Morgan State University
MDTC 411 CLINICAL CHEMISTRY AND URINALYSIS PRACTICUM
SUGGESTED LABORATORY ROTATION SCORING RUBRIC
Please attach the student's test record to this evaluation

Clinical Chemistry Analyzer Operation

TEST ITEM	Exceeds Standards (4 pts)	Meets Standards (3.5 pts)	Meets Standards AFTER REVIEW (2.5 pts)	Does Not Meet Standards (1.5 pt)
Implement the standard safety precautions in the clinical laboratory- 12 runs	Exceeds the standard safety precautions	Meets the standard safety precautions	Fail to meet the standard safety precautions, counseled one time	Fail to meet the standard safety precautions, counseled more than one time
Prepares reagents, calibrators and control material within the acceptable QA limits for a minimum of 10 different runs with 100% accuracy	Completes all of the tasks	Completes 2 of the 3 tasks	Completes 1 of the 3 tasks	Fail to complete any of the tasks
Prepares a dilution with 100% accuracy	Prepares 8 of the 10 dilutions correctly	Prepares 6 of the 10 dilutions correctly	Prepares 4 of the 10 dilutions correctly	Prepares 2 of the 10 dilutions correctly
Completes a minimum of 10 runs/assays with acceptable results and within the laboratory timeframe specified for stat and/or routine turn-around time	Completes 10 runs with the acceptable results and designated times	Completes 8 of the 10 runs with acceptable results and designated times	Completes 6 of the 10 runs with acceptable results and designated times	Completes less than 6 of the runs with acceptable results and designated times
Organizes the workflow	Exceeds Standard Operation Procedures (SOP)-by writing suggestions for improvement	Meets SOP standards	Fail to meet SOP standards, counseled one time	Fail to meet SOP standards, counseled more than one time
Recognizes common malfunctions of the instrument/analyzer	Recognizes common malfunctions of the instrument and demonstrates troubleshooting skills	Recognizes some of the common malfunctions of the instrument and demonstrates some troubleshooting skills	Fail to recognize all common malfunctions of the instrument **or** fail to inform technologist of problem	Fail to recognize all common malfunctions of the instrumentation **and** fail to inform technologist of problem
Calculates anion gap and creatinine clearance for a minimum of 5 samples		100% accuracy	**After review**, 100% accuracy	**After review**, < 100% accuracy
Performs a minimum of 2 manual tests		100% accuracy	**After review**, 100% accuracy	**After review**, < 100% accuracy
Identify patient values that are significantly different (e.g. risk values, panic values, analytical errors) and to bring these to the attention of the technologist immediately	Identify all values and inform the technologist for all values	Identify some of the values and inform the technologist for some of the values	Identify the values, but fail to inform the technologist of the values	Fail to identify the values and fail to inform the technologist of the values

Scoring and Grading

_____/ 31.5_____ X 100 = ____%

Student's Score divided by total possible points that can be earned at "Meets Standards" level, times 100

Morgan State University
MDTC 411 **CLINICAL CHEMISTRY AND URINALYSIS PRACTICUM**
SUGGESTED LABORATORY ROTATION SCORING RUBRIC
Medical Laboratory Science Students

Please attach the student's test record to this evaluation.

Non Automated Method

TEST ITEM	Exceeds Standards (4 pts)	Meets Standards (3.5 pts)	Meets Standards AFTER REVIEW (2.5 pts)	Does Not Meet Standards (1.5 pt)
Implements the standard safety in the clinical laboratory -12 samples	Exceeds the standard safety precautions	Meets the standard safety precautions	Fail to meet the standard safety precautions, counseled one time	Fail to meet the standard safety precautions, counseled more than one time
Organize the workflow	Exceed Standard Operation Procedures (SOP)- by writing suggestions for improvement	Meet SOP standards	Fail to meet SOP standards for 1 of the 2	Fail to organize the work of operations
Prepares reagents, calibrators and control material within the acceptable QA limits or a minimum of 10 different assays with 100% accuracy	Completes all of the tasks	Completes 2 of the 3 tasks	Completes 1 of the 3 tasks	Fail to complete any of the tasks
Completes a minimum of 10 runs/assay with acceptable results and within the laboratory timeframe specified for stat and/or routine turn-around time	Completes 10 runs with the acceptable results and designated times	Completes 8 of the 10 runs with acceptable results and designated times	Completes 6 of the 10 runs with acceptable results and designated times	Completes less than 6 of the runs with acceptable results and designated times
Identify patient values that are significantly different (e.g. risk values, panic values, analytical errors) and to bring these to the attention of the technologist immediately	Identify all values and inform the technologist for all values	Identify some of the values and inform the technologist for some of the values	Identify the values, but fail to inform the technologist of the values	Fail to identify the values and fail to inform the technologist of the values
Document manually lot numbers, expiration dates, initials, prep time, patient values, QC results and standard values if applicable	No error in the documentation	Errors in 2 of the documentation	Errors in 4 of the documentation	Errors in 5 of the documentation

Scoring and Grading: **_____/ _____21_____ X 100 = ____%**

Student's Score divided by the total possible points that can be earned at the "Meets Standards" level, times 100

***MDTC 411* CLINICAL CHEMISTRY AND URINALYSIS PRACTICUM**
SUGGESTED LABORATORY ROTATION SCORING RUBIRIC
Medical Laboratory Science Students

Please attach the student's test record to this evaluation.

Urinalysis

TEST ITEM	Exceeds Standards (4 pts)	Meets Standards (3,5 pts)	Meets Standards AFTER REVIEW (2.5 pts)	Does Not Meet Standards (1.5 pt)
Implements the standard safety in the clinical laboratory - 12 samples	Exceeds the standard precautions	Meets the standard safety precautions	Fail to meet the standard safety precautions, counseled one time	Fail to meet the standard safety precautions, counseled more than one time
Demonstrates the ability to organize workflow	Exceed Standard Operation Procedures (SOP) - by writing suggestions for improvement	Meets SOP standards	Fail to meet SOP standards for 1 of the 2	Fail to organize the work of operations
Identify cellular elements	95%- 8 out of 10 matches instructor's results	75%-6 out of 10 matches instructor's results	50%- 4 out of 10 matches instructor's results	25%- 2 out of 10 matches instructor's results
Enumerates the component of the urine	95%- 8 out of 10 matches instructor's results	75%-6 out of 10 matches instructor's results	50%- 4 out of 10 matches instructor's results	25%- 2 out of 10 matches instructor's results
Performs follow-up for abnormal results	95%- 8 out of 10 matches instructor's results	75%-6 out of 10 matches instructor's results	50%- 4 out of 10 matches instructor's results	25%- 2 out of 10 matches instructor's results
Correlates the microscopic and reagent strip results for 10 samples	95%- 8 out of 10 matches instructor's results	75%-6 out of 10 matches instructor's results	50%- 4 out of 10 matches instructor's results	25%- 2 out of 10 matches instructor's results

Scoring and Grading: _____/ _____**21**_____ **X 100 = ____%**

Student's Score divided by the total possible points that can be earned at the "Meets Standards" level, times 100

Morgan State University
MDTC 411 - **CLINICAL CHEMISTRY PRACTICUM**
TECHNICAL PERFORMANCE EVALUATION

Instructions

Please rate the student's technical performance **at the end of the rotation**. This should reflect the student's terminal ability and not the normal growth of the student during the rotation. Match the student's performance on each item with the **numerical rating** that most closely describes **his/her performance in comparison to an entry-level MLS employee with no experience or training**. It is recognized that with an entry level MLS, proficiency, speed and level of judgment will increase with experience.

Each task in the Technical Performance Evaluation is evaluated using the scale below:

1.0 ***Unacceptable performance***
After appropriate training, the student performs the task with consistent performance errors, needs constant supervision and does not adhere to affiliate policies (e.g., safety) during task performance. The student also appears unwilling to improve performance.

2.0 ***Marginal performance***
After appropriate training, the student performs the task with inconsistent technical skills OR needs constant and detailed instructions in order to achieve acceptable performance. The student demonstrates an understanding of the principle of the assay or procedure. **Performance at this level is equivalent to a grade of 'C'.**

3.0 ***Acceptable performance***
After appropriate training, the student performs the task with average technical skill, but still needs/requires direct supervision. The student demonstrates an understanding of the principle of the assay or procedure and its application. **Performance at this level is equivalent to a grade of 'B'.**

4.0 ***Very Good performance***
After appropriate training, the student performs the task with average technical skill with minimal supervision. The instructor feels confident in student performance and outcomes. The student demonstrates an understanding of the principle of the assay or procedure and its application.
Performance at this level is equivalent to a grade of 'A'.

Using the above criteria, the final score for the Technical Evaluation is calculated as follows:

1. Add the Points Earned on the Technical Tasks.
2. Divide this total by the Total Possible Points (number of tasks actually performed x 4)
3. Multiply that Total x 100 to calculate % Score

Points Earned / (Tasks performed x 4) = Raw score x 100 = % Technical Performance Score

Technical Tasks

_____ 1. Check for correct identification/labeling of specimens.

_____ 2. Evaluate specimens for appropriate anticoagulant, collection time and site of collection.

_____ 3. Identify specimens that may be unsuitable for analysis due to incorrect anticoagulant used, hemolysis, lipemia, icteric, clot, and/or air bubble present.

_____ 4. Explain corrective measures for unacceptable specimens.

_____ 5. Prepare a minimum of 20 specimens for analysis by centrifugation and separation of cells from serum/plasma.

_____ 6. Dispose of waste according to laboratory protocol.

_____ 7. Prepare reagents, calibrators and control material within the acceptable QA limits for a minimum of 10 different assays *with 100% accuracy*.

_____ 8. Perform calibrations.

_____ 9. Perform routine maintenance checks.

_____ 10. Evaluate the validity of standardization/calibration of the instrument.

_____ 11. Document results of calibration, performance and maintenance checks, malfunctions, and corrections without error.

_____ 12 Identify control results that are not within the accepted quality control limits *with 100% accuracy*.

_____ 13. Explain appropriate actions for unacceptable control results.

_____ 14. Observe corrective documentation for unacceptable control values.

_____ 15. State possible sources of error. If results are not within limits (e.g. outside instrument limitations.)

_____ 16. Observe basic LIS computer applications where relevant.

_____ 17. Describe various periodic maintenance procedures for the different instruments and maintenance sheets.

_____ 18. Comply with regulatory issues.

_____ 19. Follow the procedure and safety precautions, without error, for the analytical instrument and manual testing with respect to:

- Specimen preparation
- Control selection
- Intervals at which standards and controls are to be analyzed
- Identification and correct positioning of specimens
- Operation of the instrument

_____ 20. Pipet reagents and samples accurately.

_____ 21. Prepare dilutions *with 100% accuracy*.

_____ 22. Complete a minimum of 10 runs/assays *with acceptable results within the laboratory's timeframe specified for stat and/or routine turnaround time*.

_____ 23. Operate at least one analyzer with minimal supervision in accordance with laboratory protocol.

_____ 24. Observe the sample path or flow in 2 instruments.

_____ 25. Describe the theoretical principles for each analytical methodology

_____ 26. Demonstrate the ability to organize workflow.

_____ 27. Recognize common malfunctions of the instrument.

_____ 28. Describe or demonstrate basic trouble-shooting skills.

_____ 29. Recognize interfering substances for each procedure performed.

_____ 30. Identify patient values that are significantly different (e.g. risk values, panic values, analytical errors) and bring these to the attention of the technologist immediately.

_____ 31. Determine need for repeat analysis on unacceptable reportable ranges.

_____ 32. Determine whether results fit the expected pattern with respect to previously obtained results on the same test or other test results on the same patient.

_____ 33. Evaluate a minimum of 50 patient results according to laboratory protocol for routine results, STAT results (including telephone results) and panic value results.

_____ 34. Perform and interpret 10 routine calculations (to include dilutions anion gap, 24 hour urine, creatinine clearance, LDL, thyroid index) *with 100% accuracy.*

_____ 35. Correlate laboratory data with clinical implications *with 70% accuracy*. This includes:

- Cardiac enzymes
- Creatinine
- Liver enzymes
- Blood gases
- Bilirubin
- Iron
- Protein
- Lipids
- Glucose
- Endocrine function
- Electrolytes
- Blood urea nitrogen
- Tumor markers
- Therapeutic Drugs
- Drugs of Abuse

_____ 36. Correlate abnormal test results to abnormal disease states *with 100% accuracy.*

_____ 37. Recognize reference serum intervals and panic values for the following tests:

- Glucose
- Blood urea nitrogen
- Total protein
- Creatinine
- Sodium
- Total bilirubin
- Potassium
- Cholesterol
- Chloride
- Blood gases

_____ 38. Define the following terms:

- End-point spectrophotometry
- Kinetic spectrophotometry
- Ion-selective electrodes
- Osmometry
- Electrophoresis
- Chemiluminescence
- Peak
- Trough
- Immunoassay

_____ 39. Classify the instruments at the site according to the approach of automation (i.e., discrete and parallel analyzers)

Student's Name:_____

Evaluator(s):_____

Date:_____

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2. Divide this total by the Total Possible Points (number of tasks actually performed x 4)
3. Multiply that Total x 100 to calculate % Score

Points Earned / (Tasks performed x 4) = Raw score x 100 = % Technical Performance Score

$$\frac{\text{Total Points Earned}}{\text{Total Possible Points (\# Tasks x 4)}} = \_\_\_\_\_ \times 100 = \_\_\_\_\_\%\ \text{Technical Score}$$

Morgan State University
MDTC 411 - **URINALYSIS PRACTICUM**
TECHNICAL PERFORMANCE EVALUATION

Instructions

Please rate the student's technical performance **at the end of the rotation**. This should reflect the student's terminal ability and not the normal growth of the student during the rotation. Match the student's performance on each item with the **numerical rating** that most closely describes **his/her performance in comparison to an entry-level MLS employee with no experience or training**. It is recognized that with an entry level MLS, proficiency, speed and level of judgment will increase with experience.

Each task in the Technical Performance Evaluation is evaluated using the scale below:

1.0 ***Unacceptable performance***
After appropriate training, the student performs the task with consistent performance errors, needs constant supervision and does not adhere to affiliate policies (e.g., safety) during task performance. The student also appears unwilling to improve performance.

2.0 ***Marginal performance***
After appropriate training, the student performs the task with inconsistent technical skills or **needs** constant and detailed instructions in order to achieve acceptable performance. The student demonstrates an understanding of the principle of the assay or procedure. **Performance at this level is equivalent to a grade of 'C'.**

3.0 ***Acceptable performance***
After appropriate training, the student performs the task with average technical skill, but still needs/requires direct supervision. The student demonstrates an understanding of the principle of the assay or procedure and its application. **Performance at this level is equivalent to a grade of 'B'.**

4.0 ***Very Good performance***
After appropriate training, the student performs the task with average technical skill with minimal supervision. The instructor feels confident in student performance and outcomes. The student demonstrates an understanding of the principle of the assay or procedure and its application. **Performance at this level is equivalent to a grade of 'A'.**

Using the above criteria, the final score for the Technical Evaluation is calculated as follows:

1. Add the Points Earned on the Technical Tasks.
2. Divide this total by the Total Possible Points (number of tasks actually performed x 4)
3. Multiply that Total x 100 to calculate % Score

Points Earned / (Tasks performed x 4) = Raw score x 100 = % Technical Performance Score

Technical Tasks

_____ 1. Check for correct identification/labeling of specimens according to the current National Patient Safety Procedure from JCAHO.

_____ 2. Explain the importance of proper collection and transport of specimens.

_____ 3. List criteria for evaluating specimen quality and corrective actions to resolve problems.

_____ 4. List substances that will cause false negative and false positive results in a routine urinalysis.

_____ 5. Summarize the advantages and disadvantages of commonly used urine preservatives

_____ 6. State the confidentiality policy of the facility during testing procedure and reporting in accordance with HIPAA guidelines.

_____ 7. Observe basic computer applications where relevant.

_____ 8. Report or record quality control results according to the standard operating procedures of the laboratory *with 100% accuracy*.

_____ 9. For a minimum of 25 urine specimens with *95% accuracy*:

- Describe the physical appearance.
- Perform specific gravity analysis using the refractometer and/or dipstick methods.
- Perform chemical analysis of the urine specimens.
- Interpret results obtained from chemical analysis.
- Where applicable, confirm abnormal results with appropriate confirmatory tests for a minimum of 5 different abnormal urine specimens.
- Interpret the confirmatory test results.
- Perform microscopic analysis on urine specimens according to the standard operating procedure of the laboratory.
- Given a specimen or kodachrome, identify normal and abnormal constituents in a microscopic analysis of urine specimens with 95% accuracy. These constituents include:
  - ❑ Erythrocytes
  - ❑ Leukocytes
  - ❑ Epithelial cells: squamous, transitional, renal
  - ❑ Bacteria
  - ❑ Yeast
  - ❑ Casts: hyaline, fine and coarse granular, rbc, wbc, waxy
  - ❑ Crystals: uric acid, calcium oxalate, triple phosphate, tyrosine, cystine, ammonium biurate
  - ❑ Oval fat bodies
  - ❑ Contaminants: fibers, talc, glass, etc.

_____ 10. Operate automated dipstick readers with 100% accuracy.

_____ 11. For the following procedures, it is essential that the student receive hands-on experience and perform *with 95% accuracy* in whichever department the procedure is performed:

- Cerebrospinal fluid analysis to include cell count, differential, chemistry
- Fecal occult blood
- Urine/serum pregnancy test

_____ 12. Recognize cells specific to each body fluid type to include histiocytes, mesothelial cells, malignant cells, macrophage with inclusions, crystals, yeast, bacteria and others.

_____ 13. Discuss or perform body fluid analysis on synovial, serous, and other fluids.

_____ 14. State the reference (normal) values for all routine assays performed in the urinalysis laboratory.

_____ 15. *With 95% accuracy*, correlate quantitative data with microscopic data.

_____ 16. Correlate abnormal results with associated common disease states.

_____ 17. Interpret the results obtained from performing body fluid analysis on synovial, serous, and other fluids.

_____ 18. Report all divergent or discordant results between quantitative and microscopic data to the clinical instructor.

_____ 19. Recognize all critical values and report these findings to the Clinical Instructor.

Student's Name:_____

Evaluator(s):_____

Date:_____

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2. Divide this total by the Total Possible Points (number of tasks actually performed x 4)
3. Multiply that Total x 100 to calculate % Score

Points Earned / (Tasks performed x 4) = Raw score x 100 = % Technical Performance Score

Total Points Earned ____ = _____ x 100 = _____% Technical Score
Total Possible Points
(# Tasks x 4)