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Online Clinical Competency Checklist - MLS 2211 Principles of Clinical Chemistry I

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**LABORATORY CLINICAL EXPERIENCE OBJECTIVES**

The MLS 2211 student has studied the following items in class this semester to prepare them for the following laboratory skills portion of their education:

- Reagent preparation
- Laboratory mathematics (including conversions)
- Water and glass quality standards
- Dilution protocols
- Calibration and Quality Control concepts
- Clinical chemistry basics of:
  - Carbohydrates
  - Heme metabolism
  - Non-protein Nitrogen compounds
  - Electrolytes
  - Blood Gases
  - Various instrumentation and assay methodologies

It is understood that the student may be introduced to methodologies and concepts not yet covered in this semester's course in the daily workload. Instrument knowledge and competency should be based on instrumentation used at the student's clinical facility, while clinical correlation competency should be based on the concepts covered in this course.

The student should perform the following tasks (as deemed appropriate by the clinical facility):

- Perform Routine Quality Control procedures on all clinical chemistry analyzers.
- Reconstitute controls and reagents used in the chemistry section of the laboratory.
- Become familiar with general laboratory and chemical safety practices.
- Participate in instrument maintenance (daily, weekly and monthly).
- Participate in instrument troubleshooting.
- Recognize common interferences and clinically unrealistic results encountered.
- Perform routine testing of patient samples (previously analyzed samples may be used).
- Participate in the reporting of results including STATs and critical values.
- Perform dilutions (simple and complex).
- Participate in the calibration of analyzers.
- Be familiar with validation processes used in the lab for new instrumentation or analytes.

Students should work together with their respective mentors to complete the listed objectives. Accuracy, precision, timely reporting of test results, and demeanor must comply with the laboratory's acceptable standards. While working in the laboratory, the student must meet laboratory standards for work habit skills in patient confidentiality, communication skills, laboratory safety, universal precautions, waste disposal, and equipment/work area maintenance. It is requested that the student's laboratory competency evaluation be completed by the clinical mentor **in the presence of the student** so as to allow verbal feedback to the student regarding the student's progress and performance.

**Note:** As part of the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS) accreditation regulations, no student may engage in **service work** during his/her clinical experience. All laboratory test results generated by students during their clinical hours must be directly supervised by clinical laboratory staff. While the student is performing their clinical hours, they must be performing duties as a student, and not an employee. **Definition of Service Work:** Providing or generating results of clinical tests on patient samples without direct supervision of clinical staff or supervisor managers which exceeds the expected component required for the educational process.

- 1: Discussed: Process was discussed, principle explained, student acknowledges an understanding of the process or principle.
- 2: Demonstrated: Process has been performed and demonstrated by the practicum instructor. Student has observed demonstration and has been allowed to ask questions as needed. The student acknowledges an understanding of the process or principle by verbally explaining the process or principle back to the practicum instructor.
- 3: Practiced: Student has ***practiced*** the process under the direction and maximum supervision of the practicum instructor. The student demonstrates knowledge of how to perform the process or task by actual performance under direct, maximum supervision, but without having to demonstrate any particular competency at that task or process.
- 4: Maximum Supervision: The student has performed the process under the direct, maximum supervision of the practicum instructor, and with the level of competency required by the laboratory for that task or process.
- 5: Minimum Supervision: The student can perform the process satisfactorily with only minimum or non-direct supervision by the practicum instructor, and the performance meets the level of competency required by the laboratory for that task or process.

N/A: Not Available: The nature of the laboratory does not allow the student access to the equipment/test method.

**For questions about this competency checklist, contact the instructor, Dr. Scott Moore, at [mmoore@weber.edu](mailto:mmoore@weber.edu).**

**Please have all mentors sign and date below.**

Name of Facility: \_\_\_\_\_

[illegible]

**Mentor Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

[illegible]

**Mentor Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

Mentor Printed Name	Initials
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**Mentor Signature** \_\_\_\_\_ **Date** \_\_\_\_\_

Comments:

Student: \_\_\_\_\_ Wildcat ID # \_\_\_\_\_

<b>Orientation and Lab Safety</b>	<b>Mandatory</b>	<b>Expected Score</b>	<b>Student Score</b>	<b>Date complete</b>	<b>Mentor initial</b>
Orientation of the teaching facility's Chemistry lab.	M	4			
Proper use and location of safety equipment and PPE.	M	5			
Proper use and location of MSDS.	M	5			
Correctly interpret NFPA safety labels.	M	5			
Demonstrate procedure for handling biohazard /chemical spills & broken glass.	M	5			
<b>Specimen Processing: labeling and specimen identification</b>					
Label specimens according to facility's policy. Check for labeling compliance on all samples (i.e. name discrepancy).	M	5			
Identify correct specimen types as specified by the facility's requirements.	M	5			
Discuss proper specimen collection and storage for routine chemistry assays.	M	4			
Identify physical characteristics of samples that may interfere with testing.	M	5			
<b>Unit 1: Reagent preparation and general laboratory concepts</b>					
Properly reconstitute control or reagents using pipettes routinely used in the lab.	M	5			
<b>Demonstrate understanding of when to use and proper use of:</b>					
Volumetric pipettes (TD or TC)		5			
Serological pipettes		5			
Micropipettes	M	5			
Repeater pipettes		5			
Perform dilutions & calculations on patient samples (95% accuracy of previously analyzed samples)	M	5			
<b>Unit 2: Spectrophotometry and Quality Control</b>					
Perform daily, weekly, & monthly maintenance on photometric instrument in your lab	M	4			
Perform QC procedures in accordance with the clinical facility's policy.	M	5			
Correctly document actions taken when results are not within acceptable limits.	M	5			
<b>Unit 3: Osmometry – Carbohydrate Studies</b>					
Discuss or perform glucose tolerance tests. (Discussion of tolerance testing should include Epinephrine tolerance test, Xylose tolerance test and Lactose tolerance test)	M	4			
Perform freeze-point osmometry or VP depression.		5			
Perform CSF Glucose and/or Lactate assays.		5			
Perform plasma lactic acid.		5			
Perform serum/plasma glucose on fasting and random samples.		5			
Perform or discuss Glycosylated Hemoglobin assays.					
<b>Unit 4: Lipid Metabolism Studies</b>					
Perform lipid panels		5			
Calculate LDL Cholesterols	M	5			
<b>Unit 5: Electrolyte Analysis</b>					
Perform Na, K, Cl, CO <sub>2</sub> , Ca, Mg, Phos, Iron, TIBC		5			
Perform and discuss ionized Calcium assays (understand collection and specimen integrity)		5			
Calculate and interpret anion gaps	M	5			

Student: \_\_\_\_\_ Wildcat ID # \_\_\_\_\_

<b>Unit 5: Electrolyte Analysis – continued...</b>	<b>Mandatory</b>	<b>Expected Score</b>	<b>Student Score</b>	<b>Date complete</b>	<b>Mentor initial</b>
Perform Lithium assays		<b>5</b>			
Evaluate electrolyte results to scrutinize sources of significant error	<b>M</b>	<b>5</b>			
<b>Unit 6: Blood Gas Analysis</b>					
Explain and/or demonstrate collection, processing & storage of blood gas samples.	M	4			
Identify sources of error commonly encountered with blood gas analysis.	M	4			
Perform or discuss calibration of a blood gas analyzer.		4			
<b>Interpretation and Acceptance of Results</b>					
Discuss and demonstrate recording, reporting, and documenting results	M	5			
Explain "panic values" or "critical values". Demonstrate how & when to report them	M	5			
Explain "linear limits", "linear ranges" or "reportable ranges" and demonstrate how to handle and report samples outside these limits.	M	5			
<b>Student demonstrates honesty by:</b>					
Maintaining strict patient confidentiality	M	5			
Accepting control values only when within acceptable limits	M	5			
Performing and documenting daily & weekly maintenance procedures, preventative maintenance, temperature checks, etc.	M	5			
Completing all procedures in adherence to laboratory SOPs, taking no shortcuts or unauthorized modifications of procedure	M	5			
<b>Student demonstrates personal interactive skills and proper professional behavior by:</b>					
Working with co-workers in a positive manner, promoting productive workflow.	M	5			
Refraining from making statements or actions that represent sexual, ethnic, racial, or homophobic harassment.	M	5			
Willingly and consistently using appropriate personal safety devices when handling caustic, infectious, or hazardous materials.	M	5			
Completing all required tasks and remaining in the work area when scheduled.	M	5			
Being punctual whenever scheduled.	M	5			
Adhering to current dress and appearance in the laboratory setting.	M	5			
Cleaning the work area when leaving the laboratory, returning supplies to appropriate storage location, & disinfecting all work areas used by the student.	M	5			
<b>Student demonstrates professional responsibility by:</b>					
Correctly reporting all patient test values, as well as recognizing and correctly reporting all patient critical test values.	M	5			
Resolving discrepancies in specimen labeling, handling, or collection before reporting results.	M	5			
<b>Hours completed by student:</b>					
Minimum time required for this lab competency is 80 hours. Mentors are encouraged to increase the number of hours dependent on individual student need. Please verify the number of hours your student spent:		80 hours			
Based on performance is this the type of person you would consider for potential employment? Y <input type="checkbox"/> N <input type="checkbox"/>					