Weber State University
Annual Assessment of Evidence of Learning

Cover Page

Department/Program:
Academic Year of Report: 2015/16
Date Submitted:
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A. **Brief Introductory Statement:**
Please review the Introductory Statement and contact information for your department displayed on the assessment site: **http://www.weber.edu/portfolio/departments.html** - if this information is current, please place an 'X' below. No further information is needed. We will indicate "Last Reviewed: [current date]" on the page.

___ Information is current; no changes required.
_X_ Information is not current; updates below.

Update:
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B. Mission Statement

Please review the Mission Statement for your department displayed on the assessment site: **http://www.weber.edu/portfolio/departments.html** - if it is current, please indicate as much; we will mark the web page as "Last Reviewed [current date]". No further information is needed.
If the information is not current, please provide an update:

__X_ Information is current; no changes required.
___ Information is not current; updates below.

C. Student Learning Outcomes

Please review the Student Learning Outcomes for your department displayed on the assessment site: **http://www.weber.edu/portfolio/departments.html** - if they are current, please indicate as much; we will mark the web page as "Last Reviewed [current date]". No further information is needed.
If they are not current, please provide an update:

__X_ Information is current; no changes required.
___ Information is not current; updates below.

Measurable Learning Outcomes

At the end of their study at WSU, students in this program will:

1) …
2) …
3) …
4) …
5) …
6) etc.

D. **Curriculum**

Please review the Curriculum Grid for your department displayed on the assessment site: **http://www.weber.edu/portfolio/departments.html** - if it is current, please indicate as much; we will mark the web page as "Last Reviewed: [current data]". No further information is needed.
If the curriculum grid is not current, please provide an update:

___ Information is current; no changes required.
__X_ Information is not current; updates below

Curriculum Map

Core Courses in Department/Program	Department/Program Learning Outcomes							
	Goal 1	Goal2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7	Goal 8
MLS 1000 Core Clinical Laboratory Skills	1	0	2	1	1	1	2	1
MLS 1001 Online Orientation for AAS Degree*	0	0	0	0	0	0	0	0
MLS 1113 Introduction to Laboratory Practices	4	1	4	3	2	4	1	1
MLS 1123 Principles of Hematology and Hemostasis	2	3	2	3	1	3	3	1
MLS 2211 Principles of Clinical Chemistry I	3	4	3	3	0	3	2	2
MLS 2212 Principles of Clinical Microbiology I	3	3	4	2	1	1	3	3
MLS 2213 Principles of Clinical Chemistry II	3	2	3	4	3	4	1	2
MLS 2214 Principles of Clinical Microbiology II	3	3	4	2	1	1	3	3
MLS 2210 Principles of Clinical Immunohematology	2	1	3	1	1	1	3	1
MLS 3301 Online Orientation for BS Degree*	0	0	0	0	0	0	0	0
MLS 3302 Advanced Laboratory Practices	4	4	0	3	3	0	0	3
MLS 3310 Advanced Clinical Immunohematology	3	3	4	3	3	2	4	3
MLS 3313 Advanced Hematology and Hemostasis	3	3	3	4	2	4	4	3
MLS 3314 Advanced Clinical Chemistry	3	3	4	3	3	3	3	2
MLS 3316 Advanced Clinical Microbiology and Molecular Diagnostics	3	3	3	3	3	2	3	3
MLS 4409 Clinical Correlation	3	0	0	3	3	3	3	3

Core Courses in Department/Program	Department/Program Learning Outcomes							
	Goal 1	Goal2	Goal 3	Goal 4	Goal 5	Goal 6	Goal 7	Goal 8
MLS 4411 MLS Simulated Laboratory I	0	0	0	3	0	0	3	3
MLS 4412 MLS Simulated Laboratory II	0	0	0	3	0	0	3	3
MLS 4415 Laboratory Teaching and Supervision I	3	0	1	2	0	0	4	3
MLS 4803 Research Projects in MLS I	3	1	1	1	0	0	2	3
MLS 4804 Research Projects in MLS II	3	3	3	3	3	3	3	3

Key: Degree to which course met program goals: 0 = Not Applicable, 1 = Introduced, 2 =Emphasized, 3 =Utilized, 4=Assessed Comprehensively

*The MLS 1001 and 3301 online orientation courses are designed to provide the online MLS student with some keys to online success. The online environment is different than the traditional classroom in many respects. These courses were developed in response to student issues regarding online success. Knowing what to expect and having the resources and contacts available help minimize frustrations and allow the new online student to be successful in their coursework and degree completion. These two courses are specific to getting our online only students started and do not contain any MLS core learning material. These courses are designed to prepare the student for the online environment and specifics of the MLS program. Course components include: study and computer skills, learning styles, MLS student handbook, library tutorial, faculty introductions, contact and troubleshooting information, and academic advisement tailor-made specifically for AAS degree and BS MLS students online. MLS 1001 & MLS 3301 are identical courses, with the exception of academic advisement. MLS 1001 is geared toward the AAS degree, MLS 3301 towards the BS degree. MLS 2215 is now MLS 2210. MLS 4414 and MLS 4417 are now merged into a single 3 credit hour course called MLS 4415. MLS 4801 and MLS 4802 are now MLS 4803 and MLS 4804

Additional Information (if needed)

E. Assessment Plan

Please review the Assessment Plan for your department displayed on the assessment site: http://www.weber.edu/portfolio/departments.html - if the plan current, please indicate as much; we will mark the web page as "Last Reviewed [current date]". No further information is needed.

The site should contain an up-to-date assessment plan with planning going out a minimum of three years beyond the current year. Please review the plan displayed for your department at the above site. The plan should include a list of courses from which data will be gathered and the schedule, as well as an overview of the assessment strategy the department is using (for example, portfolios, or a combination of Chi assessment data and student survey information, or industry certification exams, etc.).

Please be sure to include your planned assessment of any general education courses taught within your department. This information will be used to update the General Education Improvement and Assessment Committee's planning documentation.

Assessment plan: **Information is current; no changes required.**

F. Report of assessment results for the most previous academic year:

There are a variety of ways in which departments can choose to show evidence of learning. This is one example. The critical pieces to include are 1) what learning outcome is being assessed, 2) what method of measurement was used, 3) what the threshold for 'acceptable performance' is for that measurement, 4) what the actual results of the assessment were, 5) how those findings are interpreted, and 6) what is the course of action to be taken based upon the interpretation.

A. Evidence of Learning: Courses within the Major
(**this is a sample page for purpose of illustration only**; a blank template can be found on the next page)

Sample only - Evidence of Learning: Courses within the Major – **Sample only**					
Measurable Learning Outcome: Students will…	Method of Measurement*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results
Learning Outcome 1:	Measure 1: A set of 10 multiple choice questions from Exam 1	Measure 1: 85% of students will score 80% or better on 10 questions	Measure 1: 93% of students scored 80% or better on 10 questions	Measure 1: Students successfully demonstrated interpretation skills	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Student presentations	Measure 2: Using a rubric to assess the presentation, 90% of students will achieve a score of 75% or above.	Measure 2: the threshold was met, but students performed poorly (avg. = 1.8) on one criterion.	Measure 2: unclear where the issue is	Measure 2: provide better explanation of the expectations for this criterion and re-assess.
Learning Outcome 2:	Measure 1: Results of standardized test	Measure 1: 85% of students will score at or above the national average.	Measure 1: 90% of students scored above national average	Measure 1: Students successfully demonstrated competence; lowest average score was in transfer of knowledge, where only 69% of questions were answered correctly.	Measure 1: Faculty agree to include review of transfer in all related courses; this outcome will be reassessed during next review
	Measure 2: Students are surveyed about their perceived competence of the outcome	Measure 2: On a 5 point Likert scale, 90% of students will indicate 4 or 5	Measure 2: Less than half of students felt competence with this outcome.	Measure 2: Students tested well, but their perceived competence was lower than expected.	Measure 2: Students will be given more opportunity to practice this skill with immediate feedback.

*Can be a mix of direct and indirect measures, but at least one measure must be direct

Evidence of Learning: Courses within the Major: MLS 1000

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Approximately 30% of each of the 7 exams	Measure 1: 100% of students will score 80% or better on specified exam questions	Measure 1: 100% of students scored 80% or better on specified exam questions	Measure 1: All students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students practice these skills with a qualified mentor on a weekly basis	Measure 2: 100% of students will correctly perform required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills to mentor satisfaction	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of	Measure 1: Approx. 10% of multiple choice questions on exams 2,3,5,6 and 7 Approx. 50% of multiple choice questions on exams 1 and 4	Measure 1: 100% of students will score 80% or on these specific questions	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated knowledge of evaluating specimen acceptability and optimal analysis methods.	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
quality assurance procedures.	Measure 2: Demonstrate knowledge of specimen criteria and properly perform simple laboratory procedures for lab mentor	Measure 2: 100% of students will correctly determine proper sample suitability and properly perform simple lab procedures	Measure 2: 100% of students were able to correctly determine proper sample suitability and perform simple lab procedures	Measure 2: All students correctly determined proper sample suitability and perform lab procedures to mentor satisfaction	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: 7 lab quizzes and approx. 10-20% of each exam with multiple choice questions	Measure 1: 100% of students will score 80% on exams and quizzes	Measure 1: 100% of students scored 100% on quizzes (multiple attempts allowed)	Measure 1: All students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Assess unknowns with accuracy during 4 laboratory practical exams	Measure 2: 100% of students will score 80% or better on 4 laboratory practical exams	Measure 2: 99% of students scored 80% or better on 4 laboratory practical exams.	Measure 2: Most students performed the required skills during the 4 laboratory practical exams.	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: A set of 20 multiple choice questions from Exams 2 and 3	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Student properly demonstrates trouble shooting in various areas of the lab to lab mentor	Measure 2: 100% of students will achieve at least 80% competency in this area	Measure 2: 100% of students achieved at least 80% in this area based on mentor assessment	Measure 2: All students demonstrated acceptable problem solving skills	Measure 2: No clinical changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: A set of 25 questions from Exams 2, 3, 5, 6 and 7	Measure 1: 100% of students will score 80% or better on 25 questions.	Measure 1: 100% of students scored 80% or better on 25 questions	Measure 1: All students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2:	Measure 2:

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Student will be required to respond in group discussions in a professional manner and will turn in course work in a timely manner	Measure 1: 100% of students will turn in course work , late work is penalized 100% of students will post to group discussions	Measure 1: 99% of students turned in course work in a timely manner 100% of students posted to group discussions	Measure 1: All students responded to discussions in a professional manner, most course work was on time, late submission were pre-arranged or emergency situations.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Affective Objectives on Clinical Competencies	Measure 2: 100% of students will score 80% or better	Measure 1: 100% of students scored 80% or better	Measure 1: All students were able to prove competency in this area when assessed by their lab mentor	Measure 1: No curricular or pedagogical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: N/A	Measure 1: N/A	Measure 2: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Personal Interactive and Professional Skills on Clinical Competencies.	Measure 2: 100% of students will score 80% or better	Measure 2: 100% of students scored 80% or better	Measure 2: All students were able to prove competency in this area	Measure 2: : No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: This course is designed to provide additional training to individuals employed in the health care industry who may be interested in learning an additional set of medical skills to enhance their employability. The program is designed to encourage medical assistants, phlebotomists, certified nursing practitioners and other health care workers to achieve competencies which better serve patient care in settings requiring basic laboratory testing as a part of the facility's health care services. The MLS 1000 course is designed to teach core clinical laboratory skills to individuals from various health care professions. The curriculum will focus on basic laboratory methods in quality control, quality assurance,

information recording and transfer, normal and abnormal laboratory values, and problem recognition. Students will receive basic technical instruction in phlebotomy, specimen collection and processing, and laboratory instrumentation in the areas of hematology, serology, urinalysis, and clinical chemistry. This course is an introductory level course, so learning goals 1,4,5,6, and 8 are geared toward exposing/introducing the student to several aspects of the laboratory as a whole. Learning goal 2 applies to mathematical calculations, at this level, students are not expected to complete complex calculations. Learning goals 3 and 7 are emphasized in this course. In all cases, the measures show that 100% of students are meeting requirements of the seven applicable learning goals at 80% or higher, so no changes are needed at this time. Data is based on seven sections taught since spring 2012 to present.

Evidence of Learning: Courses within the Major: MLS 1113

Evidence of Learning: Courses within the Major: MLS 1113					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: 6 Unit exams and one comprehensive final where students are assessed through multiple choice questions and case study scenarios	Measure 1: Students are expected to score 80% or better to prove knowledge and competency	Measure 1: The majority of students were able to achieve 80% or higher competency	Measure 1: Only the students who achieve competency are eligible to be admitted to the MLS program.	Measure 1: No changes needed at this time
	Measure 2 12 laboratory sessions that focus on concept application and practical work	Measure 1: Students are expected to score 80% or better to prove knowledge and competency	Measure 1: The majority of students were able to achieve 80% or higher competency	Measure 1: Only the students who achieve competency are eligible to be admitted to the MLS program.	Measure 1: No changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: Multiple choice questions in Exam 4 assess absolute and raw sperm counts	Measure 1: Students will score 80% or better on 50 questions.	Measure 1: The majority of students scored 80% or better on Exam 4.	Measure 1: Most students successfully applied mathematical calculations to laboratory situations.	Measure 1: No changes needed at this time
	Measure 2: Formative assessment in the form of a group quiz during lecture following the sperm count lecture assesses calculating absolute and raw sperm counts.	Measure 2: Students will correctly perform mathematical calculations in class and answer questions as a group and be able to apply to laboratory situations.	Measure 2: The majority of the students correctly performed mathematical calculations in class.	Measure 2: Students understand the concept and are able to apply it in laboratory situations.	Measure 2: No changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing,	Measure 1: Unit 4 Exam tests knowledge theory of Phlebotomy	Measure 1: The majority of the students will score 80% or better on 50 questions	Measure 1: The majority of students scored 80% or better on Exam 4.	Measure 1: Students successfully demonstrated their understanding of phlebotomy theory.	Measure 1: No changes needed at this time

Evidence of Learning: Courses within the Major: MLS 1113					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
analysis, interpretation, and use of quality assurance procedures.	Measure 2: Demonstrate knowledge of phlebotomy by successfully performing a syringe and a vacutainer draw on a classmate.	Measure 2: Students will correctly perform phlebotomy on a classmate.	Measure 2: The majority of students were able to successfully perform phlebotomy.	Measure 2: Most students were able to apply the theory learned and successfully draw blood.	Measure 2: No changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Exam 3 uses 50 multiple choice questions to assess theory on reagent test strips and correlate it with urine microscopic analysis.	Measure 1: Students will score 80% or better on 50 questions.	Measure 1: The majority of students scored 80% or better on 50 questions	Measure 1: Most students successfully correlated laboratory theory of reagent test strips to microscopic urinalysis performed as practical work.	Measure 1: No changes needed at this time
	Measure 2: Five laboratory sessions requiring students to perform urine microscopic examination and reagent test strips.	Measure 2: Students must score 80% or better on laboratory assignments.	Measure 2: The majority of students scored 80% or better on urine microscopic and reagent test strips laboratory assignments.	Measure 2: The majority of students performed the required skills during their laboratory assignments demonstrating proficiency in urinalysis.	Measure 2: No clinical changes needed at this time

Evidence of Learning: Courses within the Major: MLS 1113					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: A set of Urinalysis Case Studies from Unit 2.	Measure 1: Students will score 80% or better on 6 case studies.	Measure 1: The majority of students scored 80% or better on 6 case studies.	Measure 1: The majority of students successfully demonstrated theory underlying urinalysis and how it relates to renal disease.	Measure 1: No changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: A set of Urinalysis Case Studies from Unit 2.	Measure 1: Students will score 80% or better on 6 case studies.	Measure 1: The majority of students scored 80% or better on 6 case studies.	Measure 1: The majority of students successfully demonstrated theory underlying urinalysis and how it relates to renal disease.	Measure 1: No changes needed at this time
	Measure 2: 50 questions on Exam 3 dealing with renal disease.	Measure 2: Students will score 80% or better on the Unit 2 exam.	Measure 2: The majority of students were able to score 80% or better.	Measure 2: The majority of students correctly related laboratory findings to common renal diseases.	Measure 2: No changes needed at this time.
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus.	Measure 1: Students will attend laboratory section and be punctual.	Measure 1: The majority of students attended laboratory sessions unless previously excused.	Measure 1: The majority of students attended laboratory sessions and most were punctual.	Measure 1: No changes needed at this time.
	Measure 2: Adherence to laboratory dress code and safety procedures through viewing safety videos	Measure 2: Students will comply with dress code and safety procedures.	Measure 2: All students complied with dress code and safety procedures.	Measure 2: All students were in compliance with dress code and safety procedures.	Measure 2: Nol changes needed at this time

Evidence of Learning: Courses within the Major: MLS 1113					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	and discussions during the first lab session.				
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Class discussions and open-ended questions	Measure 1: Students will participate in class discussions when open ended questions are asked regarding the material.	Measure 1: Students are able to communicate their knowledge through class discussion	Measure 1: All students were able to communicate their knowledge through class discussions.	Measure 1: No changes needed at this time.
	Measure 2: Reflective questions as part of phlebotomy lab competency.	Measure 2: Students will be able to respond to 2 reflective questions and evaluate their own performance.	Measure 2: Students will evaluate themselves and offer suggestions on how they can improve their phlebotomy skills.	Measure 2: Students reflected on their skills and self-evaluated allowing them to find ways to improve.	Measure 2: No clinical changes needed at this time.

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 1113: Introduction to laboratory practices.

This course encompasses principles and applications to laboratory testing including safe practices for the laboratory practitioner, specimen quality assurance, phlebotomy, urinalysis, basic concepts in clinical immunology, and clinical approaches to immunological testing. Laboratory session addresses the principles and applications to laboratory testing including safe practices for the laboratory practitioner, specimen quality assurance, phlebotomy, urinalysis, basic concepts in clinical immunology, and clinical approaches to immunological testing.

Evidence of Learning: Courses within the Major: MLS 1123 Principles of Hematology and Hemostasis

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: The Unit 1 exam tests the principles of hematology testing. The Unit 5 exam tests the principles of hemostasis testing. 50 multiple choice questions each.	Measure 1: 100% of students will score 80% or better on both exams.	Measure 1: 95% of students scored 80% or better on both exams.	Measure 1: 95% of students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 17 graded laboratory practice sessions and 1 final comprehensive lab exam	Measure 2: 100% of students will correctly perform required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: 8 multiple choice questions requiring mathematical calculations in exam 1 and 5	Measure 1: 100% of students will score 80% or better on 8 questions.	Measure 1: 95% of students scored 80% or better on 8 questions.	Measure 1: 95% of students successfully applied mathematical calculations to laboratory situations.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2:6 laboratory sessions requiring applications of laboratory mathematical calculations	Measure 2: 100% of students will correctly perform mathematical calculations in 6 laboratory situations.	Measure 2: 100% of students correctly performed mathematical calculations in 6 laboratory situations.	Measure 2: All students correctly performed mathematical calculations in 6 laboratory situations.	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of	Measure 1: 50 multiple choice questions from Exam 1 and 10 multiple choice questions from Exam 5	Measure 1: 95% of students will score 80% or better on 60 questions	Measure 1: 95% of students scored 80% or better on 20 questions.	Measure 1: 95% of students successfully demonstrated knowledge of evaluating specimen acceptability and optimal analysis methods.	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
quality assurance procedures.	Measure 2: Demonstrate proper knowledge of specimen criteria in a hematology laboratory setting	Measure 2: 100% of students will correctly determine proper sample suitability.	Measure 2: 100% of students were able to correctly determine proper sample suitability for hematology analysis	Measure 2: All students correctly determined proper sample suitability.	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: 50 multiple choice questions each from exams 2, 3, and 4	Measure 1: 100% of students will score 80% or better on all questions.	Measure 1: 95% of students scored 80% or better on 20 questions	Measure 1: 95% of students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Evaluate abnormal hematology smears from a wide variety of disorders during 6 laboratory sessions. Assess competency during 1 laboratory practical exam	Measure 2: 100% of students will score 80% or better on the laboratory practical exam and participate in all required laboratory sessions.	Measure 2: 95% of students scored 80% or better on the laboratory practical exam and participated in all required laboratory sessions.	Measure 2: Most students performed the required skills during the laboratory practical exam and required laboratory sessions.	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: A set of 15 multiple choice questions from Exams 1 and 5	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students correlate patient history and diagnoses to laboratory findings in 6 laboratory sessions	Measure 2: 100% of students will correctly correlate patient history and diagnoses to laboratory findings in 6 laboratory sessions	Measure 2: 95% of students were able to correctly correlate patient history and diagnoses to laboratory findings in 6 laboratory sessions	Measure 2: Most students correctly correlated patient history and diagnoses to laboratory findings in 6 laboratory sessions	Measure 2: No clinical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: 50 multiple choice questions each from exams 2, 3, and 4, and 25 questions from exam 5.	Measure 1: 100% of students will score 80% or better on 50 multiple choice questions each from exams 2, 3, and 4, and 25 questions from exam 5.	Measure 1: 95% of students scored 80% or better on 50 multiple choice questions each from exams 2, 3, and 4, and 25 questions from exam 5.	Measure 1: Most students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: In 6 laboratory sessions students relate laboratory findings to common diseases	Measure 2: 100% of students will perform the required skills in the laboratory	Measure 2: 100% of students were able to relate laboratory findings to common diseases.	Measure 2: All students correctly related laboratory findings to common diseases.	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend laboratory section and be punctual.	Measure 1: 100% attendance in laboratory section. 95% punctuality	Measure 1: All students attended laboratory section and most were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Adherence to laboratory dress code and safety procedures	Measure 2: 100% of students will comply with dress code and safety procedures.	Measure 2: 100% of students complied with dress code and safety procedures	Measure 2: All students were in compliance with dress code and safety procedures.	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Laboratory etiquette and expectations are defined in the syllabus. Measured by punctuality and participation.	Measure 1: 100% of students will be punctual to laboratory sessions, and remain task-oriented throughout the session in order to receive full participation credit.	Measure 1: 95% of students were punctual to laboratory sessions, and remained task-oriented throughout the session and received full participation credit.	Measure 1: Most students demonstrated effective communication skills through punctuality and task-orientedness during laboratory sessions.	Measure 1: : No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 1123 is an introductory hematology course covering the theory and principles of hematology and hemostasis relevant to routine laboratory testing, normal erythrocyte physiology and associated disorders, normal leukocyte physiology and associated non-malignant and malignant disorders, and normal platelet and coagulation physiology and associated disorders. MLS 1123 contains all eight of the program's identified learning goals, though in appropriately varying amounts. As noted in the curriculum map, learning goals 5 and 8 are areas of introduction, learning goals 1 and 3 are emphasized, and learning goals 2, 4, 6, and 7 are utilized. Data in this table is limited due to the short time frame of a new faculty member and reflects a course taught in Spring 2015, and an in-progress course in Fall 2016.

Evidence of Learning: Courses within the Major: MLS 2211

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Each exam covers testing specific to the covered units.	Measure 1: Each student must complete the exam with a score of at least 80%.	Measure 1: All students with passing grades achieved a score of at least 80% on each unit exam.	Measure 1: All students with passing grades showed an acceptable level of understanding of the theory behind the testing discussed.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Students will complete laboratory exercises, which require understanding of the testing methods.	Measure 2: The total points earned from the laboratory must equal at least 80% of the points possible.	Measure 2: All students with passing grades earned at least 80% of the total points possible.	Measure 2: All students with passing grades showed competency of the covered topics and laboratory exercises.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: Students must complete a 50-question math exam.	Measure 1: Each student must pass the exam with a score of at least 80%.	Measure 1: All students with passing grades scored at least 80%.	Measure 1: All students with a passing grade can successfully complete laboratory mathematics.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Graded laboratory exercises, which include calculations.	Measure 2: All students must correctly complete laboratory calculations.	Measure 2: All students with passing grades earned at least 80% of the total points possible.	Measure 2: All students with passing grades can successfully complete laboratory mathematics.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis,	Measure 1: Students will complete a laboratory final with several exercises ranging in difficulty.	Measure 1: All students must complete the laboratory final with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can successfully complete laboratory testing procedures ranging in difficulty.	Measure 1: Findings indicate no changes are needed at this time.

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
(CONT) interpretation, and use of quality assurance procedures.	Measure 2: Demonstrate knowledge of accurate sample requirements and collection procedures.	Measure 2: Students will assess samples submitted for testing for acceptability.	Measure 2: All students with passing grades have accurately demonstrated knowledge of sample requirements.	Measure 2: All students can assess samples for testing as appropriate.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Students will correlate theory and terminology in all laboratory exercises.	Measure 1: Students will complete all laboratory correlation activities with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can correlate theory to practical laboratory situations.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Students must test unknown samples during laboratory exercises.	Measure 2: Students must complete the laboratory section with at least 80%.	Measure 2: All students with passing grades earned a score of at least 80%.	Measure 2: All students with passing grades can correlate theory to practical laboratory situations.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: Not applicable.	Measure 1: Not applicable.	Measure 1: Not applicable.	Measure 1: Not applicable.	Measure 1: Not applicable.
	Measure 2: Not applicable.	Measure 2: Not applicable.	Measure 2: Not applicable.	Measure 2: Not applicable.	Measure 2: Not applicable.
Learning Outcome 6: Relate laboratory findings to common disease. *(CONT)*	Measure 1: Each unit exam will test the student's ability to correlate laboratory findings to common diseases.	Measure 1: Each student must pass the exam with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can accurately correlate laboratory findings to common diseases.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Laboratory exercises require students to use disease correlation to	Measure 2: Students must identify laboratory results that	Measure 2: All students with passing grades have accurately correlated laboratory	Measure 2: All students with passing grades can correlate laboratory findings to disease	Measure 2: Findings indicate no changes are needed at this time.

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	laboratory findings as a QA tool.	are not consistent with patient diagnoses.	findings on assigned laboratory activities.	states covered in the course.	
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Unit 1 test contains 30 questions and includes professional behavior.	Measure 1:Students must pass the test with a score of at least 80%.	Measure 1: All students with passing grades scored at least 80% on the test.	Measure 1: All students with passing scores have an introductory understanding of professional behavior.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Adherence to proper laboratory dress code and common regulatory requirements (i.e. HIPPA)	Measure 2: Students must comply with dress code requirements for safety and HIPPA requirements.	Measure 2: All students with passing grades properly gowned laboratory clothing (i.e. lab coat) and showed compliance to HIPPA regulations they were exposed to.	Measure 2: All students with passing grades are aware of proper laboratory attire and HIPPA regulations that are discussed.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Laboratory exercises require students to communicate critical values to the healthcare provider.	Measure 1: All students must accurately identify all critical values and properly report them to the provider.	Measure 1: All students with passing grades were able to identify critical values.	Measure 1: All students with passing grades know the importance of prompt and professional interaction.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Instructor/ Professor observation of interactions amongst peers.	Measure 2: All students must adhere to the no hazing policy outlined in the course syllabus.	Measure 2: All students with a passing grade have interacted appropriately with their colleagues.	Measure 2: All students with passing grades know the importance of prompt and professional interaction.	Measure 2: Findings indicate no changes are needed at this time.

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 2211 is an introductory clinical chemistry course covering the theory and principles of clinical chemistry, including laboratory basics, HIPPA and harassment, carbohydrate metabolism, osmolality, electrolyte balance, iron metabolism, reagent preparation, non-protein nitrogen waste products, and blood gas analysis. MLS 2211 contains seven of the eight identified learning goals. This course does not include gathering additional data on patients, as it is rarely needed in the clinical chemistry department. The exposure level of each goal in this course is appropriate for the introductory students.

Evidence of Learning: Courses within the Major: MLS 2212

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: 3 quizzes (100% of questions), 4 exams and comprehensive final (75% of questions)	Measure 1: 100% of students will score 80% or better on all test questions (quizzes are excluded)	Measure 1: Approx. 92% of students scored 80% or better all exams (avg. 37 of 40 students)	Measure 1: 92% of students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 13 weeks of graded laboratory activities and 2 practical in-lab exams	Measure 2: 100% of students will score 80% or better by correctly performing required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: 2-3 questions per quiz and 4-5 questions per exam, fill-in-the blank and multiple choice	Measure 1: 100% of students will score 80% or better math questions	Measure 1: 100% of students scored 80% or better on math questions	Measure 1: All students successfully applied mathematical calculations to laboratory situations	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 6 weekly laboratory activities with 1-2 unknown patient specimens per week which utilize correct reporting of urine cultures involving mathematical calculations	Measure 2: 100% of students will score 80% or better on mathematical calculations in laboratory situations	Measure 2: 100% of students correctly performed mathematical calculations 80% or better in laboratory situations	Measure 2: All students correctly performed mathematical calculations in lab situations 80% of the time or better	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use	Measure 1: 13 weeks of graded laboratory activities, each involving identification of bacterial unknown specimens and 2 practical in-lab exams	Measure 1: 100% of students will score 80% or better on laboratory activities and practical exams	Measure 1: 100% of students scored 80% or better overall on final course laboratory grade	Measure 1: All students successfully demonstrated knowledge of evaluating specimen acceptability and optimal analysis methods.	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
of quality assurance procedures.	Measure 2: Demonstrate proper knowledge of quality assurance procedures in clinical microbiology laboratory	Measure 2: 100% of students will correctly determine proper quality assurance procedures in clinical microbiology laboratory	Measure 2: 100% of students were able to correctly determine proper quality assurance procedures in clinical microbiology laboratory	Measure 2: All students correctly determined quality assurance procedures in clinical microbiology laboratory	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: All course exams and 3 quizzes have 50% of questions that correlate theory/terminology to laboratory testing	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions	Measure 1: All students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Assess 4-5 weekly laboratory unknowns in each of the 13 laboratory activities and 1 comprehensive lab final	Measure 2: 100% of students will score 80% or better overall on course laboratory activates and comprehensive lab final	Measure 2: 100% of students scored 80% or better overall on course laboratory activates and comprehensive lab final	Measure 2: All students performed the required skills during 13 lab activates and comprehensive lab final	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: Four case study homework assignments in Unit 2 and Unit 3.	Measure 1: 100% of students must complete assignments	Measure 1: 100% of students completed the four assignments.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: Exams 2,3,4 and the final exam contain approximately 10% diagnostic questions	Measure 1: 100% of students will score 80% or better on the diagnostic questions	Measure 1: 100% of students scored 80% or better on the diagnostic questions	Measure 1: All students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Measure 2: In 11 of the weekly laboratory activities specimen source of unknowns is related to diseases	Measure 2: 100% of students will perform 80% or better relating specimen unknowns to related diseases	Measure 2: 100% of students were able to relate laboratory findings to common diseases 80% of the time	Measure 2: All students correctly related laboratory findings to common diseases.	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend laboratory section and be punctual.	Measure 1: 100% attendance in laboratory section. 95% punctuality	Measure 1: All students attended laboratory section and most were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Adherence to laboratory dress code and safety procedures	Measure 2: 100% of students will comply with dress code and safety procedures.	Measure 2: 100% of students complied with dress code and safety procedures	Measure 2: All students were in compliance with dress code and safety procedures.	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Correct reporting of laboratory results in 13 weekly activities.	Measure 1: 100% of students will correctly report results 80% or better on laboratory reports.	Measure 1: 100% of students were able to correctly report results 80% or better on laboratory reports.	Measure 1: All students were able to correctly report laboratory reports.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students work in teams for 6 of 13 weekly laboratory activities	Measure 2: 100 % of students will demonstrate effective team work during the 6 weeks of laboratory activates	Measure 2: 100% of students demonstrated effective team work.	Measure 2: All students demonstrated effective team work.	Measure 2: No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 2212 – Principles in Clinical Microbiology I is an introductory clinical microbiology course provides an in-depth coverage of clinically significant bacteria including epidemiology, pathogenicity, and procedures for traditional laboratory identification. Major organisms include Gram positive cocci enteric Gram negative rods, nonfermentative Gram negative bacilli and miscellaneous Gram negative

rods. This course contains all eight of the program's identified learning goals. In all cases, the measures show that 100% of the students are reaching all 8 goals at levels of 80% or above, so no curricular or clinical changes are seen as needed at this time.

Evidence of Learning: Courses within the Major: MLS 2213

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Each exam covers testing specific to the covered units.	Measure 1: Each student must complete the exam with a score of at least 80%.	Measure 1: All students with passing grades achieved a score of at least 80% on each unit exam.	Measure 1: All students with passing grades showed an acceptable level of understanding of the theory behind the testing discussed.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Students will complete laboratory exercises, which require understanding of the testing methods.	Measure 2: The total points earned from the laboratory must equal at least 80% of the points possible.	Measure 2: All students with passing grades earned at least 80% of the total points possible.	Measure 2: All students with passing grades showed competency of the covered topics and laboratory exercises.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: Multiple exams include questions covering reactions specific to that unit.	Measure 1: Each student must pass the exam with a score of at least 80%.	Measure 1: All students with passing grades scored at least 80%.	Measure 1: All students with a passing grade can successfully complete laboratory mathematics.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Graded laboratory exercises, which include calculations.	Measure 2: All students must correctly complete laboratory calculations.	Measure 2: All students with passing grades earned at least 80% of the total points possible.	Measure 2: All students with passing grades can successfully complete laboratory mathematics.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis,	Measure 1: Students will complete a laboratory final with several exercises ranging in difficulty.	Measure 1: All students must complete the laboratory final with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can successfully complete laboratory testing procedures ranging in difficulty.	Measure 1: Findings indicate no changes are needed at this time.

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
(CONT) interpretation, and use of quality assurance procedures.	Measure 2: Demonstrate knowledge of accurate sample requirements and collection procedures.	Measure 2: Students will assess samples submitted for testing for acceptability.	Measure 2: All students with passing grades have accurately demonstrated knowledge of sample requirements.	Measure 2: All students can assess samples for testing as appropriate.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Students will correlate theory and terminology in all laboratory exercises.	Measure 1: Students will complete all laboratory correlation activities with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can correlate theory to practical laboratory situations.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Students must test unknown samples during laboratory exercises.	Measure 2: Students must complete the laboratory section with at least 80%.	Measure 2: All students with passing grades earned a score of at least 80%.	Measure 2: All students with passing grades can correlate theory to laboratory situations.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: Students will evaluate a collection of tests to identify discrepancies.	Measure 1: All students must pass the panel exam with at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades are able to correlate multiple results for the identification of erroneous entries.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Some laboratory activities require the students to troubleshoot specimen/result discrepancies.	Measure 2: All Students must correct discrepancies in order to report out correct results with at least 80% accuracy.	Measure 2: All students with passing grades earned a score of at least 80%.	Measure 2: All students with passing grades are able to identify and correct discrepancies in order to provide accurate results.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: Each unit exam will test the student's ability to correlate laboratory findings to common diseases.	Measure 1: Each student must pass the exam with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can accurately correlate laboratory findings to common diseases.	Measure 1: Findings indicate no changes are needed at this time.

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
(CONT)	Measure 2: Laboratory exercises require students to use disease correlation to laboratory findings as a QA tool.	Measure 2: Students must identify laboratory results that are not consistent with patient diagnoses.	Measure 2: All students with passing grades have accurately correlated laboratory findings on assigned laboratory activities.	Measure 2: All students with passing grades can correlate laboratory findings to disease states covered in the course.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: The final exam contains 30 questions that cover professional behavior.	Measure 1:Students must pass the test with a score of at least 80%.	Measure 1: All students with passing grades scored at least 80% on the test.	Measure 1: All students with passing scores have an introductory understanding of professional behavior.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Adherence to proper laboratory dress code and common regulatory requirements (i.e. HIPAA)	Measure 2: Students must comply with dress code requirements for safety and HIPAA requirements.	Measure 2: All students with passing grades properly gowned laboratory clothing (i.e. lab coat) and showed compliance to HIPAA regulations they were exposed to.	Measure 2: All students with passing grades are aware of proper laboratory attire and HIPAA regulations that are discussed.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Laboratory exercises require students to communicate critical values to the healthcare provider.	Measure 1: All students must accurately identify all critical values and properly report them to the provider.	Measure 1: All students with passing grades were able to identify critical values.	Measure 1: All students with passing grades know the importance of prompt and professional interaction.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Instructor/ Professor observation of interactions amongst peers.	Measure 2: All students must adhere to the no hazing policy outlined in the course syllabus.	Measure 2: All students with a passing grade have interacted appropriately with their colleagues.	Measure 2: All students with passing grades know the importance of prompt and professional interaction.	Measure 2: Findings indicate no changes are needed at this time.

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 2213 is an introductory clinical chemistry course covering the theory and principles of clinical chemistry, including protein catabolism, Lipids, enzymology, therapeutic drug monitoring, toxicology, analytical principles, and endocrinology. MLS 2213 contains all of the eight identified learning goals. The exposure level of each goal in this course is appropriate for the introductory students.

Evidence of Learning: Courses within the Major: MLS 2214

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: 2 quizzes (100% of questions), 4 exams and comprehensive final (75% of questions)	Measure 1: 100% of students will score 80% or better on all test questions (quizzes are excluded)	Measure 1: Approx. 92% of students scored 80% or better all exams (avg. 37 of 40 students)	Measure 1: 92% of students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 11 weeks of graded laboratory activities and 1 practical in-lab exam	Measure 2: 100% of students will score 80% or better by correctly performing required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: 1-2 questions on exam 1 multiple choice	Measure 1: 100% of students will score 80% or better math questions	Measure 1: 100% of students scored 80% or better on math questions	Measure 1: All students successfully applied mathematical calculations to laboratory situations	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 3 weekly laboratory activities with 1-2 unknown patient specimens and 4 weeks of hospital urine culture plates, which utilize correct reporting of urine cultures involving mathematical calculations.	Measure 2: 100% of students will score 80% or better on mathematical calculations in laboratory situations	Measure 2: 100% of students correctly performed mathematical calculations 80% or better in laboratory situations	Measure 2: All students correctly performed mathematical calculations in lab situations 80% of the time or better	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis,	Measure 1: 11 weeks of graded laboratory activities involving identification of bacteria and parasites	Measure 1: 100% of students will score 80% or better on laboratory activities and practical exams	Measure 1: 100% of students scored 80% or better overall on final course laboratory grade	Measure 1: All students successfully demonstrated knowledge of evaluating specimen acceptability and	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
interpretation, and use of quality assurance procedures.				optimal analysis methods.	
	Measure 2: Demonstrate proper knowledge of quality assurance procedures in clinical microbiology laboratory	Measure 2: 100% of students will correctly determine proper quality assurance procedures in clinical microbiology laboratory	Measure 2: 100% of students were able to correctly determine proper quality assurance procedures in clinical microbiology laboratory	Measure 2: All students correctly determined quality assurance procedures in clinical microbiology laboratory	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: All course exams and 2 quizzes have 50% of questions that correlate theory/terminology to laboratory testing	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions	Measure 1: All students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Assess 4-5 weekly laboratory unknowns in each of the 11 laboratory activities	Measure 2: 100% of students will score 80% or better overall on course laboratory activates	Measure 2: 100% of students scored 80% or better overall on course laboratory activates	Measure 2: All students performed the required skills during 13 lab activates	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: Four case study homework assignments in Unit 6, 7, 8, and 11.	Measure 1: 100% of students must complete assignments	Measure 1: 100% of students completed the four assignments.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: Exams 2,3,4 and the final exam contain approximately 20% diagnostic questions	Measure 1: 100% of students will score 80% or better on the diagnostic questions	Measure 1: 100% of students scored 80% or better on the diagnostic questions	Measure 1: All students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: In 11 of the weekly laboratory activities, specimen source of unknowns is related to diseases	Measure 2: 100% of students will perform 80% or better relating specimen unknowns to related diseases	Measure 2: 100% of students were able to relate laboratory findings to common diseases 80% of the time	Measure 2: All students correctly related laboratory findings to common diseases.	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend laboratory section and be punctual.	Measure 1: 100% attendance in laboratory section. 95% punctuality	Measure 1: All students attended laboratory section and most were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Adherence to laboratory dress code and safety procedures	Measure 2: 100% of students will comply with dress code and safety procedures.	Measure 2: 100% of students complied with dress code and safety procedures	Measure 2: All students were in compliance with dress code and safety procedures.	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Correct reporting of laboratory results in 11 weekly activities.	Measure 1: 100% of students will correctly report results 80% or better on laboratory reports.	Measure 1: 100% of students were able to correctly report results 80% or better on laboratory reports.	Measure 1: All students were able to correctly report laboratory reports.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students work in teams for 3 of 11 weekly laboratory activities	Measure 2: 100 % of students will demonstrate effective team work during the 6 weeks of laboratory activates	Measure 2: 100% of students demonstrated effective team work.	Measure 2: All students demonstrated effective team work.	Measure 2: No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 2214 – Principles in Clinical Microbiology II is an introductory course and is a continuation of MLS 2212, including antimicrobials, Gram positive rods, mycobacteria, anaerobes, mycology, and parasitology. This course contains all eight of the program's identified learning goals. In all cases, the measures show that 100% of the students are reaching all 8 goals at levels of 80% or above, so no curricular or clinical changes are seen as needed at this time.

Evidence of Learning: Courses within the Major: MLS 2210

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: A set of 10 multiple choice questions from Exams 2	Measure 1: 100% of students will score 80% or better on 10 questions	Measure 1: 100% of students scored 80% or better on 10 questions)	Measure 1: All students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 9 graded laboratory practice sessions and 4 unknown practical exams	Measure 2: 100% of students will correctly perform required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: 1: A set of 20 multiple choice questions from Exams 4 and Final Exam	Measure 1: 100% of students will score 80% or better on 10 questions.	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully applied mathematical calculations to laboratory situations.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 2 graded laboratory applications of laboratory mathematical calculations	Measure 2: 100% of students will correctly perform mathematical calculations in laboratory situations.	Measure 2: 100% of students correctly performed mathematical calculations in laboratory situations.	Measure 2: All students correctly performed mathematical calculations in laboratory situations.	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including	Measure 1: A set of 20 multiple choice questions from Exams 1 and 2	Measure 1: 100% of students will score 80% or better on 20 questions	Measure 1: 96% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated knowledge of	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.				evaluating specimen acceptability and optimal analysis methods.	
	Measure 2: Demonstrate proper knowledge of specimen criteria in a blood bank laboratory setting	Measure 2: 100% of students will correctly determine proper sample suitability.	Measure 2: 100% of students were able to correctly determine proper sample suitability for blood bank analysis	Measure 2: All students correctly determined proper sample suitability.	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: A set of 20 multiple choice questions from Exams 2 and 3	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions	Measure 1: All students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Assess unknowns with accuracy during 4 laboratory practical exams	Measure 2: 100% of students will score 80% or better on 4 laboratory practical exams	Measure 2: 99% of students scored 80% or better on 4 laboratory practical exams.	Measure 2: Most students performed the required skills during the 4 laboratory practical exams.	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: A set of 20 multiple choice questions from Exams 2 and 3	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students resolve discrepancies in the 13 laboratory sessions and must correlate patient history to laboratory findings	Measure 2: 100% of students will correctly resolve discrepancies in the 13 laboratory sessions and correlate patient history to laboratory findings	Measure 2: 100% of students were able to correctly resolve discrepancies in the 13 laboratory sessions and correlate patient history to laboratory findings	Measure 2: All students correctly resolved discrepancies in the 13 laboratory sessions and correlated patient history to laboratory findings	Measure 2: No clinical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: A set of 25 questions from Exams 2, 3, and 4	Measure 1: 100% of students will score 80% or better on 25 questions.	Measure 1: 100% of students scored 80% or better on 25 questions	Measure 1: All students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: In 2 laboratory sessions students relate laboratory findings to common diseases	Measure 2: 100% of students will perform the required skills in the laboratory	Measure 2: 100% of students were able to relate laboratory findings to common diseases.	Measure 2: All students correctly related laboratory findings to common diseases.	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend laboratory section and be punctual.	Measure 1: 100% attendance in laboratory section. 89% punctuality	Measure 1: All students attended laboratory section and most were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Adherence to laboratory dress code and safety procedures	Measure 2: 100% of students will comply with dress code and safety procedures.	Measure 2: 100% of students complied with dress code and safety procedures	Measure 2: All students were in compliance with dress code and safety procedures.	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: 3 essay questions on exams 2, 3, and 4	Measure 1: 100% of students will score 80% or better on essay questions.	Measure 1: 100% of students were able to communicate their knowledge on the essay questions	Measure 1: All students were able to communicate their knowledge on the essay questions	Measure 1: : No curricular or pedagogical changes needed at this time
	Measure 2: Friday current event classroom discussions with student participation	Measure 2: Students will be able to respond to laboratory related current events	Measure 2: 100% of students voice their opinions and provide responses to topics explored in class	Measure 2: All students can communicate better as the course progresses	Measure 2: No clinical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 2210 is an introductory immunohematology course covering the theory and principles of Immunohematology relevant to blood group serology, antibody detection and identification, compatibility testing, component preparation and therapy in blood transfusion service, quality control, donor screening and phlebotomy, transfusion reactions and hemolytic disease of the fetus and newborn. MLS 2215 contains all eight of the program's identified learning goals, though in appropriately varying amounts. As noted in the curriculum map, learning goals 2,4,5,6 and 8 are areas of introduction, learning goal 1is emphasized, and learning goals 3 and 7 are utilized. In all cases, the measures show that 100% of the students are reaching all 8 goals at levels of 80% or above, so no curricular or clinical changes are seen as needed at this time. Data in this table are derived from five sections of the course taught in Spring 2012-2016 by Janet Oja

Evidence of Learning: Courses within the Major: MLS 3302

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Exam three focused on pre-use validation of clinical instrumentation	Measure 1: 100% of students will score at least 80% on this exam	Measure 1: 97% of students scored an 80% or better (range: 78 – 100)	Measure 1: One student did not achieve 80% but upon retake they earned the required grade percentage	Measure 1: No changes are needed to this unit exam
	Measure 2: Problem based practical exam containing three validation scenarios.	Measure 2: 100% of students will score at least 80% on the practical exam	Measure 2: 100% of students scored an 80% or better	Measure 2: All students performed adequately on applying their knowledge in a problem based assignment	Measure 2: No changes are needed to this unit practical
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: A series of homework assignments (n= 14) covering; t-Test, F-Test, ANOVA, Chi-Squared Test, Correlation, Reference Ranges, Standard Error of the Mean, Sensitivity, Specificity, Positive	Measure 1: 100% of students will compute and interpret the findings.	Measure 1: 100% of students completed all homework assignments and either interpreted their findings correctly or understood where they made an error	Measure 1: All students were able to apply common laboratory mathematical calculations and understand their results	Measure 1: No changes are needed to these series of homework assignments

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Predictive Value, Negative Predictive Value, Accuracy, Precision, Minimum Detection Limit				
	Measure 2: Two problem based practical exam	Measure 2: 100% of students will score at least 80% on the practical exam	Measure 2: 100% of students scored an 80% or better	Measure 2: All students were able to apply mathematical calculations to real laboratory situations	Measure 2: No changes are needed to the two practical exam
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	This course focuses on advanced application of laboratory mathematical theory, research, and management. As such, there are no wet lab procedures taught or conducted	NA	NA	NA	NA
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Five unit examinations covering the theory and application of advanced laboratory practices	Measure 1: 100% of students will score at least 80% on this exam	Measure 1: 97% of students scored an 80% or better (range 78-100)	Measure 1: One student did not achieve 80% but upon retake they earned the required grade percentage	Measure 1: No changes are needed for these examinations
	Measure 2: A series of homework assignment (n=25)	Measure 2: 100% of students will complete the assignment and interpret their findings	Measure 1: 100% of students completed all homework assignments and either interpreted their findings correctly or understood where they made an error	Measure 2: All students were able to apply common laboratory mathematical calculations and understand their results	Measure 2: No changes are needed to these assignments

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Measure 3: Three problem based practical examinations	Measure 3: 100% of students will score at least 80% on the practical exam	Measure 3: 100% of students scored an 80% or better	Measure 3: All students were able to apply advanced laboratory theory to practical situations	Measure 3: No changes are needed to these practical exams
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: Three problem based practical examinations	Measure 1: 100% of students will score at least 80% on the practical exam	Measure 1: 100% of students scored an 80% or better	Measure 1: All students were able to apply advanced laboratory theory to practical situations	Measure 1: No changes are needed to these practical exams
Learning Outcome 6: Relate laboratory findings to common disease.	This course focuses on advanced application of laboratory mathematical theory, research, and management. As such, there are no wet lab procedures taught or conducted	NA	NA	NA	NA
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	This is a theory and application based course that does not focus or measure professionalism or ethical behavior	NA	NA	NA	NA
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: An instrument selection presentation and research paper critique	Measure 1: 100% of students must demonstrate adequate presentation and written ability to convey critical findings and conclusions	Measure 1: 100% of students will demonstrated an ability to communicate critical examination of instrumentation and research	Measure 1: 100% of students were able to communicate critical examinations of instrumentation an research	Measure 1: No changes are needed to these assignments

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS3302, Advanced Medical Laboratory Practices is a course that covers advanced theory and application of mathematics, research concepts, and management practices in the clinical laboratory. This course contains five units that cover; basic statistics, experimental design, statistical tools, research study design, critiquing and interpreting of research articles, laboratory instrumentation testing, selection, and pre-use validation, laboratory financial management (management models, financial cost analysis, laboratory budgets, and inventory forecasting), job descriptions, performance appraisals, quality control, and leadership. MLS3302 is a focused advanced level course that deals with very specific areas of clinical laboratory operation and theory. As such, it does not contain all eight of the MLS department program goals. The goals that are covered; 1,2,4,5, & 8, are covered to a high degree (to the utilization level or higher). These data are collected from a single on campus section in the fall semester from 2012. This is my first semester instructing this course and there is a planned major curriculum overhaul subject to this course in the coming year. Currently it is planned to retain key concepts, remove information that is not required for board certification, and add program goal oriented concepts, such as professionalism to this course.

Evidence of Learning: Courses within the Major: MLS 3310

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: A set of 10 multiple choice questions from Exam 1 and Quiz 1	Measure 1: 100% of students will score 80% or better on 10 questions	Measure 1: 100% of students scored 80% or better on 10 questions)	Measure 1: All students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 9 graded laboratory practice sessions and 4 unknown practical exams	Measure 2: 100% of students will correctly perform required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: 1: A set of 20 multiple choice questions from Exams 2 and Final Exam	Measure 1: 100% of students will score 80% or better on 10 questions.	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully applied mathematical calculations to laboratory situations.	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Measure 2: 2 graded laboratory applications of laboratory mathematical calculations	Measure 2: 100% of students will correctly perform mathematical calculations in laboratory situations.	Measure 2: 100% of students correctly performed mathematical calculations in laboratory situations.	Measure 2: All students correctly performed mathematical calculations in laboratory situations.	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: A set of 20 multiple choice questions from Exams 1 and 2	Measure 1: 100% of students will score 80% or better on 20 questions	Measure 1: 96% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated knowledge of evaluating specimen acceptability and optimal analysis methods.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Demonstrate proper knowledge of specimen criteria in a blood bank laboratory setting.	Measure 2: 100% of students will correctly determine proper sample suitability. Students to perform QC on all blood bank reagents	Measure 2: 100% of students were able to correctly determine proper sample suitability for blood bank analysis. QC results accurate.	Measure 2: All students correctly determined proper sample suitability.	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: A set of 20 multiple choice questions from Exams 3 and Quiz 2 and 3	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions	Measure 1: All students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Assess unknowns with accuracy during 4 laboratory practical exams	Measure 2: 100% of students will score 80% or better on 4 laboratory practical exams	Measure 2: 99% of students scored 80% or better on 4 laboratory practical exams.	Measure 2: Most students performed the required skills during the 4 laboratory practical exams.	Measure 2: No clinical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: A set of 20 multiple choice questions from Exams 2 and 3 and Quiz 2, 3 and 4	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students resolve discrepancies in the 13 laboratory sessions and must correlate patient history to laboratory findings	Measure 2: 100% of students will correctly resolve discrepancies in the 13 laboratory sessions and correlate patient history to laboratory findings	Measure 2: 100% of students were able to correctly resolve discrepancies in the 13 laboratory sessions and correlate patient history to laboratory findings	Measure 2: All students correctly resolved discrepancies in the 13 laboratory sessions and correlated patient history to laboratory findings	Measure 2: No clinical changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: A set of 25 questions from Exams 2, 3, and the Final Exam	Measure 1: 100% of students will score 80% or better on 25 questions.	Measure 1: 100% of students scored 80% or better on 25 questions	Measure 1: All students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: In 2 laboratory sessions students relate laboratory findings to common diseases	Measure 2: 100% of students will perform the required skills in the laboratory	Measure 2: 100% of students were able to relate laboratory findings to common diseases.	Measure 2: All students correctly related laboratory findings to common diseases.	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend laboratory section and be punctual.	Measure 1: 100% attendance in laboratory section. 89% punctuality	Measure 1: All students attended laboratory section and most were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Adherence to laboratory dress code and safety procedures	Measure 2: 100% of students will comply with dress code and safety procedures.	Measure 2: 100% of students complied with dress code and safety procedures	Measure 2: All students were in compliance with dress code and safety procedures.	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with	Measure 1: 3 essay questions on Exams 2, 3, and Final. 15 case study writ-ups	Measure 1: 100% of students will score 80% or better on essay questions.	Measure 1: 100% of students were able to communicate their	Measure 1: All students were able to communicate their	Measure 1: : No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
colleagues in the program and in the laboratory			knowledge on the essay questions	knowledge on the essay questions	
	Measure 2: Case study write-ups performed in small groups.	Measure 2: Students will be able to communicate effectively in a group setting	Measure 2: 100% of students communicate effectively in the group setting	Measure 2: All students can communicate better as the course progresses	Measure 2: No clinical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 3310 is an advanced immunohematology course covering advanced blood banking theory and specialized procedures of Immunohematology relevant to blood group serology, antibody detection and identification, compatibility testing, component preparation and therapy in blood transfusion service, quality control, donor screening and phlebotomy, transfusion reactions and hemolytic disease of the fetus and newborn. MLS3301contains all eight of the program's identified learning goals, though in appropriately varying amounts. As noted in the curriculum map, learning goals 1,2,4,5, and 8 are areas of utilization, learning goal 6 is emphasized, and learning goals 3 and 7 are assessed comprehensively. In all cases, the measures show that 100% of the students are reaching all 8 goals at levels of 80% or above, so no curricular or clinical changes are seen as needed at this time. Data in this table are derived from five sections of the course taught in Fall 2012-2016 by Janet Oja.

Evidence of Learning: Courses within the Major: MLS 3313 Advanced Clinical Hematology and Hemostasis

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: The Unit 1 exam tests the principles of hematology testing. The Unit 5 exam tests the principles of hemostasis testing. 50 multiple choice questions each.	Measure 1: 100% of students will score 80% or better on both exams.	Measure 1: 95% of students scored 80% or better on both exams.	Measure 1: 95% of students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 11 graded laboratory practice sessions and 1 final comprehensive lab exam	Measure 2: 100% of students will correctly perform required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: 8 multiple choice questions requiring mathematical calculations in exam 1 and 5	Measure 1: 100% of students will score 80% or better on 8 questions.	Measure 1: 95% of students scored 80% or better on 8 questions.	Measure 1: 95% of students successfully applied mathematical calculations to laboratory situations.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2:4 laboratory sessions requiring applications of laboratory mathematical calculations	Measure 2: 100% of students will correctly perform mathematical calculations in 4 laboratory situations.	Measure 2: 100% of students correctly performed mathematical calculations in 4 laboratory situations.	Measure 2: All students correctly performed mathematical calculations in 4 laboratory situations.	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of	Measure 1: 50 multiple choice questions from Exam 1 and 10 multiple choice questions from Exam 5	Measure 1: 95% of students will score 80% or better on 60 questions	Measure 1: 95% of students scored 80% or better on 20 questions.	Measure 1: 95% of students successfully demonstrated knowledge of evaluating specimen acceptability and optimal analysis methods.	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
quality assurance procedures.	Measure 2: Demonstrate proper knowledge of specimen criteria in a hematology laboratory setting	Measure 2: 100% of students will correctly determine proper sample suitability.	Measure 2: 100% of students were able to correctly determine proper sample suitability for hematology analysis	Measure 2: All students correctly determined proper sample suitability.	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: 50 multiple choice questions each from exams 2, 3, and 4	Measure 1: 100% of students will score 80% or better on all questions.	Measure 1: 100% of students scored 80% or better on all questions	Measure 1: 100% of students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Evaluate abnormal hematology smears from a wide variety of disorders during 3 laboratory sessions. Assess competency during 1 laboratory practical exam	Measure 2: 100% of students will score 80% or better on the laboratory practical exam and participate in all required laboratory sessions.	Measure 2: 95% of students scored 80% or better on the laboratory practical exam and participated in all required laboratory sessions.	Measure 2: Most students performed the required skills during the laboratory practical exam and required laboratory sessions.	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: A set of 15 multiple choice questions from Exams 1 and 5	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students correlate patient history and diagnoses to laboratory findings in 4 laboratory sessions	Measure 2: 100% of students will correctly correlate patient history and diagnoses to laboratory findings in 4 laboratory sessions	Measure 2: 100% of students were able to correctly correlate patient history and diagnoses to laboratory findings in 4 laboratory sessions	Measure 2: All students correctly correlated patient history and diagnoses to laboratory findings in 4 laboratory sessions	Measure 2: No clinical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: 50 multiple choice questions each from exams 2, 3, and 4, and 25 questions from exam 5.	Measure 1: 100% of students will score 80% or better on 50 multiple choice questions each from exams 2, 3, and 4, and 25 questions from exam 5.	Measure 1: 100% of students scored 80% or better on 50 multiple choice questions each from exams 2, 3, and 4, and 25 questions from exam 5.	Measure 1: All students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: In 4 laboratory sessions students relate laboratory findings to common diseases	Measure 2: 100% of students will perform the required skills in the laboratory	Measure 2: 100% of students were able to relate laboratory findings to common diseases.	Measure 2: All students correctly related laboratory findings to common diseases.	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend laboratory section and be punctual.	Measure 1: 100% attendance in laboratory section. 95% punctuality	Measure 1: All students attended laboratory section and most were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Adherence to laboratory dress code and safety procedures	Measure 2: 100% of students will comply with dress code and safety procedures.	Measure 2: 100% of students complied with dress code and safety procedures	Measure 2: All students were in compliance with dress code and safety procedures.	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Laboratory etiquette and expectations are defined in the syllabus. Measured by punctuality and participation.	Measure 1: 100% of students will be punctual to laboratory sessions, and remain task-oriented throughout the session in order to receive full participation credit.	Measure 1: 95% of students were punctual to laboratory sessions, and remained task-oriented throughout the session and received full participation credit.	Measure 1: Most students demonstrated effective communication skills through punctuality and task-orientedness during laboratory sessions.	Measure 1: : No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 3313 is an advanced hematology course covering the theory and principles of hematology and hemostasis relevant to routine laboratory testing, normal and abnormal body fluid analysis, normal erythrocyte physiology and associated disorders, normal leukocyte physiology and associated non-malignant and malignant disorders, bone marrow evaluation, and normal platelet and coagulation physiology and associated disorders. MLS 3313 contains all eight of the program's identified learning goals, though in appropriately varying amounts. As noted in the curriculum map, learning goal 5 is emphasized, learning goals 1, 2, 3, and 8 are utilized, and learning goals 4 and 7 are assessed comprehensively. Data in this table is limited due to the short time frame of a new faculty member and reflects an in-progress course in Fall 2016.

Evidence of Learning: Courses within the Major: MLS 3314

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Each exam covers testing specific to the covered units.	Measure 1: Each student must complete the exam with a score of at least 80%.	Measure 1: All students with passing grades achieved a score of at least 80% on each unit exam.	Measure 1: All students with passing grades showed an acceptable level of understanding of the theory behind the testing discussed.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Students will complete laboratory exercises, which require understanding of the testing methods.	Measure 2: The total points earned from the laboratory must equal at least 80% of the points possible.	Measure 2: All students with passing grades earned at least 80% of the total points possible.	Measure 2: All students with passing grades showed competency of the covered topics and laboratory exercises.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: Multiple exams include questions covering reactions specific to that unit.	Measure 1: Each student must pass the exam with a score of at least 80%.	Measure 1: All students with passing grades scored at least 80%.	Measure 1: All students with a passing grade can successfully complete laboratory mathematics.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Graded laboratory exercises, which include calculations.	Measure 2: All students must correctly complete laboratory calculations.	Measure 2: All students with passing grades earned at least 80% of the total points possible.	Measure 2: All students with passing grades can successfully complete laboratory mathematics.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis,	Measure 1: Students will complete a laboratory project that includes several exercises ranging in difficulty.	Measure 1: All students must complete the laboratory with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can successfully complete laboratory testing procedures ranging in difficulty.	Measure 1: Findings indicate no changes are needed at this time.

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
(CONT) interpretation, and use of quality assurance procedures.	Measure 2: Demonstrate knowledge of accurate sample requirements and collection procedures.	Measure 2: Students will assess samples submitted for testing for acceptability.	Measure 2: All students with passing grades have accurately demonstrated knowledge of sample requirements.	Measure 2: All students can assess samples for testing as appropriate.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Students will correlate theory and terminology in all laboratory exercises.	Measure 1: Students will complete all laboratory correlation activities with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can correlate theory to practical laboratory situations.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Students must complete the verification exercise that requires knowledge of theory.	Measure 2: Students must complete the verification with at least 80%.	Measure 2: All students with passing grades earned a score of at least 80%.	Measure 2: All students with passing grades can correlate theory to laboratory situations.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: Students will evaluate a collection of tests to identify discrepancies.	Measure 1: All students must pass the panel exam with at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades are able to correlate multiple results for the identification of erroneous entries.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: The laboratory verification exercise will require the students to troubleshoot multiple situations.	Measure 2: All Students must correct discrepancies in order to report out verification results with at least 80% accuracy.	Measure 2: All students with passing grades earned a score of at least 80%.	Measure 2: All students with passing grades are able to identify and correct discrepancies in order to provide accurate results.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: Each unit exam will test the student's ability to correlate laboratory findings to common diseases.	Measure 1: Each student must pass the exam with a score of at least 80%.	Measure 1: All students with passing grades earned a score of at least 80%.	Measure 1: All students with passing grades can accurately correlate laboratory findings to common diseases.	Measure 1: Findings indicate no changes are needed at this time.

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
(CONT)	Measure 2: Class assignments will require the students to understand disease states in order to determine if the results are acceptable.	Measure 2: Students must identify laboratory results that are not consistent with patient diagnoses.	Measure 2: All students with passing grades have accurately correlated laboratory findings on assigned activities.	Measure 2: All students with passing grades can correlate laboratory findings to disease states covered in the course.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: The final exam contains 30 questions that cover professional behavior.	Measure 1:Students must pass the test with a score of at least 80%.	Measure 1: All students with passing grades scored at least 80% on the test.	Measure 1: All students with passing scores have an introductory understanding of professional behavior.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Adherence to proper laboratory dress code and common regulatory requirements (i.e. HIPAA)	Measure 2: Students must comply with dress code requirements for OSHA and HIPAA requirements.	Measure 2: All students with passing grades properly gowned laboratory clothing (i.e. lab coat) and showed compliance to HIPAA regulations they were exposed to.	Measure 2: All students with passing grades are aware of proper laboratory attire and HIPAA regulations that are discussed.	Measure 2: Findings indicate no changes are needed at this time.
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: The verification exercise requires the students to submit a validation plan and an executive summary.	Measure 1: All verification and validation activities but earn a grade of at least 80%.	Measure 1: All students with passing grades earned at least 80% on the verification and validation exercises.	Measure 1: All students with passing grades have shown appropriate written communication skills.	Measure 1: Findings indicate no changes are needed at this time.
	Measure 2: Instructor/ Professor observation of interactions amongst peers.	Measure 2: All students must adhere to the no hazing policy outlined in the course syllabus.	Measure 2: All students with a passing grade have interacted appropriately with their colleagues.	Measure 2: All students with passing grades know the importance of prompt and professional interaction.	Measure 2: Findings indicate no changes are needed at this time.

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 3314 is an advanced clinical chemistry course covering the theory and principles of clinical chemistry, including protein catabolism, carbohydrate metabolism, safety, regulatory agencies, non-protein nitrogen compounds, instrumentation validation, electrolyte balance, Lipids, enzymology, therapeutic drug monitoring, toxicology, analytical principles, and endocrinology. MLS 3314 contains all of the eight identified learning goals. The exposure level of each goal in this course is appropriate for the advanced students.

Evidence of Learning: Courses within the Major: MLS 3316

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: 3 quizzes (50% of questions), 4 exams (75% of questions)	Measure 1: 100% of students will score 80% or better on all test questions (quizzes are excluded)	Measure 1: Approx. 86% of students scored 80% or better all exams (avg. 31 of 36 students)	Measure 1: 86% of students successfully demonstrated theory underlying laboratory testing	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 9 weeks of graded laboratory activities	Measure 2: 100% of students will score 80% or better by correctly performing required laboratory skills	Measure 2: 100% of students were able to correctly perform required laboratory skills	Measure 2: All students correctly performed required laboratory skills	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: 1-2 questions on exam 1 and exam 2, multiple choice	Measure 1: 100% of students will score 80% or better math questions	Measure 1: 100% of students scored 80% or better on math questions	Measure 1: All students successfully applied mathematical calculations to laboratory situations	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: 3 weekly laboratory activities involving mathematical calculations.	Measure 2: 100% of students will score 80% or better on mathematical calculations in laboratory situations	Measure 2: 100% of students correctly performed mathematical calculations 80% or better in laboratory situations	Measure 2: All students correctly performed mathematical calculations in lab situations 80% of the time or better	Measure 2: No clinical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: 5 weeks of graded laboratory activities involving identification of bacterial unknowns, 4 week of molecular diagnostics lab activities	Measure 1: 100% of students will score 80% or better on laboratory activities	Measure 1: 100% of students scored 80% or better overall on final course laboratory grade	Measure 1: All students successfully scored 80% or better overall on final course laboratory grade	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Demonstrate proper knowledge of quality assurance procedures in clinical microbiology laboratory	Measure 2: 100% of students will correctly determine proper quality assurance procedures in clinical microbiology laboratory	Measure 2: 100% of students were able to correctly determine proper quality assurance procedures in clinical microbiology laboratory	Measure 2: All students correctly determined quality assurance procedures in clinical microbiology laboratory	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: All course exams and quizzes have 50% of questions that correlate theory/terminology to laboratory testing	Measure 1: 100% of students will score 80% or better on 20 questions.	Measure 1: 100% of students scored 80% or better on 20 questions	Measure 1: All students successfully correlated laboratory theory and terminology to practical laboratory work.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Assess 9 weeks of laboratory activities that each correlate laboratory theory and terminology to practical laboratory work	Measure 2: 100% of students will score 80% or better overall on course laboratory activates	Measure 2: 100% of students scored 80% or better overall on course laboratory activates	Measure 2: All students performed the required skills during 9 laboratory activates	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving	Measure 1: Four case study homework assignments in Unit 6, 7, 8, and 11.	Measure 1: 100% of students must complete assignments	Measure 1: 100% of students completed the four assignments.	Measure 1: All students successfully demonstrated problem solving skills	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
skills to solve problems/discrepancies.					
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: Exam 2 contains approximately 25% diagnostic questions	Measure 1: 100% of students will score 80% or better on the diagnostic questions	Measure 1: 100% of students scored 80% or better on the diagnostic questions	Measure 1: All students correctly related laboratory findings to common diseases.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: In 5 of the weekly laboratory activities, specimen source of unknowns is related to diseases	Measure 2: 100% of students will perform 80% or better relating specimen unknowns to related diseases	Measure 2: 100% of students were able to relate laboratory findings to common diseases 80% of the time	Measure 2: All students correctly related laboratory findings to common diseases.	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend laboratory section and be punctual.	Measure 1: 100% attendance in laboratory section. 95% punctuality	Measure 1: All students attended laboratory section and most were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Adherence to laboratory dress code and safety procedures	Measure 2: 100% of students will comply with dress code and safety procedures.	Measure 2: 100% of students complied with dress code and safety procedures	Measure 2: All students were in compliance with dress code and safety procedures	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Correct reporting of laboratory results in 9 weekly activities.	Measure 1: 100% of students will correctly report results 80% or better on laboratory reports.	Measure 1: 100% of students were able to correctly report results 80% or better on laboratory reports.	Measure 1: All students were able to correctly report laboratory reports.	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Students work in teams for 5 of 9 weekly laboratory activities	Measure 2: 100 % of students will demonstrate effective team work during the	Measure 2: 100% of students demonstrated effective team work.	Measure 2: All students demonstrated effective team work.	Measure 2: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
		5 weeks of laboratory activates			

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 3316 – Advanced Clinical Microbiology and Molecular Diagnostics. This course begins with a comprehensive review of introductory clinical bacteriology and mycology, along with a culture site approach to clinical bacteriology for the laboratory identification of pathogens by traditional manual methods. Diagnostic molecular biology of infectious microorganisms will also be over and will include background of nucleic acid chemistry along with current molecular methodologies of detection.

Evidence of Learning: Courses within the Major: MLS 4409

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Student participation in physician guided correlation	Measure 1: All students required to attend and participate in discussion	Measure 1: All students participate in discussion	Measure 1: Student participation increases as semester progresses	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: None	Measure 2: None	Measure 2: None	Measure 2: None	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1***	Measure 1: ***	Measure 1: ***	Measure 1: ***	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: ***	Measure 1: ***	Measure 1: ***	Measure 1: ***	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2:
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: ***	Measure 1: ***	Measure 1: ***	Measure 1: ***	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend and be punctual.	Measure 1: 95% punctuality	Measure 1: Most students were punctual	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: ***	Measure 1: ***	Measure 1: ***	Measure 1: ***	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: ***	Measure 2: No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

*** This course is a 1 credit hour course led by visiting physicians. Case studies are presented and discussed with the students and correlations between laboratory data and patient diagnosis are evaluated.

Summary: MLS 4409 – Clinical Correlation. This course is a 1 credit hour course where case studies are presented and discussed with the students and correlations between laboratory data and patient diagnosis are evaluated. Data in this table are derived from five semesters taught fall 2012-2016

Evidence of Learning: Courses within the Major: MLS 4411

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology	Measure 1: Students participate in mock CAP inspection	Measure 1: All students will review current CAP standards and prepare a	Measure 1: 100% of students participated in mock CAP inspection and	Measure 1: All students successfully participated in mock CAP inspection	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
to practical laboratory work		laboratory for inspection	submitted a deficiency report to lab manager		
	Measure 2: Students will calibrate laboratory equipment	Measure 2: All students will calibrate laboratory equipment currently in use	Measure 2: 100% of students calibrated laboratory equipment to lab manager standards	Measure 2: All students successfully participated in calibration studies	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Student participation in customer service and emotional intelligence project	Measure 1: All students will participate and develop written responses to customer service case studies	Measure 1: 100% of students participated in customer service and emotional intelligence case studies	Measure 1: All students participated and developed written responses to customer service case studies	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Student functioning as a member of a team	Measure 1: All students will participate in team projects, each taking turns being the project manager	Measure 1: 100% of students participated in team projects, with each taking a turn as project manager	Measure 1: All students participated in and managed the team for all projects	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Evaluation of each team member for effective communication skills and participation in projects	Measure 2: All students will complete evaluations on team members for effective communication skills and participation in group projects	Measure 2: 100% of students completed evaluations on team members for effective communication skills and participation in group projects	Measure 2: All students completed evaluations on team members for effective communication skills and participation in group projects	Measure 2: No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 4411 – MLS Simulated Laboratory I. This course teaches fundamental principles for establishing a simulated working laboratory in which students refine technical skills, problem identification and solving, work-load management, and decision-making skills, development of strategies for managing and implementing the rules and regulations that govern medical laboratory testing. MLS 4411 contains 3 of the program's identified learning goals. As noted in the curriculum map, learning goals 4, 7, and 8 are utilized in this course. Data in this table are derived from five semesters taught fall 2012-2016 by Janet Oja

Evidence of Learning: Courses within the Major: MLS 4412

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Students participate in mock CAP inspection	Measure 1: All students will review current CAP standards and prepare a laboratory for inspection	Measure 1: 100% of students participated in mock CAP inspection and submitted a deficiency report to lab manager	Measure 1: All students successfully participated in mock CAP inspection	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Measure 2: Students will calibrate laboratory equipment	Measure 2: All students will calibrate laboratory equipment currently in use	Measure 2: 100% of students calibrated laboratory equipment to lab manager standards	Measure 2: All students successfully participated in calibration studies	Measure 2: No clinical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: N/A	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Student participation in customer service and emotional intelligence project	Measure 1: All students will participate and develop written responses to customer service case studies	Measure 1: 100% of students participated in customer service and emotional intelligence case studies	Measure 1: All students participated and developed written responses to customer service case studies	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: N/A	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the	Measure 1: Student functioning as a member of a team	Measure 1: All students will participate in team projects, each taking	Measure 1: 100% of students participated in team projects, with each taking a turn as project manager	Measure 1: All students participated in and managed the team for all projects	Measure 1: No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
program and in the laboratory		turns being the project manager			
	Measure 2: Evaluation of each team member for effective communication skills and participation in projects	Measure 2: All students will complete evaluations on team members for effective communication skills and participation in group projects	Measure 2: 100% of students completed evaluations on team members for effective communication skills and participation in group projects	Measure 2: All students completed evaluations on team members for effective communication skills and participation in group projects	Measure 2: No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 4412 – MLS Simulated Laboratory II. This course is a continuation of MLS 4411. Students staff a simulated medical laboratory and assume responsibilities associated with all facets of laboratory operations. Clinical and academic faculty serves as advisors/managers to each team of students. The process develops team-building skills critical to the modern health care setting. MLS 4412 expands to examine issues that cross all health care disciplines. MLS 4412 contains 3 of the program's identified learning goals. As noted in the curriculum map, learning goals 4, 7, and 8 are utilized in this course. Data in this table are derived from five semesters taught fall 2012-2016 by Janet Oja

Evidence of Learning: Courses within the Major: MLS 4415

Evidence of Learning: Courses within the Major: MLS 4415					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Multiple choice questions in Management theory Quiz	Measure 1: Students are expected to score 80% or better to prove knowledge and competency	Measure 1: The majority of students were able to achieve 80% or higher competency	Measure 1: Students have proved to have knowledge of management theories	Measure 1: No changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	N/A	N/A	N/A	N/A	N/A
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: Students are assigned to TA a laboratory where they can apply previously learned procedures in education and training and quality assurance.	Measure 1: All students will achieve 90% or better attendance to their assigned labs. Lab instructors evaluate their performance using a rubric.	Measure 1: All students participated as TAs and achieved 90% or better attendance.	Measure 1: All students successfully demonstrated their proficiency in education and training by assisting in laboratory teaching.	Measure 1: No changes needed at this time

Evidence of Learning: Courses within the Major: MLS 4415					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Students participate in online discussions analyzing management case studies scenarios and applying the management concepts previously learned.	Measure 1: The majority of students will participate and score 80% or better on all discussions.	Measure 1: The majority of students participated and scored 80% or better on all online discussions.	Measure 1: Students were able to correlate management theory to real life case study situations and management scenarios.	Measure 1: No changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	N/A	N/A	N/A	N/A	N/A
Learning Outcome 6: Relate laboratory findings to common disease.	N/A	N/A	N/A	N/A	N/A
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus.	Measure 1: Students will attend class section and be punctual.	Measure 1: The majority of students attended class sessions unless previously excused	Measure 1: Students attended class sessions and most were punctual. They demonstrated professional conduct and ethical behavior.	Measure 1: No changes needed at this time

Evidence of Learning: Courses within the Major: MLS 4415					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	Measure 2: Students will listen to a guest speaker on resume writing and critique each other's resumes.	Measure 2: Students will attend and participate in a resume critique exercise where they will review 3 of their classmates' resumes.	Measure 2: The majority of students attended and participated in a resume critique exercise where they reviewed 3 of their classmates' resumes.	Measure 2: Students attended and participated in a resume critique exercise. They demonstrated professional conduct and ethical behavior.	Measure 2: No changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: Students will listen to a guest speaker on interviewing skills and participate in mock interviews.	Measure 1: Students will participate as interviewer and interviewee in mock interview exercise and score 80% or higher in peer evaluations.	Measure 1: The majority of participated in the mock interviews and scored 80% or higher in their peer evaluations	Measure 1: Students were able to apply interviewing skills previously learned in class through class lectures and guest speakers	Measure 1: No changes needed at this time
	Measure 2: Students participate in online discussions analyzing management case studies scenarios and applying the management concepts previously learned.	Measure 2: The majority of students will participate and score 80% or better on all discussions.	Measure 2: The majority of students participated and scored 80% or better on all online discussions.	Measure 2: Students were able to correlate management theory to real life case study situations and management scenarios.	Measure 2: No changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

MLS 4415: MLS 4415 is a new course merged from previous courses MLS 4414 and MLS 4417. Students will apply sound instructional and pedagogical theory. Approaches to management, leadership of groups, human resource management, and technical supervision will also be covered and reinforced through online discussions and case study analysis. Each student will also participate as a laboratory-teaching assistant (TA) in a MLS laboratory section assisting the faculty in the administration of the laboratory instruction. Each student will be assigned to a MLS course laboratory section in which expected behavior includes: active participation in laboratory teaching, demonstration of procedures, preparation of laboratory teaching materials and assisting laboratory faculty and students where ever needed.

Evidence of Learning: Courses within the Major: MLS 4803

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Student groups will develop a research question relating to MLS and also develop methods to address the research question	Measure 1: 100% of student groups will develop a research question relating to MLS and also develop methods to address the research question	Measure 1: 100% of student groups developed a research question relating to MLS and also developed methods to address the research question	Measure 1: 100% of student groups were able to develop a research question relating to MLS and also developed methods to address the research question	Measure 1: No curricular or pedagogical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: Student groups will identify appropriate statistical calculations to be used in analyzing research data collected, if appropriate for research project	Measure 1: 100% of student groups will identify appropriate statistical calculations to be used in analyzing research data collected, if appropriate for research project	Measure 1: 100% of student groups identified appropriate statistical calculations to be used in analyzing research data collected, if appropriate for research project	Measure 1: 100% of student groups were able to identify appropriate statistical calculations to be used in analyzing research data collected, if appropriate for research project	No curricular or pedagogical changes needed at this time
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: Goal not applicable to research class this semester				No curricular or pedagogical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: During the process of developing the research methods, students will correlate laboratory theory and terminology to determine what testing is required to	Measure 1: 100% of students will correlate laboratory theory and terminology to determine what testing is required to answer research question, if	Measure 1: 100% of students correlated laboratory theory and terminology to determine testing required to answer research question, if	Measure 1: 100% of students were able to correlate laboratory theory and terminology to determine testing required to answer research question, if	No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
	answer research question	appropriate for research project	appropriate for research project	appropriate for research project	
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Goal not applicable to research class				No curricular or pedagogical changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Goal not applicable to research class				No curricular or pedagogical changes needed at this time
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend class and be punctual.	Measure 1: 95% attendance in class	Measure 1: Most students attended class	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Submission of 7 class assignments by due date.	Measure 2: 100% of students will submit all 7 class assignments on time	Measure 2: 100% of students submitted class assignments on time	Measure 2: All students submitted class assignments on time	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: 7 course group assignments demonstrating writing proficiency	Measure 1: 100% of student groups will demonstrate writing proficiency with scores above 80% or better	Measure 1: 100% of students scored better than 80% on written group assignments	Measure 1: All student groups were able to demonstrate writing proficiency on groups assignments	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: demonstrates effective communication and collaboration within research group and with research mentor	Measure 2: 100 % of students will demonstrate effective communication and collaboration within research group and with research mentor	Measure 2: 98% of students demonstrated effective communication and collaboration within research group and with research mentor	Measure 2: Most students were able to effectively communicate in a collaborative fashion within their research group and with mentor	Measure 2: No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.
** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 4803 – Research Projects in MLS. In this first of two courses, students will identify a significant laboratory related research question and develop an original research design to address that question. Students will work closely with a faculty mentor and will prepare a grant application for funding of supplies and reagents, and write an IRB application. Learning outcomes from goals 2 through 6 were not applicable to this type of course, but are applicable in the second semester of the research course, MLS 4804. Data in this table are derived from five semesters and two sections/semester of the course taught from spring 2012-2016 by Scott Wright.

Evidence of Learning: Courses within the Major: MLS 4804

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 1: Demonstrate knowledge of theory underlying laboratory testing using analytical, interpretive, and problem solving skills.	Measure 1: Student groups will perform identified research methods to address research question	Measure 1: 100% of student groups will complete research methods to address research question	Measure 1: 100% of student groups were able to completed research methods to address research question	Measure 1: 100% of student groups were able to complete research methods to address research question	Measure 1: No curricular or pedagogical changes needed at this time
Learning Outcome 2: Apply mathematical calculations to laboratory situations.	Measure 1: Statistical analysis will be applied research data collected, if appropriate for the data collected during the research project	Measure 1: 100% of the statistical analysis will be completed for research data collected, if appropriate for the data collected during the research project	Measure 1: 100% statistical analysis was completed for research data collected, if appropriate for the data and the research project	Measure 1: 100% of research groups were able to complete statistical analysis on collected research data, if appropriate for the data and the research project	No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 3: Perform laboratory procedures from simple to complex, including specimen collection and processing, analysis, interpretation, and use of quality assurance procedures.	Measure 1: Preform laboratory testing of identified research methods to address research question, if appropriate for research project	Measure 1: 100% of laboratory testing will be completed for the identified research methods to address research question, if appropriate for research project	Measure 1: 100% of laboratory testing was completed for the identified research methods to address research question, if appropriate for research project	Measure 1: 100% of student groups were able to complete laboratory testing for the identified research methods to address research question, if appropriate for research project	No curricular or pedagogical changes needed at this time
Learning Outcome 4: Correlate laboratory theory and terminology to practical laboratory work	Measure 1: Students will correlate laboratory theory and terminology to laboratory testing required to answer research question, if appropriate for research project	Measure 1: 100% of students will correlate laboratory theory and terminology to laboratory testing required to answer research question, if appropriate for research project	Measure 1: 100% of students correlated laboratory theory and terminology to laboratory testing required to answer research question, if appropriate for research project	Measure 1: 100% of students correlated laboratory theory and terminology to laboratory testing required to answer research question, if appropriate for research project	No curricular or pedagogical changes needed at this time
Learning Outcome 5: Gather additional laboratory data and apply problem solving skills to solve problems/discrepancies.	Measure 1: Students will evaluate each set of experimental results and modify methods for succeeding experiments, if appropriate for research project	Measure 1: 100% of students will evaluate each set of experimental results and modify methods for succeeding experiments, if appropriate for research project	Measure 1: 100% of students evaluated each set of experimental results and modified methods for succeeding experiments, if appropriate for research project	Measure 1: 100% of students were able to evaluate each set of experimental results and modify methods for succeeding experiments, if appropriate for research project	No curricular or pedagogical changes needed at this time
Learning Outcome 6: Relate laboratory findings to common disease.	Measure 1: If appropriate for research project, students will relate research findings to common disease	Measure 1: 100% of students will relate research findings to common disease, if appropriate for research project	Measure 1: 100% of students related research findings to common disease, if appropriate for research project	Measure 1: 100% of students were able to relate research findings to common disease, if appropriate for research project	No curricular or pedagogical changes needed at this time

Evidence of Learning: Courses within the Major					
Measurable Learning Goal Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results**
Learning Outcome 7: Demonstrate professional conduct and ethical behavior	Measure 1: Attendance and punctuality expectations defined in course syllabus	Measure 1: 100% of students will attend class and be punctual.	Measure 1: 95% attendance in class	Measure 1: Most students attended class	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Submission of 3 class assignments by due date.	Measure 2: 100% of students will submit all 3 class assignments on time	Measure 2: 100% of students submitted class assignments on time	Measure 2: All students submitted class assignments on time	Measure 2: No clinical changes needed at this time
Learning Outcome 8: Demonstrate effective communication skills and behaviors with colleagues in the program and in the laboratory	Measure 1: 3 course group assignments demonstrating writing proficiency	Measure 1: 100% of student groups will demonstrate writing proficiency on 3 assignments with scores above 80% or better	Measure 1: 100% of students scored better than 80% on written group assignments	Measure 1: All student groups were able to demonstrate writing proficiency on groups assignments	Measure 1: No curricular or pedagogical changes needed at this time
	Measure 2: Demonstration of effective communication and collaboration within research group and with research mentor	Measure 2: 100 % of students will demonstrate effective communication and collaboration within research group and with research mentor	Measure 2: 98% of students demonstrated effective communication and collaboration within research group and with research mentor	Measure 2: Most students were able to effectively communicate in a collaborative fashion within their research group and with mentor	Measure 2: No curricular or pedagogical changes needed at this time

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

** MLS department policy states that not achieving a minimum competency of 80% overall will result in a letter grade of C. A grade below B- is not considered passing for students wishing to complete the MLS (MT) program.

Summary: MLS 4804 – Research Projects in MLS II. This course is a continuation of MLS 4803. Students will continue working on their original research project that was initiated fall semester. After completing the project, students will present their research findings in poster and oral formats, along with preparing a forma manuscript for publication in the university undergraduate research journal ERGO and possibly in other appropriate scientific journals. Learning outcomes from goals 2 through 6 were not applicable to this type of course, but are applicable in the second semester of the research course, MLS 4804. Data in this table are derived from five semesters and two sections/semester of the course taught from spring 2012-2016 by Scott Wright.

Evidence of Learning: High Impact or Service Learning

Evidence of Learning: High Impact Service Learning					
Measurable Learning Outcome Students will…	Method of Measurement Direct and Indirect Measures*	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results
Learning Outcome 1.A:	Measure 1: (Ex. A set of 10 multiple choice questions from Exam 1)	Measure 1: (Ex. 85% of students will score 80% or better on 10 questions)	Measure 1: (Ex. 93% of students scored 80% or better on 10 questions)	Measure 1: (Ex. Students successfully demonstrated interpretation skills)	Measure 1: (Ex. No curricular or pedagogical changes needed at this time)
	Measure 2:	Measure 2:	Measure 2:	Measure 2:	Measure 2:
Learning Outcome 2.A:	Measure 1: (Ex. Results of standardized test)	Measure 1: (Ex. 85% of students will score at or above the national average)	Measure 1: (Ex. 90% of students scored above national average)	Measure 1: (Ex. Students successfully demonstrated competence; lowest average score was in transfer of knowledge, where only 69% of questions were answered correctly	Measure 1: (Ex. Faculty agree to include review of transfer in all related courses; this outcome will be reassessed during next review
	Measure 2:	Measure 2:	Measure 2:	Measure 2:	Measure 2:

*At least one measure per objective must be a direct measure. Indirect measures may be used to supplement evidence provided via the direct measures.

Summary Information (as needed)

b. Evidence of Learning: High Impact or Service Learning

This is an optional section. If you provide students with high impact or service learning opportunities you may briefly describe those opportunities and explain how you assess their impact on student learning. This excerpt from George D. Kuh provides a brief overview of high-impact practices.

c. Evidence of Learning: General Education Courses
(Area-specific EOL grids can be found at http://weber.edu/oie/Complete_Rubrics.html; they can replace this page.)

Evidence of Learning: General Education Area [fill in]					
Measurable Learning Outcome Students will…	Method of Measurement	Threshold for Evidence of Student Learning	Findings Linked to Learning Outcomes	Interpretation of Findings	Action Plan/Use of Results
Learning Outcome 1:	Measure 1	Measure 1	Measure 1:	Measure 1:	Measure 1:
	Measure 2:	Measure 2:	Measure 2:	Measure 2:	Measure 2:
Learning Outcome 2:	Measure 1:	Measure 1:	Measure 1:	Measure 1:	Measure 1:
	Measure 2:	Measure 2:	Measure 2:	Measure 2:	Measure 2:
Learning Outcome 3:	Measure 1:	Measure 1:	Measure 1:	Measure 1:	Measure 1:
	Measure 2:	Measure 2:	Measure 2:	Measure 2:	Measure 2:

*At least one measure per objective must be a direct measure; indirect measures may be used to supplement direct measure(s).

Additional narrative (optional – use as much space as needed):

G. **Summary of Artifact Collection Procedure**

Artifact	When/How Collected?	Where Stored?
(i.e. Final Project Rubric)	(i.e. end of semester)	(i.e. electronic copies)
(i.e. Chi Tester Outcome Report)	(i.e. 2-3 times per semester)	(i.e. electronic format, chi tester warehouse)

Summary Information (as needed)

Appendix A

Most departments or programs receive a number of recommendations from their Five-Year Program Review processes. This page provides a means of updating progress towards the recommendations the department/program is acting upon.

Date of Program Review: 2012/2013	Recommendation	Progress Description
Recommendation 1	Text of recommendation	#### +1 progress
Meeting with external advisory board	The committee suggested yearly advisory board meetings.	The MLS department held advisory board meetings in 2013 and 2016 and will continue to meet annually.
Recommendation 2	Text of recommendation	
Understaffed and overworked MLS faculty	The committee addressed that the MLS faculty is overworked and understaffed.	The MLS department is not fully staffed at this time due to the retirement of the department chair in spring 2016 and the vacancy left by another faculty member fall 2016. The department is in the process of hiring a new full time faculty member.
Recommendation 3	Text of recommendation	
(add as needed)		

Additional narrative:

Appendix B

Please provide the following information about the full-time and adjunct faculty contracted by your department during the last academic year (summer through spring). Gathering this information each year will help with the headcount reporting that must be done for the final Five Year Program Review document that is shared with the State Board of Regents.

Faculty 2015-16	
Headcount	
With Doctoral Degrees (Including MFA and other terminal degrees, as specified by the institution)	
Full-time Tenured	4
Full-time Non-Tenured (includes tenure-track)	1
Part-time and adjunct	0
With Master's Degrees	
Full-time Tenured	4
Full-time Non-Tenured	0
Part-time and adjunct	0
With Bachelor's Degrees	
Full-time Tenured	0
Full-time Non-tenured	0
Part-time and adjunct	7
Other	
Full-time Tenured	0
Full-time Non-tenured	0
Part-time	0
Total Headcount Faculty	
Full-time Tenured	1
Full-time Non-tenured	4
Part-time (Adjunct)	7

Please respond to the following questions.

1) Based on your program's assessment findings, what subsequent action will your program take?

   The MLS department's main goal is to hire a full time faculty member to teach clinical chemistry. Also, an Advisory Board committee meeting is scheduled for December 2016.

We are interested in better understanding how departments/programs assess their graduating seniors. Please provide a short narrative describing the practices/curriculum in place for your department/program. Please include both direct and indirect measures employed.

The MLS program builds upon competency statements as outlined in the ASCP Board of Certification. The competencies are provided in didactic courses and expanded upon in the laboratory setting. Students are assessed by quizzes, examinations, case studies, and laboratory competencies. Upon graduation from the MLS program, students are eligible to sit for the American Society for Clinical Pathologists (ASCP) national certification exam. The results of the certification exam are sent to the MLS program director, who utilizes the statistics to ensure the program is meeting the requirements set forth by the accrediting agency. The MLS department is accredited by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS), which requires measurement of certification pass rates as well as graduation rates, placement rates and attrition rates. The WSU MLS department exceeds NAACLS benchmarks for these measurements. The MLS department completed the rigorous NAACLS accreditation process spring 2015 and was awarded the maximum length of accreditation of ten years. The MLS faculty and online advising staff are continuously reviewing the curriculum and student evaluations to address the needs of the students along with the outcomes from courses and national certification assessments.