MLSCI 340 – Clinical Microbiology

Overview / General Information

MLSCI 350 Histotechnology is a continuation of the material and techniques introduced in MLSCI 250 during Phase I. This course is intended to review and expand on previous theoretical knowledge and build confidence when using common histology tools and equipment. In-depth topics include grossing, processing, embedding, microtomy, cryotomy, and staining. Specialized techniques such as in-situ hybridization, immunohistochemistry and electron microscopy are also discussed. Theory will be examined in both written and e-class formats. Technical skills will be examined by written and e-class testing, as well as by demonstrating the skills for the instructor/facilitator. This theoretical review and skill training will prepare the student to write the CSMLS certification exam, and to work as an entry level laboratory technologist in the field of Histology.

Please note that Histology and Histotechnology may be referred to as Anatomical Pathology (or AP) in many hospital laboratories. Policy about course outlines can be found in Course Requirements, Evaluation Procedures and Grading of the University Calendar. http://calendar.ualberta.ca/content.php?catoid=6&navoid=806#course-requirements,-evaluation-procedures-and-grading-a

The University of Alberta is committed to the highest standards of academic integrity and honesty. Students are expected to be familiar with these standards regarding academic honesty and to uphold the policies of the University in this respect. Students are particularly urged to familiarize themselves with the provisions of the Code of Student Behaviour (online at www.governance.ualberta.ca) and avoid any behaviour which could potentially result in suspicions of cheating, plagiarism, misrepresentation of facts and/or participation in an offence. Academic dishonesty is a serious offence and can result in suspension or expulsion from the University.

Audio or video recording, digital or otherwise, of lectures, labs, seminars or any other teaching environment by students is allowed only with the prior written consent of the instructor or as a part of an approved accommodation plan. Student or instructor content, digital or otherwise, created and/or used within the context of the course is to be used solely for personal study, and is not to be used or distributed for any other purpose without prior written consent from the content author(s).

Course Coordinator / Instructor (s)

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Course Learning Objectives

| A. | Incorporate theoretical knowledge gained in first year of your program into clinical practice. |
| B. | Demonstrate safe work practices, according to established protocols, safety guidelines, and existing legislation. |
| C. | Demonstrate reagent preparation with the aid of an SOP |
| D. | Demonstrate knowledge of anatomical terminology, including microanatomy |
| E. | Discuss the importance of maintaining specimen integrity through standard practices |
| F. | Describe/discuss standard tissue grossing techniques, focusing on the importance of clerical checks, documentation, specimen orientation, and preparation for processing |
| G. | Describe the functions and use of routine fixatives and decalcifying agents |
| H. | Describe automated tissue processing, including types of processors, selection of reagents, choice/programming of processing schedules, and troubleshooting |
| I. | Discuss paraffin embedding, focusing on orientation and maintaining specimen integrity |
| J. | Perform paraffin embedding technique with a variety of tissues |
| K. | Discuss the use of rotary microtomes, concentrating on paraffin section production and identifying common artifacts |
| L. | Perform microtomy of paraffin blocks |
M. Describe the use of cryostats for intraoperative consultations, as well as associated ancillary tests
N. Demonstrate ability to produce acceptable frozen sections
O. Describe/discuss common staining techniques, including progressive and regressive H&E staining, connective tissue stains, Schiff staining, silver impregnation techniques, and lipid staining. Identify common staining issues, and apply appropriate corrective action
P. Discuss immunohistochemical staining techniques, and perform a manual IHC stain
Q. Discuss the use of molecular pathology in histology, particularly in-situ hybridization (ISH) techniques
R. Perform manual and automated staining and coverslipping of tissue sections
S. Recognize and identify microanatomical features of common human tissues when provided with H&E stained sections
T. Appropriately utilize quality control tissues and procedures when dealing with patient tissues
U. Prepare for national certification exam offered by CSMLS

Methods of instruction

Technical training will initially occur in the training laboratory at EGH under the supervision of the clinical instructor. This training will allow the student to re-familiarize themselves with histology tools and techniques in order to gain confidence before entering the regional histology laboratories for clinical experience. Skills practiced at the training laboratory include cryotomy, microtomy, paraffin embedding, H&E and special staining, manual IHC staining, manual coverslipping, and microanatomy.

Completion of Competency Based Objectives (CBOs) will occur throughout the 5 weeks of training. The student will gain experience in histology procedures and instrumentation, and will attain at least "entry-level competence" as a student technologist. For more information regarding CBOs, please refer to the “Evaluation” section below.

Theory review will occur during the training lab weeks as well as during the clinical lab weeks of the course. Tutorial review with the instructor will help the student evaluate the material before examinations. Informal discussion of higher-knowledge questions follows most tutorials. Students are also provided with worksheet-style assignments and histology-themed puzzles for additional practice.

Independent review of some material is also required and expected, such as completion of TRACCESS learning materials and other resources.

Distribution of Marks

- CBO Exams 1-7 50%
- Tissue Identification 5%
- Problem Solving Exam 5%
- Final Exam 40%

Attendance

The student is expected to work 35-40 hours per week. Daily attendance is compulsory. Any missed time will be documented in the student's file and used if/when giving employment references for students. Start times in Histology vary from as early as 0600 to as late as 1215. Students will be given statutory holidays as recognized by Alberta Health Services and partner sites.

If absences occur for any reason, you may be required to make up for missed time. Extension of the training time beyond the end of the clinical year, if necessary, will be dependent on availability of a training place, and will be at the convenience of the clinical site.

Extension of the clinical year may mean postponement of entry into Phase III of the program.