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This is the template for program assessment of data collected during 2023-2024 academic year. The template ensures that programs are planning for, collecting and analyzing, and engaging with assessment data.

1.D.4 The institution's **processes** and methodologies for collecting and analyzing indicators of student achievement are transparent and are used to inform and implement strategies and allocate resources to mitigate perceived gaps in achievement and equity.

1.C.7 The institution **uses** the results of its assessment efforts to inform academic and learning-support planning and practices to continuously **improve** student learning outcomes.

NWCCU Standards were updated in Jan. 2020 and include student learning outcomes, student success and achievement measures. Student achievement including, but not limited to, persistence, completion, retention, and postgraduation success. Such indicators of student achievement should be disaggregated by race, ethnicity, age, gender, socioeconomic status, first generation college student, and any other institutionally meaningful categories that may help promote student achievement and close barriers to academic excellence and success (equity gaps).

What you Did – The Plan

Section 1 – Program Mission

Program Mission & Goals:

The mission of the Medical Laboratory Science Degree, a Bachelor of Science program, is to educate, train, and graduate **professionally competent** and ethical individuals, committed to life-long learning, and who are prepared to meet current and future workplace challenges in medical laboratory science.

The goals of the Oregon Tech • OHSU MLS program are to:

1. Advance an **innovative** curriculum that meets current and emergent pedagogical and professional development needs of students.
2. Provide learning experiences rich in opportunities that maximize every student's potential to achieve MLS career entry-level competencies.
3. Graduate competent MLS that meet the **workforce needs of Oregon** and underserved regions of the nation.
4. Identify, establish, and maintain partnerships with community medical laboratories that provide exceptional educational experiences.
5. Contribute to the advancement of MLS pedagogy and growth of the profession.

Mission Alignment:

The mission of Oregon Institute of Technology as adopted in 2019 is to:

"offer **innovative, professionally**-focused undergraduate and graduate degree programs in the areas of engineering, **health**, business, technology, and applied arts and sciences. To foster student and graduate success, the university provides a **hands-on**, project-based learning environment and emphasizes innovation, scholarship, and applied research. With a commitment to diversity and leadership development, Oregon Tech offers **statewide** educational opportunities and technical expertise to meet current and emerging needs of Oregonians as well as other national and international constituents."

The MLS program meets this mission through its end goal of producing competent MLS professionals that serve our health care facilities in and outside of this state. The program uses innovative and **hands-on** curriculum to challenge students to maximize their potential. The profession of MLS meets a workforce need in Oregon, and the affiliates associated with this program are located in both rural and urban areas of multiple states in our region of the United States. Faculty are active contributors to the MLS pedagogy and the profession through their extra curricular work.

Changes to the Mission:

Mission of the MLS program has been unchanged for the last ten years. It has been approved by the Advisory Board annually at the Advisory board meeting for the program and by the National Accrediting Agency for Clinical Laboratory Sciences (NAACLS).

Section 2 – Program Student Learning Outcomes

Program Educational Objectives:

Upon completion of the Oregon Tech • OHSU MLS program, a student will have had the opportunity to acquire the knowledge and skills required to demonstrate professional attributes of a Medical Laboratory Scientist. Successful completion of the program will allow students to pursue career opportunities in various laboratory settings including but not limited to medical, research and development, sales, management and public health.

At the time of graduation, graduates of the MLS program will have the knowledge needed to:

1. Competently perform a full range of testing in the contemporary medical laboratory, encompassing pre-analytical, analytical, and post-analytical components of laboratory services, including immunology, hematology, clinical chemistry, immunochemistry, microbiology, molecular, hemostasis, urinalysis, body fluids, parasitology, mycology, virology and other emerging diagnostic venues.
2. Proficiently problem-solve, troubleshoot, and interpret results, and to use statistical approaches when evaluating data.
3. Participate actively in the development, implementation, and evaluation of test methods
4. Take Responsibility for analysis and decision-making.
5. Apply safety and governmental regulations and standards to medical laboratory practice.
6. Act with Professional and ethical conduct, respecting the feelings and needs of others, protecting the confidence of patient information, and never allowing personal concerns and biases to interfere with the welfare of patients.
7. Participate in Interpersonal and interdisciplinary communication interactions with members of healthcare teams, external relations, customer service and patients.
8. Apply knowledge of medical laboratory finance, operations, marketing, human resource management and educational methods.
9. Utilize information technology to effectively and accurately report laboratory-generated information.
10. Apply research design and practice principles to test development and validation.

Institutional Outcomes:

Additionally, the University requires that all programs measure student abilities on a globally applicable set of outcomes referred to as Institutional Specific Student Learning Outcomes (ISLO). The ISLOs reflect the common expectations about the knowledge, skills, and abilities that Oregon Tech students will acquire and are reflected in the General Education requirements that lay the foundation upon which the major curricula build. Engaging in these ISLOs will support Oregon Tech graduates in developing the habits of mind and behaviors of professionals and lifelong learners that is important to the mission of the University.

Oregon Tech students will:

- **communicate** effectively orally and in writing;
- engage in a process of ***inquiry and analysis***; including problem-solving & information literacy, critical analysis & logical thinking;
- make and defend reasonable ***ethical*** judgments;
- collaborate effectively in ***teams*** or groups;

- demonstrate **quantitative literacy & reasoning**; and
- explore **diverse perspectives, including cultural sensitivity & global awareness**.

Justification of PSLOS:

Seven measurable program specific learning outcomes have been defined that align both the university standards (Communication, Inquiry & Analysis, Ethical reasoning, Teamwork, Quantitative Literacy, and Global and Diverse Perspectives) and the educational objectives of the MLS program. Several of the standards also match National Accrediting standards published by NAACLS.

Graduates of the MLS program will have demonstrated:

1. **Competency** to perform a full range of testing in the contemporary medical laboratory encompassing pre-analytical, analytical, and post-analytical components of laboratory services, including immunology, hematology, clinical chemistry, immunohematology, microbiology, molecular, hemostasis, urinalysis, body fluids, parasitology, mycology, virology and other emerging diagnostic venues.

This outcome may be measured by the student's work product in all laboratory classes taught during the program. Professionally, students will be expected to demonstrate competency at the completion of on-the-job training and annually thereafter. The MLS program gives students knowledge of the subjects required to make clinical decisions, and also the ability to perform analytical testing as they would in the workplace. Each program course contains a demonstration of competency through the classroom laboratory exercises. Successful completion of the externship is based on a list of competencies that must be performed while the student is in the workplace. This programmatic outcome matches NAACLS standard entry level competencies of the Medical Laboratory scientist that state, *"At entry level, the medical laboratory scientist will possess the entry level competencies necessary to perform the full range of clinical laboratory tests in areas such as Clinical Chemistry, Hematology/Hemostasis, Immunology, Immunohematology/Transfusion medicine, Microbiology, Urine and Body Fluid Analysis and Laboratory Operations, and other emerging diagnostics, and will play a role in the development and evaluation of test systems and interpretive algorithms."*

2. **Proficiency to problem-solve, troubleshoot, and interpret results, and to use statistical approaches when evaluating data.**

This outcome measures student data analysis and inquiry skill as well as their quantitative literacy or ability to interact with written results. Professionally students will be expected to read and interpret clinical data from automated instrumentation to determine if those results are accurate or to identify problems with instrumentation or samples. Student abilities are measured by performance on a comprehensive Certification exam, laboratory exercises and tests in course work throughout the program. Every class in the program focuses on data analysis and troubleshooting to some extent. This outcome matches NAACLS entry level competencies of the Medical Laboratory scientist that state, *"The medical laboratory scientist will have diverse responsibilities in areas of analysis and clinical decision-making."*

3. **Professional and ethical conduct, respecting the culture and diversity of individual preference of others, protecting the confidence of patient information, and never allowing personal concerns and biases to interfere with the welfare of patients.**

This outcome measures student ethical reasoning with a focus on interprofessional interaction of a team caring for a patient. Ethical issues are discussed in most courses throughout the program. Foundations of Medical Laboratory Science I at the beginning of the program assigns students a specific ethics project. Students are also rated by their externship site at the end of the program for ethical understanding. Through the many team exercises provided students become aware of the diverse perspectives of the care giving team and the patient perspective. Global perspectives are introduced in many classes as reference ranges are discussed that pertain to specific communities. This outcome matches NAACLS entry level competencies of the Medical Laboratory scientist that state, *"At entry level, the medical laboratory scientist will have skills in principles and practices of professional conduct..."*

4. **Maintaining appropriate composure under stressful conditions.**

The program strives to teach this objective during laboratory simulations in student lab and capstone lab before clinical externship. Professional Development Evaluations from faculty and externship preceptors provide perspective data on student performance of this particular objective. Specifically, stress may be measured by cortisol levels in MLS 416 Chemistry II while the students concentrate on this subject. The program itself is rigorous and stressful; how a student

comports themselves in the academic environment may show how they comport themselves in a professionally stressful environment, with heavy workload and emotional demands in the patient care setting.

5. **Administrative skills** consistent with philosophies of quality assurance, continuous quality improvement, laboratory education, fiscal resource management.

This outcome covers the managerial aspects of coursework. Students who graduate from the MLS program will be qualified to manage the clinical laboratory after two years of professional practice. Students are made aware of continuous improvement activities in their Foundations of Medical Laboratory Science courses and are given several tasks to perform on the subjects while out on externship. In course work, this objective may be measured by the completion of specific projects on education, quality control or finances. This outcome matches NAACLS entry level competencies of the Medical Laboratory scientist that state, *“At entry level, the medical laboratory scientist will have skills in principles and practices of administration and supervision as applied to clinical laboratory science and educational methodologies and terminology sufficient to train/educate users and providers of laboratory services.”*

6. **Application of safety and governmental regulations** and standards as applied to medical laboratory practice.

Since Medical Laboratory science is a highly regulated profession, students are required to become familiar with safety and best practice standards governing their laboratory actions. Students are required to participate in HIPAA education before working with OHSU patient samples. Students learn and perform Quality Control activities for most tests in the classroom laboratories and the Foundations of Medical Laboratory Science II class has an inspection exercise incorporated into the curriculum. This outcome is measured by student performance in quality control activities in the laboratory classroom and in externship. This outcome matches NAACLS entry level competencies of the Medical Laboratory scientist that state, *“At entry level, the medical laboratory scientist will have skills in application of safety and governmental regulations and standards as applied to clinical laboratory science.”*

7. **Effective communication** skills to ensure accurate and appropriate information transfer.

This outcome measures students’ ability to communicate orally and in the written word. Oral communication is important to teamwork and will be necessary when dealing with other health care professionals, during work-load hand offs at shift change and during problem solving. Written communication is measured through the writing of reports and procedures. Students entering the program should already have experience with both types of communication. An oral presentation of a comprehensive case study is made during the last term of the didactic portion of the program. Students work in groups to organize and present the case study material. Students are also given a variety of reports to write for the various courses simulating those reports written professionally. This outcome matches NAACLS entry level competencies of the Medical Laboratory scientist that state, *“At entry level, the medical laboratory scientist will have skills in communications sufficient to serve the needs of patients, the public and members of the health care team.”*

Changes made to learning outcomes:

At the summer term assessment meeting of the program on 6/27/2024 the PSLO outcomes were reviewed with faculty. Faculty recommended no changes.

Course Learning Outcomes:

The following is a list of the course learning outcomes within the curriculum map for the professional year of the program. Course learning outcomes are overall expectations or topics covered by the courses, they are not the same as learning objectives by topic. A complete listing of learning objectives by topic are available in the individual course syllabi.

COURSE	Term/ Instructor	PSLO1	PSLO2	PSLO3	PSLO4	PSLO5	PSLO6	PSLO7
University ISLO		Quantitative Literacy	Inquiry and Analysis	Ethical Reasoning and Diversity				Teamwork and Communication
Hematology Series								
MLS442 Hem I	Fall/Dawn	Identify and quantitate blood cells on a peripheral blood smear.	Calculate and interpret values associated with the				Safely perform heme	Effectively communicate in writing to

			CBC and other hematology procedures.				procedures to obtain accurate patient and QC results	convey necessary information included in a lab report.
MLS 452 Hem II	Winter/Dawn	Accurately perform differentials on Wright's stained peripheral blood smears.	Interpret findings on Wright's stained peripheral blood smears to determine a most likely diagnosis.					
MLS 449 UA	Spring/Caroline	Perform procedures related to the microscopic and chemical examination of urine and obtain accurate results	Interpret and correlate urine chemistry results and urine microscopic results and their relationship to renal disease		Perform a urinalysis in a timely manner	Perform and interpret quality control and quality assurance practices used in the examination of Urine in accordance with governmental regulations and best practices		Effectively communicate, written and verbal, laboratory results, urinalysis methodologies and training materials to peers
MLS 424 Hemostasis	Summer/Dawn	Safely perform hemostasis procedures to get accurate patient and QC results.	Interpret findings case study findings and lab data to determine a most likely diagnosis.					As a team , develop and present a case study
Chemistry Series								
MLS 415 Chem I	Winter/Laurie	Accurately perform chemistry procedures on an analytic method using patient and QC samples.	Determine and apply the appropriate mathematical function to solve problems in the analytical chemistry lab.					
MLS 416 Chem II	Spring/Laurie	Perform precise and accurate analytical procedures utilizing the appropriate analytical methodology.	Perform method comparison study to calculate acceptability of instrument comparison test results.					Effectively communicate and discuss various testing methodologies and testing practices used in the chemistry laboratory
MLS 407 Capstone	Summer/Rachel		Students will calculate total allowable error to determine if a method should be implemented.			Students will use educational theory to appropriately train their peers on a new procedure.	Students will understand the purpose of each step in the method validation process and be able to link it to compliance standards.	Students will develop appropriate documentation for a method validation process.
Foundations Series								
MLS 432 Found I	Fall/Caroline		Determine and apply the appropriate mathematical functions and statistical approaches to solve problems and evaluate data in the medical laboratory	identify ethical issues within the medical laboratory and apply the ASCLS professional code of ethics to	demonstrate professionalism as a phlebotomist and perform a venous blood collection suitable for laboratory testing.	perform and interpret quality control and quality assurance practices in the clinical laboratory in accordance with	comply with governmental safety regulations and perform correct safety procedures in the medical laboratory.	

				resolve laboratory ethical dilemmas.		governmental regulations and best practices		
MLS 462 Found II	Winter/Rachelle		Choose an appropriate statistical analysis for a given research question.	Perform the appropriate steps necessary to apply for a position as a Medical Laboratory Scientist.		Utilizing information regarding testing volume workload, develop a schedule that meets laboratory staffing needs and adheres to legal employment standards.	Identify Compliance Regulations that are met by specific laboratory activities	Convey appropriate information in a Standard Operating Procedure (SOP)
MLS 463 Found III	Fall2/Rachelle		Recognize how operations policies impact workflow within the laboratory.		Work effectively and contribute toward the productivity of the laboratory team.	Apply knowledge and skills acquired during subject specific coursework to the administrative and supervisory duties conducted within the laboratory department.	Adhere to established safety policies and practices to minimize injury to self and others.	Communicate in a manner sufficient to serve the needs of patients, the public and members of the health care team.
Microbiology Series								
MLS 464 Parasit/Myology	Fall/Darrell	Identify and accurately report parasites in laboratory samples.	Identify and accurately report yeast and molds in laboratory samples.					
MLS 422 Molecular	Summer/Caroline	Perform and interpret nucleic acid amplification				Discuss and perform quality control and quality assurance practices that are specific to a molecular testing laboratory		Effectively communicate and discuss various testing methodologies and current practices used in the molecular laboratory for the isolation, quantification, qualification and interpretation of DNA, RNA and Protein from patient samples
MLS 444 Micro I	Winter/Darrell	Identify bacterial commonly found in clinical samples using identification schema.	Identify bacteria commonly found in clinical samples using identification schema.			Accurately report biochemical tests used in identification of bacteria.		
MLS 445 Micro II	Spring/Darrell	Identify, perform, and report appropriate biochemical tests for organism identification.	Analyze and interpret microbiology culture test results.					
Blood Bank Series								

MLS 420 Immunology	Fall/Laurie	Accurately perform immunology procedures on a variety of methods using patient and QC samples.	Identify analytical process errors and how they impact results.					
MLS 443 BB I	Spring/Rachelle	Perform serological testing sufficient to identify an appropriate blood product for transfusion.	Use probability of antigenic frequency in various populations to choose an appropriate number of potential donors to screen for compatibility for a given patient.	Recognize cultural and global factors that impact the blood supply and ability to find compatible blood.		Perform appropriate Quality Control sufficient to determine that the test system for pretransfusion testing is operational.		
MLS 453 BB II	Summer/Rachelle	Perform appropriate testing to detect and/or prevent Hemolytic Disease of the Newborn	Identify the type of transfusion reaction most likely occurring given a set of patient symptoms and transfusion history.		Recognize the stress involved in managing a patient workload within the Blood Bank setting.		Handle, Store and Transport Blood Components according to published guidelines.	Determine and Communicate to the clinician the appropriate component to transfuse to a patient given sufficient patient clinical situation information

Section 3 – Curriculum Map

The program's learning outcomes are stratified throughout the MLS **professional program** curriculum which is completed in 12 months and capped by a 12-week externship in the professional clinical setting. Each instructor identifies within their course outcomes, alignment to program and institutional outcomes and specific assignments that provide measurements of student performance on the outcomes. Care was taken to ensure that each outcome is measured by a different instructor and at different levels of competency throughout the curriculum. Following is a map that identifies courses that measure the outcomes, instructors and the level of measure from **foundational** knowledge (initial introduction to the concept), **practice** performance (built upon concepts from previous learning), and **capstone** competency (students are masters of the material).

Curriculum Map:

COURSE	Term/Instructor	PSLO1	PSLO2	PSLO3	PSLO4	PSLO5	PSLO6	PSLO7
University ISLO		Quantitative Literacy	Inquiry and Analysis	Ethical Reasoning and Diversity				Teamwork and Communication
Hematology Series								
MLS442 Hem I	Fall/Dawn	F	F				F	F
MLS 452 Hem II	Winter/Dawn	P	P					
MLS 449 UA	Spring/Caroline	F	P		P	P		p
MLS 424 Hemostasis	Summer/Dawn	P	P					P
MLS 471 Externship	Fall2/Dawn	C	C	C	C	C	C	C
Chemistry Series								
MLS 415 Chem I	Winter/Laurie	F	F					F
MLS 416 Chem II	Spring/Laurie	P	P		F			P
MLS 407 Capstone	Summer/Rachelle		C			C	C	C
MLS 470 Externship	Fall2/Laurie	C	C	C	C	C	C	C
Foundations Series								

MLS 432 Found I	Fall/Caroline		F	P	F	P	F	
MLS 462 Found II	Winter/Rachelle		P	P		P	P	P
MLS 463 Found III	Fall2/Rachelle		C		C	C	C	C
Microbiology Series								
MLS 464 Parasit/Mycology	Fall/Darrell	P	F					
MLS 422 Molecular	Summer/Caroline	P				P		C
MLS 444 Micro I	Winter/Darrell	F	F			F		
MLS 445 Micro II	Spring/Darrell	P	P					
MLS 472 Externship	Fall2/Darrell	C	C	C	C	C	C	C
Blood Bank Series								
MLS 420 Immunology	Fall/Laurie	F	F					
MLS 443 BB I	Spring/Rachelle	F	F	P		F		
MLS 453 BB II	Summer/Rachelle	P	P		P		P	P
MLS 473 Externship	Fall2/Rachelle	C	C	C	C	C	C	C

Section 4 – Assessment Cycle

The assessment of the Medical Laboratory Science program follows a **systematic** timeline of activities each academic year concluding with the preparation of this Annual Program Assessment Report that is published with the Office of Academic Excellence at Oregon Institute of Technology and externally on the University website at <https://www.oit.edu/academic-excellence/assessment/reports/mls/medical-laboratory-science> .

Timeline of Assessment Activities:



The report contains data and actions from three different cohorts that are present during the academic year 2023-24. The same data is collected from each cohort **annually** which includes measurements of student work on all educational outcomes (PSLO and ISLO), student senior exit survey, preceptor evaluations of student performance, job placement, graduation, retention, and certification passage. This report contains complete **post-graduation success** data on class of 2023, defined as those students that graduated at end of Fall term 2023. This report contains complete **curricular data** from class of 2024, defined as those students that have completed the entire year of didactic learning, but are set to graduate at the end of fall term 2024 after externship. This report contains **plans** for the collection of data and actions to be taken to improve the experience of class of 2025, defined as those students beginning curriculum in fall of 2024. Additional post-graduation success data in the report may be from classes 2020, 2021, and 2022 to judge long term trends that help interpret data produced from class of 2023.

	Act	Collect	Plan
	2022-2023	2023-2024	2024-2025
Data Set	Cohort Class of 2023 Complete data set available. Cohort graduated end of Fall term. Post graduation success data includes: <ul style="list-style-type: none"> Alumni Survey Employment data Certification Graduation Curriculum performance PDE 	Cohort Class of 2024 Incomplete data set available. Cohort has completed academic coursework but has not graduated <ul style="list-style-type: none"> Curriculum performance Plan to collect post-graduation success data.	Cohort Class of 2025 Incoming cohort beginning curriculum. Plan for curriculum collection for this cohort during the coming academic year.
Actions taken on curriculum	Gaps in this data indicated actions that were taken during academic year 2023-24.	Compare curricular performance of this cohort to previous cohort to determine success of previous actions taken. Gaps in this data generate new actions to be taken in academic year 2024-25.	Implement actions. Develop measures for success of the new actions planned for this cohort.
Actions taken on programmatic success	Gaps in post-graduation success data indicate trends to be watched. This cohort plus three previous years' cohorts complete data verify success of previous actions taken. Cohorts included: class of 2022, class of 2021, class of 2020.	Communication is maintained with cohort in order to collect post-graduation success data. As trends appear, action plans develop.	Action plans implemented to improve post-graduation success. Plan to review trends when data becomes available to verify success of actions taken.

Section 5 – Assessment Data Collection Processes

Curricular Evaluation of Student performance in the Program: Student artifact

MLS faculty have standardized the following criteria for student work artifact collection:

- **Performance Target:** 85% of student work will meet the criteria of the assignment to gain a grade of B or better. By capstone performance, all students should be meeting performance target.
- **Sample:** All registered students in the 2023-24 cohort class.
- **Accountability:** The assigned instructor of the course will be grading the assignment. In some circumstances, faculty team grading may be used when course numbers have multiple instructors. As it is stored on a shared program drive, raw assessment data is viewable by all program faculty.
- **Representation:** All student data from multiple modalities is included in the performance number reported for the course. Within the tracking spreadsheet for instructor grading, modality and student disaggregated categories are filtered by the instructor before reporting DFWI data in the course learning outcomes worksheet. Specific population trends are identified on a course by course performance basis.

Activities and **Rubrics** used for outcomes assessment are updated annually by the instructor based on the performance of the cohort in the previous academic year. For cohort graduating in 2023 these activities are listed in the following table:

COURSE	PSLO1	PSLO2	PSLO3	PSLO4	PSLO5	PSLO6	PSLO7
University ISLO	Quantitative Literacy	Inquiry and Analysis	Ethical Reasoning and Diversity				Teamwork and Communication
Hematology Series							
MLS442 Hem I	Practical Exam	Calculations on Final				Safety Scenarios	RBC procedure lab reports
MLS 452Hem II	Differentials	Unknowns					
MLS 449 UA	Practical Exam	Case History Exam		Lab Practical	Lab2 Worksheet		You are the Expert presentation
MLS 424 Hemostasis	Lab Exercises grade	Case Questions on Final					Immunohematology/ Hemostasis Case Study presentation
Chemistry Series							
MLS 415 Chem I	Practical Exam	Final Exam- Calculations					
MLS 416 Chem II	Dilutions Lab	Method Comparison Lab					Chemistry Case Study presentation
MLS 407 Capstone		Calculations			Training Plan	Background Research	Validation Report
Foundations Series							
MLS 432 Found I		Lab Math Exam	Ethics Project	Phlebotomy practical	QC/QA exam	Create a Safety Exam	
MLS 462 Found II		Journal Critique	Corrective Action Cases		Schedule	Inspection Cases	SOP
MLS 463 Found III		Completed Checklist		Sim Lab	Reviewed a Policy	Safety or Inspections training	Made a phone call or Interviewed someone
Microbiology Series							
MLS 464 Parasit/Mycology	Photo Exam	Case Study Exam					
MLS 444 Micro I	Lab Practical	Weekly Exam Total			Lab 9		
MLS 445 Micro II	Total lab activities	Case Study Exam					
Blood Bank Series							

MLS 420 Immunology	Protocol Quiz	Lab problem solving questions					
MLS 443 BB I	Practical Exam	Midterm 2 Frequency Calculations	Global Discussion Board		QC Lab Grade		
MLS 453 BB II	Lab Score	Calculations Questions	Donor Discussion Board	Prioritization Lab		Components Questions	Immunohematology/Hemostasis Case Study
Stand Alone Courses							
MLS 422 Molecular	Lab 3				PCR contamination lab		Teach the class Presentation

External Evaluation of Student performance on Learning Outcomes

Indirect measure of student achievement is taken from **Senior Exit Survey**. The survey asks the students to rate their time in the program met the stated PSLOs and ISLOs. Student perspective on their own learning is relevant to demonstrated confidence with the material given and general satisfaction with the instruction given. Student exit survey is meant to evaluate student satisfaction at the end of the program. **Minimum acceptability standard for student exit survey is 85% of students rating themselves as impacted “quite a bit” or “very much”** by their time in the program for the stated outcome.

Note: The cohort graduating in 2022 did not respond to the survey. No data were available.

Direct measure at the capstone level is made from the **Professional Development Evaluation (PDE)** completed by the preceptors during externship. **Minimum acceptability standard for PDE performance is 95% of all students receiving a grade of 2 or greater** on the specified criteria.

Post Graduation Success of the Program: NAACLS Requirements

The Medical Laboratory Science professional program is accredited by the *National Accrediting Agency for Clinical Laboratory Science (NAACLS)*, 5600 North River Road, Suite 720, Rosemont, Illinois 60018-5119. NAACLS requires annual submission of program assessment data to include certification results, graduation rates, employment rates, and attrition rates.

Graduation and attrition data is gathered from **University registrar records**. Board Certification Passage is generated in a report from **ASCP** by the department Program Director. Placement data is gathered through both the **Senior Exit survey** administered by the Office of Academic Excellence and **faculty contact** with recent graduates. All data is stored on a shared assessment file by the Program Assessment Coordinator.

OIT/OHSU MLS program has set the following performance target for achievement of the cohort on these data:

	NAACLS Minimum Standards
Certification Passage	75%
Graduation Rate	70%
Placement Rate	70%
Attrition	Must be documented

Note: All percentages refer to % of students admitted to the program in the academic year documented.

What you Found – The data collected

Section 6 – Assessment Data and Interpretations

In this section, the data is presented for **2023-2024** academic year. Cohort expected to graduate in **2024** provides the data for **course work**. Cohort that did graduate in **2023** provided the data for **post-graduation success**. This program only has one modality of delivery of content: in-person on Portland Metro Campus. For 2024-25 report, data will be disaggregated by deceleration and online content delivery.

Performance Criteria	Assessment Methods	Performance Target	Results			Interpretation	Equity Gap?
PSLO1 – Competency ISLO - Inquiry and Analysis University Indicator	Direct: Course specific Project Grade	85% of student work will meet the criteria of the assignment to gain a grade of B or better.	F	MLS442 Hem I	91%	Met. The later curriculum measures indicate that students improved throughout the curriculum.	NO
			P	MLS 452Hem II	100%		
			F	MLS 449 UA	100%		
			P	MLS 424 Hemostasis	97%		
			F	MLS 415 Chem I	97%		
			P	MLS 416 Chem II	100%		
			F	MLS 464 Parasit/Mycology	100%		
			F	MLS 444 Micro I	67%		
			P	MLS 445 Micro II	100%		
			F	MLS 420 Immunology	96%		
			F	MLS 443 BB I	94%		
			P	MLS 453 BB II	100%		
			P	MLS 422 Molecular	100%		
			Exit Survey - 100%				
			PDE 100%				
PSLO2- Problem Solving ISLO – Quantitative Literacy University Indicator	Course specific Project Grade	85% of student work will meet the criteria of the assignment to gain a grade of B or better.	F	MLS442 Hem I	88%	Improving. Students that took advantage of extra math and tutoring optional supports demonstrated improvements. Program Level Action plan: Early failures in mathematics assignments will require a sign off that the student sought tutoring. Program institutes additional study practice supports in Orientation. Early course work failures will trigger additional study supports requirements.	NO
			P	MLS 452Hem II	88%		
			F	MLS 449 UA	100%		
			P	MLS 424 Hemostasis	67%		
			F	MLS 415 Chem I	51%		
			P	MLS 416 Chem II	93%		
			C	MLS 475 Capstone	100%		
			F	MLS 464 Parasit/Mycology	100%		
			F	MLS 444 Micro I	94%		
			P	MLS 445 Micro II	80%		
			F	MLS 420 Immunology	100%		
			F	MLS 443 BB I	54%		
			P	MLS 453 BB II	64%		
			F	MLS 422 Molecular	100%		
			F	MLS 432 Foundations I	74%		
			P	MLS 462 Foundations II	86%		
			Exit Survey – 100%				
			PDE 100%				
PSLO3 – Ethics	Course specific Project Grade	85% of student work will meet the criteria of the assignment to	P	MLS 443 BB1	94%	Improving. Looking for additional measures and	NO
			F	MLS 432 Foundations I	100%		

ISLO – Diverse Perspectives ISLO – Ethics		gain a grade of B or better.	P P Exit Survey – 100% PDE 100%	MLS 462 Foundations II MLS 462 Foundations II	88% 65%	instruction on this outcome within curriculum.	
PSLO4 - Stress	Course specific Project Grade	85% of student work will meet the criteria of the assignment to gain a grade of B or better.	P P F C P Exit Survey – 100% PDE 100%	MLS 449 UA MLS 416 Chemistry II MLS 432 Foundations I MLS 463 Foundations III MLS 449 Molecular	100% 100% 100% 100% 100%	Met.	NO
PSLO5 – Quality Control	Course specific Project Grade	85% of student work will meet the criteria of the assignment to gain a grade of B or better.	P F F F P C P Exit Survey – 88% PDE 100%	MLS 449 UA MLS 444 Microbiology I MLS 443 BB I MLS 432 Foundations I MLS 462 Foundations II MLS 475 Capstone MLS 422 Molecular	100% 97% 97% 97% 88% 100% 100%	Met.	NO
PSLO6 – Safety and Compliance	Course specific Project Grade	85% of student work will meet the criteria of the assignment to gain a grade of B or better.	F P F P C Exit Survey – 88% PDE 100%	MLS 442 Hematology I MLS 453 BB II MLS 432 Foundations I MLS 462 Foundations II MLS 475 Capstone	100% 87% 100% 97% 90%	Met.	NO
PSLO7 – Communication ISLO – Teamwork ISLO - Communication	Course specific Project Grade	85% of student work will meet the criteria of the assignment to gain a grade of B or better.	P C P F C C P C Exit Survey – 88% PDE 100%	MLS 449 UA MLS 424 Hemostasis MLS 416 Chem II MLS 442 Heme I MLS 453 BB II MLS 422 Molecular MLS 462 Foundations II MLS 475 Capstone	100% 100% 100% 97% 100% 100% 91% 100%	Met.	NO
Graduation Rate	Registrar's office	75%	100%			Met	NO
Placement	Senior Exit Survey	75%	100%			Met	NO
Attrition	Registrar's office	tracked	0% - 2 decelerated			Met	NO
Certification	ASCP	75%	100%			Met	NO
DFWI	University dashboard	<12%	<1%			Met	NO

Faculty Interpretation: Faculty discussed student performance for cohorts 2023 and 2024 during their assessment meeting on 6/27/2024. Early exam performance for cohort 2024 demonstrated more challenges academically than 2023 cohort. However, the assignments chosen to reflect outcomes performance did not demonstrate the same gaps. In looking at assessment data for the two cohorts, cohort 2024 performed better than cohort 2023 on nearly every outcome assessed in every course. There are two ways to interpret this data. The first is that the data is not reflective of comprehensive understanding of course materials. The second is that faculty efforts on teaching to the outcomes are successful. For instance, measure of laboratory competency from PSLO1 shows early performance failures that improve over time spent with the curriculum. Secondly, measures of problem solving from PSLO2 demonstrate that early warning and intervention for students who have challenges with mathematics have improved performance. Actions will continue to be taken on the outcomes, but the program might also consider measuring comprehension of course materials by the final exam performance.

Representation: The program began to exist in two modalities as of this 2024 cohort. Both modalities are offered in-person on the Portland Metro campus, but students choose whether to complete coursework in 12 months or 2 years. The 12-month track is labeled as traditional and the 2-year track is deceleration. The overall data set contains data for students in both tracks which can be disaggregated. Not enough data yet exists to see if students in the decelerated track are performing as well as their peers in the traditional track. Preliminary data suggests that they are not performing on curriculum outcomes at the same percentage as traditional students are, however this academic performance may be why they have chosen the deceleration track in the first place. Board exam scores and post-graduation success indicators will ultimately demonstrate if this track is as successful as the traditional route.

Growth in the curriculum: The data presented for both cohorts on PSLO1 or PSLO2 gives the best representation of improvement throughout program. Most courses in the curriculum contain a representative assignment that measures problem-solving or laboratory competency. For class of 2024 in both categories, failures to meet in these outcomes occurred in foundational level courses where the information was first introduced, once the outcomes were assessed at the practice and capstone levels, students demonstrated adequate performance on the outcomes. Faculty feel that recognition of the students' early failures to meet allowed them to pivot and add additional supports to later curriculum to ensure successes.

External evaluations of the program: Students evaluate the success of their time in the program through completion of the senior exit survey during the last weeks of their final term. Overwhelmingly, students felt their time in the program contributed to success on the outcomes. Clinical affiliates confirmed during externship that our students met the stated outcomes for professional competence. The alumni and employer surveys were distributed in June of 2024 after the annual advisory board meeting approved the timing and contents. Results of the employer survey indicated that employers ranked our students 71% as better than students from other programs (74% of employers surveyed said that they took students from other programs for externship) and 100% said that employees that came from our program had sufficient entry level knowledge. Overwhelmingly, the top item employers felt needed more work in the curriculum was problem solving ability. When asked about their ability to provide clinical experiences, only 58% of respondents felt that they could offer a microbiology location compared with 84% for transfusion medicine and 100% for hematology and chemistry and 26% still have techs that perform phlebotomy. Alumni survey indicated that 100% of responding graduates were satisfied that their time in the program prepared them for certification and 80% were satisfied with their salary after graduation. The alarming trend reported last year of 36% of graduates reporting leaving their first job in less than 1 year is down on the current survey to 10%. The number one item alumni requested as curricular improvements were more practice with automation and detecting error/contaminated specimens.

Outlook for placement and growth: Given the changing landscape of Portland Metro hospital consolidation, program growth and post-graduation placement rates may decrease. In the recent employer survey sent out by the program 67% of facilities considered themselves adequately staffed and 50% anticipated that 3-7 jobs may open in the next 2 years. This program must be careful not to saturate the professional market in Portland. As hospital laboratories consolidate beneath corporate laboratory umbrellas, the online modality of the program may become more important to keep the program growing to serve the rural communities where the job openings remain. Maintaining more affiliates that will take students for externship continues to be a major focus for keeping post-graduation placement up. When asked

about their ability to provide clinical experiences, only 58% of respondents felt that they could offer a microbiology location compared with 84% for transfusion medicine and 100% for hematology and chemistry and 26% still have techs that perform phlebotomy. The program continues to attempt to place students in rural communities where more jobs are available.

Evidence of Improvement in Student Learning

History of Results: Met Not Met Not Assessed

Outcomes	Class of 2024	Class of 2023	Class of 2022	Class of 2021	Class of 2020
PSLO1 Competency	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I
	MLS 452Hem II	MLS 452Hem II	MLS 452Hem II	MLS 452Hem II	MLS 452Hem II
	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA
	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis
	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I
	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II
	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology
	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular
	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I
	MLS 445 Micro II	MLS 445 Micro II	MLS 445 Micro II	MLS 445 Micro II	MLS 445 Micro II
	MLS 420 Immunology	MLS 420 Immunology	MLS 420 Immunology	MLS 420 Immunology	MLS 420 Immunology
	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I
	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II
PSLO2 Problem-solving	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I
	MLS 452Hem II	MLS 452Hem II	MLS 452Hem II	MLS 452Hem II	MLS 452Hem II
	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA
	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis
	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I
	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II
	MLS 407 Capstone	MLS 407 Capstone	MLS 417 Capstone	MLS 407 Capstone	MLS 407 Capstone
	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I
	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II
	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology	MLS 464 Parasit/Mycology
	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I
	MLS 445 Micro II	MLS 445 Micro II	MLS 445 Micro II	MLS 445 Micro II	MLS 445 Micro II
	MLS 420 Immunology	MLS 420 Immunology	MLS 420 Immunology	MLS 420 Immunology	MLS 420 Immunology
PSLO3 Ethics	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I
	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II
	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone
	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I
	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II

PSLO4 Stress	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I
	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA
	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II
	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone
	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I
	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II
PSLO5 Quality Control	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA
	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis
	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone
	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I
	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II
	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular
PSLO6 Safety & Compliance	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I	MLS 444 Micro I
	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I	MLS 443 BB I
	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I
	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone	MLS 407 Capstone
	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I	MLS 432 Found I
	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II
PSLO7 Communication	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II	MLS 453 BB II
	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I	MLS442 Hem I
	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA	MLS 449 UA
	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis	MLS 424 Hemostasis
	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I	MLS 415 Chem I
	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II	MLS 416 Chem II
	MLS 475 Capstone	MLS 407 Capstone	MLS 417 Capstone	MLS 407 Capstone	MLS 407 Capstone
	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II	MLS 462 Found II
	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular	MLS 422 Molecular
Average Certification score	NA	583	545	519	530
Certification Rate	NA	100% total pass rate	91% total pass rate	97% total pass rate	100% total pass rate
		93% first time pass rate	88% first time pass rate	88% first time pass rate	84% first time pass rate
Graduation Rate	NA	100%	97%	100%	100%
Employment	NA	100%	100%	100%	100%
Attrition #	None/2 decelerated	A large number of students dropped in first two weeks + 2 decelerated, 1 withdrew.	2/39; 1 delayed for medical, 1 delayed for family	0	1/39; 1 delayed to graduate with class of 2021

Interpretations of past trends: Past data indicate that the program consistently produces students that **persist, graduate, are employable, and pass their certifications**. As assessment practices were adapted by faculty over time, more curricular data has been added each year to enrich measurement of **program learning outcomes**.

When outcomes data is looked at over time, one particular outcome becomes a focus for the program: **Problem solving**. Trends in problem solving demonstrate that students consistently do not perform as well on earlier coursework as they do later in the program. When faculty drilled down to the cause, they found that the difficulty was in assignments with calculations. The assignment showing consistently in red in PLSO3 Ethics from Blood Bank I is also a calculations assignment and was re-grouped with the problem-solving assignments for 2024. With the early alert of students struggling with calculations, faculty are able to provide more supports in later curriculum and help students reach outcomes in later classes. For all other outcomes that did not meet, individual action plans made by faculty worked as implemented over time.

How are you using the data? – Action

Section 7 – Data-driven Action Plans:

Action Driver	Action Taken	Accountable Person	Resources Needed	Outcome Measure
<p>PSLO1 – Competency Inquiry and Analysis MLS444</p> <p>Program Trend Identified: <i>Final Exam and practical exam performance had higher failure rates in multiple courses than previous years.</i> MLS443, MLS442, MLS415, MLS416,</p>	<p>Lecture and Lab competencies will be considered separate requirements for passing program subject specific courses that have a comprehensive final exam and comprehensive practical exam.</p> <p>Those courses are Micro I and II, BB I & II, Heme I and II.</p> <p>Students who do not pass the designated competencies for the laboratory portion or the lecture portion do not meet the essential requirements as listed in the student handbook. Students will be required to do remediation before moving on to the next course level regardless of overall course grade.</p> <p>Instructors will Begin tracking Final Exam performance for assessment.</p>	<p>Darrell Mooers Laurie Sprauer Rachelle Barrett Dawn Taylor</p>	<p>Department Syllabus Alignment</p> <p>Handbook Update & remediation plans in place at Orientation</p>	<p>Competencies identified.</p> <p>Student performance on final exams 2024-25 academic year.</p> <p>BOC passage rate.</p>

Evaluation of 2022-2023 Past Actions:

Actions that were taken in the past based on assessment data were most often developed by a single instructor and impacted a single course or assignment. Single course action plans often produced better results in assessment data confirming that the action plan was successful. As multiple years of course data have been reviewed, trends have become visible to faculty and the need for larger program-wide actions that will benefit multiple faculty, students and courses.

In 2022-23, one of those larger programmatic actions was taken to improve student performance on **problem-solving** an educational outcome that had been low across multiple courses. Through the collection and comparison of multiple courses over the years, a gap was found in student performance on laboratory **calculations**. The program focused on a single gate-keeper course MLS432 Foundations I which introduced “lab math”. The class, taught in the first term of the program, collected data via mathematics exam. Failure on this exam identified students early in the cohort that needed extra calculations support. A plan was put into place with the assistance of student tutor services to encourage students that did not meet expectations on this exam to seek out the tutoring center where worksheets and special training specific to calculations was provided. For 2023-24 academic year, this process was optional for students. Those students that sought the extra services did improve. In 2024-25 students that fail to meet expectations on the exam will be required to visit the tutor center.

Attrition was another focus for the program and the university in 2022-23. In reviewing retention trends for the program over multiple years, a slight increase in students leaving was noticed by faculty. After discussing student performance that led to students leaving the program, it was decided that a commonly implemented action plan for deceleration of course work would be developed into an optional track for students to choose to enter at the beginning of their time in the program. To retain a consistently high enrollment, it was decided that the program would allow 2 students per cohort to opt into the deceleration track with a total of 4 students per year. During 2023-24 this action resulted in students who would have chosen to leave for personal and family reasons staying in the program with the goal of completion in 2024-25. Academic progress and certification of these decelerated students will be rigorously monitored compared with traditional track students in coming years to ensure continued success with this altered curriculum schedule.

A 2022-23 action plan was implemented on recruitment of more **diverse** populations by translating some marketing materials into Spanish in paper and on the website. Cohorts for 2023-24 and 2024-25 academic year have seen the results of this targeted advertising. The enrolled class graduating in 2024 contained a percentage of Hispanic students equivalent to the Oregon Census for Hispanic population at 13% with a non-white enrollment of 45% and in 24-25 cohort, the most diverse cohort to date has a non-white enrollment of 55% and Hispanic enrollment of 24%.

Performance Criteria	Previous Action Plan	Cohort 2023 Data	Cohort 2024 Data	Interpretation
PSLO2- Problem Solving ISLO – Quantitative Literacy	<p>MLS432 evaluates math skills with a pre-test. Student failures recommended to attend tutoring session on math. More support for calculations in MLS415 curriculum.</p> <p>MLS442, MLS452 & MLS 424 to add group post-exam debrief.</p> <p>MLS 452 and MLS 424 Include more examples of how to approach case studies and unknowns.</p>	<p>MLS442 59%</p> <p>MLS424 66%</p> <p>MLS452 80%</p> <p>MLS432 84%</p> <p>MLS443 34%</p> <p>MLS415 58%</p>	<p>MLS442 88%</p> <p>MLS424 68%</p> <p>MLS453 77%</p> <p>MLS432 74%</p> <p>MLS443 54%</p> <p>MLS415 51%</p>	<p>Improved.</p> <p>Improved</p> <p>Not Improved</p> <p>Not Improved</p> <p>Improved.</p> <p>Not Improved</p> <p>This cohort especially struggled in mathematical concepts early and across</p>

	MLS 443 to allow resubmission of corrected failed exams for up to 5% back.			multiple courses. Improvements were made in the upper-level courses.
PSLO3 – Ethics ISLO – Diverse Perspectives ISLO – Ethics	MLS 443 –Create new assignment grading rubric for discussion board post to include cultural competency standards published June 2022. MLS462 & MLS443 -Instuctor to seek training on classroom discussion techniques during fall 2023.	MLS443 56% MLS462 83% MLS462 26%	MLS443 94% MLS462 88% MLS462 65%	Improved. Improved. Improved.
PSLO6 – Compliance	MLS407 improvements planned based on student and faculty feedback. Itemized in the course binder and collaboration planned for spring 2024. MLS453 supplemented with components worksheet, lab and field trip.	MLS475 84% MLS453 60%	MLS475 90% MLS453 87%	Improved Improved
Attrition	Several instances have been discussed where students might have benefitted from a decelerated version of the program (2 years instead of 1 year academic prep). Plan being developed for deceleration to be implemented 2023 or 2024 academic year.	2 decelerated but retained in program. 1 withdrew for medical 2 in next cohort (2024) decelerated and retained.	100% retention	Improved.
Equity	1.Translating recruitment materials into Spanish 2.ASCLS Club sponsored cultural potluck to foster inclusion of multiple ethnicities within cohort. 3.Faculty seeking continuing education opportunities for providing ESL curriculum in medical sciences	Hispanic and Black populations reduced 2023 cohort but increased in 2024 cohort. Males also reduced in 2023 and 2024 cohorts. Asian population increased in both cohorts. BOC first time failure more common in males than non English speakers.	Class of 2025 prospectively, 25% latino (increased from previous year), 5% Non-binary. and 27% male. Non-binary and male slightly increased over previous years. Still need recruitment in the black community.	Improved.

Discuss programmatic Improvements

In the 2023-24 academic year, in-person lectures were introduced for the Capstone course, and additional support for method validation was integrated throughout the chemistry curriculum. Early and frequent exposure to technology was

emphasized, along with an increase in examples of abnormal sample integrity across multiple courses. These enhancements are designed to improve student competency in both simulated laboratory environments and problem-solving as they transition into their first professional roles. These changes were requested by alumni of the program and the advisory board. Alumni survey and PSLO measures specifically in simulation laboratory can be used to assess these changes. Summer of 2024 will provide the first results of academic assessment in simulated laboratory as a capstone measure.

Faculty Discussion:

Assessment results from the program reflect that faculty are very engaged with adapting curriculum to serve changing student needs. Difficulty with mathematics applications and problem-solving are not unique to the MLS program. University-wide faculty discussions have discovered the same gap across the university and across the nation as students arrive at the University after taking foundational mathematics courses online during COVID-19 lockdown. Faculty will continue to monitor and support students from entry level to program completion without lowering standards for graduation. Given the post-graduation success both in Board of Certification scores and employment, the program continues to provide quality education that produces successful students.

These assessment results were shared with the Advisory board in the June 4th 2024 meeting and will be published on the Office of Academic Assessment webpage for the MLS program. A table of current Post-graduation success data from 2023 cohort has already been published to the external facing MLS program assessment website and when available in April of 2025 the data for 2024 cohort will be posted there.

Section 9 – Executive Summary

Answer the following questions regarding activities in your program this past academic year:

1. What are the top 3 continuous improvements your program has made in the last year, and what evidence/data did you use to make those changes? (For example: hired faculty, purchased more equipment, curriculum changes, etc.)
 - 1) Curriculum changes in MLS432, MLS415, and MLS416 supporting students in mathematics came from PSLO2 evaluation.
 - 2) MLS475 Capstone Course implemented at the suggestion of advisory board.
 - 3) Deceleration option implemented due to increasing attrition numbers.
2. Provide 3 examples of student achievement in your program over the last year. (For example: graduation, persistence, retention, DFWI rates, presentations, participation in student competitions, etc.)
 - 1) 100% Placement rate for cohort 2023
 - 2) 100% Graduation rate for cohort 2023
 - 3) Significant number of national professional organization scholarship recipients from our program cohort 2024. 3 Betsy Baptist Scholarship recipients. 1 student traveled to national convention with Oregon Chapter of ASCLS to receive a scholarship and attend educational sessions.
3. Provide 3 examples of student success stories for your program over the last year. (For example: job placement, published papers, paper or poster presentations, participation in student competitions, industry impact, etc.)
 - 1) 70% of students from cohort 2023 had jobs at graduation.
 - 2) 100% Board of Certification (BOC) passage for cohort 2023.
 - 3) Students in 2024 cohort participated in research on race related cases in board certification preparatory exam books. Students in 2023 cohort participated in the publication of an Open Online Educational Resource (OER) Atlas for Hematology and Urinalysis.
4. Describe your efforts so far in closing equity gaps in your program? How have you assessed and identified equity gaps? What does your disaggregated data show? What actions have you taken to help students achieve

their potential (For example: project-based experiences, inclusivity exercises, TILT assignment instructions, etc.)?

- 1) Our disaggregated data show no equity gaps in individual courses for any population served.
- 2) We are planning to watch the deceleration students carefully to ensure that their performance is equal to that of students participating in the traditional track. Deceleration students are identified in outcomes tracking as they are accepted into that plan. Students who seek this track, tend to have learning disabilities or life circumstances that would prevent them from being successful in an accelerated course load. The deceleration option is one way of supporting them through the program. These students are allowed to audit courses from the first year they have already passed in their second year to ensure their comprehension of the course materials has not waned in the extended timeframe.

Given the two year reduced credit schedule, these students require some additional course work sequence adjustments. The first adjustment relates to immunology coursework (a pre-requisite for blood bank) which according to the 2 year schedule is taken between blood bank I and II instead of at the beginning of the blood bank sequence. Students sequencing coursework in this way, may not have the traditional background knowledge in immunology to begin blood bank I. To support students in this track, the immunology instructor and blood bank instructor developed an immunology worksheet of pre-course work that students in the deceleration track will complete before registering for Blood Bank I. Students are encouraged to meet with either professor for tutor supports during the completion of the worksheet to ensure that comprehension of the applicable materials necessary to be successful in BB1. The second adjustment is in completion of a capstone case study project that in the traditional course sequence collaborates between Hemostasis and Blood Bank II and is presented at the conclusion of the didactic education. The deceleration schedule splits these two summer courses among the two years. It was decided by faculty that deceleration students would benefit from completing the project twice, once for each course, to solidify curriculum across the two years.

- 3) While, our cohort continues to demonstrate wide diversity in background, we have some students that have English as their second language. Program curriculum is taught in English because the Board of Certification (BOC) exam in the United States is only given in English. Students with English as second language, according to educational literature, do not perform as well on standardized exams as their native English speaking peers. So far, no gaps have been demonstrated on outcomes in students in our cohort. If students self-identify as English as second language, they are classified in the program's outcomes tracking. Additional supports for this population are provided through pictorial representations of complex concepts and in some circumstances additional time on exams.

Program Assessment Report Feedback Rubric

2023-24 Assessment Report

Program: Medical Lab Science

Department Chair: Caroline Doty

Program Assessment Report Author: Rachelle Barrett

Rubric Measure	Well Developed, Progressing or Not included.
Program mission is aligned to University Mission	
Educational Objectives Wording is Actionable	
PSLO's are justified by Professional Standards	
PSLO'S are aligned to ISLO	
Curriculum Map: Scaffolding indicates Foundational, Practice, and Capstone Assessments by course	
Assessment Cycle is three years or less to cover all PSLO and ISLO	
Actions taken by programs on assessment during each year of the cycle are specified	
During collection year, courses/assignments are specified that align to PSLO at FP&C levels	
Rubric: Criteria for grading the assignment is described (may include as an appendix)	
Sample: Number of samples reviewed is specified	
Accountability: Reviewer of the assignment are specified	
Assessment data is collected across all locations and modalities	
Performance Targets of acceptability are indicated	
Results include: Graduation, Retention, Persistence, DFWI, Post Grad Success, Equity Gaps, PSLO, ISLO	
Interpretation: Current results are compared against performance targets	
Interpretation: Current results are compared against previous years of data	
Interpretation: Current results are compared against some external comparator	
Action drivers: Items not meeting performance targets have actions planned	
Action drivers: Additional action plans for overall department improvement are indicated	
Action plans: Specifics of accountability and timelines are indicated	
Action plans: Actions are linked to identification of resources needed	
Faculty discuss trends in the data	
Faculty discuss previous action plan success given new data	
Faculty discuss the assessment process and make any improvements necessary	

Directions: Please provide comments on any item that is not graded as well developed.