography.	Offered in October 2008	$240.84
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**INSTMLS06 Instrumentation Theory** This course wil look at the principles and applications of spectrophotometry. Other measurement principlies utilized in the laboratory will also be studied. The importance of proper instrument maintenance will also be examined.	Offered in October 2008	$137.76
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**INSTMLS07 Instrumentation Lab** This lab course will allow the student to utilize some of the instrumentation introduced in MLS06, in a practical setting	Offered in October 2008	$146.07

Institution	Outline	Duration	Cost
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS10 Analytical Techniques 1 Lab** This course allows practice of chemistry technique studied in MLS09	Offered in November 2008	$159.23
Northern Alberta Institute of Technology www.nait.ca/course_ML834.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML834 Clinical Chemistry II (Homestudy)** 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	Continuous registration 50 hours	$235.00 + text
Northern Alberta Institute of Technology www.nait.ca/course_ML205.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML205 Urinalysis (Homestudy)** 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.	Continuous registration 20 hours	$235.00 + text
Southern Alberta Institute of Technology www.sait.ca/pages/cometosait/continuingeducation/index.shtml 1-877-284-7248 or 403-210-4210	**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	Continuous registration Sept-Dec 2008 80 hours	$355.00 + materials + text
University of Windsor www.uwindsor.ca/flexible	**03-59-263 Organic Chemistry of Biomolecules** An extension of the principles covered in 59-230 to the structure and properties of organic molecules of biological significance. i.e. proteins, nucleic acids and lipids. **Prerequisite**: 59-230 or 59-232, or consent of instructor.	Was offered Summer 2008 Check the Web site for 2009 offerings (usually offered Summer only	

Institution	Outline	Duration	Cost
	(Not available for credit to students majoring in Chemistry, Biochemistry, or Biological Sciences) Distance Education Delivery Details: Print, Audio Cassette Students Require: E-mail, Internet access		
CSMLS www.csmls.org	**Cardiac Markers (9865)** **At the completion of this course, the learner will be able to:** • Describe the clinical and pathological findings for ischemic heart disease or coronary heart disease • Differentiate between the features of angina pectoris, myocardial infarction, chronic ischemic heart disease and sudden cardiac death • Outline the sequence of events seen as a consequence of an acute myocardial infarction • Describe the WHO definition of the diagnosis of AMI as seen in a patient who presents with chest pain in the Emergency Department • List and explain the characteristic of an ideal cardiac marker • Review the now obsolete tests once used to assist in making the diagnosis of AMI. These tests include LD, AST, ALT, HBD, PK, BB, CK and CRP. A more detailed review of LD isoenzymes would be outlined • Describe the meaning of the term cardiac enzymes and how they are used in assisting with the diagnosis of AMI • Discuss the use of total CK, CK-MB isoenzymes and the problems associated with their measurement and interpretation • Describe the newer cardiac markers which are not enzymes, i.e., myoglobin, Troponin I, Troponin T and CK isomers and how they are useful in making the diagnosis of AMI	Continuous registration	Member: $80 Non-member: $120

Institution	Outline	Duration	Cost
	• Outline the advantages and potential disadvantages of the new non-enzyme cardiac markers • List and discuss the major recommendations of the NAB for standards of laboratory practice in use of cardiac markers • Describe some of the new approaches to finding early markers for heart diseases • Outline the differences between BNP and NT-pro BNP • Describe the potential use of BNP in heart disease **Other course details:** • Work at your own pace - you set the schedule. Your studies are supported by the author/instructor, self-assessment exercise and your learning is evaluated by an invigilated quiz (you choose the place and time). • Individuals registered in a self-paced course must complete the course within 12 months of registration.		

MICROBIOLOGY

Institution	Outline	Duration	Cost
CSMLS www.csmls.org	**Medical Mycology** (Advanced level) **4344-08F and 4344-08S** Upon successful completion of this course you will be able to: ▪ Understand the clinical importance of fungi ▪ Detect and interpret fungi indirect smears such as Gram stain, KOH and Calcofluor White from clinical specimens ▪ Differentiate septate hyphae, aseptate hyphae, pseudohyphae and dematiaceous fungi based on structures observed under the microscope	Starting November and April Four months	Member: $325 Non-member: $488

Institution	Outline	Duration	Cost
	▪ Understand the terms saprophyte opportunistic, hyalohyphomicosis, phaeohyphomycosis and dimorphism ▪ Understand taxonomy and classification of fungi ▪ Process and identify clinically relevant fungi from clinical specimens ▪ Learn and understand mycological procedures used in the mycology laboratory to work up specimens leading to fungal species identification ▪ Understand structures such as conidia, conidiogenous cells and their role in identification ▪ Speciate clinical isolates as pathogens, opportunistics, saprophytes and laboratory contaminants Four assignments and a final exam		
CSMLS **www.csmls.org**	**Staphylococci 9813-98** Staphylococcus aureus continues to be an important community and hospital pathogen, with the recent emergence of MRSA strains becoming major clinical and epidemiological problems. This module examines staphylococci from classification and nomenclature, morphology, isolation and identification procedures, to clinical significance and antimicrobial susceptibility.	Continuous enrolment. Must complete the course within 12 months of registration.	Members $70 Non-Members $100
CSMLS **www.csmls.org**	**Streptococci 9814-98** In the last decade, serious cases of group A Streptococcus invasive infections have increased in Canada as well as worldwide. 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. You can choose whether to write a paper exam or online computer exam through E-Learning Society.	Continuous enrolment. Must complete the course within 12 months of registration.	Members $70 Non-Members $100

Institution	Outline	Duration	Cost
CSMLS **www.csmls.org**	**Enterobacteriaceae 9830-98** (Basic) Keeping up with the family, Enterobacteriaceae, becomes more formidable each year with the addition of new genera. In 1990, 29 genera and over 100 species were recognized, and more have been added each year. Keep abreast of these changes as you study the myriad of characteristics that make up this group of non-sporing, Gram negative rods. 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 isolates.	Continuous enrolment. Must complete the course within 12 months of registration.	Members $70 Non-Members $100
CSMLS **www.csmls.org**	**Enterobacteriaceae 9831-08 (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.	Continuous enrolment. Must complete the course within 12 months of registration.	Members $60 Non-Members $90
CSMLS **www.csmls.org**	**Miscellaneous Gram Positive Rods 9828-98** Although cases are rare, Bacillus anthracis can show up when and where you least expect it. Diptheria is almost unheard of in Canada and the US today but with Corynebacterium diphtheriae endemic in developing countries and with global travel, cases are still seen. Other species of these groups along with organisms such as Listeria increasingly cause infections in debilitated and immunosuppressed patients. Improve your ability to isolate,	Continuous enrolment. Must complete the course within 12 months of registration.	Members $60 Non-Members $90

Institution	Outline	Duration	Cost
	identify, differentiate and be better prepared to deal with these potential pathogens.		
CSMLS **www.csmls.org**	**Introduction to Anaerobes 9832-99** Anaerobic cultures can be labour intensive, expensive and while the health care system cannot afford to identify anaerobes that are not clinically significant, these infections are associated with high morbidity and mortality rates. Most anaerobic infections come from the patients own normal flora, during trauma, surgery or lesions. Knowledge of normal flora anaerobes can benefit anaerobic investigations by enabling you to "predict" the identity of the pathogen and choose appropriate procedures. Explore this group of organisms which account for over 90 percent of clinically significant anaerobes, and learn how to more readily identify species of Veillonella, Peptostreptococcus, Propionibacterium, Clostridium, Bacteroides and Fusobacterium.	Continuous enrolment. Must complete the course within 12 months of registration.	Members $60 Non-Members $90
McMaster University www.mcmaster.ca	**BIOLOGY 4P03 Medical Microbiology** Infectious diseases: identification, epidemiology and treatment. **Prerequisites**: BIOLOGY 2EE3 or 3E03, and registration in Level III or above of any Honours program	2 lecture, 1 tutorial; one term	
The Michener Institute www.michener.ca	**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 are to: - 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	Continuous intake	$535.00

Institution	Outline	Duration	Cost
	- Differentiate and identify commonly isolated bacterial pathogens Assignments plus final examination		
The Michener Institute www.michener.ca	**AOML403** **Simulated Clinical Work Experience – Clinical Microbiology** This course has been specifically designed to help prepare internationally educated medical laboratory technologists for the national certification examination and for practice of their profession in Ontario. This course uses a "hands-on" approach to provide the learner with exposure to laboratory techniques and investigations used in clinical microbiology laboratories. This simulated clinical experience provides the learner with the opportunity to acquire knowledge and skills essential for the isolation and identification of bacteria frequently encountered as potential pathogens in clinical specimens. The organisms studied in this course represent organisms more commonly encountered in disease processes but constitute only part of a much larger group. Upon successful completion of this course, the learner will be able to demonstrate the following outcomes according to established guidelines and expectations: • explain the role and responsibilities of the technologist working in a diagnostic clinical Microbiology laboratory • discuss factors which must be considered in order to obtain optimal recovery of micro organisms from clinical specimens; discussion must include nutritional requirements, atmospheric conditions, and generation time/growth rate • process clinical specimens in order to obtain optimal isolation and/or detection of probable pathogens and be able to rationalize the choice of media, e.g., enriched, selective, differential and enrichment	The course is scheduled on a part-time basis; Thursday/Friday evenings plus Saturday and Sunday (alternated weeks) Commences April 2, 2009 Register by March 13, 2009	$750.00

Institution	Outline	Duration	Cost
	• describe the principles and applications of some frequently used biochemical tests including methyl red (MR), Voges Proskauer (VP), oxidase, catalase, citrate, decarboxylase, phenylalanine deaminase, urease, Sulfide-indole-motility (SIM) medium, and triple sugar iron (TSI) medium • select and use appropriate tests to identify potential pathogens found in clinical specimens • identify common genera and species bacteria using culture characteristics, colonial appearance, Gram-stain reaction and morphology, and biochemical tests		
The Michener Institute www.michener.ca	**IC800 Infection Control** **Infection Control & Epidemiology** This online course is competency-based and will include units on the following topics: • Infectious disease processes and identification of causative agents • Concepts in epidemiology for Professionals in Infection Control • Principles of immunity and immunization • Control and prevention of communicable disease outbreaks in community and health care settings • Occupational health and safety • Vignettes of notifiable disease outbreaks • Community and hospital-associated antimicrobial resistant organisms • Implementing, and evaluation of a Hospital Infection Control Program The course is designed for those preparing for APIC certification examination (CIC) Eight learning modules; seven assignments plus a capstone project at the end You are evaluated by written assignments and participation in online chats as well as relevant discussions to the Discussion Board	Offered February 16 to June 5, 2009 Register by February 2, 2009	$950.00

Institution	Outline	Duration	Cost
Southern Alberta Institute of Technology www.sait.ca/pages/cometosait/continuingeducation/index.shtml 1-877-284-7248 or 403-210-4210	**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.	Continuous registration Sept-Dec 2008 80 hours	$355.00 + materials + S&H
University of British Columbia www.olt.ubc.ca	**PATH417 (3 credits)** **Bacterial Infection in Humans** The course explores human bacterial infections focussing on both the virulence factors of the microorganism and the pathophysiology of the host response. The learning occurs using a Case-Based Learning approach in which the students, working in groups, are directed to acquire information by working through case scenarios. The course is delivered over the World Wide Web, using the WebCT platform, with students and instructors all communicating online. **Prerequisite**: MICB 202 Evaluation: 30% participation; 30% e-portfolio;40% final exam	26 weeks Sept – Apr 1 case every three weeks	
University of British Columbia www.olt.ubc.ca	**PATH427 (3 Credits)** **Basic Principles of Infection Prevention and Control** This course introduces students to the principles of infection prevention and control, outbreak investigation and management, surveillance techniques,	20 weeks Jan – May	

Institution	Outline	Duration	Cost
	methods of sterilization and disinfection as well as other topics pertinent to long-term care, pediatric community infection control. Permission of the instructor is required. Please contact the instructor at medlab@pathology.ubc.ca with "PATH 427" in the subject box of your email. Computer and internet access required. **Note:** This course will be of interest to those with a science background e.g. epidemiology integrated sciences, or medical microbiology or those who are working in a hospital environment and need specific training in infection control. Evaluation:30% participation;30% midterm exam;40% final exam		
University of British Columbia www.olt.ubc.ca	**PATH467 (3 Credits)** **Basic Microbiology for Infection Control** This course introduces students to pathogenic organisms and the diseases they produce; identification, clinical significance, and transmission of pathogenic organisms will be presented. The information from this course is intended to provide a basis for improving patient care and infection control practices. Permission of the instructor is required. Computer and internet access required. You can contact the instructor at medlab@pathology.ubc.ca with "PATH 467" in the subject box of your e-mail. Evaluation: 20% participation;20% midterm exam;60% final exam	20 weeks Jan – May	
Centennial College janekennedy@centennialcollege.ca	**PI 100 Infection Prevention & Control** This course is designed to teach the basic infection prevention and control principles to newly appointed Infection Control Practitioners in Health Care facilities. It is also designed to provde basic principles to others who may be involved in the prevention and control of infections: eg. Community health, public health, Long Term Care facilities, homes for the aged, first responders and support services. At the completion of this course the	Contact College	Contact College

Institution	Outline	Duration	Cost
	student will be able to: 1. Conduct a detailed needs-assessment of infection control prevention and control in his/her facility. 2. Develop goals and objectives for an IC program. 3. Select appropriate, quantifiable, measures and timelines to meet the goals of the program. 4. Establish a program to complete the measure (eg. Identify, record, analyze and report targeted infections within a facility using recognized, published criteria.) 5. Establish an infection prevention and control education program for all staff including knowledge of policies, compliance, notification of IP&C department of specific predetermined infections. 6. Provide relevant evidence based handouts geared to the educational level and learning style of the learner. 7. Provide feedback to the relevant staff. 8. Evaluate and revise the program and take corrective action as necessary. Final Exam: 40% written 3 weeks after course with proctor of your choice 6 Group Case Studies: 10% each for total 60% due every 2 weeks starting after the exam.		
University of Waterloo de.uwaterloo.ca distance@uwaterloo.ca	**BIOL 140 Fundamentals of Microbiology** Introduction to the biology of bacterial and archaeal organisms. Cell structure and function, methods of cultivation, genetics, phylogeny and taxonomy, and metabolic and genetic diversity. Online study. Course work: 40%, Exams: 60%	Half credit Sept-Dec Jan-Apr	
University of Windsor www.uwindsor.ca/flexible	**03-55-351 Medical Microbiology (previously 03-55-241 Infectious Diseases)** Viral and bacterial pathogenesis, including the processes and genetic control of human diseases.	Was offered Fall 2007 Contact Registrar for current offerings T:519-971-3650	

Institution	Outline	Duration	Cost
	Prerequisite: 55-237 or 55-238 Introductory Microbiology Required: Computer, E-mail	flexible@uwindsor.ca	
University of Windsor www.uwindsor.ca	**55-351 Medical Microbiology (as above)** Viral and bacterial pathogenesis, including the processes of genetic control of human diseases. **Prerequisites:** 55-237 or 55-238 Intro Micr	3 lecture hrs/week	
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS14 Analytical Techniques 4 L& T** The student will review topics such as Bacterial Identification, Susceptibility Testing, and Nucleic Acid Testing in relation to Microbiology. There will also be a microbiology lab session as part of this course.	Offered in September 2008	$151.61

ELECTRON MICROSCOPY

Institution	Outline	Duration	Cost
Trent University www.trentu.ca	**Biology 307H Electron Microscopy** The biological applications of transmission and scanning electron microscopy. Course emphasizes practical instruction in use of microscopes and preparation of biological materials for the electron microscope. **Prerequisite:** Biology 304H Histology.	WINTER Two lectures, demonstrations and tutorials weekly.	There will be a max charge of $20 to cover field trips and photographic printing.
University of Western Ontario www.uwo.ca	**Biology Microscopy and Imaging in Biology** A survey of modern microscopy and imaging techniques in biology. Emphasis on practical and theoretical experience with light and fluorescent microscopy, scanning electron microscopy, confocal microscopy, and new fluorescent molecules used in imaging. Students generate, process and assemble their own images electronically for publication quality plates. **Prerequisite:** Biology 3326F/G or permission of the Dept.	FALL 2 lecture 3 lab half credit	

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 20 hours, 10 DVDs, 1.5 hour exam	Continuous registration	MLT Provincial Society member: $295.00 Non-member: $385.00
British Columbia Society of Laboratory Science www.bcsls.net	**Back to Basics: Chemistry & Hematology Joint Modules** 32 hours, 16 DVDs, 2.5 hour exam	Continuous registration	MLT Provincial Society member: $415.00 Non-member: $540.00

Institution	Outline	Duration	Cost
CSMLS www.csmls.org	**Refresher Course in Hematology** **4193-08 F or 4193-08 S** What you will know after completing this course: • Basic hematology knowledge of test results and their implications; • Blood formation and the role of proliferation and differentiation of hematopoietic stem cells and extramedullary hematopoiesis • Normal ranges of each component of the complete blood count (CBC) and indices (RBC, MCV, MCHC) and relate to critical values • Preparation and systematic examination of manual differentials and relate to automated differentials • White blood cell and red blood cell morphology and relate to disease states • Clinical significance of analyses such as serum iron, TIBC, ferritin, haptoglobins, hemopaxin, methemalbumin, sickle cell solubility and reticulocyte count • Anemias including macrocytic, megaloblastic and nonmegaloblastic, aplastic, microcytic hypochromic, iron deficiency, chronic disease, and sideroblastic • Hemoglobinopathies including the thalassemias and abnormal hemoglobins • Red cell membrane disorders and red cell enzyme defects • Myeloproliferative and lymphoproliferative disorders, myelodysplastic syndromes and the different leukemias • understand basic coagulation concepts and testing 5 assignments and a final examination A CD drive is required to view images	Begins September and March Five months	Members: $300 + $93.56 materials Non-members: $450 + $93.56 materials

Institution	Outline	Duration	Cost
CSMLS **www.csmls.org**	**Non-malignant Disorders of Leukocytes 9826-08** (Advanced) What you will know after completing this course: • causes of neutropenia (under production and increased destruction) • common drugs affecting neutrophil numbers • how to investigate a child with neutropenia • tabulate the congential disorders of neutropenia • describe major causes of neutrophilia • describe qualitative abnormalitites of neutrophils • tabulate functional abnormalities of neutrophil dysfunction • describe morphological abnormalities seen in inherited disorders of neutrophils You can choose whether to write a paper exam or online computer exam through E-Learning Society.	Continuous registration. Work at your own pace; must complete course within 12 months of registration.	Member: $70.00 Non-member: $100.00
CSMLS **www.csmls.org**	**Case Studies: Patients with Platelet Disorders – Series One 9863-03** Interested in challenging and unusual platelet disorders? Want to improve your problem solving skills? You will learn how to assess information from the problem, clinical data and laboratory findings to resolve disorders such a neonatal alloimmune thrombocytopenia, gray platelet syndrome, Glanzmann's thrombasthenia, post-infectious thrombocytopenia, and use and abuse of bleeding time.	Continuous registration. Work at your own pace; must complete course within 12 months of registration.	Member: $70.00 Non-member: $100.00

Institution	Outline	Duration	Cost
CSMLS **www.csmls.org**	**Case Studies: Patients with Platelet Disorders – Series Two 9864-03** In Series Two, you will continue to increase your knowledge and problem solving skills by using five case studies to analyse HELLP syndrome, idiopathic thrombocytopenia purpura, thrombotic thrombocytopenic purpura, Von Willebrand's disease, and the hyper-responder to asprin.	Continuous registration. Work at your own pace; must complete course within 12 months of registration.	Member: $70.00 Non-member: $100.00

CSMLS **www.csmls.org**	**An Introduction to Erythrocyte Disorders and Normocytic Anemias (9802)** Explore basic information on erythrocyte disorders and the various types of normocytic normochromic anemias. You will consider the questions that arise when investigating an anemia and the laboratory tests involved. Classification, etiology, erythropoiesis and laboratory findings are discussed. At the completion of this course, the learner will be able to: . Write a definition for the two major categories of erythrocyte disorders. . Write a definition for the two major categories of anemias. . List the three major causes of absolute anemias. . List the four main groups in the MORPHOLOGIC/ETIOLOGIC classification of the anemias. . State the three questions which must be answered in the investigation of an anemia and list the lab tests generally performed to answer the questions. . State the purpose of a reticulocyte count and bone marrow evaluation, and conclusions to be drawn if an anemic patient shows a reticulocyte count which is decreased, normal or increased along with a bone marrow which is hypocellular, normocellular or hypercellular. . List the tests which usually make up the complete blood count (CBC) using a hematology analyzer like the Technicon H*1 or Coulter STKS. . Define:effective erythropoiesis; ineffective erythropoiesis . Calculate the Red Cell Indices (MCV, MCH, MCHC), state the normal range of values for each and interpret normal and abnormal results. . Define the RDW, state the normal range of values and interpret normal and abnormal results. . Aplastic Anemia – define, discuss etiology and types, list a few agents which cause aplastic anemia.	Work at your own pace – you set the schedule. Your studies are supported by the author /instructor, self-assessment exercise and your learning is evaluated by an invigilated quiz (you choose the place and time). Individuals registered in a self-paced module must complete the module within 12 months of registration. After 12 months the registration will expire. No refund will be provided for expired registrations. Continuous registration.	Member: $60.00 Non-member: $90.00

The Michener Institute www.michener.ca	**AOML402 Simulated Clinical Work Experience - Hematology** This course has been specifically designed to help prepare internationally educated medical laboratory technologists for the national certification examination and for practice of their profession in Ontario. This course uses a "hands-on" approach to provide the learner with exposure to laboratory techniques and instrumentation used in Hematology laboratories. These sessions of simulated work experience will provide the learner with the opportunity to acquire knowledge and skills essential for the Clinical Hematology Laboratory. Upon successful completion of this course, the learner will be able to demonstrate the following outcomes: • Apply the principles of universal precautions and safe laboratory practice. • Apply the principles of Quality Assurance to laboratory analysis. • Perform specimen examinations using manual and automated laboratory techniques. • Prepare and stain specimen for microscopic analysis • Perform microscopic analysis of a peripheral blood specimen. • Correlate a laboratory test results with the primary disorders of the human body systems. **Was offered in Fall 2008; contact Michener Institute for future dates.**	This course is scheduled on a part-time basis; Thursday/Friday evenings and Saturday and Sunday, alternate weeks	$750.00
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS11 Analytical Techniques 2** Theory The student will review areas of study in Hematology such as: Principles of Particle Counting Systems, Morphology of Cellular and Non-Cellular elements and Hemostasis	Was offered in September 2008	$204.15

Institution	Outline	Duration	Cost
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLEC5 Hemostasis** Hemostasis for the crosstrainer. A review of coagulation using a unique approach, intrinsic, extrinsic and fibrinolytic pathways. A look at the arious thrombolytic therapies, platelets and their role, quality assurance, commonly used technologies and case studies. This course will consist of 5 assisgnments and a final exam which will be arranged with instructor. Manual included.	Offered in October 2008	$104.13
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html	**MLSCMLS12 Analytical Techiques 2 Lab** This course allows practice of hematology techniques studied in MLS11	Was offered in October 2008	$127.38 For more Information 1-905-540-4247, ext. 26706
Northern Alberta Institute of Technology www.nait.ca/course_ML839.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML839 Clinical Hematology – Normal Hematology (Homestudy)** Unit 1: Blood Smear Evaluation - the examination and evaluation of mature blood cells on correctly prepared and stained peripheral blood smears. Unit 2: Counting and Analyzing Blood Cells - the counting of blood cells using manual techniques and using automated techniques (a multiparameter hematology analyzer with 3-part differential capabilities). Unit 3: Manual Laboratory Techniques - the erythrocyte sedimentation rate (ESR), the cyanmethemoglobin principle, and the manual microhematocrit method. Unit 4: Blood Cell Production and Blood Cell Functions - the stages of maturation of the normal blood cells and the major functions of the mature leukocytes, erythrocytes and platelets.	Continuous registration 30 hours	$235.00 + text

Institution	Outline	Duration	Cost
Northern Alberta Institute of Technology www.nait.ca/course_ML841.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML841 Clinical Hematology – Erythrocyte Disorders (Homestudy)** This course consists of three units: **Unit 1**: Reticulocyte Counting: Methods and Maturation **Unit 2:** Erythrocytes: Production and Destruction **Unit 3:** Pathophysiology and Laboratory Findings in Anemia	Continuous registration 30 hours	$235.00 + text
Northern Alberta Institute of Technology www.nait.ca/course_ML843.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML843 Clinical Hematology – Leukocyte Disorders (Homestudy)** **Unit 1:** Blood Cell development **Unit 2:** Bone Marrow Evaluation **Unit 3:** Chronic Malignant Blood Disorders **Unit 4:** Acute Leukemias **Unit 5:** Myelodysplastic Syndromes **Unit 6:** Systematic Evaluation of Leukocyte Abnormalities .	Continuous registration 30 hours	$235.00 + text
Northern Alberta Institute of Technology www.nait.ca/course_ML845.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML845 Clinical Hematology – Hemostasis (Homestudy)** **Unit 1:** Basic Concepts of Coagulation- covers the cascade theory of coagulation, introduces the theory of clot lysis, and discusses the prothrombin time test and the activated partial thromboplastin time test **Unit 2:** Monitoring Thrombosis Therapy – discusses some disorders that may lead to thrombosis and the monitoring of heparin therapy using the APTT test and the monitoring of oral anticoagulant therapy using the prothrombin time test. **Unit 3:** Bleeding Disorders of Coagulation- briefly covers the inherited and acquired bleeding disorders of coagulation. **Unit 4:** Basic Concepts of Fibrinolysis – outlines the activation of the fibrinolytic system, differentiates primary and secondary fibrinolysis, and briefly discusses laboratory tests that are used to detect fibrinolysis	Continuous registration 30 hours	$235.00 + text

	Unit 5: Platelets – Their Function in Hemostasis – the importance of platelets in hemostasis **Unit 6:** Special Coagulation Tests – some special coagulation tests (inhibitor studies and factor assays) that will identify coagulation factor deficiencies or abnormalities.		
Southern Alberta Institute of Technology www.sait.ca/pages/cometosait/coursefinder/coned.shtml 1-877-284-7248 or 403-210-4210	**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.	Continuous registration Sept-Dec 2008 80 hours	$355.00 + text

HISTOTECHNOLOGY

Institution	Outline	Duration	Cost
CSMLS www.csmls.org	**Histology I 2605-01F and 2605-01S** Advanced level. Improve your understanding of the interactions that occur among tissues, fixatives and dyes and build your skills in assessing the outcomes of the work you do. You will study protein synthesis, tissues including connective and nervous, muscle, sensory organs and skin. Over 200 images on CD supplement the written material. Upon completion of this course, you will have an understanding of the: cell and epithelium; soft connective tissues; hard connective tissues; nervous tissue; muscle; sensory organs; and skin. 4 assignments and a final examination. PowerPoint is required to view images.	Begins October and March Three months	Members: $325.00 Non-members: $488.00 Materials: $62.96

Institution	Outline	Duration	Cost
CSMLS www.csmls.org	**Histology II 2606-01F and 2606-01S** Advanced level. Continue the work you began in Histology I, as you consider the cardiovascular, digestive, respiratory, urinary, male and female reproductive and endocrine systems. Anatomy, physiology and the effect of hormone and other secretions are discussed in terms of laboratory findings. You will continue to build your expertise as you examine the 160 images on CD that support your studies. Upon completion of this course, you will have an understanding of the: circulatory system; digestive system (alimentary canal); pancreas, liver and gall bladder; respiratory system; urinary system; female reproductive system; male reproductive system; endocrine system. **Prerequisite:** Histology I 4 assignments and a final examination. PowerPoint is required to view images.	Begins October and March Three months	Members: $325.00 Non-members: $488.00 Materials: $62.96 (same text as used in Histology 1)
CSMLS www.csmls.org	**Paraffin Tissue Processing 9822-98** 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.	Continuous registration. Work at your own pace; must complete course within 12 months of registration.	Member: $70.00 Non-member: $100.00
The Michener Institute www.michener.ca	**HI901 Tutorials in Histology** An excellent review of all aspects of histotechnology theory, this course covers: • Microanatomy • Routine tissue preparation techniques • General principles of staining • Special techniques and staining methods Assignments plus examination.	Continuous intake	$535.00 (includes CD)

Institution	Outline	Duration	Cost
The Michener Institute www.michener.ca	**AOML404 Simulated Clinical Work Experience – Histology** This course has been specifically designed to help prepare internationally educated medical laboratory technologists for the national certification examination and for practice of their profession in Ontario. The course will be conducted at The Michener Institute for Applied Health Sciences using the laboratories and clinical instrumentation currently used by the full time Medical Laboratory Science Program students. This course uses a "hands-on" approach to provide the learner with exposure to laboratory techniques and investigations used in histology laboratories. Upon successful completion of this course, the learner will be able to demonstrate the following outcomes: • Apply the principles of universal precautions and safe laboratory practice. • Apply the principles of Quality Assurance to laboratory analysis. • Process and prepare tissue specimens for microscopic examination using histotechnology techniques in a realistic and clinically relevant manner. • Accurately record and interpret staining results.	Part-time delivery format;Thursday /Friday evenings and Saturday/Sunday , alternate weeks Commences from January 15, 2009 Register by December 19, 2008	$750
Southern Alberta Institute of Technology www.sait.ca/pages/cometosait/coursefinder/coned.shtml 1-877-284-7248 or 403-210-4210	**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	Continuous registration Sept-Dec 2008 48 hours	$280.00 + materials
University of Guelph www.uoguelph.ca Dept. of Integrative Biology	**ZOO*3000 Comparative Histology** An introduction to the microscopic structure of the major organ systems of the vertebrate body. The study of epithelial, connective, muscular, and nervous tissues precedes examination of the comparative	FALL 3 lecture 3 lab hrs/week half-course	

Institution	Outline	Duration	Cost
	histology of the circulatory, nervous, digestive, integumentary, respiratory, excretory, reproductive, endocrine, and sensory systems of vertebrates. Prerequisites: one of ZOO*2090, ZOO*3200, BIOM*3010, BIOM*3100, HK*3940, or HK*3401/2		
University of Waterloo www.uwaterloo.ca	**BIOL 302 Functional Histology** A hierarchical approach to biological structure with an emphasis on functional morphology. Starting with the cell, the fundamental unit of structure and function, the material progressively develops how cells organize to form tissues such as epithelium, connective tissue and muscle. Emphasis on how these tissue building blocks cooperate to form the major organs and organ systems of the human body. **Prerequisite:** BIOL 130 Introductory Cell Biology, and BIOL 273 Human Physiology I	FALL 2 lecture 3 lab hrs/week half-course	
University of Western Ontario www.uwo.ca Department of Anatomy and Cell Biology	**Anatomy and Cell Biology 3309 Mammalian Histology** A detailed study of the cellular and microscopic structure of the various tissues and organ systems of the body, with emphasis on man and other mammals used in medical research. Systems are examined stressing the relations of structure to function. **Prerequisite:** Registration in the third year of the Biology BSc program or in one of the Honours programs in a biological discipline or the BMSc program.	2 lecture 3 lab hrs/week	
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS15 Analytical Techniques 5** The student will review tissue preparation, staining techniques and tissue assessment as it relates to the study of Histology. There will be an opportunity to practice microtomy and routine staining as part of this course.	Offered in September 2008	For more info,

TRANSFUSION SCIENCE/IMMUNOHEMATOLOGY

Institution	Outline	Duration	Cost
CSMLS www.csmls.org	**Transfusion Medicine Refresher Course 4336-07F and 4336-07S** Basic level. Upon successful completion of the requirements of this course you will be able to: • Describe a self-directed learning project, thereby relating to other independent learning situations • Define transfusion medicine • Define primary and secondary immunization • Differentiate between humoral and cellular immunity • Recognize functions of T cells and B cells • Use terminology relating to immunoglobulin structure and function • Employ basic factual information about the immune system • Explain environmental conditions necessary for a successful antigen-antibody reaction in anti-human globulin testing • Apply the principles of anti-human globulin testing to antibody detection problems • Differentiate between methods of antibody detection • Apply basic genetic principles to the ABO system • Interpret normal and abnormal ABO and Rh testing results • Compare blood group system characteristics for systems • Explain commonly required antibody investigation techniques • Identify critical steps in investigation of a suspected haemolytic transfusion reaction • Explain adverse effects of transfusion • List transmissible disease testing requirements for blood donations • Identify the types of laboratory errors used in a standardized error reporting system • Identify aspects of transfusion	Begins March and October Four months	Members: $350.00 Non-members: $525.00 Textbook: $59.85

Institution	Outline	Duration	Cost
	medicine as it relates to hemolytic disease of the newborn • Describe investigation techniques for autoimmune hemolytic anemia • Describe mechanisms of drug-induced hemolytic anemia • Identify criteria for selection of suitable blood donors • List and explain the characteristics of blood components and blood products available from the blood supplier • Indicate the storage requirements and expiry dates for red blood cells, platelets and plasma components Ten assignments and a final exam. Access to a computer and the internet is required because Turnitin.com is used for submitting assignments and emailing with your instructor.		
The Michener Institute www.michener.ca	**IH603 Compatibility Testing and Antibody Investigation** This print-based review course is designed for Medical Laboratory Technologists preparing for national certification or cross-training in Transfusion Medicine. ▪ Review procedures for compatibility testing and collection of specimens ▪ Discuss methodology, selection, and issuing of compatible units ▪ Discover techniques for antibody classification ▪ Improve your detection, identification, and resolution of difficulties encountered in compatibility testing Case studies are used to review the exclusion process and to illustrate problems, plus final exam.	Continuous intake	$465 (including cost of materials)
The Michener Institute www.michener.ca	**IH816 Transfusion Science Review** Review the essential aspects of transfusion science, including: Immunoglobulins; complement; immune response; antiglobulin test; crossmatching; blood components;	Online Course Commences January 12, 2009; register by December	$535.00

Institution	Outline	Duration	Cost
	antibody detection and identification; alloimmune 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.	19, 2008 Commences May 4, 2009; register by April 20, 2009	
The Michener Institute www.michener.ca	**IH903 Tutorials in Transfusion Science** This refresher course is designed for technologists cross-training into transfusion medicine or preparing for national certification examinations. It consists of videotaped lectures and self-study notes covering all aspects of immunohematology theory including: immunology, major blood group systems, antibody investigation, compatibility testing, haemolytic disorders, transfusion reactions, and quality control. Graded assignments plus examination.	Continuous intake	$535.00 (includes cost of videotaped lectures on CD and self-study notes)
The Michener Institute www.michener.ca	**AOML400 Simulated Clinical Work Experience – Transfusion Science** This course has been specifically designed to help prepare internationally educated medical laboratory technologists for the national certification examination and for practice of their profession in Ontario. This course uses a "hands-on" approach to provide the learner with exposure to laboratory techniques and investigations used in Clinical Transfusion Science laboratories. **Learning Outcomes** On successful completion of this course the learner will be able to: • Apply the principles of universal precautions and safe laboratory practice • Apply the principles of quality assurance to laboratory analyses • Perform immunohematological investigations using blood banking techniques in a realistic and clinically	The part-time delivery format consists of laboratory sessions for each of three weekends. Labs will be conducted Thursday, and Friday 1800-2100h, Saturday 0900-1700 and Sundays 1000-1700h alternate weekends. Commences from February 26, 2009 Register by February 6, 2009	$750.00

Institution	Outline	Duration	Cost
	relevant manner • Accurately record and interpret results • Correlate laboratory test results with patient history and clinical picture		
Northern Alberta Institute of Technology www.nait.ca/course_ML722.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML722 Rural Transfusion Homestudy and One-day Competency Based Assessment – Combined** Theory and academic practice at a CSMLS MLT* level. The learning package consists of the following modules: - Basic Immunohematology - Blood Group Systems - Applied Techniques - Competency Practice & Evaluation Activities Prior to starting the course, participants are required to obtain their employer's, or a potential employer (sponsor), written consent to oversee the registrant's competency development and practice. Competency development and practice occurs in parallel to the completion of the theory package. Competency based assessments includes a case study assignment, 1 hour telephone-based oral examination and 1 hour written examination. *Not all competencies of the MLT profile are covered; only those pertaining to rural services. Prerequisites: CSMLS initial certification level (Medical Laboratory Technologist)	Continuous registration 57 hours	$525.00 The costs associated with competency development and practice are the responsibility of the registrant or the employer/ employer sponsor.
Southern Alberta Institute of Technology www.sait.ca/pages/cometosait/coursefinder/coned.shtml or 403-210-4210	**MEDL-360 Transfusion Medicine Theory Refresher** 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. 16 lecture modules + 2 lab modules	Continuous registration Sept-Dec 2008 48 hours	$280.00 + text

Institution	Outline	Duration	Cost
	3 examinations.		
University of Windsor www.uwindsor.ca/flexible	**03-55-342 Immunology** The formation and structure of antibodies. Antigens and the mechanisms of antigen-antibody interactions. **Prerequisites** for non-MLT degree completion students: 55-140 and 55-141; co-requisite: 59-230	Not offered in 2008. Check Web site for 2009 offerings	Contact Registrar T:519-971-3650 flexible@uwindsor.ca
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html	**MLSCMLS13 Analytical Techniques 3 L & T** The student will review topics such as Immunology, Blood Group Systems and the handling of Blood Products. A laboratory session to practice some blood banking techniques is also part of this course.	Offered in September 2008	$162.76 For more info, 1-905-540-4247, ext. 26706

GENERAL

Institution	Outline	Duration	Cost
Mohawk College www.mohawkcollege.ca	**Medical Laboratory Technology** This diploma program is intended for internationally educated Medical Laboratory Technologists who wish to work in this role in Ontario. The program consists of theory and laboratory sessions at the College, along with 675 hours in the clinical setting. The program also includes Sector Specific Languages courses and preparation for the CSMLS competency based exam. Program applicants must go through a Prior Learning Assessment process with the Canadian Society of Medical Laboratory Science, unless they already have temporary registration from College of Medical Laboratory Technologists of Ontario. Some of the coursework may also be of interest to technologists who are trying to re-enter the work force.	Fall to Spring full time	Contact Mohawk College MLT Program Manager: Mary Golba-Bylhouwer, (905) 540-4247, ext 26706, or e-mail: mary.golba-bylhouwer@mohawkcollege.ca

Institution	Outline	Duration	Cost
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS04 Speciment Procurement** This course will discuss the protocols and proper techniques involved in obtaining blood and other specimens for laboratory analysis. Students will learn how to perform venepuncture and how to collect capillary blood samples.	Offered September 2008	$101.07
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**SAFEMLS03 Safe Work Practices** This course will focus on all aspects of safety in relation to work in a laboratory. The use of protective equipment and the issues around universal precautions will be examined.	Offered September 2008	$69.38
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS05 Basic Laboratory Techniques** This course will focus on some of the techniques that are utilized in many areas of the laboratory. The theory and practical aspects of microscopy will be examined.	Offered September 2008	$222.99
Mohawk College www.mohawkcollege.ca/Discover/CE/cehsc.html 1-905-540-4247, ext. 26706	**MLSCMLS22 Basic Laboratory Techniques II** This course continues the studies started in basic laboratory techniques. Discipline specific information will be introduced in this course.	Offered September 2008	$175.46
British Columbia Institute of Technology (BCIT) www.bcit.ca	**Medical Laboratory Science – Professional Qualifying Program** The Medical Laboratory Certificate Program is designed as a refresher for internationally-trained medical laboratory technologists, or Canadian-trained medical laboratory technologists who have been out of the workforce for a lengthy period. This certificate includes clinical chemistry, hematology, clinical microbiology, histotechnology and transfusion science (also called blood transfusion). The program provides theoretical,	This program is 14 months in length, full-time, beginning in September 2009. After the first year, there is a 2 month summer break, prior to the second clinical practicum	Contact BCIT or see web page www.bcit.ca/study/programs/6565certt

Institution	Outline	Duration	Cost
	practical and clinical learning experiences. In a competency-based model, students have the opportunity to first practice, and then become capable of a variety of competencies. Students prove competence during real-life experiences (clinical placements). Successful completion of this program requires proof of competence.		
CSMLS www.csmls.org	**Body Fluids: Laboratory Methods 9825-08 Basic Course** The presence of malignant cells in a fluid may precede finding a primary tumor elsewhere in the body. You will learn tips for differentiating these cells from normal cells using techniques such as cell counting, film preparation, staining, evaluation and interpretation. Specimen Collection, Cytospin preparation and confusing artefacts are also discussed. You can choose whether to write a paper exam or online computer exam through E-Learning Society.	Continuous Registration Work at your own pace; must complete course within 12 months of registration	Members $60 Non-Members $90
CSMLS www.csmls.org	**Immunology – Generation of Antibody Diversity 9849-01 Advanced Course** The immune system is uniquely capable of responding with an unlimited range of specific antibodies in reaction to an antigenic challenge. Explore the concept of antibody diversity as you study the complexity of antibodies and review DNA and the transcription of protein molecules. You will review the theory of both heavy and light chain diversity that together with somatic mutation explains the process.	Continuous Registration Work at your own pace; must complete course within 12 months of registration	Members $60 Non-Members $90
Northern Alberta Institute of Technology www.nait.ca/course_ML601.asp For registration information, call 780-378-5000 healthdistance@nait.ca	**ML601 Specimen Collection & Handling (Homestudy)** The emphasis of this correspondence course is on the collection of blood specimens by venipuncture and by capillary puncture. All of the related theory on anticoagulants, problems associated with collecting blood, etc. are covered. There is a small unit on the collection of urine specimens and a few other miscellaneous specimens. The appropriate distribution of collected specimens as well as a guide to minimum	Continuous registration 15 hours	$260.00 + text

Institution	Outline	Duration	Cost
	volumes required is also included. This course is designed for anyone working in a health care field that wishes to acquire an additional skill (become multi-skilled). Evaluation – one exam		
Northern Alberta Institute of Technology www.nait.ca/course_ML830.asp For registration information, call 780-378-5000 or healthdistance@nait.ca	**ML830 General Laboratory Practices (Homestudy)** This course provides general knowledge and basic skills, which are prerequisite to all the major areas of practice in medical laboratory technology. Basic procedures and equipment used in medical laboratories are introduced throughout the course. Topics include: glass/plastic; microscopes; thermal equipment; centrifuges; water purity; balances; reagents; calculation; safety; and special microscopes.	Continuous registration 60 hours	$295.00 + text
The Michener Institute www.michener.ca	**AOML800 Medical Laboratory Science Review** This course is designed to prepare those who are eligible to write the national certification exam (CSMLS). This course will use a case study approach to review general principles and the five traditional medical laboratory technology disciplines. Safe work practices and quality practices will also be covered. The course format includes lectures and group discussions. Practice tests using competency based multiple choice questions will be a major focus of the review. This course is recognized by the College of Medical Laboratory Technologists of Ontario (CMLTO) as an approved refresher course for medical labortory technologists that are seeking to upgrade their registration license from non-practising to practising, and for those who are seeking to re-enter the profession after an extended absence from practice. Weekly assessments and final examination.	Nine weekends Commences from January 17, 2009 Register by December 19, 2008	$1,500.00

VIROLOGY

Institution	Outline	Duration	Cost
British Columbia Society of Laboratory Science (BCSLS) www.bcsls.net	**Virology 2001** Basic virology Pathogenesis of virus infections Principles of viral diagnosis Update on Hepatitis A, B, C, D, E, G Zoonotic and Retro viruses Agents targeting various organs 1. To provide students with the basic concepts of viral replication and pathogenesis. 2. To provide an understanding of viral diagnosis and the application of new technologies. 3. To review several important and currently topical virus infections.	Directed towards the post-RT level 12 45-minute audio-CDs with explanatory handouts 2-hour Exam MLT Provincial Society	Members: $165.00 Non-Members: $225.00 Refundable audio-CD deposit: $50.00
Brock University www.brocku.ca	**BTEC 4P51 Molecular Virology (or BIOL 4P51)** 3 lecture/seminar hrs/wk Bacterial and animal viruses. Topics include biochemical properties, virus-host interaction, productive cycle, effect of virus on host cell and organism, viral vectors and gene therapy, recombinant viral vaccines and origin of virus. Restriction: students must have a minimum of 14.0 overall credits or approval to year 4 (honours). **Prerequisite**: BTEC 3P50 or permission of the instructor		
McMaster University www.mcmaster.ca	**HTH SCI 3K03 Introductory Virology** FALL/WINTER An introduction to the basics of virology. Topics include the structure and composition of viruses, virus replication strategies, virus-host interactions and uses of viruses for medical research. **Prerequisite**: Biology 2B03 or HTH SCI 2K03; and registration in Level III	2 lectures, 1 tutorial, one term	

Institution	Outline	Duration	Cost
Queen's University http://microimm.queensu.ca/undergrad/courses.htm	**MICR-450* Principles of Molecular Virology** FALL 2 lecture, 1 tutorial Further study of contemporary virology, using the textbook as a guide to particles, genomes, replication, expression, infection and pathogenesis. Emphasizing reading, writing and presentation to develop skills in observation and critical thinking. In addition, written journals will be maintained to mimic scientific laboratory notebooks to record observations and development of thoughts. Offered in alternate years to MICR-451* ***Offered in Fall 2009**	MICR-221 Basic Microbiology Prerequisite or Co requisite: BCHM-310 General Biochemistry or BCHM-315 Proteins and Enzymes, or equivalent	
	MICR-451* Selected Topics in Viral Pathogenesis FALL 2 lecture, 2 seminar, 1 tutorial The nature of selected animal virus groups and their interactions with the host in disease production is studied. Special emphasis on the pathogenesis of tumour and human immunodeficiency viruses. Offered in alternate years to MICR-450*. **Next offered Fall 2010.**	BIOL-205* introduction to Mendelian and Molecular Genetics Prerequisite or Corequisite: BCHM-310 General Biochemistry or BCHM-315 Proteins and Enzymes, or equivalent	
University of Guelph www.uoguelph.ca Dept of Molecular and Cell Biology **NEW**	**MICR-4330 Molecular Virology** WINTER 2 lecture, 3 lab This course will focus on molecular aspects of virus replication cycles and the diverse strategies used for replication of select RNA and DNA viruses. Virus-host interactions including tumour virology and host antiviral responses such as interferon and apoptosis and viral anti host-defence responses as well as recent advances in molecular virology and evolution will be also be covered. **Offered in even numbered years.**	Prerequisite(s): MICR*2030, MICR*3330 Restriction(s): MICR*4120 . Restricted to students specializing in MICR or MBG.	

Institution	Outline	Duration	Cost
University of Toronto www.artsci.utoronto.ca Molecular Genetics Dept.	**MGY440H1 Molecular Virology** 39 hours lecture Analysis of virus/host interactions at the molecular level with a view to understanding how viruses cause disease. Course material is based on recent research publications. Topics may include: virus entry and intracellular trafficking, activation of host cell signaling pathways, viral and host determinants of tissue tropism within the host and transmission between hosts.	BCH210H1/BCH 242Y1; CSB349H1/MGY 311Y1; MGY378H1. (Note: BIO/CSB 351Y1 is not an acceptable equivalent to MGY378H1) Recommended preparation: IMM334Y1/IMM 335Y1	
University of Toronto www.artsci.utoronto.ca Cell and Systems Biology Dept.	**CSB351Y1 Introductory Virology (formerly BIO351Y1)** FALL 52 lecture, 104 tutorial An introduction to basic and medical virology. Attendance in tutorials is optional.	BIO 250Y1/BIO 355Y1 Cell and Molecular Biology	
University of Waterloo www.uwaterloo.ca	**BIOL 442 Virology** WINTER 2 lecture, 3 lab half course Survey of viral structures, life cycles, and the interactions of viruses with microbial and animal hosts. The laboratory component will include demonstrations of procedures used for viral detection and titration, as well as individual library research projects.	BIOL 140/140L Microbiology, BIOL 241 Introduction to the Microbial World, and BIOL 308 or 330 Molecular Biology	