Doisy College of Health Sciences Program-Level Assessment: Annual Report

Program: Medical Laboratory Science	Department: Clinical Health Sciences
Degree or Certificate Level: **BS and Certificates**	College/School: **Doisy College of Health Sciences**
Date (Month/Year): 8/11/2021	Primary Assessment Contact: amanda.reed@health.slu.edu
In what year/cycle was the data upon which this report is based collected? 2020-2021	
In what year/cycle was the program's assessment plan most recently reviewed/updated? 2019-2020	

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle?

PLO #1: Students will demonstrate respect for human life with regard to all aspects of laboratory testing.

PLO #3: Students will apply critical reasoning to solve laboratory-based case studies.

PLO #5: Students will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics. (See appendix 2)

2. Assessment Methods: Student Artifacts

Which student artifacts were used to determine if students achieved this outcome? Please identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

PLO #1: Students will demonstrate respect for human life with regard to all aspects of laboratory testing.

Artifact 1- BLS 1100 Foundations of Medical Laboratory Science / Microbiology Ethics Case Study Assignment (Due to COVID-19, this assignment was not assigned) (See Appendix 3)

The students are presented with an ethical dilemma as it pertains to the clinical laboratory. This case study evaluates that students recognize that every test is attached to a real person regardless of personal history since it deals directly with the test results of a close friend (HIPAA violation). The students are asked to use the ethical decision-making model discussed in class to decide what is the most ethical way to address the situation. They are asked to:
1. Identify the Problem
2. Determine what professional and personal values pertain to the problem
3. Propose two approaches to solving the problem and identify likely consequences of each in relation to those values
4. Describe how they would handle the situation

No Madrid student artifacts were included.

Artifact 2- MLS-4800 Clinical Microbiology Practicum / Professional Development Evaluation (This is a clinical course that takes place at hospital microbiology labs throughout the St. Louis metropolitan area).

The Professional Development Evaluation forms contain 3 characteristics/behaviors that have been keyed back to PLO#1. The Clinical Preceptor evaluates the students at the end of their clinical rotation on the following:

3. Judgment: Problem recognition and resolution (PLO #1, #2, #4)	Has difficulty distinguishing normal from abnormal situations. Doesn't recognize or proceed appropriately in problem situations, i.e. problem specimen or QC out of range	Recognizes normal from abnormal. Recognizes problem specimens with ease. Proceeds appropriately in each case. Recognizes situations that require consultation with instructor or tech. Asks appropriate questions. Instructor would feel comfortable having student performing their own family member's lab samples with no worry.		Sees "big picture." Conveys understanding of how own actions have consequences and impacts patient care.
Circle one:	**1**	**2**	**3**	**4**	**5**

5. Bench Work: Skills and pace (PLO#1)	Everyday bench skills need improvement. Hasn't developed work pace that would meet expected turn-around-times. OR Sacrifices accuracy for speed: makes mistakes, misses things by going too fast.	Does good work at the bench. Has good manual dexterity. Demonstrates efficiency/balances speed and accuracy. Can maintain appropriate work pace while producing accurate results.		Demonstrates excellent multitasking skills usually seen in experienced techs.
Circle one:	**1**	**2**	**3**	**4**	**5**

7. Professionalism/Maturity (PD 2, 5, 11) (PLO#1, #4)	Does not follow policies set forth by clinical site. Complains about policies and expectations. Recognizes that every test is attached to a real person by treating all specimens and patient information the same regardless of age, sex, gender identity, ethnicity, personal history, etc., of the patient.	Follows all policies at all times without complaint. Focused. Engaged in learning activities and lab environment. Is a good representative of the laboratory profession.		Unsolicited positive feedback received from non-instructors or people outside section, i.e. student's professional behavior is above and beyond.
Circle one:	**1**	**2**	**3**	**4**	**5**

No Madrid student artifacts were included.

PLO #3: Students will apply critical reasoning to solve laboratory-based case studies.

Artifact-1- BLS 1150 Foundations of Medical Laboratory Science Laboratory / Urinalysis Case Study Assignment

The students are given a case study that contains pertinent patient history (age, symptoms, specimen type, etc.) along with urinalysis test results (See appendix 4). The students are asked to identify normal from abnormal results, and identify which disorder is the most likely cause of the results. In addition, they are asked to explain why each of the other disorders listed as options is not an appropriate choice.

Artifact-2- MLS 4611 Advanced Topics and Case Correlations / Case Study Presentations

The students are given a case study that contains pertinent patient history (age, symptoms, specimen type, etc.) along with test results (more detailed and comprehensive results than those provided in artifact 1). The test results span all major areas of the clinical laboratory (Hematology, Urinalysis, Chemistry, Blood Bank, Microbiology, and Serology) as opposed to just Urinalysis as seen in artifact 1. Please see appendix 5 for a sample case. The students are asked to prepare a short PowerPoint presentation about the case (12-15 slides) using a rubric and questions in the case as their guide. They are required to highlight the abnormal test results and discuss the diagnosis, treatment, and prognosis in terms of these abnormal test results, as well as explain the principle of the major tests.

No Madrid student artifacts were included.

PLO #5: Students will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics. (See appendix 2)

Artifact-1- BLS 1100 Foundations of Medical Laboratory Science / Immunohematology Ethics Case Study Assignment (Due to COVID-19, this assignment was not assigned) (Appendix 6)

The students are presented with an ethical dilemma as it pertains to the clinical laboratory. This case study deals with whether to report a coworker for releasing erroneous results and workplace violence. The students are asked to use the ethical decision-making model discussed in class to decide what is the most ethical way to address the situation. They are asked to:
1. Identify the Problem
2. Determine what professional and personal values pertain to the problem
3. Propose two approaches to solving the problem and identify likely consequences of each in relation to those values
4. Describe how they would handle the situation

No Madrid student artifacts were included.

Artifact-2- MLS 4780 Clinical Immunohematology Practicum / Professional Development Evaluation

The Professional Development Evaluation forms contain one characteristic/behavior that have been keyed back to PLO#5. The Clinical Preceptor evaluates the students at the end of their clinical rotation on the following:

13. **Adherence to the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics (PLO #5)**	Identifies central ethical issues and uses them as a basis for ethical evaluation	Formulates an implementation plan that delineates the execution of the decision		Formulates an implementation plan that delineates the execution of the decision and that evidences a thoughtful reflection on the benefits and risks of action.
Circle one:	**1**	**2**	**3**	**4**

No Madrid student artifacts were included

3. Assessment Methods: Evaluation Process

What process was used to evaluate the student artifacts, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and include them in/with this report.

PLO #1: Students will demonstrate respect for human life with regard to all aspects of laboratory testing.

Artifact 1- BLS 1100 Foundations of Medical Laboratory Science / Microbiology Ethics Case Study Assignment (Due to COVID-19, this assignment was not assigned)

Due to COVID-19 and the changes that were made to the course to accommodate students and a revised schedule, this assignment was not assigned. The Program Director uses the assessment rubric located in appendix 1 to evaluate each assignment. The Program Director determines the % of students that achieved a ranking of "introduce" or higher on the assessment rubric.

Artifact 2- MLS-4800 Clinical Microbiology Practicum / Professional Development Evaluation (n= 6)
(This is a clinical course that takes place at hospital microbiology labs throughout the St. Louis metropolitan area).

The forms were completed by the Clinical Preceptors at the end of the students' clinical rotation and were then evaluated by the MLS Program Director. The Clinical Preceptor ranked the students on a scale of 1 to 5 (5 being the highest score) on various professional characteristics and behaviors that are linked to our specific PLOs. The MLS Program Director used the assessment rubric located in appendix 1 to review the scores of the respective characteristics/behaviors found in the Professional Evaluation form that are keyed to PLO #1. The scores of each characteristic/behavior were added together and then divided by the total number to get an average score for PLO #1. The Program Director identified students scoring 2 - 5 as achieving the ranking of "master" since, per the evaluation form, the student "Meets expectations. Student is currently performing as an entry level MLS to varying degrees."

PLO #3: Students will apply critical reasoning to solve laboratory-based case studies

Artifact-1-BLS 1150 Foundations of Medical Laboratory Science Laboratory / Urinalysis Case Study Assignment (n =9)

The urinalysis case study assignment was reviewed by the MLS Program Director. The Program Director used the assessment rubric located in appendix 1 to evaluate each assignment. The results were tallied, and the Program Director determined the % of students that achieved a ranking of "introduce" or higher on the assessment rubric.

Artifact-2- MLS 4611 Advanced Topics and Case Correlations / Case Study Presentations (n = 4)

The Program Director attended the case study presentations and evaluated the students using the assessment rubric located in appendix 1. The results were tallied, and the Program Director determined the % of students that achieved a ranking of "mastery" or higher on the assessment rubric.
PLO #5: Students will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics. (See appendix 2)

Artifact-1- BLS 1100 Foundations of Medical Laboratory Science / Immunohematology Ethics Case Study Assignment (Due to COVID-19, this assignment was not assigned)

Due to COVID-19 and the changes that were made to the course to accommodate students and a revised schedule, this assignment was not assigned. The Program Director uses the assessment rubric located in appendix 1 to evaluate each assignment. The Program Director determined the % of students that achieved a ranking of "introduce" or higher on the assessment rubric.

Artifact-2- MLS 4780 Clinical Immunohematology Practicum / Professional Development Evaluation (n = 4)

The forms were completed by the Clinical Preceptors at the end of the students' clinical rotation and were then evaluated by the MLS Program Director. The Clinical Preceptor ranked the students on a scale of 1 to 5 (5 being the highest score) on various professional characteristics and behaviors that are linked to our specific PLOs. The MLS Program Director used the assessment rubric located in appendix 1 to review the scores of the respective characteristic/behavior found in the Professional Evaluation form that are keyed to PLO #5. The Program Director identified students scoring 2 - 5 as achieving the ranking of "master" since, per the evaluation form, the student "Meets expectations. Student is currently performing as an entry level MLS to varying degrees."

4. Data/Results

What were the results of the assessment of the learning outcomes? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

NOTE:
The program target identified in the assessment plan, which is the minimum percentage of students able to achieve each PLO at the designated ranking, was established at the College standard rate of 85% or better by the former Dean of the Doisy College of Health Sciences.

PLO #1: Students will demonstrate respect for human life with regard to all aspects of laboratory testing.

Artifact 1- BLS 1100 Foundations of Medical Laboratory Science / Microbiology Ethics Case Study Assignment (Due to COVID-19, this assignment was not assigned)

Due to COVID-19 and the changes that were made to the course to accommodate students and a revised schedule, this assignment was not assigned and, therefore, no data is available.

Artifact 2- MLS-4800 Clinical Microbiology Practicum / Professional Development Evaluation (n = 6)
(This is a clinical course that takes place at hospital microbiology labs throughout the St. Louis metropolitan area).

The scores of each characteristic/behavior were added together and then divided by the total number to get an average score for PLO #1. Per the Professional Development Evaluation Instruction, the Program Director identified students scoring 2 - 5 as achieving the ranking of "master" since, per the evaluation form, the student "Meets expectations. Student is currently performing as an entry level MLS to varying degrees."

The goal of an average of 85% of students will achieve a ranking of *"mastery"* was achieved. In fact, 100% (6/6) of the students achieved a ranking of "mastery". That is, 100% of the students achieved an average score of 2-5. See the chart below for a breakdown of scores.

Student	Characteristic/Behavior 1	Characteristic/Behavior 2	Characteristic/Behavior 3	Average score
1	4	4	4	4
2	Score missing	3	5	4
3	5	4	4	4.3
4	5	5	5	5
5	5	5	5	5
6	4	4	4	4

Teaching modality did not differ for this artifact. All students were assessed at off campus locations as part of their clinical practicums.

PLO #3: Students will apply critical reasoning to solve laboratory-based case studies

Artifact-1-BLS 1150 Foundations of Medical Laboratory Science Laboratory / Urinalysis Case Study Assignment (n =9)

The goal of an average of 85% of students will achieve a ranking of *"introduce"* was achieved. An average of 88% (8/9) of students achieved a ranking of "introduce" or higher using corresponding assessment rubric. Students were able to "recognize normal from abnormal results."11% of the students (1/9) did not meet any criteria of the assessment. This student has subsequently left SLU and the MLS program. 78% of the students (7/9) achieved a ranking of "reinforce" and could "choose appropriate next steps in each case."

Student	Ranking	Percent
1	Did not meet any criteria	11%
2	Introduce	11%
3	Reinforce	78%
4	Reinforce	
5	Reinforce	
6	Reinforce	
7	Reinforce	
8	Reinforce	
9	Reinforce	

Teaching modality did differ for this artifact. The one student that did not meet any criteria and subsequently left the Program, opted to take the course online. The rest of the students completed this exercise in a face-to-face learning environment.

Artifact-2- MLS 4611 Advanced Topics and Case Correlations / Case Study Presentations (n = 4)

The goal of an average of 85% of students will achieve a ranking of *"mastery"* was not achieved. Only **50% (2/4)** of the students achieved the ranking of "mastery" and could "propose solutions to case study problems with justification." 50% (2/4) achieved a ranking of "reinforce." This means they were able to "choose the appropriate next step in each case" but were not able to "propose solutions to case study problems."

Student	Ranking	Percent
1	Reinforce	50%
2	Reinforce	
3	Mastery	50%
4	Mastery	

Teaching modality did not differ for this artifact. All students presented their case studies via Zoom.

PLO #5: Students will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics. (See appendix 2)

Artifact-1- BLS 1100 Foundations of Medical Laboratory Science / Immunohematology Ethics Case Study Assignment (Due to COVID-19, this assignment was not assigned)

Due to COVID-19 and the changes that were made to the course to accommodate students and a revised schedule, this assignment was not assigned and, therefore, no data is available.

Artifact-2- MLS 4780 Clinical Immunohematology Practicum / Professional Development Evaluation (n = 4)

The goal of an average of 85% of students will achieve a ranking of *"mastery"* was achieved. 100% (3/3) of the students that had scores for this artifact earned scores on the evaluation form that were between a 2-5. One student's evaluation form was left blank on this item and therefore, was not included in the calculations.

Student	Characteristic/Behavior Score	Ranking
1	4	Mastery
2	4	Mastery
3	3	Mastery
4	NA	Unable to evaluate

Teaching modality did not differ for this artifact. All students were assessed at off campus locations as part of their clinical practicum.

5. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

PLO #1: Students will demonstrate respect for human life with regard to all aspects of laboratory testing.

Artifact 1- BLS 1100 Foundations of Medical Laboratory Science / Microbiology Ethics Case Study Assignment (Due to COVID-19, this assignment was not assigned)

Due to COVID-19 and the changes that were made to the course to accommodate students and a revised schedule, this assignment was not assigned and, therefore, no data is available to assess. This artifact was updated from the artifact assessed during the AY2018-2019. Since it was also not assessed during the AY2020-2021, we will assess it for the first time in AY2022-2023.

Artifact 2- MLS-4800 Clinical Microbiology Practicum / Professional Development Evaluation (n = 6)

After reviewing the evaluation forms it was determined by the Program Director and the Program Manager that changes were needed to ensure consistency in evaluating each item and to better differentiate achievement levels. For example, some items were graded on a scale of 1-4 while others were graded on a scale of 1-5. In addition, having a range of 2-4 "meeting expectations" does not allow us to appropriately evaluate the students and make clear distinction between achievement levels.

The Spring 2020 Professional Development instructions to the evaluators are below along with the revised 2021 instructions.

INSTRUCTORS TO THE EVALUATOR (2020):
Rate the student in each area by circling:
1 = Needs improvement. / Student is not performing as would be expected of an entry level MLS.
2, 3 or 4 = Meets expectations. / Student is currently performing as an entry level MLS to varying degrees
5 = Exceptional. / Student's performance is well above what would be expected of an entry level MLS.

INSTRUCTIONS TO THE EVALUATOR (2021):
Rate the student in each area by circling:
2 = Needs improvement. / Student is not performing as would be expected of an entry level MLS.
4 = Meets expectations. / Student is currently performing as an entry level MLS.
5 = Exceptional. / Student's performance is well above what would be expected of an entry level MLS.

Thus, the rubric used to assess this artifact was updated so that the language is consistent with the 2021 instructions to the evaluator.

In addition, we decided to use the comprehensive score from the professional development evaluation form as the artifact #2 instead of only using certain characteristics/behaviors to evaluate PLO #1. We decided that a more holistic approach to evaluation is needed since the PLO states "all aspects of laboratory testing." This decision was made after discussing each characteristic/behavior that is listed on the form which includes:

1. Knowledge of the subject
2. Application of knowledge to practice
3. Judgement: Problem recognition and resolution
4. Bench work: skills and pace
5. Safety practices
6. Professionalism/Maturity
7. Attendance/Punctuality
8. Initiative/Motivation
9. Responsibility
10. Interpersonal/communication skills
11. Ability to work in a clinical lab environment/handle stressful situations

12. Adherence to the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics

PLO #3: Students will apply critical reasoning to solve laboratory-based case studies

Artifact-1-BLS 1150 Foundations of Medical Laboratory Science Laboratory / Urinalysis Case Study Assignment (n =9)

Upon review of the Urinalysis exercise, it was clear that the current approach that is used to introduce clinical laboratory theory in lecture followed by videos instructing students on how to perform testing, and the hands-on student laboratory activity are successful teaching methodologies. However, we found that the laboratory activity is only useful for determining whether the students meet the "introduce" and "reinforce" criteria and is not useful for determining "mastery". The assignment will be revised to better ascertain all levels of competency.

Artifact-2- MLS 4611 Advanced Topics and Case Correlations / Case Study Presentations (n = 4)

Only 50% of the students demonstrated "mastery." However, with such a small sample size and extenuating circumstances that the students were under, additional assessment cycles are needed to properly evaluate this PLO.

PLO #5: Students will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics (See Appendix 1).

Artifact-1- BLS 1100 Foundations of Medical Laboratory Science / Immunohematology Ethics Case Study Assignment

Due to COVID-19 and the changes that were made to the course to accommodate students and a revised schedule, this assignment was not assigned and, therefore, no data is available to assess. This artifact was updated from the artifact assessed during the AY2018-2019. Since it was also not assessed during the AY2020-2021, we will assess it for the first time in AY2022-2023.

Artifact-2- MLS 4780 Clinical Immunohematology Practicum / Professional Development Evaluation (n =3)

100% of the students met this benchmark during this assessment cycle and the previous assessment cycle. This informs us that our clinical preceptors see our students as ethical practitioners.

6. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

The data/results from section 4 were shared and discussed at the Fall 2021 MLS Faculty meeting. These were compared with the data/results obtained from the previous assessment cycles. MLS Faculty were given copies of the recent and previous assessment plans and assessment rubrics as well as copies of the artifact assignments. They were also provided with the assessment results as shown below:

PLO 1: Students will demonstrate respect for human life with regard to all aspects of laboratory testing.

Assessment Mapping/Tools:

1. BLS 1150 Foundations of Medical Laboratory Science Microbiology Ethics Case Study Assignment
   - Program Target: An average of 85% of students will achieve a ranking of "introduce" or higher using corresponding assessment rubric.

Academic Year	n =	# meeting target	% Meeting Target	Notes
2018-2019	8	8	100%	Immunohematology case study assignment was used as artifact
2020-2021	NA	NA	NA	Artifact changed to microbiology ethics assignment but not given due to COVID

2. MLS 4800 Clinical Microbiology Practicum Professional Development Evaluation
   - Program Target: An average of 85% of students will achieve a ranking of "mastery" using corresponding rubric

Academic Year	n =	# meeting target	% Meeting Target	Notes
2018-2019	7	5	71%	Clinical Immunohematology PD Evaluation was used as artifact
2020-2021	6	6	100%	Artifact changed to Clinical Microbiology PD Evaluation. Updated version of evaluation was used.

PLO 3: Students will apply critical reasoning to solve laboratory-based case studies.

Assessment Mapping/Tools:
1. BLS 1100 Foundations of Medical Laboratory Science / Urinalysis case study assignment
   - Program Target: An average of 85% of students will achieve a ranking of "introduce" or higher using corresponding assessment rubric.

Academic Year	n =	# meeting target	% Meeting Target	Notes
2018-2019	8	8	100%	
2020-2021	9	8	88%	

2. MLS 4611 Advanced topics and Case Correlations / Observations of case study presentations
   - Program Target: An average of 85% of students will achieve a ranking of "mastery" using corresponding rubric

Academic Year	n =	# meeting target	% Meeting Target	Notes
2018-2019	9	9	100%	
2020-2021	4	2	50%	

PLO 5: Students will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS)

Assessment Mapping/Tools:
1. BLS 1100 Foundations of Medical Laboratory Science / Immunohematology ethics case study assignment
   - Program Target: An average of 85% of students will achieve a ranking of "introduce" or higher using corresponding assessment rubric

Academic Year	n =	# meeting target	% Meeting Target	Notes
2018-2019	8	8	100%	Microbiology ethics case study assignment was used as the artifact
2020-2021	NA	NA	NA	Artifact was changed to Immunohematology Ethics and was not given due to COVID

2. MLS 4870 Clinical Immunohematology / Practicum Professional Development Evaluation
   - Program Target: An average of 85% of students will achieve a ranking of "mastery" using corresponding rubric

Academic Year	n =	# meeting target	% Meeting Target	Notes
2018-2019	7	7	100%	Clinical Microbiology PD was used as the artifact
2020-2021	3	3	100%	Artifact changed to Clinical Immunohematology PD Evaluation. Updated version of evaluation was used.

B. How specifically have you decided to use findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies	● Course content ● Teaching techniques ● Improvements in technology ● Prerequisites	● Course sequence ● New courses ● Deletion of courses ● Changes in frequency or scheduling of course offerings
Changes to the Assessment Plan	● Student learning outcomes ● Student artifacts collected ● Evaluation process	● Evaluation tools (e.g., rubrics) ● Data collection methods ● Frequency of data collection

Please describe the actions you are taking as a result of the findings.

Changes to the Assessment Plan

PLO #1 Artifact 1- BLS 1100 Foundations of Medical Laboratory Science / Microbiology Ethics Case Study Assignment

We are implementing a new online program where students will enter the MLS program as juniors. These students will not be required to take BLS 1100 Foundations of Medical Laboratory Science. Therefore, the Microbiology Ethics Case Study assignment will be moved to MLS 4520 Medical Bacteriology course. This change will take place in the during the 2021-2022 academic year.

PLO #1 Artifact 2- MLS-4800 Clinical Microbiology Practicum / Professional Development Evaluation

After reviewing the evaluation forms it was determined by the Program Director and the Program Manager that changes were needed to ensure consistency in evaluating each item and to better differentiate achievement levels. For example, some items were graded on a scale of 1-4 while other were graded on a scale of 1-5. In

addition, having a range of 2-4 “meeting expectations” does not allow us to appropriately evaluate the students and make clear distinction between achievement levels.

The Spring 2020 Professional Development instructions to the evaluators are below along with the revised 2021 instructions.

INSTRUCTORS TO THE EVALUATOR (2020):
Rate the student in each area by circling:
1 = Needs improvement. / Student is not performing as would be expected of an entry level MLS.
2, 3 or 4 = Meets expectations. / Student is currently performing as an entry level MLS to varying degrees
5 = Exceptional. / Student’s performance is well above what would be expected of an entry level MLS.

INSTRUCTIONS TO THE EVALUATOR (2021):
Rate the student in each area by circling:
2 = Needs improvement. / Student is not performing as would be expected of an entry level MLS.
4 = Meets expectations. / Student is currently performing as an entry level MLS.
5 = Exceptional. / Student’s performance is well above what would be expected of an entry level MLS.

Thus, the rubric used to assess this artifact was updated so that the language is consistent with the 2021 instructions to the evaluator.

In addition, we decided to use the comprehensive score from the professional development evaluation form as the artifact #2 instead of only using certain characteristics/behaviors to evaluate PLO #1. We decided that a more holistic approach to evaluation is needed since the PLO states “all aspects of laboratory testing.” This decision was made after discussing each characteristic/behavior which includes:

1. Knowledge of the subject
2. Application of knowledge to practice
3. Judgement: Problem recognition and resolution
4. Bench work: skills and pace
5. Safety practices
6. Professionalism/Maturity
7. Attendance/Punctuality
8. Initiative/Motivation
9. Responsibility
10. Interpersonal/communication skills
11. Ability to work in a clinical lab environment/handle stressful situations
12. Adherence to the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics

PLO #3 Artifact-1-BLS 1150 Foundations of Medical Laboratory Science Laboratory / Urinalysis Case Study Assignment

We are implementing a new online program where students will enter the MLS program as juniors. These students will not be required to take BLS 1150 Foundations of Medical Laboratory Science Laboratory. Therefore, the Urinalysis Case Study assignment will be moved to MLS 3150 Urinalysis & Immunology Lab. This change will take place in the during the 2021-2022 academic year.

Upon review of the Urinalysis exercise, it was clear that the current approach that is used to introduce clinical laboratory theory in lecture followed by videos instructing students on how to perform testing, and the hands-on student laboratory activity are successful teaching methodologies. However, we found that the laboratory activity is only useful for determining whether the students meet the “introduce” and “reinforce”

criteria and is not useful for determining "mastery". The assignment will be revised to better ascertain all levels of competency.

PLO #3 Artifact-2- MLS 4611 Advanced Topics and Case Correlations / Case Study Presentations

The MLS curriculum was recently updated (implemented with the 2024 cohort). MLS 4611 Advanced Topics and Case Correlations was removed from the curriculum. The case study presentations will be replaced by alternative assignments that are to be determined in courses that take place spring semester of the senior year. We will continue to evaluate this artifact until 2024.

PLO #5 Artifact-1- BLS 1100 Foundations of Medical Laboratory Science / Immunohematology Ethics Case Study Assignment

We are implementing a new online program where students will enter the MLS program as juniors. These students will not be required to take BLS 1100 Foundations of Medical Laboratory Science. Therefore, the Immunohematology Ethics Case Study Assignment will be moved to MLS 4350 Immunohematology Lab. This change will take place during the 2021-2022 academic year.

If no changes are being made, please explain why.

No changes are being made to the curriculum or pedagogies at this time for 3 reasons.

1. The MLS curriculum was recently updated (implemented with the 2024 cohort). The MLS program faculty need more time and data to determine if additional changes are warranted.
2. In addition, SLU is implementing new core requirements that need to be added to the MLS curriculum and we do not want to make any additional changes until we know exactly how the new SLU core requirements will affect the MLS program.
3. The artifacts and rubrics used to evaluate the PLOs have been changed, updated, and improved upon since the inception of the PLO report in 2018/2019. We want at least 3 consecutive assessment periods where static artifacts are used to accurately evaluate each PLO.

7. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

Many changes were made to either artifacts or assessment rubrics based upon reviewing assessment data from AY 18/19 and AY20/21. For example, in AY18/19 we decided to switch the ethics cases used to assess PLO #1 and PLO #3. Unfortunately, we were unable to assess this change due to the ethics cases not being assigned as explained above.

B. How has this change/have these changes been assessed?

Unfortunately, we were unable to assess this change due to the ethics cases not being assigned as explained above.

C. What were the findings of the assessment?

Unfortunately, we were unable to assess this change due to the ethics cases not being assigned as explained above.

D. How do you plan to (continue to) use this information moving forward?

The artifacts and rubrics used to evaluate the PLOs have been changed, updated, and improved upon since the inception of the PLO report. We want at least 3 consecutive assessment periods where static artifacts are used to accurately evaluate each PLO.

IMPORTANT: Please submit any assessment tools and/or revised/updated assessment plans along with this report

Appendices

Appendix 1: Assessment Rubrics Used to Evaluate PLO #1, 3, and 5

MEDICAL LABORATORY SCIENCE (MLS)		
Program Learning Outcome (PLO #1): Students will demonstrate respect for human life with regard to all aspects of laboratory testing.		
Introduce**	**Reinforce****	**Master****
• Students recognize that every test is attached to a real person by treating all specimens and patient information the same regardless of age, sex, gender identity, ethnicity, personal history, etc., of the patient.	• Perform all testing and reporting of results in an efficient manner while maintaining accuracy.	• Assess quality of the specimen and test results and takes appropriate action if either are unacceptable.

****IMPORTANT NOTES:** The ratings, identified by the column headings, are of increasing complexity moving across the table (from left to right).

MEDICAL LABORATORY SCIENCE (MLS)		
Program Learning Outcome (PLO #3): Students will apply critical reasoning to solve laboratory-based case studies.		
Introduce**	**Reinforce****	**Master****
• Recognizes normal from abnormal results.	• Chooses appropriate next steps in each case.	• Proposes solutions to laboratory-based case study problems with justification.

****IMPORTANT NOTES:** The ratings, identified by the column headings, are of increasing complexity moving across the table (from left to right).

MEDICAL LABORATORY SCIENCE (MLS)		
Program Learning Outcome (PLO #5): Students will adhere to the principles found in the American Society for Clinical Laboratory Science (ASCLS) Professional Code of Ethics		
Introduce**	**Reinforce****	**Master****
• Identifies central ethical issues and uses them as a basis for ethical evaluation.	• Formulates an implementation plan that delineates the execution of the decision	• Formulates an implementation plan that delineates the execution of the decision and that evidences a thoughtful reflection on the benefits and risks of action.

****IMPORTANT NOTES:** The ratings, identified by the column headings, are of increasing complexity moving across the

table (from left to right).

Appendix 2: ASCLS Code of Ethics

Preamble

The Code of Ethics of the American Society for Clinical Laboratory Science sets forth the principles and standards by which Medical Laboratory Professionals and students admitted to professional education programs practice their profession.

I. Duty to the Patient

Medical Laboratory Professionals' primary duty is to the patient, placing the welfare of the patient above their own needs and desires and ensuring that each patient receives the highest quality of care according to current standards of practice. High quality laboratory services are safe, effective, efficient, timely, equitable, and patient-centered. Medical Laboratory Professionals work with all patients and all patient samples without regard to disease state, ethnicity, race, religion, or sexual orientation. Medical Laboratory Professionals prevent and avoid conflicts of interest that undermine the best interests of patients.

Medical Laboratory Professionals are accountable for the quality and integrity of the laboratory services they provide. This obligation includes maintaining the highest level of individual competence as patient needs change, yet practicing within the limits of their level of practice. Medical Laboratory Professionals exercise sound judgment in all aspects of laboratory services they provide. Furthermore, Medical Laboratory Professionals safeguard patients from others' incompetent or illegal practice through identification and appropriate reporting of instances where the integrity and high quality of laboratory services have been breached.

Medical Laboratory Professionals maintain strict confidentiality of patient information and test results. They safeguard the dignity and privacy of patients and provide accurate information to patients and other health care professionals. Medical Laboratory Professionals respect patients' rights to make decisions regarding their own medical care.

II. Duty to Colleagues and the Profession

Medical Laboratory Professionals uphold the dignity and respect of the profession and maintain a reputation of honesty, integrity, competence, and reliability. Medical Laboratory Professionals contribute to the advancement of the profession by improving and disseminating the body of knowledge, adopting scientific advances that benefit the patient, maintaining high standards of practice and education, and seeking fair socioeconomic working conditions for members of the profession.

Medical Laboratory Professionals accept the responsibility to establish the qualifications for entry to the profession, to implement those qualifications through participation in licensing and certification programs, to uphold those qualifications in hiring practices, and to recruit and educate students in accredited programs to achieve those qualifications.

Medical Laboratory Professionals establish cooperative, honest, and respectful working relationships within the clinical laboratory and with all members of the healthcare team with the primary objective of ensuring a high standard of care for the patients they serve.

III. Duty to Society

As practitioners of an autonomous profession, Medical Laboratory Professionals have the responsibility to contribute from their sphere of professional competence to the general well-being of society. Medical Laboratory Professionals serve as patient advocates. They apply their expertise to improve patient healthcare outcomes by eliminating barriers to access to laboratory services and promoting equitable distribution of healthcare resources.

Medical Laboratory Professionals comply with relevant laws and regulations pertaining to the practice of Clinical Laboratory Science and actively seek, to change those laws and regulations that do not meet the high standards of care

and practice.

Pledge to the Profession
As a Medical Laboratory Professional, I pledge to uphold my duty to Patients, the Profession and Society by:

- Placing patients' welfare above my own needs and desires.
- Ensuring that each patient receives care that is safe, effective, efficient, timely, equitable and patient-centered.
- Maintaining the dignity and respect for my profession.
- Promoting the advancement of my profession.
- Ensuring collegial relationships within the clinical laboratory and with other patient care providers.
- Improving access to laboratory services.
- Promoting equitable distribution of healthcare resources.
- Complying with laws and regulations and protecting patients from others' incompetent or illegal practice
- Changing conditions where necessary to advance the best interests of patients.

Appendix 3: Microbiology Ethics Case Study Assignment

BLS 1100 Foundations of MLS Ethics Case Study Assignment
Ethics Case - Clinical Microbiology

You are working on the genital cultures bench and have identified *Neisseria gonorrhoeae* as the patient's infectious agent. As you are entering the results in the computer, you notice the patient is your best friend's spouse. Your friend knows that you work in the Clinical Microbiology Laboratory where the culture was performed and asks whether you have seen the results.

HIPPA regulations (see note below) forbid the release of patient information except as defined in the policy which excludes telling anyone including the patient without permission from the patient's physician or primary health care provider.

Note: In 1996, United States Congress enacted the Health Insurance Portability and Accountability Act, known as HIPAA. HIPAA is a federal mandate overseen by the U.S. Department of Health and Human Services and governs the use and disclosure of individually identifiable health information. This rule is commonly referred to as the HIPAA privacy regulation.

Ethical Dilemma: Use the model discussed in class to complete the following:

1. Describe the dilemma.

2. Determine what personal and professional values pertain to the problem.

3. Propose two approaches to solving the problem and identify the likely consequences of each in relation to those values.

4. How would you handle this situation and why?

Appendix 4: Urinalysis Case Study Assignment

Name: _____ **Major: _____**

CASE STUDY:
A fresh, first morning urine sample was obtained from a 27-year-old female complaining of frequency and painful urination. A urinalysis revealed the following:

Physical/Chemical	
Color:	yellow
Clarity:	turbid
Specific gravity:	1.024
pH:	7.5
Protein:	trace
Glucose:	negative
Ketone:	negative
Bilirubin:	negative
Blood:	trace
Nitrite:	positive
Leukocyte esterase:	positive
Urobilinogen:	1 Ehrlich unit

Microscopic	
RBC/hpf:	3-5
WBC/hpf:	25-30
Other:	many bacteria

12. Circle the abnormal result(s). (2 points)

13. Listed below are three disorders. Choose the disorder which is the most likely cause for the results obtained. JUSTIFY your choice and EXPLAIN WHY each of the other disorders is not an appropriate choice. (4 points)

    a. Urinary tract infection (UTI)
    b. Kidney stone
    c. Diabetic ketoacidosis

14. What additional lab testing should be performed to confirm your diagnosis? (2 points)

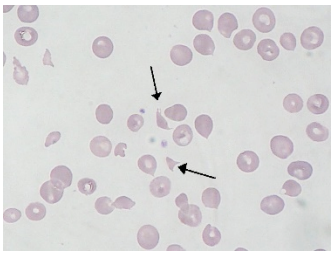
Appendix 5: Advanced Topics Sample Case Study

A 58-year-old male patient presents with complaints of vomiting, loose stools and crampy abdominal pain over the last 3 days. He has

had several BM per day and has noted mucus in the stools, at times tinged with blood. He has had a subjective (feel, not measured) fever and chills over the last day. No one else is sick at home. He has not traveled recently and had no previous change in diet.

- Past Medical History: DM II
- Vital signs on admission:
    - Temperature 101F
    - Pulse rate 110/min & Blood pressure 98/60 mm Hg supine
    - Pulse rate 125/min & Blood pressure 85/65 mm Hg upright

- Laboratory tests:
    - Hematology
        - Hemoglobin 10.6 g/dL
        - Hematocrit 31%
        - Platelet count 19,000/uL
        - WBC 14,300/ uL
        - ESR: 62 (0-20mm/hr)



    - Chemistry:
        - Na 132 meq/L (136-148 meq/L)
        - K 6.7 meq/L (3.5-5.0 meq/L)
        - Cl 103 meq/L
        - HCO3 18 meq/L
        - Glucose 331mg/dL (60-99 mg/dL)
        - Albumin 4.0 g/dL (3.5-5g/dL)
        - Urea 97 mg/dL (8-35mg/dl)
        - Creatinine 3.1 mg/dL (0.6-1.6 mg/dL)
        - LDH 480 U/L (140-280 U/L) h
        - Total BR 10.5 mg/dL (0.3 to 1.9 mg/dL)
        - Indirect BR 9.3 mg/dL (0.2 to 0.7 mg/dL)
        - Serum haptoglobin 5 mg/dL (30-200 mg/dL)
        - No hepatitis A

    - Urinalysis:
        - Specific gravity 1.020
        - pH 6.0
        - Blood 2(+)
        - Protein 3(+)
        - Glucose 3(+)
        - Ketone 1(+)
        - Bilirubin (-)
        - WBC 2-4/HPF
        - RBC 14-16/HPF

    - Blood Bank: direct Coombs negative
    - Microbiology: both blood and stool cultures positive for E. coli H7:0157

Questions:

1. What disease explains the symptoms and lab results?
2. What is the pathophysiology of this disease?
3. What are the principles behind the diagnostic lab tests, and how are the abnormal lab results related to the pathophysiology of the disease?
4. What is the treatment and prognosis for this condition?

Appendix 6: Immunohematology Ethics Case Study Assignment

Ethics Case 2 - Immunohematology (Blood Bank)

Herbie is the dayshift (7:00 am-3:30 pm) Medical Laboratory Scientist (MLS) in the Immunohematology (Blood Bank)

Laboratory at Agglutination Medical Center. Suppose that you are the evening shift MLS who works from 3:00-11:30 pm. Prior to your arrival on this day, Herbie performed a STAT blood typing test on a patient. At the time the test was ordered, the surgery team alerted Herbie that the patient will likely need two units of blood soon. The following results were obtained.

Patient Cells +			**Patient Serum +**	
Anti-A reagent	Anti-B reagent	Anti-A,B reagent	a cells commercial reagent	b cells commercial reagent
negative	negative	negative	positive	positive

After contemplating the results obtained above for a few moments, Herbie recorded the following interpretation of these results as: ABO Type AB Blood. Moments later, a member of the surgery team called Herbie & requested two (2) units of blood for the patient.

Confident of his test interpretation and without any further testing, Herbie enters and releases the results. Standard protocol in the blood bank lab is for a member of each shift to check the test interpretation and result entries of all work performed on the previous shift.

You are the designee on this particular day. Upon inspection of Herbie's paperwork trail, you detect the error in interpretation of the test results. You debate reporting this to the BB supervisor & the lab manager because Herbie has been in trouble for similar issues before. The last time, he was told that he would only get one more chance before being fired. You "ratted" on him last time at which point Herbie threatened you and your family. Frankly, you are scared of him. What action should you take?

Ethical Dilemma: Use the model discussed in class to complete the following:

1. Describe the dilemma.
2. Determine what personal and professional values pertain to the problem.
3. Propose two approaches to solving the problem and identify the likely consequences of each in relation to those values.
4. How would you handle this situation and why?