2022-23

Program Assessment Report Template

Submission Deadline: October 31, 2023

to Office of Academic Excellence

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## 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, immunohematology, 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 Outomes (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***.

**Program Specific Learning Outcomes:**

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*.”

1. 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*.”

1. 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*...”

1. 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.

1. **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.”*

1. 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.”*

1. 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 09/20/23 the PSLO outcomes were reviewed with faculty. Faculty recommended no changes.

**Course Learning Outcomes:**

For 2023-24 academic year, faculty were charged to write course specific learning outcomes (CLO) that demonstrated alignment with program learning outcomes being measured in their courses. The following is a list of the course learning outcomes within the curriculum map. 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 CBC and other hematology procedures. |  |  |  | Safely perform heme procedures to obtain accurate patient and QC results | Effectively communicate in writing to convey necessary information included in a lab report. |
| MLS 452Hem 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. |  |  |  |  |  |
| **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. | Interpret laboratory findings and choose appropriate following up testing. |  |  |  |  | Effectively communicate and discuss various testing methodologies and testing practices used in the chemistry laboratory |
| MLS 407 Capstone | Summer/Rachelle |  | 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 resolve laboratory ethical dilemmas. | 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 governmental regulations and best practices | comply with governmental safety regulations and perform correct safety procedures in the medical laboratory. |  |
| 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/Mycology | 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 identifcation 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 an 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**

These 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 |  |
| MLS 452Hem II | Winter/Dawn | P | P |  |  |  |  |  |
| MLS 449 UA | Spring/Caroline | F | P |  | P | P |  | p |
| MLS 424 Hemostasis | Summer/Dawn | P | 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:**

Text

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The report contains data and actions from three different cohorts that are present during the academic year 2022-23. The same data is collected from each cohort **annually** which includes measurements of student work on educational outcomes, 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 2022, defined as those students that graduated at end of Fall term 2022. This report contains complete **curricular data** from class of 2023, defined as those students that have completed the entire year of didactic learning, but are set to graduate at the end of fall term 2023 after externship. This report contains **plans** for the collection of data and actions to be taken to improve the experience of class of 2024, defined as those students beginning curriculum in fall of 2023. Additional post-graduation success data in the report may be from classes 2019, 2020, and 2021 to judge long term trends that help interpret data produced from class of 2022.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Act** | **Collect** | **Plan** |
|  | **2021-2022** | **2022-2023** | **2023-2024** |
| **Data Set** | Cohort Class of 2022  Complete data set available. Cohort graduated end of Fall term. Post graduation success data includes:   * Alumni Survey * Employment data * Certification * Graduation * Curriculum performance * PDE | Cohort Class of 2023  Incomplete data set available. Cohort has completed academic coursework but has not graduated   * Curriculum performance   Plan to collect post-graduation success data. | Cohort Class of 2024  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 2022-23. | 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 2023-24. | 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 2021, class of 2020, class of 2019. | 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**

**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.*

**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.

The following table summarizes data collection by these processes annually.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| PSLO # | **1** | 2 | 3 | 4 | 5 | 6 | 7 |
| PSLO Wording | 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. | Proficiency to problem-solve, troubleshoot, and interpret results, and to use statistical approaches when evaluating data. | 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. | Maintaining appropriate composure under stressful conditions. | Administrative skills consistent with philosophies of quality assurance, continuous quality improvement, laboratory education, fiscal resource management. | Application of safety and governmental regulations and standards as applied to medical laboratory practice. | Effective communication skills to ensure accurate and appropriate information transfer. |
| University ISLO | Quantitative Literacy | Inquiry & Analysis | Ethical Reasoning & Diversity |  |  |  | Teamwork, Communication |
| PDE Question | 10 | 18 | 36 | 8 | 7 | 3 | 50 |
| **Direct**  Performance Target:  90% of students are rated as 2 or greater. | Obtains accurate and precise results. | Shows logical thinking and resourcefulness in dealing with problems. | Demonstrates integrity and ethical behavior. | Maintains work Quality and Quantity under stress. | Performs appropriate quality control/   quality assurance procedures. | Follows laboratory institutional safety policies. | Receives/gives information to others effectively & courteously. |
| **Indirect**  Performance Target: 85% of students rate their time in in program impacted “Quite a Bit” or “Very Much” | How has the OIT experience contributed to this outcome? | How has the OIT experience contributed to this outcome? | How has the OIT experience contributed to this outcome? | How has the OIT experience contributed to this outcome? | How has the OIT experience contributed to this outcome? | How has the OIT experience contributed to this outcome? | Please rate your proficiency on this outcome? |

**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 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 | Thyroid testing Cascade |  |  |  |  | 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 | HDN labs | Transfusion Reaction Questions | Donor Discussion Board | Prioritization Lab |  | Compliance Cases | Immunohematology/ Hemostasis Case Study |
| **Stand Alone Courses** |  |  |  |  |  |  |  |
| MLS 422 Molecular | Lab 3 |  |  |  | PCR contamination lab |  | Teach the class Presentation |

# What you Found – The data

**Section 6 – Assessment Data and Interpretations**

In this section, the data presented is for **2022-2023** academic year. It covers two cohorts which are separated into two different tables. **Class of 2023** which completed most of their coursework in academic year 2022-23 is considered incomplete because fall term 2023 coursework is still being evaluated at the time of this report, and graduation and post-graduation success cannot be evaluated at the time of this report. This cohort does demonstrate some of the successes or failures of action plans implemented during academic year 2022-23. Class of 2023 will also be the basis for new actions to be taken in academic year 2023-24. **Class of 2022** is a complete data set that includes curricular data and post-graduation success. This is the data that action plans implemented during the academic year were triggered from.

**Curriculum data for class of 2023:**

Meets performance target Does not meet performance target

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **COURSE** | **PSLO1** | **PSLO2** | **PSLO3** | **PSLO4** | **PSLO5** | **PSLO6** | **PSLO7** |
| **University ISLO** | **Inquiry and Analysis** | **Quantitative Literacy** | **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 |  |  |  |  |  |
| MLS 416 Chem II | Dilutions Lab | Quizzes and Assignments Total |  |  |  |  | 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 |
| **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 | Final Exam |  |  |  |  |  |
| MLS 443 BB I | Practical Exam | Midterm 2 Frequency Calculations | Global Discussion Board |  | QC Lab Grade |  |  |
| MLS 453 BB II | HDN labs | Transfusion Reaction Questions |  | Prioritization Lab |  | Compliance Cases | Immunohematology/ Hemostasis Case Study |
| **Stand Alone Courses** |  |  |  |  |  |  |  |
| MLS 422 Molecular | Lab 3 |  |  |  | PCR contamination lab |  | Teach the class Presentation |
| Interpretation: | 12 courses assessed.  11 met. | 14 courses assessed.  7 met | 3 courses assessed.  1 met | 3 courses assessed.  3 met | 8 courses assessed.  8 met | 6 courses assessed.  4 met | 8 courses assessed.  8 met |

Class of 2023 initial interpretations: Faculty met on 9/20/23 to discuss assessment results from the 2022-23 academic year. Initial observation of the data indicates that problem solving, most especially calculations, are a gap for students. In looking at the data, for many of the assignment failures, it was observed that the same students failed over multiple courses which indicated an individual student support problem, not necessarily a systemic problem with the curriculum delivery.

**Complete data for class of 2022:**

Assessment Methods: Direct = Assignments in Classes; Indirect = PDE

Performance Targets: 80% students score >B; 95% students rated >2

|  |  |  |  |
| --- | --- | --- | --- |
| **Performance Criteria** | **Results** | **Interpretation** | **Equity Gap?** |
| PSLO1 – Competency  ISLO -  Inquiry and Analysis | |  |  |  | | --- | --- | --- | | F | MLS442 Hem I | **97%** | | P | MLS 452Hem II | 100% | | F | MLS 449 UA | **100%** | | P | MLS 424 Hemostasis | 100% | | F | MLS 415 Chem I | 100% | | P | MLS 416 Chem II | **100%** | | C | MLS 417 Chem III | **100%** | | F | MLS 464 Parasit/Mycology | **94%** | | F | MLS 444 Micro I | **89%** | | P | MLS 445 Micro II | 95% | | F | MLS 420 Immunology | **100%** | | F | MLS 443 BB I | 94% | | P | MLS 453 BB II | 91% | | P | MLS 422 Molecular | **100%** | | C | PDE rating | **100%** | | 14 courses assessed. 14 met.  Outcome met directly and indirectly. | NO |
| PSLO2- Problem Solving  ISLO – Quantitative Literacy | |  |  |  | | --- | --- | --- | | F | MLS442 Hem I | **76%** | | P | MLS 452Hem II | 86% | | F | MLS 449 UA | **100%** | | P | MLS 424 Hemostasis | 63% | | F | MLS 415 Chem I | 73% | | P | MLS 416 Chem II | **73%** | | C | MLS 417 Chem III | **94%** | | F | MLS 464 Parasit/Mycology | **100%** | | F | MLS 444 Micro I | **97%** | | P | MLS 445 Micro II | 89% | | F | MLS 420 Immunology | **91%** | | F | MLS 443 BB I | 100% | | P | MLS 453 BB II | 83% | | F | MLS 422 Molecular | **100%** | | F | MLS 432 Foundations I | **89%** | | P | MLS 462 Foundations II | **100%** | | C | MLS 463 Foundations III | **94%** | | C | PDE rating | **100%** | | 17 courses assessed. 12 met.  Program action plan indicated because outcome fails across multiple courses, terms levels and instructors.  Indirect assessment met. | NO |
| PSLO3 – Ethics  ISLO – Diverse Perspectives  ISLO – Ethics | |  |  |  | | --- | --- | --- | | P | MLS 443 BB1 | **34%** | | F | MLS 432 Foundations I | **100%** | | P | MLS 462 Foundations II | **91%** | | C | PDE rating | **100%** | | 3 courses assessed. 2 met.  Course action plan indicated only.  Indirect assessment met. | NO |
| PSLO4 - Stress | |  |  |  | | --- | --- | --- | | P | MLS 449 UA | **100%** | | P | MLS 416 Chemistry II | **100%** | | F | MLS 432 Foundations I | **97%** | | C | MLS 463 Foundations III | **97%** | | C | PDE rating | **100%** | | 4 courses assessed. 4 courses meet.  Outcome met directly and indirectly. | NO |
| PSLO5 – Quality Control | |  |  |  | | --- | --- | --- | | P | MLS 449 UA | **100%** | | F | MLS 444 Microbiology I | **97%** | | F | MLS 443 BB I | **100%** | | F | MLS 432 Foundations I | **92%** | | P | MLS 462 Foundations II | **100%** | | C | MLS 463 Foundations III | **94%** | | P | MLS 422 Molecular | **100%** | | C | PDE rating | **100%** | | 7 courses assessed. 7 met.  Outcome met directly and indirectly. | NO |
| PSLO6 – Safety and Compliance | |  |  |  | | --- | --- | --- | | F | MLS 442 Hematology I | **100%** | | P | MLS 453 BB II | **89%** | | F | MLS 432 Foundations I | **100%** | | P | MLS 462 Foundations II | **92%** | | C | MLS 463 Foundations III | **91%** | | C | PDE rating | **100%** | | 5 courses assessed. 5 met.  Outcome met directly and indirectly. | NO |
| PSLO7 – Communication  ISLO – Teamwork  ISLO - Communication | |  |  |  | | --- | --- | --- | | P | MLS 449 UA | **100%** | | C | MLS 424 Hemostasis | 100% | | F | MLS 415 Chem I | 97% | | P | MLS 416 Chem II | **100%** | | C | MLS 417 Chem III | **89%** | | C | MLS 453 BB II | 100% | | C | MLS 422 Molecular | **100%** | | P | MLS 462 Foundations II | **88%** | | C | MLS 463 Foundations III | **100%** | | C | PDE rating | **100%** | | 9 courses assessed. 9 met.  Outcome met directly and indirectly. | NO |
| Graduation Rate | 97% | Met | NO |
| Placement | 100% | Met | NO |
| Attrition | 4% - 1 withdrew; 1 dismissed | Program level action plan indicated. | Yes- DACA and low income |
| Certification | 91% | Met | Maybe – English as first language |
| DFWI | <1% | Met | NO |

**Faculty Interpretation:** Given both the 2022 cohort and 2023 cohort curricular data, PSLO2 & PSLO3 require action plans. Assessment methods have improved over the last two cohorts such that student performance can be calculated throughout the curriculum in a variety of courses. The success of students from this program continues to be very high post graduation. Assessment of coursework allows faculty to understand where students struggle and may need extra supports built into the curriculum. This allows faculty to focus on curricular changes that will be most useful.

**Representation:** Because this program is a cohort model for traditional in-person instruction in a 12-month curriculum experience, all modalities for the program are considered to be equally represented in the data for both cohorts 2022 and 2023. Going forward into 2023-24 academic year, the deceleration option for the program has been introduced and will have to be evaluated as a separate modality from the traditional 12-month didactic coursework completion. For academic year 2024-25 online vs in-person performance will have to be evaluated as a separate modality from both traditional and decelerated paths. The same coursework will be presented in each of these different modalities and the same outcomes will be evaluated for student success.

**Growth in the curriculum:** The data presented for both cohorts on PSLO2 can give the best representation of improvement or stagnancy within the program. Most courses in the curriculum contain a representative assignment that measures problem-solving. Class of 2022 fell short on this outcome in coursework at the practice level. This is the level where material increases in complexity and where students are expected to build upon information gained at the foundational levels and begin to use it in practice. A closer look at this outcome in class of 2023 demonstrated that assignments where students fell short were related to calculations and often choosing the correct calculation to use in solving the problem. As students were provided more supports, practices and real-world examples of how these calculations are used to monitor patient care, this ability steadily increased into the capstone level performance that is acceptable.

**External evaluations of the program:** The alumni and employer surveys were distributed in May of 2023 in preparation for the annual advisory board meeting. Results of the employer survey indicated that employers ranked our students 100% as equal or better than students from other programs (86% of employers surveyed said that they took other students for externship). Our students were ranked on professionalism and competency and 90% of employers surveyed gave them high marks for both. Items employers felt needed more work in the curriculum were workflow, problem solving and teamwork. Alumni survey indicated that 100% of responding graduates were satisfied with their time in the program and 75% were satisfied with their salary after graduation. However, an alarming trend did emerge from the alumni survey: 36% reported leaving their first job in less than 1 year. Results of these surveys are in line with assessment data collected from curriculum, that the focus for improvements should be in problem-solving and professionalism.

**Outlook for placement and growth:** Given the changing landscape of Portland Metro hospital consolidation, program growth and post-graduation placement rates may decrease. 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. Employer survey reported an anticipated 3-7 job openings over the next year as the average expected per hospital surveyed. Maintaining more affiliates that will take students for externship continues to be a major focus for keeping post-graduation placement up.

**Evidence of Improvement in Student Learning**

Over the last several years of the program, cohorts have been faced with varying challenges that impact their educational and support needs. These needs have impacted and continue to impact their academic performance. The program continues to adapt assessment practices with the aim of collecting the most useful data that can optimally pinpoint these needs so that actions can be implemented that best support the changing student population being served.

The cohort graduating in 2019 and the cohort set to graduate in 2023 have the most in common in relation to traditional course work experience. Class of 2020 suffered from a disruption of coursework delivery. Class of 2021 had coursework delivered in an entirely different format (online). Class of 2022 had continually changing safety requirements and delivery formats similar to those faced by class of 2020.

These curricular disruptions from the COVID-19 pandemic are anticipated to have long ranging impacts on student study habits and interpersonal connections. Trends in student performance over time can begin to highlight where action plans can best be focused to maintain quality within the program.

**History of Results**:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Outcomes** | **Class of 2023** | **Class of 2022** | **Class of 2021**  **\***course work delivered online/lab in-person | **Class of 2020**   \*Coursework disrupted. Final half of program online. Externships shortened. | **Class of 2019** | **Faculty Interpretation** |
| **PSLO1** | Direct:  Met for:  MLS442, MLS452,  MLS449, MLS424, MLS415, MLS416, MLS444, MLS445, MLS443, MLS453  MLS407  **Not Met for:**  **MLS464** | Direct:  Met for:  MLS442, MLS417, MLS445, MLS472, MLS443, MLS422  Outside: 100% of student reports returned received >2 on PDE. | Direct:  Met for:  MLS470, MLS474   MLS449 MLS415  **Not Met for:  MLS452  MLS464**    Outside: 100% of student reports returned received >2 on PDE.  Indirect:  100% of student responses rated Quite a bit or very much | Direct: 100% scored B or greater on BB practical and 92.3% scored B or greater on Immunology practical.    Outside: 100% of student reports returned received >2 on PDE.    Indirect NA | Direct: 100% scored B or greater on Parasitology. 100% scored B or greater on Chem II.      Outside: 100% of student reports returned received >2 on PDE.    Indirect:  100% of student responses rated Quite a bit or very much | **Acceptable.**  Curricular changes have been implemented as a result of assessment data. MLS464 changed instructors 3 times in 3 years, thus the assignment has changed. |
| **PSLO2** | Direct:  Met for:  MLS449, MLS416, MLS462, MLS444, MLS445, MLS464  MLS407  Not Met for: MLS442, MLS452, MLS432, MLS415, MLS443  MLS453 | Direct:  Met for:  MLS463, MLS445, MLS472, MLS443, MLS417  Not Met for: MLS442  Outside: 100% of student reports returned received >2 on PDE. | Met for:  MLS452  MLS470  MLS474  MLS449 MLS415  **Not Met for: MLS 462  MLS464**    Outside: 100% of student reports returned received >2 on PDE.    Indirect:  100% of student responses rated Quite a bit or very much | Direct: 94.9% of students scored B or greater on cases in both Parasitology and Chemistry.      Outside: 100% of student reports returned received >2 on PDE.      Indirect NA | Direct: 100% scored B or greater on UA project.  **80.4% scored B or greater on Heme project.**    Outside: 100% of student reports returned received >2 on PDE.    Indirect: 90% of student responses rated Quite a bit or very much | **Needs Work.** Teaching problem solving is still one of our greatest challenges. Utilizing coursework in assessment has been successful at identifying curricular weaknesses. Utilizing specific exam questions identified a weakness in student ability to calculate laboratory values. More work will focus on additional practice in this area through multiple subjects and in capstone simulation. |
| **PSLO3** | Direct  Met for:  MLS432  Not Met for: MLS443,  MLS462 | Direct  Met for:  MLS472  Not Met for: MLS443  Outside: 100% of student reports returned received >2 on PDE. | Direct  Met for:  MLS470  MLS462      Outside: 100% of student reports returned received >2 on PDE.  Indirect:  96% of student responses rated Quite a bit or very much | Direct: 100% scored B or greater on Ethics project.    Outside: 100% of student reports returned received >2 on PDE.      Indirect NA | Direct: 100% scored B or greater on Ethics project.    Outside: 100% of student reports returned received >2 on PDE.    Indirect: 93% of student responses rated Quite a bit or very much | **Needs Work.** Indirect data identified that this topic wasn’t perceived as a priority for this program. The program has concentrated on adding more assessments throughout the program on this topic rather than a single course work topic. This rubric will continue to be updated to include cultural competency standards. |
| **PSLO4** | Direct  Met for:  MLS449  MLS432  MLS453 | Direct  Met for:  MLS463, MLS472  Outside: 100% of student reports returned received >2 on PDE. | Direct  Met for:  MLS470  MLS449    Outside: 100% of student reports returned received >2 on PDE.  Indirect:  100% of student responses rated Quite a bit or very much | Direct: unmeasured due to COVID closures.    Outside: 97% of student reports returned received >2 on PDE.      Indirect NA | **Direct: Stress Test not given (no measurement)**    Outside: 100% of student reports returned received >2 on PDE.    Indirect: 90% of student responses rated Quite a bit or very much | **Acceptable**. Students have demonstrated continued resiliency in laboratory practices. |
| **PSLO5** | Direct  Met for:  MLS449  MLS432  MLS462  MLS444  MLS443  MLS422  MLS407 | Direct  Met for:  MLS463, MLS472, MLS443  Outside: 100% of student reports returned received >2 on PDE. | Direct  Met for:  MLS462  MLS474  MLS470  MLS462  MLS449      Outside: 100% of student reports returned received >2 on PDE.  Indirect:  100% of student responses rated Quite a bit or very much | Direct: 100% scored B or greater on QC/QA exam    Outside: 100% of student reports returned received >2 on PDE.    Indirect NA | Direct: 100% scored B or greater on Finances Quiz    Outside: 100% of student reports returned received >2 on PDE.    Indirect: 90% of student responses rated Quite a bit or very much | **Acceptable.** Quality continues to be a major focus of the coursework. |
| **PSLO6** | Direct  Met for:  MLS442,  MLS432,  MLS462  Not me for: MLS453  MLS407 | Direct  Met for:  MLS442,  MLS463  MLS472  Outside: 100% of student reports returned received >2 on PDE. | Direct  Met for:  MLS462  MLS474  MLS470  Not Met for:  MLS463    Outside: 100% of student reports returned received >2 on PDE.  Indirect:  100% of student responses rated Quite a bit or very much | Direct: 100% scored B or greater on Safety Exam    Outside: 100% of student reports returned received >2 on PDE.  Indirect NA | **Direct: 79% received B or greater on Inspection Quiz.**    Outside: 100% of student reports returned received >2 on PDE.    Indirect: 90% of student responses rated Quite a bit or very much | **Needs work.** One instructor teaches the classes students aren’t achieving in. Faculty group work and shared scoring should be included in the action plan. |
| **PSLO7** | Direct  Met for: MLS442, MLS449, MLS462  MLS453  MLS422  MLS424 | Met for: MLS463, MLS472, MLS417  Outside: 100% of student reports returned received >2 on PDE. | Direct  Met for:  MLS462  MLS470  MLS452  MLS464      Outside: 100% of student reports returned received >2 on PDE.  Indirect:  96% of student responses rated Quite a bit or very much | **Direct: 83.3% received B or greater on SOP assignment.**  100% scored B or greater on Molecular teach the class assignment    Outside: 100% of student reports returned received >2 on PDE.  Indirect: NA | Direct: 100% received B or greater on Oral Case Study and Written Validation Project.          Outside: 100% of student reports returned received >2 on PDE.+      Indirect: 90% of student responses rated Quite a bit or very much | **Acceptable.** Students demonstrate both verbal and written communications skills. |
| **Average Certification score** | **NA** | **545** | **519** | **530** | **547** | **Acceptable.** |
| **Certification Rate** | **NA** | **91% total**  **88% first time** | **97% total pass rate**  **88% first time pass rate** | **100% total pass rate**  **84% first time pass rate** | **95.2% total pass rate**  **90.5% first time pass rate** | **Acceptable.** |
| **Graduation Rate** | **NA** | **97%** | **100%** | **100%** | **97.6%** | **Acceptable.** |
| **Employment** | **NA** | **100%** | **100%** | **100%** | **97.6%** | **Outstanding.** |
| **Attrition #** | **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** | **2/44; 1 dismissed during 2021, 1 left before second half** | **Needs work.** |

**Interpretations of past trends:** Past data indicate that the program consistently produces students that are **employable, pass their certifications and meet outcomes for communication, quality, stress management, safety and competency**. Though there were some instances in each of these categories that did not meet outcomes, no trends in student performance overall were apparent. As assessment practices were adapted by faculty, more curricular data was added each year. The highest number of data points measured competency, quality and problem solving. Both competency and quality continued to produce good outcomes despite the addition of more data points.

**Problem solving** ability has continued to be difficult to produce good outcomes from early student coursework. As more data was added into the set and more actions were attempted, student performance on the outcomes began to highlight a program wide trend that students continued to struggle with selecting and performing laboratory calculations early in the curriculum. Later in the coursework, students adapted and produced acceptable performance by graduation.

Another trend that begins to appear as more data points are added is students not meeting outcomes for **global and diverse perspectives** coursework. This is the first year the University measured this outcome, and more work needs to be done to add data points to the curriculum. The course work trend is mirrored by the employer survey results that also called out professionalism as something students should be focusing on more in their coursework.

Programmatically, the **attrition rate** is slowly increasing. Students in the program select to leave the university early in the year. While past students returned, there wasn’t a standard mechanism for decelerating coursework to keep those students engaged. The implementation of both online and deceleration options may impact these numbers.

**Evaluation of 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. When student performance didn’t improve, a new action plan was implemented in the course. Annual evaluation of all assessment outcomes will produce better visibility of the successes or failures of these low impact action plans.

Last academic year, larger programmatic actions were taken to improve student success indicators such as attrition and to identify and close equity gaps. These larger action plans will require more time to implement and see improvements.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Performance Criteria** | **Previous Action Plan** | **Cohort 2022 Data** | **Cohort 2023 Data** | **Interpretation** |
| PSLO2- Problem Solving  ISLO – Quantitative Literacy | MLS 424 – No previous data collected. Will try to have more student accountability for doing the case study assignments during the term. Assign a grade, not just a complete/incomplete.  MLS 442 – Do more demonstration of calculations and practice problems in class. May be relying too heavily on students to self-grade exercises and seek help if needed.  MLS453 – New method of measuring outcome. No action taken. | MLS442 76%  MLS 424 63%  MLS 453 83%  MLS 415 73%  MLS 416 73% | MLS442 59%  MLS424 66%  MLS453 70%  MLS415 58%  MLS416 100% | Not Improved.  Slight Improved  Not Improved  New Instructor  Improved.  Need to Drill down on which aspect of the outcome students are not meeting calculations or memorization. |
| PSLO3 – Ethics  ISLO – Diverse Perspectives  ISLO – Ethics | MLS 443 – Change study method assignment back to assignment from 3 years ago when students made own flash cards. Updated frequency charts in lectures to include multiple nationalities. Create new assignment grading rubric for discussion board post to include cultural competency standards published June 2022. | MLS443 34% | MLS443 56% | Improved. Still needs work. |
| PSLO6 – Safety and Compliance | MLS 463 – Add more opportunities for safety and compliance activities to be performed during externship. Add colors to checklist to emphasize activities’ link to course outcomes. | MLS453 73%. | MLS463 94% | 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. | 1 delayed for medical, did not return  1 delayed for family, returned | 2 decelerated but retained in program.  1 withdrew for medical  2 in next cohort (2024) decelerated and retained. | More data needed. Beginning to see retention. |
| 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 | Diversity of current cohort doesn’t match Oregon State 2020 census.  Students with English as second language do not pass certification exam as often as native English speaking students. | 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. | Spanish recruitment materials implemented.  ASCLS club events implemented.  Continuing education ongoing. |
| **Performance Criteria** | **Previous Action Plan** | **Cohort 2021 Data** | **Cohort 2022 Data** | **Interpretation** |
| Certification | Covid-19 impacted scores similarly nation-wide. Add additional BOC prep during summer term 2022 Sim lab. | 530 (10% above national average)  100% (75% national passage rate) | 91% passage | Maintained. |

# How are you using the data? – Action

**Section 7 – Data-driven Action Plans:**

NWCCU’s standards for accreditation require that institutions “uses the results of its assessment efforts to inform academic and learning support planning and practices.”(1.C.7.)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Action Driver | Action Taken | Accountable Person | Resources Needed | Outcome Measure |
| PSLO2 – Problem Solving  Quantitative Literacy  Low performance in  MLS 424, MLS442, MLS452, MLS432, MLS443, and MLS415  *Assignments based on laboratory math and case study interpretation / problem solving.* | MLS432 evaluates math skills with a pre-test.  Student failures recommended to attend tutoring session on math.  More support for calculations in MLS415 curriculum.  MLS442, MLS452 & MLS 424 to add group post-exam debrief.  MLS 452 and MLS 424 Include more examples of how to approach case studies and unknowns.  MLS 443 to allow resubmission of corrected failed exams for up to 5% back. | Caroline Doty  Laurie Sprauer  Dawn Taylor  Rachelle Barrett | Student Tutor Center Math | PSLO2 measures in coursework during academic year 2023-24 |
| PSLO3 – Professionalism  Diverse Perspectives & Global Awareness  Low performance in  MLS443, MLS462  *Assignments based on recognition of self-responsibility in patient/coworker scenarios.* | Instructor of MLS462 & MLS443 to seek training on classroom discussion techniques during fall 2023.  Rubric for assessment of Diverse Perspectives and Cultural Competency will be reviewed by the faculty team in Winter term 2024 | Rachelle Barrett | Communications department  CCT instructional resources. | PSLO3 measures in coursework during academic year 2023-24 & employer survey in 2025 |
| PSLO 6 – Compliance  Low performance in *Rachelle’s courses* MLS407, MLS453 | MLS407 improvements planned based on student and faculty feedback. Itemized in the course binder and collaboration planned for spring 2024. | Rachelle Barrett | Department Meeting | PSLO6 measures in coursework during 2023-24 academic year increase |
| Attrition  *More students leaving the program early in curriculum.*  *Less applications for program.* | Deceleration track introduced Fall 2023, online track introduced Fall 2024. Orientation materials include emphasis on student supports and belonging. | Dawn Taylor & Josie Hudspeth | Student Involvement and Belonging PM campus | Applications for Fall 2025  Attendance for fall 2025 |
| Innovation of Curriculum  *More students involved in Applied Research* | Faculty explore research interests and develop proposals with students. Develop Case Study Symposium in summer that will present student work to incoming students and the community. | All faculty | Office of Academic Affairs faculty research and training  Student affairs on PM campus | Proposals submitted Dec 2024  Symposium Summer 2025 |
| Engagement of Campus  *Collaboration of programs* | Develop a group project between Mechanical and Manufacturing on development of analyzer parts.  Sim Lab supports a senior project for CEET student to add additional technology for the experience. | Laurie Sprauer & Rachel Speaks  Rachelle Barrett & Noah | MME materials support  ITS recycled products | PSLO2 increase. |

**Section 8 – Closing the Loop: Reflection on previous work**

NWCCU’s standards for accreditation require that institutions provide evidence of “continuous improvement of student learning.” (1.C.7.) transferred

* **Faculty Discussion of the Program**: The faculty discussion at the fall Assessment Meeting on 9/20/23 resulted in faculty feeling a sense of accomplishment. The success of actions taken by the program were easily evaluated using the assessment process. Successes included the implementation of the simulation lab and the Capstone Method Validation course. Many departmental goals for the coming year will focus on collaboration of faculty teams within and without the program to deliver programming that will challenge student’s creativity and problem-solving through hands-on activities and role playing. Faculty feel that though students continue to perform well on exams, it is the responsibility of the department to ensure the students coming into the program are well rounded capable and professional individuals. This goal, will require creative and collaborative teaching techniques as the next generation of student enters higher education. This team is up to the challenge.
* **Discuss last year’s Action Plans:** Last year’s report did not list action plan specifics. Many of the items worked on were instructional improvements run by a single instructor without the collaboration of the other instructors. Actions planned in the coming year include those collaborative pieces, to ensure that curriculum is scaffolded appropriately for the entire student experience.
* **Discuss programmatic Improvements:** Last year two new instructors joined the faculty team and the program chair position responsibilities transferred to a different faculty member. This turnover required much of the faculty focus to be on learning administrative duties on the job rather than focusing on curricular improvements for student wellbeing. While ultimately these changes will allow the team to be a more cohesive unit, there were growing pains felt during implementation. Alumni surveys, senior exit surveys and course evaluations may have been impacted if the students did not feel valued during this time. These surveys will need to be monitored in the coming year to ensure that students are the focus of program faculty going forward.
* **Improvements in Assessment Process:** This program will begin collecting assessment data that is disaggregated for online and deceleration options to ensure quality education is delivered no matter what platform a student accesses it from. Overall, the more data this program can gather, the more innovative faculty can be in curriculum design. Minor changes to the assessment process that have been implemented are: 1) Add Molecular into the Microbiology series which will partner the molecular and microbiology faculty more in their teaching; 2) Add a Capstone assessment of all PSLO in Sim lab which isn’t associated with a grade or class, but which should give our best most consistent evaluation of student performance in the workplace.
* **External Presentation of the Data:** These data will be submitted to NAACLS in October as a part of the annual accreditation reporting for the program and published on the Oregon Tech Office of Academic Assessment website following peer review in April 2024. Preliminary data was presented to the MLS Program Advisory Board on June 6 2023.

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| Program Assessment Report Feedback Rubric | |
| *2022-23 Assessment Report* | |
| **Program:** | |
| **Department Chair:** | |
| **Program Assessment Report Author:** |  |
| **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.