



Online Clinical Competency Checklist - MLS 3314 Advanced Clinical Chemistry

LABORATORY CLINICAL EXPERIENCE OBJECTIVES

The student is expected to exhibit competency with the following skills:

- 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, and blood gases
- Clinical enzymology including major cardiac, hepatic, and pancreatic enzymes and markers
- Clinical Endocrinology including common testing methods and clinical correlations
- Analytical principles used in Toxicology, TDM, and Endocrinology
- Clinical applications of Toxicology and Therapeutic Drug Monitoring
- Clinical application of numerous nutrient and vitamin assays
- Analytical application of hemoglobin analysis
- Analysis of body fluids

It is understood that the student may be introduced to methodologies and concepts not 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 semester's 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 or 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 (Primary and secondary).
- Participate in the calibration of analyzers.
- Be familiar with validation processes used in the lab for new instrumentation or analytes.
- Complete urinalysis

Special Projects: We realize that students at different facilities might have previous experience with hematology and/or hemostasis. Students that have already been certified by your facility as competent for any of the individual skills listed do not need to repeat the lab assignment for that particular skill. In addition, if the student has been working in hematology and is proficient in **all areas** on the checklist, there is an option for them to complete a project in lieu of the competency checklist. Below are the guidelines:

- The project needs to revolve around chemistry.
- The project needs to be approved by the student's mentor and the chemistry professor.
- The mentor still needs to sign off that the student is competent on the basic chemistry procedures listed in competency checklist.
- The project needs to take the minimum number of hours that the student would have been required to complete in the chemistry lab (40 hours).
- The student must submit a lab log each week within their chemistry canvas course describing what they have done so far on the project, and how many hours they have completed.
- The student must perform this project off the clock (unpaid hours).

Student: _____ Wildcat ID # _____

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.

LEVELS OF ACHIEVEMENT/SCORING KEY

- 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.

Note: The competencies will be graded for a total of 100 pts. Points will be deducted for competency categories that are not met. If an item is not available at the lab, please N/A that area so the student does not lose points. If something is not available, but was discussed with the student, please write, "1 – N/A". Students must achieve a minimum of 80% on their competency checklist in order to pass.

For questions about this competency checklist, contact the course instructor or mls@weber.edu.

Please have all mentors print their name, initial, sign and date below.

Mentor Printed Name _____ **Initials** _____

Mentor Signature _____ **Date** _____

Mentor Printed Name _____ **Initials** _____

Mentor Signature _____ **Date** _____

Mentor Printed Name _____ **Initials** _____

Mentor Signature _____ **Date** _____

Comments:

<div style="background-color: #f0f0f0; padding: 2px 5px;">Comments:</div>
--

Online Clinical Competency Checklist - MLS 3314 Advanced Clinical Chemistry

Student: _____

Wildcat ID # _____

General Laboratory Concepts	Mandatory	Expected Score	Student Score	Date complete	Mentor initial
Identify correct specimen types as specified by the clinical 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			
Properly reconstitute control or reagents using pipettes routinely used in the lab.	M	5			
Demonstrate understanding and proper use of pipettes used in the lab.	M	5			
Perform dilutions & calculations on patient samples (95% accuracy of previously analyzed samples)	M	5			
Perform daily, weekly, and monthly maintenance on an instrument in your laboratory.	M	4			
Perform QC procedures in accordance with the clinical institution's policy.	M	5			
Correctly document actions taken when results are not within acceptable limits.	M	5			
Perform the standard body fluid analysis assays or discuss where they are processed for your laboratory	M	5			
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			
Specimen Processing: labeling and specimen identification					
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			
Interpretation and Acceptance of Results					
Discuss 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			
Performance of tests					
Perform Total Protein and Albumin assays. Calculate A/G ratios.	M	5			
Perform and manually calculate Creatinine clearances and 24 hour excretions.		5			
Perform or discuss protein electrophoresis		5			
Perform or discuss Thin Layer Chromatography amino acid separations.		5			
Perform all enzyme assays routinely performed in your laboratory.	M	5			
Recognize interfering factors associated with the analysis of enzymes.	M	5			
Perform any Endocrine function assays performed in your lab.		5			
Perform or discuss Thyroid surveys and correlation of results.	M	5			

Online Clinical Competency Checklist - MLS 3314 Advanced Clinical Chemistry

Student: _____

Wildcat ID # _____

Performance of tests – continued...	Mandatory	Expected Score	Student Score	Date complete	Mentor initial
Perform TDM or Toxicology analysis on instrumentation routinely used in your lab.	M	5			
Demonstrate understanding and correlation of numerous hemoglobin assays	M	5			
Demonstrate understanding of specimen integrity issues with collection of bilirubin.	M	5			
Demonstrate understanding and correlation of numerous body fluids and how to process them	M	4			
Discuss or perform glucose tolerance tests. (Discussion of tolerance testing should include Epinephrine tolerance test, Xylose tolerance test and Lactose tolerance test)		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.	M	5			
Perform or discuss Glycosylated Hemoglobin assays.		5			
Perform lipid panels	M	5			
Calculate LDL Cholesterol	M	5			
Perform Na, K, Cl, CO ₂ , Ca, Mg, Phos, Iron, TIBC	M	5			
Perform and discuss ionized Calcium assays (understand collection and specimen integrity)		5			
Calculate and interpret anion gaps	M	5			
Perform Lithium assays		5			
Evaluate electrolyte results to scrutinize sources of significant error	M	5			
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			
Urinalysis					
Correctly identifies urine sample based on color and character.	M	5			
Follows correct laboratory procedures in performing urine dipstick analysis.	M	5			
Follows procedures for urine confirmatory testing (SSA, Clinitest, Acetest, & Icotest).	M	5			
Follows correct laboratory procedures in performing urine microscopic analysis.	M	5			
Correctly identifies common cellular elements found in urine samples.	M	4			
Correctly identifies common crystals found in urine samples.	M	4			
Correctly identifies common casts found in urine samples.	M	4			
Distinguishes common microscopic artifacts from urinary formed elements.	M	4			
Demonstrates the ability to operate instrumentation used for routine urinalysis testing.	M	5			
Proficient in daily/weekly preventative maintenance on equipment used for urinalysis.	M	4			

Online Clinical Competency Checklist - MLS 3314 Advanced Clinical Chemistry

Student: _____

Wildcat ID # _____

Urinalysis – continued...	Mandatory	Expected Score	Student Score	Date complete	Mentor initial
Performs urinalysis daily/shift QC procedures according to lab standards.	M	4			
Evaluates urinalysis cumulative QC data for abnormalities.	M	4			
Student demonstrates honesty by:					
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			
Completing all procedures in adherence to laboratory SOPs, taking no shortcuts or unauthorized modifications of procedure	M	5			
Student demonstrates personal interactive skills and proper professional behavior by:					
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			
Student demonstrates professional responsibility by:					
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			
Hours completed by student:					
Minimum time required for this lab competency is 40 hours. Mentors are encouraged to increase the number of hours dependent on individual student need. Please verify the number of hours your student spent:		40 hours			
Based on performance is this the type of person you would consider for potential employment? Y <input type="checkbox"/> N <input type="checkbox"/>					