Overview / General Information

The MLSCI 330 (Clinical Hematology) course is a continuation of the theory and technique introduced in MLSCI 230 and 235 in Phase I. This Phase II course will provide the student with technical experience in both a training lab setting and in regional hospital laboratories. In addition, the theory related to Hematology and Hemostasis will be reviewed in this course. This technical training and theory review will prepare the student for employment as a Medical Laboratory Technologist after graduation, and to write the CSMLS national certification examination.

Further course information can be found in eClass:
- Access eClass from the University of Alberta webpage (www.ualberta.ca).
- Log into eClass with your CCID and password and choose MLSCI 330A.
- Learning resources are found here, as well as study guides for each of the tutorial exams.
- The course evaluation (covering the student lab weeks, tutorials, exams, etc.) is also found on eClass.

Evaluation forms for the clinical training sites are available through google docs and the URLs will be e-mailed to you at the end of your student lab weeks.

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](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](http://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)

Valentin (Tino) Villatoro  
Assistant Professor & Clinical Coordinator  
2C30.3 EGH or 5-376 ECHA  
780-342-8908 or 780-492-3277  
valentin@ualberta.ca

Edee O’Brien Smith  
Clinical Instructor  
2C30.3 EGH  
780-342-8925  
Edee.O’Brien-Smith@albertahealthservices.ca

Allen Keeping  
Clinical Instructor  
2C30.1 EGH  
780-342-8971  
Allen.Keeping@albertahealthservices.ca

E-mail policy

Communication with the course instructor when the student is at the clinical training site will usually be done by e-mail. Check your ualberta e-mail frequently so that important messages are not missed. The instructor will check for e-mails from students Monday to Friday during work hours, and occasionally outside work hours. Replies can be expected within 24 hours.

Course Competencies

1) Knowledge and Comprehension of Facts, Principles, and Methods
The student will expand their understanding of Hematology theory and be able to:

a) Define and use hematology terms correctly
b) Explain the principle of manual and automated hematology tests, coagulation assays, and special hematology procedures (CSMLS competencies 4.02, 4.08, 4.09, 4.11, 4.12)
c) Describe the structure and characteristics of normal and abnormal hemoglobins
d) Describe the expected peripheral smear and bone marrow findings in common hematological disorders (CSMLS competency 5.01)
e) Describe expected laboratory test results for common hematological disorders (CSMLS competency 5.01)
f) Explain the normal hemostatic process and mechanisms to keep both clotting and fibrinolysis under control
g) Describe coagulation disorders in terms of the specific abnormality and the expected laboratory test results (CSMLS competencies 4.09, 4.09.01)

2) Reasoning Ability (Application, Analysis and Evaluation)

The student will be able to apply their knowledge of hematology to:

a) Calculate RBC indices, correct WBC counts for the presence of NRBCs, calculate relative and absolute reticulocyte counts, calculate absolute WBC values, and calculate bone marrow M:E ratios (CSMLS competency 4.08.04)
b) Perform calculations required for manual reticulocyte counts, CSF and fluid cell counts (CSMLS competency 4.08.04)
c) Analyze hematology and coagulation test results as to their accuracy and reliability, and suggest appropriate follow up for abnormal results (CSMLS competencies 4.08, 4.09)
d) Correlate abnormal peripheral smear and bone marrow pictures with possible clinical conditions (CSMLS competencies 4.12, 4.12.01)

3) The student will be able to perform the following procedures with acceptable accuracy and precision:

a) Manual hematology procedures (CSMLS competency 4.08.04)
b) WBC and PLT estimates, WBC differentials and RBC morphologies (CSMLS competency 4.12)
c) Analysis of specimens on automated hematology analyzers (CSMLS competency 4.08.01)
d) Coagulation testing procedures (CSMLS competency 4.09)
e) Special hematology procedures (CSMLS competency 4.08.04, 4.10, 4.11, 4.12)
f) Organize work and perform tests in volume (CSMLS competencies 3.03, 3.04, 3.06, 3.07, 3.12)
g) Control for pre-, post-, and analytical variables by adhering to established protocols for specimen handling and identification throughout analysis (CSMLS competencies 3.01, 3.02, 3.09, 3.11)
h) Prepare and use calibrators, standards, and quality control material (CSMLS competency 3.05)
i) Validate test results according to established protocols (CSMLS competencies 3.08, 3.09, 3.10)

4) Attitudes

a) Adhere to all laboratory safety protocols and practices (CSMLS competency Category 1)
b) Follow established standard operating procedures (SOPs) and show concern for quality of work done (CSMLS competency Category 6 and 11)
c) Perform clerical checks correctly and report results without errors (CSMLS competency Category 2, 3 and 5)
d) Respect the patient’s right to confidentiality (CSMLS competency Category 11)
e) Arrive to work on time
f) Demonstrate self-motivation and initiative (CSMLS competency Category 11)
g) Cooperate with peers, coworkers, and trainers (CSMLS competency Category 10)
h) Demonstrate good communication skills by writing legibly, speaking clearly and concisely, listening carefully, and asking for clarification when needed (CSMLS competency Category 10)

Methods of Instruction
Technical training will initially take place in the student training laboratory at EGH under the supervision of the course instructor. This training will allow the student to familiarize themselves with hematology techniques and gain confidence before entering the regional hematology laboratories for clinical experience. Theory review will also occur during the training lab weeks and will extend into the clinical lab weeks of the course. Tutorials with the instructor will help the student learn the material before examinations are written. Independent review of some material is also required.

Training will then continue in the hematology department at the clinical training sites. Completion of Competency-Based Objectives (CBOs) will occur during these 5 weeks. Over the nine weeks of the rotation the student will gain experience in hematology procedures and instrumentation, and must attain minimum levels of competency as expected of an entry-level technologist.

There are six CBOs to be completed in Hematology:

1. Differentials and Morphology
2. Manual Counts/Miscellaneous Tests
3. Multi-parameter Cell Counters
4. Coagulation
5. Special Hematology
6. Professionalism

The Differential and Professionalism CBOs will be signed off by the course instructor at the end of the rotation, while the technical skills portion of CBO 2-5 will be signed off by the teaching technologists at the clinical training sites. The course instructor is responsible for signing off the Knowledge Component of all six CBOs, based on the student’s performance on related exams and assignments.

Important:

In order to successfully complete the course, the student must attain each of the following:

1) An overall final course mark of 60% or better
2) A mark of at least 60% on the final exam
3) An “Acceptable” level of competency in all CBOs

Distribution of Marks

- Theory Exams 40%
- Differential, Manual Counts and Special Hematology Practical Exams 15%
- Presentation 10%
- Instructor Evaluation 5%
- Final Examination 30%

Attendance

Daily attendance is compulsory. The only acceptable reasons for missing time are illness, jury duty or bereavement leave (excusable absences). The indicated start and end times for your shift must be followed as indicated on the schedule provided at the start of each rotation. If absences occur for any reason, the student may be required to make up the missed time. If the number of absences are affecting performance or the clinical experience, and PIP will be initiated (absences are tracked for the entire clinical year). If an extension of training time beyond the end of the clinical year is necessary, this will be dependent on availability of a training place and will be at the convenience of the clinical site and the schedule. Extension of the clinical year may therefore mean postponement of entry into Phase III of the program.
Arriving late will also mean that time has to be made up. Appointments should be scheduled, whenever possible, at the end of the day so as not to interfere with training time. However, in circumstances where it is necessary to miss part of the day for an appointment, the student must complete a “Absence Notification/Vacation/LOA/Schedule Change Form” (see Appendix C) and bring it to the instructor for approval and signature. This form will then be forwarded to the training site if necessary.

If sick, absent for another reason, or arriving late, phone the instructor’s office (780-492-3277 or 780-342-8908) before the scheduled start of your shift and leave a detailed message or send an e-mail to valentin@ualberta.ca. When working at the clinical site, also phone the Hematology laboratory and leave a message according to the site protocol below:

<table>
<thead>
<tr>
<th>Site</th>
<th>Phone Numbers</th>
<th>Student Directions</th>
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<tbody>
<tr>
<td>DynaLifeDx</td>
<td>Assistant Manager 780-447-8499 ext. 3213</td>
<td>1. Report your absence or lateness to the Assistant Manager. If you do not speak to someone in person then you must leave a message and call the STAT bench to talk to someone in person. You must keep trying until you reach someone.</td>
</tr>
<tr>
<td>200-10150-102 St</td>
<td>STAT Bench 780-447-8499 ext. 8211</td>
<td>2. Report your absence or lateness to John Wilson.</td>
</tr>
<tr>
<td>Edmonton, AB</td>
<td>John Wilson 780-447-8499 ext. 3207</td>
<td></td>
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<tr>
<td></td>
<td><a href="mailto:John.Wilson@dynalifedx.com">John.Wilson@dynalifedx.com</a></td>
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<tr>
<td>Grey Nuns Hospital (GNH)</td>
<td>Core Lab 780-735-7088</td>
<td>1. Report your absence or lateness to Core Lab and let them know you are scheduled for hematology.</td>
</tr>
<tr>
<td>1100 Youville Dr.</td>
<td>Arlene Garchinski, Tech II 780-735-9642</td>
<td>2. Report your absence or lateness to Arlene Garchinski, leaving a voicemail if necessary.</td>
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<tr>
<td>Edmonton, AB</td>
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<tr>
<td>Misericordia Hospital (MIS)</td>
<td>Core Lab 780-735-9308</td>
<td>1. Report your absence or lateness to Core Lab and let them know you are scheduled for hematology.</td>
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<tr>
<td>106940-87 Ave</td>
<td>Carol Auston, Manager 780-735-2473</td>
<td>2. Ask to be transferred to Carol Auston (or her voicemail) to report to her why you are away or late.</td>
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<tr>
<td>Edmonton, AB</td>
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<tr>
<td>Royal Alexandra Hospital (RAH)</td>
<td>Core Lab 780-735-4378</td>
<td>1. Report your absence or lateness to Core Lab. The person who answers will record information on the call-in form.</td>
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<tr>
<td>10240 Kingsway Ave</td>
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<tr>
<td>Edmonton, AB</td>
<td>2. The supervisor will call the student back to determine when the student will return to work.</td>
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<tr>
<td>Cross Cancer Institute (CCI)</td>
<td>Lab 780-432-8598</td>
<td>1. Report your absence or lateness to the lab and leave a message for Elaine Kurtz-Hardowa.</td>
</tr>
<tr>
<td>Room 1466</td>
<td><a href="mailto:Elaine.kurtz-hardowa@albertahealthservices.ca">Elaine.kurtz-hardowa@albertahealthservices.ca</a></td>
<td></td>
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<tr>
<td>11560- University Ave</td>
<td>Or: <a href="mailto:Trina.smith2@albertahealthservices.ca">Trina.smith2@albertahealthservices.ca</a></td>
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<tr>
<td>Edmonton, AB</td>
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<tr>
<td>UAH</td>
<td>Lab 780-407-7096</td>
<td>1. Report your absence or lateness to the tech that answers the phone and let them know which</td>
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<tr>
<td>Hematology</td>
<td>bench you are scheduled for.</td>
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<td>8440-112 St</td>
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<td>Special Hematology</td>
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<tr>
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<tr>
<td>780-407-7096</td>
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<td>The special hematology techs do not arrive until 0800, so report your absence to the technologists in core Hem, who will pass on the message.</td>
<td>1. Report your absence or lateness to the person that answers the phone and let them that you are scheduled for Special Hematology.</td>
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