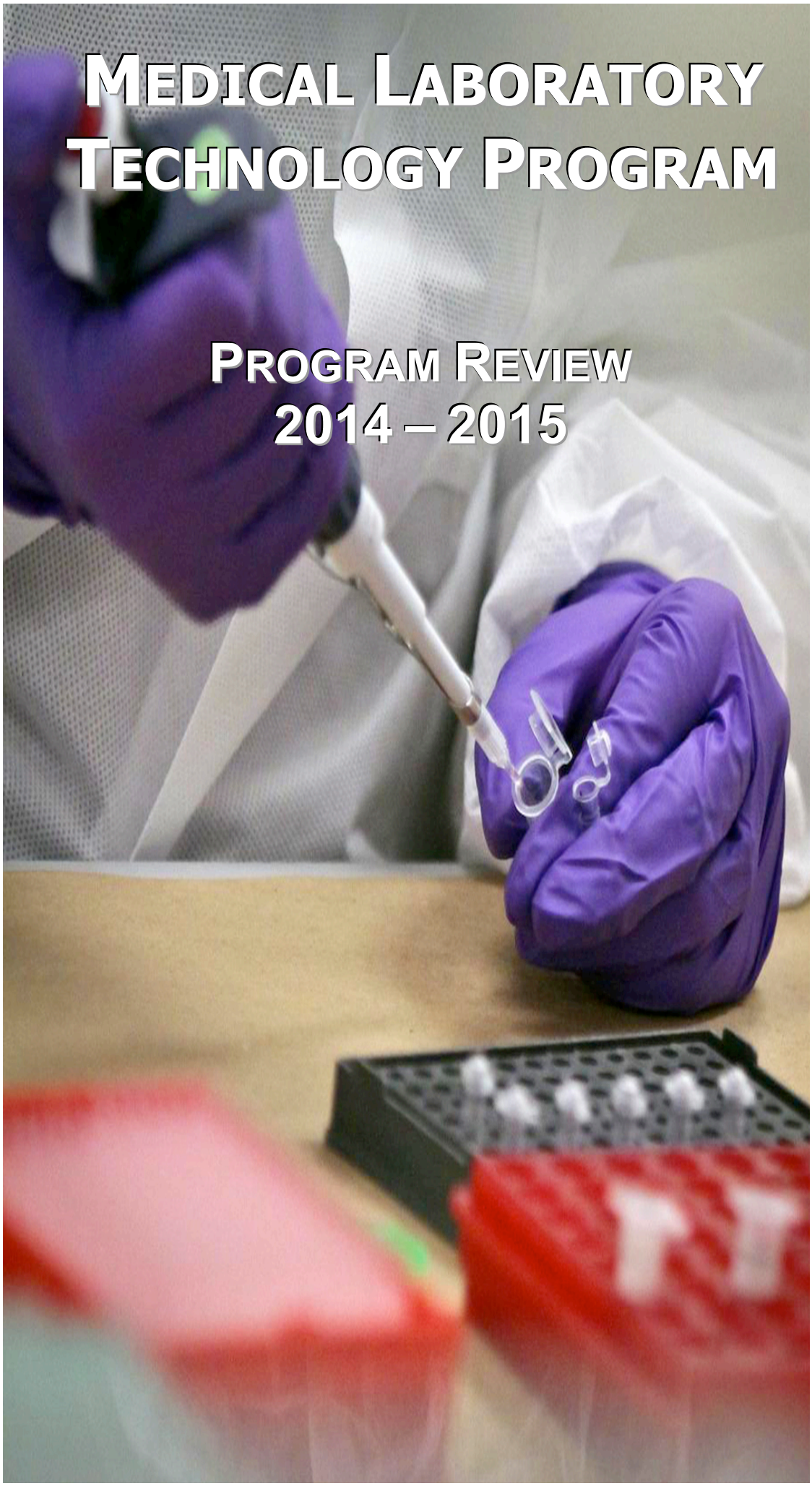
Medical Laboratory Technology Program

Program Review 2014 – 2015



By the

MLT Program SAC

Ana Sacramento, Dept. Chair
Jeff Josifek, SAC Chair
Erin Krauter
Mark Zimmerdahl
Doug Lee
Steven Marshall
Shauna Pratt

PORTLAND COMMUNITY COLLEGE
MEDICAL LABORATORY TECHNOLOGY
PROGRAM REVIEW 2014 – 2015

TABLE OF CONTENTS

SECTION 5: FACULTY

SECTION 6: FACILITIES AND SUPPORT

SECTION 7: CURRICULUM UPDATES AND STUDENT PREPAREDNESS

SECTION 8: RECOMMENDATIONS

APPENDIX:

Appendix C:

Appendix D:

Appendix E:

Appendix F:

Appendix G:

Appendix H:

PORTLAND COMMUNITY COLLEGE
MLT PROGRAM

Program Review: 2014 – 2015

Introduction

History

Portland Community College established a Certified Laboratory Assistant Program in 1968 at the request of the medical community of the State of Oregon. In 1970, it was determined that a two-year Medical Laboratory Technology Associate Degree Program would be more appropriate to meet the needs of the medical community. The curriculum was changed to incorporate more basic sciences, communication skills, general education courses and an expanded curriculum in clinical laboratory science. The Program operated as a one-plus-one program until the fall of 1978, at which time the general education, basic sciences and clinical courses were integrated into both the first and second years of the program. Since that time, the Program's basic structure has remained the same, although regular curriculum adjustments have been made to stay aligned with changing technology and to meet the needs of the medical community served by the Program.

Prior to the period covered by this program review, our MLT Advisory Committee and Oregon's health care community asked that our Program find ways to reach students and laboratories beyond the Portland-Metro area. As the only MLT program in Oregon, we believed it was imperative to address their request as quickly as possible through distance learning. A distance learning modality was developed, implemented, and initiated in 2005, with the first students graduating 2007. The distance learning option was developed and established to mirror the same structure, curriculum, requirements, expectations and outcomes of the traditional Program. The current program review addresses both modalities: traditional and distance learning. The DL option is only offered to students in Oregon who reside outside the Portland metropolitan region.

The Program is accredited by The National Accrediting Agency for Clinical Laboratory Sciences.

> National Accrediting Agency for Clinical Laboratory Sciences (NAACLS)
> 5600 N. River Rd., Suite 720
> Rosemont, IL 60018
> Phone (773) 714-8880

Program Description and Organization

The MLT Program is a two-year, seven term course of study resulting in an Associate of Applied Science (AAS) degree. To fulfill the requirements of the AAS degree, students must successfully complete 103 credit hours that include 93 credit hours of MLT required courses and 16 credit hours of General Education Courses; some MLT required courses can be used as General Education (see Current MLT Curriculum in **Appendix A**). A minimum of a 2.0 grade point average is required for students to progress through the Program. Upon graduation, students are eligible to take nationally recognized certification examinations.

The enrollment capacity for the campus class is 32 students for the first year and 20 students for the second year. The enrollment capacity for the distance learning class is 24 students for the first year and 15 in the second year. Enrollment for the second year is dependent upon the number and location of qualified applicants and clinical site availability.

MLT core courses (70 credits) cover subjects in the areas of clinical chemistry, hematology, body fluids, coagulation, urinalysis, immunology, immunohematology, serology, clinical bacteriology, mycology, parasitology, molecular diagnostics, quality control, laboratory mathematics, safety, professionalism, laboratory operations and clinical laboratory practice. All MLT lectures and laboratory exercises are taught by PCC MLT faculty. Clinical laboratory practice is supervised by trainers from affiliated laboratories under the coordination of the PCC Clinical Laboratory Practice Coordinator (referred to in this document as the CLP Coordinator). During the first year of the Program, students enroll in three terms of introductory laboratory science courses, three terms of Chemistry, two terms of Human Anatomy & Physiology, and general education courses. Throughout the second year of the Program students receive in-depth and comprehensive MLT instruction and perform their clinical internships. During the second year, the campus MLT class is divided into two groups of 10 students. Within every two-week period of classes, each student spends an average of 6 days (36 hours) on campus for lectures and labs, and 4 days (32 hours) at their assigned clinical rotation in an affiliated laboratory. Similarly, DL students spend approximately 4 days (32 hours) at their practice site and are expected to work 6 days (36 hours) on their online lessons and campus and virtual laboratory exercises. Each student completes approximately 800 hours of clinical internship.

Section 1: Program Overview

A. Program Goals and Objectives.

i. What are the educational goals or objectives of this program/discipline?

The MLT Program provides high quality education in an atmosphere that recognizes the potential of each student and supports a comprehensive and innovative approach to meet the needs of Oregon's health care community. The Program's goals and objectives are to:

- Graduate qualified, entry-level MLTs.
- Address the shortage of qualified laboratory professionals.
- Prepare graduates to function effectively as members of the health care team and of the greater community.
- Build and maintain strong partnerships in the health care community throughout the Pacific Northwest.
- Teach curriculum that is reflective of current technologies in health care.

ii. How do these compare with national or professional program/discipline trends or guidelines?

The MLT Program goals and objectives are closely aligned with those of the professional societies, The American Society of Clinical Pathology (ASCP) and The American Society for Clinical Laboratory Science (ASCLS), and the guidelines of our accrediting agency, The National Accrediting Agency for Clinical Laboratory Sciences (NAACLS). In addition, the MLT Advisory Committee and its standing subcommittees advise the Program about trends in the profession and changes in the scope of practice.

As the accrediting body for MLT programs, NAACLS works with programs to ensure nationally established standards of educational quality are met by involving faculty and staff in an ongoing self-evaluation process. Following the last site visit in 2014, PCC's MLT Program was awarded five years of accreditation, and recognition was given to the high quality of graduates from the Program.

The mission of the certifying agency, ASCP, is to provide excellence in education, certification, and advocacy on behalf of patients, pathologists, and laboratory professionals. Our students are encouraged to take the ASCP certification exam at the completion of the Program. Our graduates consistently score well above the national average (see *Section 2*). ASCP certification and maintenance through continuing education is a requirement for laboratorians working in the field. We believe our goals to be in alignment with this mission.

Furthermore, faculty and students alike are encouraged to become members of the professional society, ASCLS, whose primary goal is to provide professional development opportunities for maintaining certification and achieving the highest level of competency.

Lastly, the MLT Advisory Committee meets 3 – 4 times each year to discuss trends within the discipline and to discuss ways in which the Program may be improved upon to meet the established goals (see also *Section 7*).

iii. Have they changed since the last review, or are they expected to change in the next five years?

The Program goals and objectives have not changed since the last program review and are not expected to change in the next five years. The MLT Program is undertaking a major revision of the curriculum and program structure; however, the goals and objectives of the Program are expected to remain the same. A more detailed description of the program restructure will be presented in Section 3F.

It is worth mentioning that, with the administration decision to discontinue the Distance Learning option, the second Program goal "to address the shortage of qualified laboratory professionals" will be negatively impacted since PCC's MLT Program is only one of two accredited laboratory science programs in the state.

B. Summarize changes that have been made since the last review.

Within the last year, the MLT SAC decided to undertake a major revision of the Program structure and curriculum. This decision was the result of several factors identified by the SAC as well as feedback from NAACLS accreditation visitors from our November, 2013 accreditation site visit (refer to *Section 3.F.ii.* for a more detailed description of the Program Restructure project). The newly restructured program will include the following:

- Revised and reordered curriculum (see New MLT Curriculum in **Appendix B**).
- Each student cohort will begin in the fall and graduate at the end of spring (7 term program).
- Chemistry and Anatomy and Physiology courses will be required as pre-requisites (they are currently imbedded in the program structure).
- An open enrollment, introductory MLT course will be offered every term to give students the opportunity to explore clinical sciences. This course will be required as a pre-requisite for Program admission.
- Clinical rotations will be completed at the end of the Program, after completion of all didactic courses (sixth and seventh terms of the Program).
- The Simulation Lab (currently referred to as the Student Lab) will only run summer and fall terms every year.
- Program admission will be based on a point system (see Admission Point System in **Appendix B**).

Other program and curricular changes that were made following our last program review include the following:

- A second general immunology lesson was added in response to lower than average achievement scores on the national certification exam.
- Additional lessons in serologic methods and molecular diagnostics were also added to reflect new advances in laboratory diagnostics and medical practice.
- Phlebotomy instruction has been improved through the addition of online modules in Desire2Learn.
- The math requirement for entering the Program was increased from Math 65 to Math 95. This was to address faculty concerns regarding student preparation for applied laboratory mathematics and to coincide with the prerequisite requirements for allied health chemistry.

- Microbiology lessons were revised to cover material from a body systems approach, which better aligns with the organization of the clinical lab and how organisms are identified in practice (specimen source).
- Rubrics were modified for assessment of students during laboratory exercises to provide feedback and make grading more transparent to students (see Lab Evaluation Form and Lab Evaluation Rubric in **Appendix B**).
- The Program Outcomes were rewritten to be more concise (see Program Outcomes in **Appendix B**).
- Professional Objectives were modified to align with the Evaluation Rubric used for Clinical Lab Practice (see Professional Objectives in **Appendix B**).

C. Were any of the changes made as a result of the last review? If so, please describe the rationale and result.

Yes. The MLT Department has worked on implementing the three recommendations from the last Program Review (2009):

- *Recommendation 1*: Continue the development of a comprehensive recruitment program.
- *Recommendation 2*: Continue development and maintenance of the distance-learning program.
- *Recommendation 3*: Development of a career ladder.

Recommendation 1: The MLT Department worked closely with Advising and Admissions to improve the availability to the public of information on the MLT program. Face-to-face information sessions describing several Allied Health Programs were introduced by Admissions and are currently being offered throughout the year. The MLT web page was also improved by including clearer information on the MLT Program and admission steps. In addition, the selection criteria for acceptance into the program was modified from a lottery system to a point based format. In the last few years, the number of applicants to the program has been very high (144 applicants in 2012 and 239 in 2013) which is a good indicator that the recruitment process is adequate. The point based selection criteria will be implemented for Fall 2015 entry; therefore its effectiveness has not yet been evaluated.

Recommendation 2: The staff has worked hard to maintain and fine-tune the distance-learning program:

- Some of the laboratory exercises delivery methods were redesigned to help reduce travel for students residing far away from Portland:
  - Some labs were modified to be performed at the clinical sites ("lab-in-a-box" format)
  - Other labs were modified to be delivered through an online modality ("virtual labs")
- The student lab portion of Clinical Laboratory Practice was redesigned in an effort to more clearly differentiate preparatory activities from regular clinical rotations and to communicate those differences more clearly to students and clinical preceptors.
- Following changes in staff (Clinical Coordinator/Instructor), several courses were extensively modified to facilitate learning and teaching.

Outcome comparisons between Campus and DL students show that the Distance Learning modality is comparable to the traditional option, which clearly indicates the effectiveness of DL (see *Section 2.C.iii.* for more details).

Recommendation 3: The Program Director re-initiated contacts with the Oregon Institute of Technology (OIT) and with the Clackamas Community College with the aim of discussing and establishing Career Ladder Agreements between PCC and these institutions. An Articulation Agreement between the MLT Program and the Clinical Laboratory Sciences Program at OIT was drafted (see OIT Articulation Agreement Draft in **Appendix B**). This draft will be further revised taking into account the new MLT curriculum and is expected to be signed in 2015. An articulation agreement between the Clinical Laboratory Assistant Program at CCC is in progress and is also expected to be finalized and signed in 2015.

Section 2: Outcomes and Assessment

A. Course-level Outcomes.

i. Identify and give examples of changes made in instruction to improve students' attainment.

The MLT department faculty continues to participate in the college-wide development and implementation of outcomes assessment. Over the last several years, the department has assessed all of the Program Outcomes.

Since the Program Outcome assessments have demonstrated satisfactory results, the MLT Department has not dedicated much effort to assess individual course outcomes. However, based on student grades, student course evaluations and informal complaints, feedback from the Advisory Committee and evaluations of specific area scores from certification exams, several changes have been implemented at the course level:

- Based on poor exam scores, student course evaluations and informal complaints, several courses (DL option of MLT 113, MLT 261 and MLT 262) were selected for improvement. Curriculum content and evaluation tools were assessed and modified to properly align curriculum content and evaluation tools with course objectives.
- Based on affiliates' feedback, Clinical Practice Courses (MLT 271, MLT 272, MLT 273 and MLT 274) were reviewed and modified to improve usage and usefulness for trainers and students.
- Based on Advisory Committee feedback, recent trend methodologies (Serology and Molecular Diagnostics) were introduced into the curriculum. Serology content was added to MLT 242 and Molecular Diagnostics was added to MLT 261 and MLT 223.
- Based on below average certification exam scores for Immunology, a second lesson in Immunology was added to MLT 241.

B. College Core Outcomes.

i. Describe how each of the College Core Outcomes is addressed in courses, and/or aligned with program and/or course outcomes.

Most of the College Core Outcomes are addressed in varying aspects of the MLT program of study. The following examples are given:

1. *Communication*

   Students are assessed on their written, oral, and listening communication skills. Students are given various assignments throughout the Program that are writing intensive as well are being required to answer study questions following each laboratory activity. Student communication skills are also assessed during their clinical rotations and campus laboratory classes.

2. *Community and Environmental Responsibility*

   Students are directed to conserve resources and recycle laboratory materials appropriately while participating in campus laboratory activities and during clinical rotations at clinical affiliate sites. Students are instructed in proper disposal of infectious and chemical waste. The Program makes changes to laboratory procedures based in part on the availability of less toxic, more environmentally friendly chemicals and reagents.

3. *Critical Thinking and Problem Solving*

   Many of the learning activities in the Program teach students to develop critical thinking and problem solving skills. Lessons, lectures, in-class and online discussions, laboratory exercises, and clinical rotations are all examples where students are given opportunities to evaluate and compare analytical methods, interpret and validate laboratory results and related data, and identify discrepant results and technical errors. Troubleshooting and problem solving skills are assessed during clinical rotations and campus laboratory classes. Study questions have been revised to develop critical thinking responses.

4. *Cultural Awareness*

   Today, cultural diversity touches every aspect of modern society. This fact is no more evident than in the practice of medicine. Almost all health care professionals, including laboratorians, have some degree of direct patient contact and work in a team environment. This necessitates an awareness of cultural diversity and sensitivity. MLT students learn about interacting with patients and their families from different cultures and ethnicities from the perspective of collecting specimens, such as phlebotomy. Case studies are presented and discussed in class in order to give students the opportunity to explore their own beliefs and attitudes. Students learn how to interact with patients and their families in ways that affect a positive medical outcome while honoring their cultural differences and uniqueness as individuals.

5. *Professional Competence*

   As a Career Technical Education program, all MLT courses are designed to increase the development of professional competence. Laboratory exercises on campus give students the opportunity to learn, demonstrate, and refine both basic and advanced laboratory skills. Clinical rotations provide the opportunity to apply and practice those skills in a real working environment. All students complete over 800 hours of clinical rotations by the time they graduate from the Program.

   Graduates of the Program are eligible to sit for the national certification board examination for Medical Laboratory Technicians administered by the American Society for Clinical Pathology (ASCP). For over 10 years, PCC MLT graduates have earned a 100% pass rate on those exams. The mean scaled score for PCC's MLT Program is considerably and consistently higher than the national average, year after year. In addition, a PCC graduate has earned the highest score in the nation on the exam 3 times in the last 10 years.[1]

6. *Self-Reflection*

   Students are encouraged to keep a portfolio of their activities and experiences during clinical rotations. Students also meet with their academic advisor at least once per term and with MLT faculty at the end of term to discuss their progress and performance in both clinical practice and campus laboratory classes. Additionally, students work with Career Services to reflect on their past experience and current training as it applies to resume building and job interviewing.

Refer to **Appendix C** for updated outcome mapping matrices (PCC Core Outcomes – MLT Program Outcomes Matrix, and MLT Course Outcomes – MLT Program Outcomes Matrix).

1. American Society for Clinical Pathology, 2003 – 2013 Board of Certification Annual Program Performance Report Summary, from American Society for Clinical Pathology website, https://www.chicago.ascp.org/Certification/ForProgramDirectors/ppr/data/pprinmlt.asp, accessed Jan., 2015.

C. Career and Technical Education Programs: Degree Outcomes.

i. List your degree student learning outcomes, showing the alignment with the college core outcomes, and identify strategies that are in place to assess the degree outcomes.

	Degree Outcome	Alignment with College Core Outcome	Assessment Strategy
1	Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.	▪ Professional Competence ▪ Communication ▪ Community and Environment Responsibility ▪ Critical Thinking and Problem Solving ▪ Self-Reflection	▪ Clinical Practice Evaluation Rubric o Interpersonal Skills & Professionalism section
2	Apply knowledge of theory and principles of related content areas (e.g. clinical chemistry, hematology, microbiology, immunohematology, etc.) to the clinical laboratory setting in making appropriate professional decisions.	▪ Professional Competence ▪ Community and Environment Responsibility ▪ Critical Thinking and Problem Solving	▪ National certification exam (ASCP) ▪ Clinical Practice Evaluation Rubric o Knowledge and Application of Knowledge section
3	Select, prepare, perform, correlate and evaluate appropriate laboratory procedures in a high quality, professional, accurate and timely manner.	▪ Professional Competence ▪ Critical Thinking and Problem Solving ▪ Communication	▪ National certification exam (ASCP) ▪ Clinical Practice Evaluation Rubric o Knowledge and Application of Knowledge section o Performance section
4	Recognize and identify technical, mechanical and physiological problems within the laboratory and effect resolution of problems according to the protocols of the institution.	▪ Professional Competence ▪ Community and Environment Responsibility ▪ Critical Thinking and Problem Solving	▪ National certification exam (ASCP) ▪ Clinical Practice Evaluation Rubric o Knowledge and Application of Knowledge section o Performance section
5	Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	▪ Professional Competence ▪ Communication ▪ Self-Reflection	▪ National certification exam (ASCP) ▪ Clinical Practice Evaluation Rubric o Interpersonal Skills & Professionalism section ▪ Post Graduate Survey

ii. Describe the assessment design and processes that are used to determine whether students have met the outcomes of their degree or certificate.

Each student must complete approximately 800 hours of Clinical Laboratory Practice (CLP) to complete the MLT Program. The laboratory-affiliated trainers (external to PCC) evaluate each student based on observation of their performance using the clinical evaluation rubric (see CLP Evaluation Form and Rubric Guidelines in **Appendix C**). The rubric describes three levels of achievement (Knowledge & Application of Knowledge, Performance, and Professional Skills), which correlate with the MLT Program Outcomes. The MLT Department utilizes the data from the CLP evaluations to compare outcomes between the campus and the distance-learning student cohorts. Each year, evaluations from all students in all areas of the laboratory are utilized for this assessment.

MLT graduates are eligible to sit for the MLT ASCP national certification examination as well as equivalent examinations offered through other certification agencies. The competencies tested and described in the ASCP Board of Certification examination content guidelines (knowledge application, technical skills, problem solving and decision making, communication and, teaching and training responsibilities) are such that they can be used to assess four of the MLT Program outcomes, outcomes 2 – 5 (see ASCP Exam Content Guidelines in **Appendix C**).

Each year, the MLT department receives from ASCP a summary of the Program exam results and its comparison to the national exam results. The MLT Department utilizes the data from ASCP exams to assess attainment of degree outcomes and to compare performance of the campus and distance-learning student cohorts (see *Figure 2.1*).

iii. Summarize the results of the assessments of these outcomes.

Results from the ASCP Board Exams show that campus and distance-learning student cohorts achieve similar scores and that both groups perform well above the national average (see *Figure 2.1*).

Results from the Clinical Practice Evaluations also show that overall, there is no statistically significant difference between the performance of the campus and distance-learning student cohorts and that both groups perform above satisfactory in all areas of the laboratory (see *Figure 2.2*).

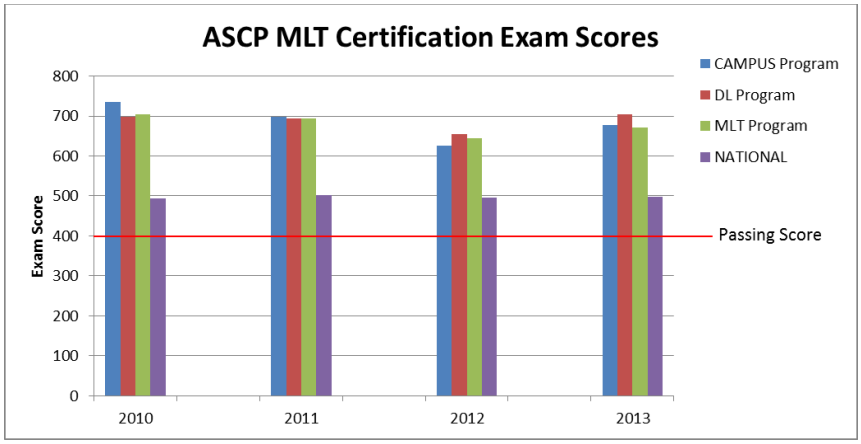


Figure 2.1 – Comparison between Campus and DL Certification exam scores

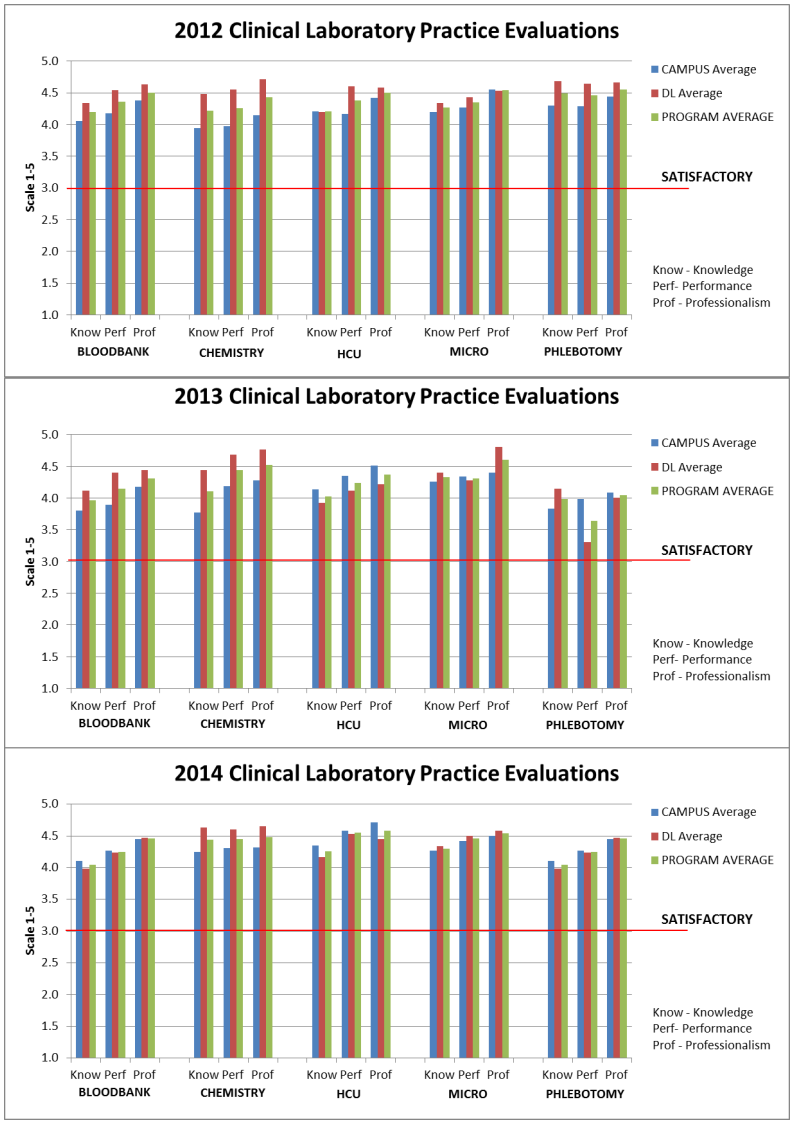


Figure 2.2 - CLP Evaluation comparison between Campus and DL per clinical area in the last 3 years

iv. Identify and give examples of assessment-driven changes that have been made to improve students' attainment of degree and certificate outcomes.

Despite the fact that the results obtained in the 2010 assessment were very satisfactory, the MLT SAC decided in 2011 to continue improving the content of campus-based laboratory exercises to create more opportunities for students to practice critical thinking and problem solving skills. As a result, laboratory exercise questions and procedures were revised to encourage development of those skills.

- Laboratory exercise activities were revised to include more activities that require critical thinking (example: preparing reagents by making dilutions from limited volumes of concentrated solutions).
- Instructors revised laboratory exercise questions to include more critical thinking and problem solving type questions.

In 2012, changes were made to the "Interpersonal Skills and Professionalism" section of the clinical evaluation rubric in order to better measure one of the MLT degree outcomes: "Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system."

No changes were made in 2013.

Section 3: Other Curricular Issues

A. Distance Learning

i. To what degree are courses offered in a Distance modality (online, hybrid, interactive television, etc.)

Distance Learning (DL) Program

The MLT Department developed a Distance Learning (DL) modality in response to the strong demand evidenced in a survey conducted throughout laboratories across the state in 2004. The DL program was initiated in 2005. To date, 40 students have graduated from the DL program. The DL program is not delivered entirely online. The term hybrid is probably a more adequate term, given that lectures and some laboratory activities are delivered online but other laboratory exercises are conducted face-to-face (usually off-site at Lane Community College). Students are assigned to a site close to their area of residence for clinical practicums.

DL lecture and laboratory correlation materials were developed by the MLT Department maintaining consistency with the traditional campus program. The DL option, which is offered online via the Desire2Learn (D2L) platform, was designed to reflect the same structure, curriculum, expectations, objectives and outcomes of the campus program. Whereas many of the lab exercises are conducted face-to-face, some of the laboratory exercises are online activities (virtual labs) enabling students to practice their laboratory skills without having to leave their home. WBC differentials (Hematology and Body Fluid cell identification) and Gram stains (bacterial morphology interpretation) are conducted in a "virtual lab" format. Over 70 clinical slides (hematology, body fluids and microbiology) were scanned at high magnification (x1000), digitized and stored online by a commercial hosting site (Leica). These images are utilized in "virtual lab" activities to simulate microscopic work performed in the lab and are further used as demonstration tools by instructors for campus based instruction (MLT 113, MLT 261, MLT 262, MLT 250 and MLT 230).

Examinations are identical in format and content for campus and DL groups. Campus based students take their exams online and on campus, proctored by an MLT instructor; whereas DL students take their exams online proctored at their local MLT approved testing center. Clinical Laboratory Practice is also similar for both modalities: same amount of hours (over 800 hours), health requirements, proficiencies, evaluations and evaluation rubrics. The main difference is that campus students spend approximately 160 hours (of the 800 hours) in the Student Lab at Legacy Emanuel Hospital whereas DL students spend the entire length of the CLP practicum at their clinical sites. The activities that correspond to the Student Lab exercises are performed at each DL clinical facility under the supervision of a clinical trainer (preceptor). Online modules, called "CLP Prep", were developed to mirror the campus based Student Lab to ensure equivalent experiences for both groups. The same checklists, proficiencies, time sheets and evaluations are used to ensure consistency between trainers.

Campus Program

The Campus Program also has several courses that offer some online components:

- **MLT 271 – 274:** Clinical Practice courses provide online modules containing review material, instructions for lab activities and self-paced quizzes.

- **MLT 281:** Clinical Seminar is a hybrid course for both campus-based and DL Programs. Students from both program modalities register for the same section allowing for interactions between the two groups through weekly discussions.

In addition, the department annually pays for access to the online Medtraining Site (MTS) from the University of Washington. This site is an extremely valuable complementary educational tool that is extensively used throughout all campus and DL MLT courses.

ii. For courses offered both via DL and on-campus, are there differences in student success?

The MLT Department tracks and compares campus and DL student achievement utilizing several measures of performance:

1. Clinical Laboratory Practice (CLP) evaluations
2. Graduation rates
3. Board Certification exam scores (ASCP exam)

Over the last three years no statistically significant differences are apparent in CLP performance when comparing campus and DL student cohorts (refer to *Figure 2.2*). On the other hand, graduation rates show a marked difference between the two groups with lower graduation rates (higher attrition rates) in the DL modality (see Graduation Numbers and Graduation Rates in **Appendix D**). Attrition is especially high during the first year (see *Figure 3.1*).

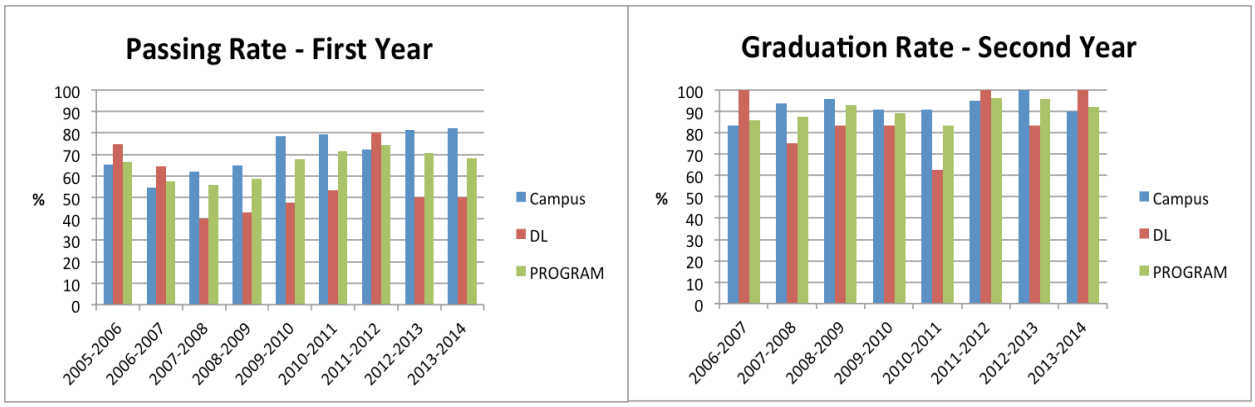


Figure 3.1 – Graduation rates comparison between Campus and DL per year

Comparison of campus and DL graduate performance on the ASCP-MLT board exams shows no significant difference. In fact, both groups of students consistently out-perform the national average in every area covered on the exam (refer to *Figure 2.1*).

The MLT Department concludes that the Program graduates students of high caliber from both campus and DL modalities. However, the department also recognizes that the DL option seems to be less effective in terms of student retention as demonstrated by the higher attrition rates.
Due to the anonymous nature of the surveys conducted we are not able to compare Campus and DL cohorts in terms of employment placement. However, in the past 5 surveyed years (2009 – 2013) we can say that overall, employment rates have been very satisfactory as demonstrated by the following data (see *Section 7.C.i.*):

- 91% of respondents had a job offer as an MLT within 9 months of graduation
- 76% within 6 month
- 22% within 1 month

iii. How are you or will you address these differences?

In the past, the MLT Department has identified several possible causes for the disparity between campus-based and distance learning program graduation/attrition rates, which included the following observations:

- In general, online students have a higher employment work load than campus students;
- Online education may not be suitable to all learning styles;
- Online classes require a higher level of commitment and self-discipline from the student;
- Some online students may have unrealistic expectations in regards to time management;
- Online delivery of instruction may need to be improved to help student success.

In light of these conclusions, the MLT Department implemented several measures to help improve the graduation rate of online students:

a. A more thorough explanation of academic work expectations, work load and work ethics is presented to the online students during the face-to-face orientation that takes place during the first week of second year;
b. Strong emphasis is given to the fact that employment should be kept to a minimum during second year;
c. Information on study skill tips has been incorporated into the first week of the second year;
d. A discussion board activity on the topic of study habits and learning styles has also been added to the first week of the second year;
e. Courses previously identified as being more cumbersome and less organized (DL MLT 113, MLT 261, MLT 262, MLT 271-274) were reviewed and modified to improve learning outcomes;
f. An admission point system was developed by the SAC to substitute the existent lottery system, with the goal of improving student preparation prior to acceptance.

Despite the implementation of measures “a - d” in 2011 – 2012 and measure “e” in 2013 – 2 014, a consistent improvement in retention has not been achieved. Measure “f”, admission point system, was developed by SAC in 2013 but has yet to be implemented due to the current hold on admissions.

iv. What significant revelations, concerns or questions arise in the area of DL delivery?

The SAC has addressed advantages and disadvantages of DL education in clinical laboratory sciences:

Pros

1. **High demand for MLTs**: there are approximately 450 accredited Lab tech programs in the US but Oregon only has 2 programs: Medical Laboratory Technology at PCC and Clinical Laboratory Science at OIT. The need for a constant generation of graduates in the field is as apparent today as it was when the initial survey was conducted 10 years ago. The demand is especially difficult to satisfy outside of the Portland area. In 2012, the DL program received 42 applications and 48 in 2013. According to a Survey conducted in July 2014, 80% of the DL affiliates strongly agree or agree that they will need to hire MLT/MTs in the next 5 years; 53% of DL affiliates said that they were very concerned about the discontinuation of the DL program; 33% were somewhat concerned about being able to hire MLTs from other programs (see DL Survey Results in **Appendix D**). Since halting of the DL program has been announced, we have received several concerned calls/emails from affiliated labs in the region (see Email from Affiliate in **Appendix D**).
2. **DL effectiveness:** as previously discussed, graduates from the DL program compare in quality with graduates from the traditional Campus modality.
3. **Flexible scheduling** allows students to maintain some level of employment (limited due to course load).
4. **DL Receptiveness**: despite the low graduation rates, the DL MLT

Cons

1. **Low graduation numbers**: as mentioned earlier, attrition rates in the DL Program are higher than in the traditional campus program, resulting in very low numbers of graduates each year (on average: 6 graduates per year).
2. **Insufficient budget**: budget concerns have been recently addressed by administration in light of the current general budget constraints. DL was originally developed and delivered with funds from a grant. Once the grant expired, funds needed to maintain the DL Program were insufficient.
3. **Risk Associated with transportation of lab materials**: another concern that the Department has addressed is safety associated with transportation of chemical and biohazards to and from Lane Community College (where some DL Program laboratory exercises are conducted). PCC instructors have to transport to/from PCC all the supplies, equipment and samples, as well as the waste generated during the lab activity.
4. **Unstable pool of clinical sites**: one other concern refers to the difficulty to maintain a stable pool of clinical sites for the DL program. Whereas the Portland sites have supported the program by providing training to our students year after year, it is more difficult to secure a commitment from DL sites. Sites show interest when they have incumbent workers in the program but are more likely to decline training if that is not the case and/or staffing levels are insufficient to provide training. The fact that the program has a higher attrition rate also contributes for a less stable pool because some sites may not see students for a couple of

Program has been well received by the industry, which faces increasing numbers of retirements and a shortage of qualified pools from which to hire. According to the same DL Survey, 82% stated that they enjoyed training PCC students and 87% strongly agree or agree that the DL Program is well structured and produces graduates of high quality. In addition, 80% of the respondents said they strongly agree or agree to continue hosting/training PCC MLT students in the future.

years, which makes it much more difficult to maintain a continued working relationship.

5. **Increased instructional workload:** another concern is the fact that DL delivery requires a lot of hands-on to keep up with the successive online platform changes and upgrades. Coordination of DL labs is cumbersome and time intensive. Technology is changing so rapidly; that what is state of the art today is antiquated tomorrow.

B. Has the SAC made any curricular changes as a result of exploring/adopting educational initiatives (e.g. Service Learning, Internationalization of the Curriculum, Inquiry-Based Learning Honors, etc.)? If so, please describe.

Not at this time.

C. Are there any courses in the program that are offered as Dual Credit area high school? If so, please describe how the SAC develops and maintains relationships with the HS faculty in support of quality instruction.

Not at this time.

D. Does the SAC plan to develop an additional Dual credit agreements with area high school? If so, please describe. If not, what does the SAC see as barriers to developing further dual credit agreements?

Not at this time. The highly specialized nature of clinical laboratory sciences is not, in SAC's opinion, appropriate for Dual Credit options. It may be possible for some of the pre-requisites to be tied to dual credit in the allied health sciences, but that is outside of the scope of the MLT Department.

E. Please describe the use of Course Evaluations by the SAC. Have you developed SAC specific questions? Has the information you have received been of use at the course and/or program level?

Given the current structure of the MLT Program, course evaluations cannot be used to its fullest. This is due to the fact that most MLT courses are co-taught; making it very difficult to identify which instructor's material the students are referring to. Student participation has also been extremely low, especially in second year, with only a few students (less than 3) responding. Students tend to only complete the survey if they have a complaint. For this reason, the SAC has not dedicated much time to developing specific questions. Once the program re-structure is implemented, the SAC can then start to develop new questions and ways to motivate students to complete online evaluations.

F. Identify and explain any other significant curricular changes that have been made since the last review.

i. Curricular changes done in 2009 – 2014

Since the last review several topics were added or expanded as the result of Advisory Committee requests or by SAC initiative. Advisory Committee requests were mostly based on changes in lab technology while SAC suggestions came from identification of certification exam areas that could be improved:

- Molecular Diagnostic Techniques (Advisory Committee)
- Phlebotomy instruction prior to clinical practice (Advisory Committee)
- Serology Methodologies (SAC)
- General Immunology (SAC)

Currently, chemistry pre-requisite courses (CH 104, 105, 106) require MTH 95 but not all MLT students take chemistry from PCC. Some students had MTH 95, while others only completed the Program requirement of MTH 65. Due to math level inconsistency, it was decided to require MTH 95 as a pre-requisite to ensure all students entered the Program with the same minimum math competency level.

ii. Planned curricular and structural changes to implement in 2015 – 2016

The SAC has decided to undertake a major revision of the Program structure and curriculum. This decision was the result of several factors identified by the SAC as well as feedback from NAACLS accreditation visitors from our November 2013 accreditation site visit. The newly restructured program addresses the following:

General Program Revisions:

1. Number of credits for each course.

   Reason: The current curriculum is larger than the number of credits students earn (approximately 10 credits).

2. Scheduling process has been simplified by maintaining a constant course schedule from week to week.

   Reason: The current course scheduling procedure is cumbersome due to block scheduling and some sections being taught by multiple instructors as well as limitations on available lab space.

3. Re-shuffling of the curriculum with creation of several smaller courses (1 and 2 credits in some cases).

   Reason: The subject material is not consistently allocated by course.

4. Creation of a 1-credit Phlebotomy course to provide adequate practice on campus prior to labs and the CLP phlebotomy rotation.

   Reason: the current model where all instructors help with phlebotomy at the beginning of lab exercises is no longer viable due to fewer FT instructors available on campus.

5. Creation of Hybrid courses to allow students to study online and practice lab skills on campus at their own pace.

Reason: Many continuing education activities are offered through online learning platforms. The design of these hybrid courses will help to prepare students for the online education format.

Admissions Revisions:

1. Pre-requisites - Chemistry and Anatomy & Physiology series

   Reason: The Chemistry and Anatomy & Physiology series are currently required Program courses. Therefore, grades for these courses cannot be used as criteria for admission into the Program. However, most students have already completed these courses when applying to the Program (due to long waiting lists from year to year). Requiring both series as pre-requisites will allow for better screening of successful students and thereby reduce attrition. In addition, it will also help minimize coordination challenges (room conflicts and/or class cancellation) with the Chemistry and Biology departments.

2. Creation of an open enrollment course (MLT 110); this course is required as a pre-requisite and as a program requirement. The course teaches basic techniques in the major areas of laboratory science (chemistry, blood bank, hematology, urinalysis, safety and quality control).

   Reason: This course will allow students to explore MLT without having to wait to be accepted into the Program, which is currently what happens. In addition, it will also allow the department to better select applicants for acceptance into the Program.

3. An Admissions system based on points (rather than lottery) has been developed. This system takes into account prior lab or health experience, recommendations, and coursework (emphasizing performance in MLT 110).

   Reason: Historically, Program admission has been based on a lottery, which can be very frustrating for applicants as well as the department. Applicants with good grades and a successful academic background may apply several times and never get accepted, whereas other less prepared applicants may be selected. In 2013, 239 applicants applied for fewer than 50 available spots. Some individuals have applied for as many as 3 consecutive years before getting into the Program. Data shows that students with limited prior college coursework graduate at comparable rates when compared to students with 90+ credits or with an AA (see *Section 4A.* for more details). In order to maintain access to this group of students, the new Admission system not only takes into consideration previous coursework but also prior experience and recommendations. The Department hopes in this way to maintain access to all different types of applicants.

4. The number of students that will be accepted into the Program will have guaranteed clinical sites for their CLP training.

   Reason: Currently not all students that are accepted into the Program can progress into second year even if they pass all first year courses. This is due to limited clinical site availability. To compensate for attrition, more students are accepted into the first year than can be accommodated in the second year resulting in low completion rates. Assuming that the new Admissions system will select students more likely to succeed, the number of students accepted into first year will be

equivalent to the capacity in second year, which in turn is dictated by the availability of clinical sites.

Course-Level Assessment Revisions:

1. Development and implementation of learning assessments for each course (midterm exams and laboratory evaluations) to adequately reflect student evaluation by subject. Work in progress.

   Reason: With the exception of final exams, current assessments are not course-specific. Instead, they evaluate student learning and performance over a given period of time (which may include material from several different courses).

2. Alignment of assessment tools with course outcomes and lecture/lab objectives. Work in progress.

   Reason: Currently, some exam questions either don't map to a specific objective or assess a higher level of learning than what is required to meet the corresponding objective.

3. Creation of more transparent Lab Evaluation Rubrics.

   Reason: Criteria for meeting satisfactory level expectations was poorly defined and explained.

4. Update laboratory activities to include more automated instrumentation.

   Reason: To adequately prepare students for an increasingly automated laboratory setting. Students currently practice performing manual methods, which are very useful to understand test principles but do not provide learning opportunity in the areas of instrument operation and troubleshooting. Instrumentation has been identified by the Advisory Committee and the SAC as an area that could be greatly improved upon to prepare competitive graduates for the workforce.

5. Expand the use of virtual labs to the campus Program.

   Reason: An existing collection of digitized images is used extensively in online courses but may also be used for demonstration purposes by the instructor during several campus classes. Expanding access to students enrolled in campus-based courses would provide an excellent tool for practicing identification skills learned in class (cell and organism identification).

Clinical Laboratory Practice (CLP) Revisions:

1. CLP to be scheduled after students have completed all didactic course work.

   Reason: The current structure does not provide an equal CLP experience to all students as CLP is completed while students are enrolled in didactics and students begin at variable times during the year. This change will help ensure that students have received all learning material before beginning clinical practice.

2. Completion of CLP rotations by the end of spring term (seventh and last term of the Program).

   Reason: The current structure has students completing their rotations at the end of summer term. Many clinical sites are staffed at lower levels in the summer due to vacations, which may result in students receiving less supervision.

3. Simplification of the CLP schedule.

   Reason: The current model for CLP scheduling is very cumbersome due to concurrent enrollment in didactic and clinical practice courses.

4. Re-configuration of Student Lab (renamed Simulation Lab) instruction with more hands-on laboratory practice.

   Reason: Current Student Lab instruction includes too much emphasis on theory, which will no longer be necessary given that in the new program, students will receive all necessary didactic material prior to initiating practice in the Student Lab environment. The Student Lab has been renamed Simulation Lab given that its main goal is to closely mimic a clinical working lab environment.

The Department has submitted the proposed changes to the Curriculum Office and obtained approval in December 2014 (see New MLT Curriculum in **Appendix B**).

Section 4: Needs of Students and the Community

A. How is instruction informed by student demographics?

A variety of demographic characteristics influence the make up of our student population. For example, age is an area where the Program has seen a consistent pattern, year after year. Of our MLT students:

- 32% are 31 – 40
- 27% are 26 – 30
- 15% are 41 – 50

Historically, the Program experiences very low enrollment by younger students (18 – 20 year olds).

In the context of gender, our student population reflects the gender distribution commonly seen in the field of laboratory medicine. Generally, that distribution is 75% female and 25% male.

The MLT student population is represented by multiple ethnicities with white/non-Hispanic representing the majority. The ethnicity distribution is broken down as follows:

- 75% identify as white/non-Hispanic
- 16% identify as Asian/Pacific Islander
- 5% identify as Hispanic
- 3% identify as African American

The MLT Program has not experienced significant changes to these demographic statistics for many years. Please refer to **Appendix E** for complete enrollment data provided by the PCC Office of Institutional Effectiveness.

In the last five years (2010 – 2014) the level of education for students entering the Program has been stable:

- 4-year degree..... 31%
- 2-year degree..... 13%
- ≤ 90 credits (no degree) 24%
- Limited college 32%

Students holding a 4-year degree seem to be at an advantage to successfully complete the Program, but the difference in graduation rates among the other three groups doesn't appear to be significant (see Graduation Comparison Data in **Appendix E**):

- 4-year degree..... 66%
- 2-year degree..... 40%
- ≤ 90 credits (no degree) 47%
- Limited college 45%

The most notable change that has been experienced in the last several years has been an increase in students' computer skills. Every year, more students enrolled in the MLT Program request that learning resources be made available in electronic format.

B. Have there been any notable changes in instruction due to changes in demographics since the last review?

No.

C. Describe current and projected demand and enrollment patterns. Include discussion of any impact this will have on the program.

Currently, student demand for Program admission is high. As described earlier, 239 applicants applied for fewer than 50 positions in the Program last year alone. Over the course of several years, the Program has seen a steady increase in the number of applications received for program admission. With a positive outlook in the job market predicted by both the State of Oregon Employment Department and the U.S. Bureau of Labor Statistics through at least 2022 (refer to *Section 7C*), we expect student interest and demand for program admission will continue to rise.

The limiting factor that directly affects the number of applicants we can accept is the number of clinical sites available for clinical training.

D. What strategies are used within the program to facilitate access and diversity?

The MLT SAC has been working on changing the application process for admission to the Program. The SAC reviewed the new system and discussed changes during the spring 2014 SAC meeting. Those changes will be implemented for the next admissions cycle in the spring of 2015 (see Program Application in **Appendix E** and Admission Point System in **Appendix B**).

The impact of the new Admission process on access and diversity will be evaluated in the future.

E. Describe the methods used to ensure faculty are working with Disability Services to implement approved academic accommodations.

The MLT Department coordinates academic accommodations through the Office of Students with Disabilities. Examples of accommodations that have been implemented in the past include:

- Allowing students to record audio of lectures
- Providing access through MyPCC and Desire2Learn to instructional materials (i.e. PowerPoint slides, lecture notes, handouts, etc.)
- Extending time available to complete examinations
- Providing a distraction-free environment during examinations

Other accommodations may also be implemented at the discretion of the department in the absence of a request from the Office of Students with Disabilities.

F. Has feedback from students, community groups, transfer institutions, business, industry or government been used to make curriculum or instructional changes?

The MLT Program is very fortunate to have a very involved Advisory Committee. The Committee meets three to four times annually. During these meetings Program faculty solicit feedback from committee members with regards to student preparation for clinical rotations and graduate preparation for employment. Changes that are occurring in the field of laboratory medicine and their impact on student instruction are also discussed. The department deeply appreciates the work

of the Advisory Committee and relies on the feedback they provide to help improve instruction and maintain an up-to-date curriculum that reflects the expectations of the laboratory community.

Graduates of the MLT Program, as well as their current employers, are surveyed annually, approximately nine months following graduation. In addition, performance data from the national certification examinations is reviewed. The SAC reviews these surveys during the annual spring SAC In-service meeting and discusses any issues that require addressing. The results are also shared and discussed with the Advisory Committee (see Post-graduation Surveys in **Appendix G**).

Student Course Evaluations have not traditionally provided very reliable feedback as previously discussed in *Section 3E*. On the other hand, Student Clinical Laboratory Practice evaluations have obtained higher participatory rates and useful feedback. The CLP evaluations are annually analyzed by the Clinical Coordinator and Program Director. Overall, students are very appreciative of the training received. The most common improvements suggested are the increase in length of the bloodbank and microbiology rotations. Another commonly appointed recommendation is to avoid changing trainers from day to day. The Department recognizes that bloodbank and microbiology are areas of the laboratory that usually require more extensive training. However, these are also the two areas where the number of clinical sites available is most limited and therefore implementing such recommendation is very difficult. Regarding the fact that students are trained by different trainers, the challenge is understandable, but it is also a very valuable learning experience. This recommendation was discussed with the Advisory Committee who considered that having several trainers actually benefits the students. Different techs tend to do things differently while still following the same general procedure. This provides a different perspective for students and is useful for increasing the students overall understanding of factors that may influence testing.

Comments from the Post Graduate Surveys are varied and, at times, contradictory but in the past years (2010-2013) the following were the most often suggested areas for program improvement.

- More bloodbanking preparation and longer clinical rotation
- More microbiology preparation and longer clinical rotation
- Less emphasis on antiquated methodology and more on automation
- More body fluids preparation
- More Quality Control (QC)
- More specimen processing

Given the difficulty of increasing the duration of clinical rotations, the department took these recommendations into consideration during the design of the program re-structure. Laboratory exercises were added to bloodbank, micro and body fluids courses and several QC activities were incorporated into the chemistry courses. Increased emphasis on automation will hopefully be possible as the Department is able to acquire more automated instruments. Specimen processing is an area for future discussion with the Advisory Committee.

Section 5: Faculty

A. Provide information on:

i. Quantity and quality of the faculty needed to meet the needs of the program/discipline

Currently there are eight staff members in the MLT Department.

Faculty:

- Ana Sacramento, MS, MLS(ASCP)^{CM}
- Erin Krauter, BS, MLS(ASCP)^{CM}
- Jeff Josifek, MS, MLS(ASCP)^{CM}
- Steve Marshall, MPA, MLS(ASCP)^{CM}
- Mark Zimmerdahl, BS, CLS(NCA)
- Doug Lee, MLS(ASCP)

Instructional support:

- Shauna Pratt, MLS(ASCP)^{CM}
- Steve Marshall, MPA, MLS(ASCP)^{CM} (*also a part-time instructor*)

All staff members are well qualified and all but one is a graduate of the MLT Program. All staff members practiced in the laboratory industry at some point in their professional career and have 10 to 35 years of educational experience. Members of staff engage in continuing education activities to maintain their professional certifications and to keep up with the latest trends in the industry. Each faculty member has one or more areas of expertise within the clinical laboratory science discipline (hematology, urinalysis, coagulation, chemistry, immunohematology, microbiology, phlebotomy, serology, etc.), which has proven to be very helpful to maintain a high quality curriculum.

The Department gives great consideration during the interview process to identify applicants whose temperament, technical and organizational skills, work ethic, and knowledge and experience in the clinical laboratory sciences is adequate to teach courses in the Program.

ii. Extent of faculty turnover and changes anticipated in the next five years.

None of the full-time faculty is planning to retire in the next five years. One of the current part-time faculty members retired from a FT position in 2013 but continues to offer his valuable services to PCC. Of the instructional support staff, one will retire in 2015 and the other is planning to retire sometime in the next five years.

iii. Extent of the reliance upon part-time faculty and how they compare with full-time faculty in terms of educational and experiential grounds.

The Department currently relies on 3 full-time faculty and 3 part-time instructors. The number of part-time faculty recently increased due to administration decision not to fill an open FT faculty position due to retirement. This decision has impacted the Program in several ways:

- Laboratory activities that require participation of multiple instructors, such as phlebotomy (which requires 4 instructors), now take much longer due to insufficient number of instructors available.
- Reliance on more part-time faculty has meant that the normal duties of FT faculty have to be divided up among fewer full-timers. These duties include: advising, FDC, Program Director, CLP Coordination, SAC Chair, accreditation responsibilities, program review activities, Advisory Committee meetings, faculty mentoring, assisting in student recruitment, and special projects. The unintended consequence has been less time to participate in college wide committees and activities when compared with past years.
- The MLT SAC encourages all staff to participate in SAC and department meetings and attempts to make decisions based on consensus of opinions. However, since students enrolled in the program are in class five days per week for six hours each day, it is very difficult to set aside meeting times when all FT faculty are free from instructional duties.
- It is very difficult to attract qualified individuals for part-time faculty positions in our field. One of the main challenges is competition with other employers. By definition, part-time faculty work part-time and salary rates for instructors are lower than the average salary for clinical laboratory positions.

We expect the reliance upon part-time faculty to decrease once the new Program structure is implemented and the DL option is discontinued. Currently, both instructional support staff members also participate in some teaching activities.

iv. How the faculty composition reflects the diversity and cultural competency goals of the institution.

The faculty of the MLT Department represents a broad spectrum of age, gender, religious, cultural, and professional backgrounds. The female to male ratio is high among MLT students and the clinical laboratory industry in general. The gender distribution in the MLT department has gradually changed over time from a full-time faculty female-to-male ratio of 1:3 ten years ago to the current 2:1 ratio. While all 3 part-time faculty are male, the gender ratio of our instructional support is 1:1.

Applicants to MLT positions are selected based on the current HR hiring process which takes into consideration applicant qualifications, experience, interview performance and attributes that contribute to diversity in the workplace. Applicants for part-time faculty positions are selected by interview from the part-time pool by the Department Chair. Care is taken to give strong consideration to the cultural competency goals of the institution. Questions on diversity are addressed during the interview to assess how the candidate's attitude and principles align with institutional and departmental goals.

B. Report any changes the SAC has made to instructor qualifications since the last review and the reason for the changes.

In 2009, Instructor Qualifications were modified in the areas of required academic degrees, certification level, and preferences. The academic degree required for each course was set by the SAC based on complexity of instruction. Preference to candidates holding a Masters degree was added to MLT Core Courses to align with NAACLS requirements, which at the time had elevated

the level for Program Director eligibility to a Masters. For consistency, the other course levels were revised accordingly.

The SAC recently (2014) revised instructor qualifications to cover the newly created courses and changes in curriculum. The following Instructor qualifications were submitted (see also SAC Minutes in **Appendix F**).

MLT 113, MLT 114, MLT 115, MLT 120, MLT 224, MLT 225, MLT 230, MLT 241, MLT 242, MLT 251, MLT 252, MLT 253, MLT 261, MLT 262, MLT 265, MLT 266, MLT 282 and MLT 283

- Minimum requirements:
  - Bachelor's degree in a science related field or applicable area of study
  - MLS(ASCP) or MLT(ASCP) certification or equivalent
  - 3 years of recent experience working in a clinical laboratory setting performing testing or teaching experience in a related field

OR

  - Master's degree in a science related field, education or a related area
  - MLS(ASCP) or MLT(ASCP) certification or equivalent
  - 2 years of recent experience working in a clinical laboratory setting performing testing or teaching experience in a related field

Preference will be given to candidates with a Master's degree.

MLT 271, MLT 272, MLT 273 and MLT 274

- Minimum requirements:
  - Bachelor's degree in a science related field or applicable area of study
  - MLS(ASCP) or MLT(ASCP) certification or equivalent
  - 3 years of recent experience working in a clinical laboratory setting performing testing

OR

  - Master's degree in a science related field, education or a related area
  - MLS(ASCP) or MLT(ASCP) certification or equivalent
  - 2 years of recent experience working in a clinical laboratory setting performing testing

Preference will be given to candidates with a Master's degree.

MLT 100, MLT 110

- Minimum requirements:
  - Associate degree in medical laboratory technology or related field
  - MLT(ASCP) certification or equivalent
  - 3 years of recent experience working in a clinical laboratory setting or teaching experience in a related field

OR

  - Bachelor's degree in a science related field or applicable area of study
  - MLS(ASCP) or MLT(ASCP) certification or equivalent
  - 2 years of recent experience working in a clinical laboratory setting or teaching experience in a related field

Preference will be given to candidates with a Bachelor's degree.

MLT 105, MLT 150 and MLT 170

- Minimum requirements:
  - Associate degree in a science related field of study
  - PbT(ASCP) certification or MLT(ASCP) certification or equivalent
  - 3 years of recent experience working in a clinical laboratory setting, including phlebotomy

C. How have professional development activities of the faculty contributed to the strength of the program/discipline? If such activities have resulted in instructional or curricular changes, please describe.

Faculty and staff are encouraged to attend fall in services, and fall and spring SAC meetings. In addition, staff meets once per week to discuss department issues and student progress.

Maintenance of a relevant curriculum in this field requires more than just feedback and suggestions from industry partners, it requires an engaged faculty that are able to participate in a variety of educational activities. A few examples from the recent past include:

- Two faculty members arranged to receive ***an informal training*** on the analytical technique called Flow Cytometry. A laboratory specialist at Kaiser Airport Way Laboratory provided the training. This educational opportunity allowed faculty to update and improve the quality of the hematology curriculum related to Flow Cytometry.
- The MLT Program Director attended two professional development activities:
  - ***NAACLS Workshop –*** Provided valuable insights on the newly developed Standards for Accreditation of MLT programs.
  - ***Clinical Laboratory Educator's Conference (CLEC) –*** Presented current trends in Clinical Laboratory education, which emphasized the development of critical thinking and problem solving skills, online learning tools, flipped classrooms, and inter-professional learning activities. Work done on the MLT Program re-structuring project

has been based, in part, on the knowledge and information gained from the Educator's Conference.

- The Clinical Coordinator is scheduled to attend the ***CLEC*** in February 2015.

All staff members are required to maintain their certification, which requires participation in continuing education activities. The staff has traditionally participated in the Oregon Spring Seminar and/or the Northwest Medical Laboratory Symposium, both of which occur annually in Oregon or Washington. These professional events are a primary means of staying abreast of the latest trends and innovations in the clinical laboratory sciences including cutting-edge research into new tests and methodologies, and state-of-the-art instrumentation. In addition, these types of events also offer unparalleled opportunities to connect with peers and colleagues, Program graduates, and other practicing laboratory professionals. The MLT Department sincerely hopes that the college will continue to support our efforts to maintain the relevancy of our Program and the curriculum through these and other professional activities.

Section 6: Facilities and Support

A. Describe how classroom space, classroom technology, laboratory space and equipment impact student success.

Lab and lecture rooms, and staff offices in Jackson Hall at Cascade Campus offer modern computer and media equipment and connections. Lab and lecture rooms have built in projectors, comfortable workstations, and adequate acoustics and lighting. All rooms have provisions for individuals with disabilities, with specific student accommodations determined by the College Office of Disability Services.

Jackson Hall (JH) Room 213 is designed for both lecture and laboratory instruction. It is 900 square feet and is designed to accommodate 24 students. Our primary lecture room, JH 207, is approximately 918 square feet in size and has room for approximately 45 students. Both rooms have advanced media capabilities.

JH 212 is a multi-purpose instructional room used primarily as a "Student Support Laboratory" where students can study independently. This lab may also be used by students to complete make-up labs, small group independent lab exercises, team learning experiences and independent study using the MedTraining online tutorials from University of Washington. JH 212 is 450 square feet and has individual workstations with microscopes, computers, an automated hematology instrument, an incubator, and a class II biological safety cabinet.

Faculty and staff offices for the MLT Program are also located in Jackson Hall and measure approximately 750 square feet in total. The Allied Health Director's office as well as the copier, printer and FAX machines are located very close to the MLT Program offices. The Division Dean and administrative staff's offices are located in other buildings on the same campus.

A central storage area is shared with the science programs and is approximately 1,000 square feet. Areas specifically designated for the MLT department are also located in this central area including MLT Prep (190 sq. ft.), Media Prep (140 sq. ft.), MLT stock area (300 sq. ft.) and, MLT refrigerators and a freezer. The MLT Program Student Laboratory at Legacy Emanuel Hospital measures 190 square feet.

All laboratories are equipped to meet current instructional needs. Each year the department submits a capital budget request, which is considered with other campus needs. The administrative responses to department needs have been driven by statewide and College fiscal realities. Despite budget shortfalls, allocations continue to be adequate for basic operations of the Program.

The following items are currently on the MLT 2014 – 2015 equipment needs list:

- Cell Washer..... 1 at $7,000 each
- Double Heat Blocks ..... 13 at $500 each
- 15" Laptop computers..... 20 at $300 each
- Chemistry Analyzer ..... 1 at $15,000 each

In July 2015, the MLT Department received a generous donation from Sysmex - a new bench-top Automated Hematology Analyzer (XS1000iC). In an industry that is becoming more and more automated it is very important to expose our students to the automated world of clinical laboratory

sciences. It is in alignment with this vision that the Department would like to acquire a Cell Washer and a Chemistry Analyzer. Purchasing of heat blocks reflects changes in industry, as water baths are no longer utilized in the clinical lab. NAACLS visitors and a Consultant both commented on the outdated equipment.

In 2008 – 2009, MLT exams started to be issued online. In 2009 – 2010, twelve netbooks were purchased due to the difficulty of booking rooms equipped with computers. The netbooks have served us well but are now starting to show some malfunctions (failing batteries). The Department would like to replace those 12 netbooks and add 8 more to have a total number that can serve the entire MLT cohort. In addition, we would like to expand the use of this technology to laboratory activities (examples: simulating a Laboratory Information System, Quality Control, etc.).

B. Describe how students are using the library or other outside-the-classroom information resources.

The PCC Library in conjunction with the MLT Department has developed an online Research Guide specifically dedicated to the MLT Program. This guide gives access to books, e-books, journals, magazines, databases and web sites within the scope of the clinical laboratory sciences.

Students also have access to numerous online learning resources in Desire2Learn (educational online platform) to enhance and complete their Student Lab or Clinical Laboratory Practice (CLP) experience. These resources include:

- Tutorials:
  - RBC Morphology tutorial with self-test
  - Urinary Sediment tutorial with self-test
- Picture Galleries:
  - Colonial morphology
  - Gram stain morphology
  - RBC morphology
  - WBC morphology
  - Urinary sediment
  - Body fluids
- Digitized images:
  - Blood smears
  - Body fluids
  - Gram stains

Students can access the MedTraining web site available through the University of Washington (http://www.medtraining.org/) via the Internet on campus, in the Student Laboratory at Legacy Emanuel Hospital, from their home, or anywhere an Internet access point is available.

In addition to PCC's extensive library resources, each clinical affiliate also has a library facility available for student use. Most affiliate libraries have multi-media and Internet access for students.

C. Provide information on clerical, technical, administrative and/or tutoring support.

The MLT Program is supported by:

- Administrative Assistants ..... Jeri Reed and Corinne Hiebert
- Admissions Specialist for Allied Health.....Amanda Gallo
- Division Dean .....John Saito
- Employment Specialist (jobs and interviews) .....Tanya Maldonado
- Instructional Support Staff……..…Shauna Pratt and Steve Marshall
- Interim Director of Allied Health .....Sue Leung
- MLT Program Director..... Ana Sacramento
- Perkins Advisor.....Karen Henry
- Special Purchasing (affiliate contracts) ..... Cathy Huey

Instructional Staff not only provide support but also work directly with students to provide instruction. One instructional support technician (Shauna Pratt) is responsible for keeping inventory and ordering supplies, maintaining equipment, updating all MLT laboratory handouts and instructor guides, and preparing and assisting with laboratory exercises. The other instructor support technician (Steve Marshall) works one-on-one with students in the Student Lab at legacy Emanuel Hospital. Steve's responsibilities include preparing didactic materials that support Student Lab activities, updating all Student Lab handouts, and training and evaluating students in their Student Lab practice.

The MLT Department does not have clerical support and takes its own minutes of SAC meetings and Advisory Committee meetings. Other clerical duties such as course content guide revisions, statistical analyses of national test scores, student and employer surveys, textbook ordering, etc. are assigned to staff members.

D. Provide information on how Advising, Counseling, Disability Services and other student services impact students.

Students meet with their designated program advisor (an MLT faculty member) every term to review their academic progress and performance, to ensure they are on track to graduate, and to guide them toward appropriate support services as needed. Students are also advised of scholarship opportunities as they become available.

Students are required to work with Career Services as they approach graduation in order to prepare resumes and develop good interviewing skills. This improves the student's ability to successfully enter the workforce and pursue career goals.

E. Describe current patterns of scheduling (such as modality, class size, duration, times, location, or other). Address the pedagogy of the program/discipline and the needs of students.

The current MLT Program is a 2-year, full-time, day program located at the Cascade campus of PCC. It is currently being offered in two modalities: campus based and distance learning. The number of students accepted is calculated each year based on the number of clinical sites available and the average attrition rate from previous years. Despite the increasing number of applicants, the number of students accepted into first year has been declining over the years. This is largely due to

a steady improvement in applicants' level of prior education. The goal is to estimate a number that will provide enough students to cover all clinical sites available and, at the same time, minimize the number of students that complete first year but cannot continue to second year due to lack of sites. In 2012 – 2013, 28 students were accepted into first year on campus and 24 students into the DL option. Predicting the availability of clinical sites one year in advance is difficult at best, especially for DL as we experience a less stable affiliate pool (refer to *Section 3*).

First year students spend two to three days per week in MLT, chemistry, biology and general education courses. Campus students take most classes at Cascade Campus while DL students take MLT classes online and the remaining classes either online (through PCC if available) or on campus at their local community college. MLT campus first year classes take place in JH 207 (lecture) and JH 213 (lab). The Campus students attend MLT lectures together (28 students). The class is separated into two groups for laboratory activities to ensure safety through adequate availability of equipment and instructor supervision.

The numbers of students accepted into second year depends on the number of clinical sites available to provide adequate training (approximately 800 hours per student). In 2013, 20 students were accepted into the second year of the campus program and 6 into DL. Students that completed first year successfully but did not get into second year were offered the opportunity to complete a phlebotomy practicum. The practicum together with first year classes provides eligibility to apply for phlebotomy certification. Four campus students followed this route.

Second year campus students are in class (lecture or lab) or at their clinical sites 40 hours/week. During second year, the campus cohort is divided into two groups, group A and group B. Group A attends classes on campus while group B attends clinical practice; the groups switch every other week, except Fridays, when all students are on campus. The rooms used are: JH 207 and JH 213. Clinical practice starts in the fall and goes all the way until the end of summer with graduation in September. Most students take their certification exam before the end of the same year. Distance learning students have online classes every week. Laboratory exercises are either completed online or face-to-face at Lane Community College or PCC (the number of labs differs each term). Clinical practice takes place 2 to 3 days per week at assigned clinical sites. The number of lessons and associated activities, plus the number of days spent in clinical practice, over a 2-week period are equal to those of the campus cohort.

The MLT Program pedagogy is based primarily on didactic instruction, applied laboratory exercises, and clinical practice experience. Student field trips, guest speakers, online tutorials and continuing education activities complement the educational experience. The MLT Department strives to present up-to-date information, followed by laboratory exercises that reinforce the material. Multiple educational formats are utilized to better cover different learning styles: lectures, videos, images, online tutorials, demonstrations, and hands-on exercises. Refer to **Appendix A** for the Current MLT Curriculum and **Appendix B** for the New MLT Curriculum.

Section 7: Curriculum Updates and Student Preparation

A. Evaluate the impact of the Advisory Committee on curriculum and instructional content methods, and/or outcomes.

The MLT Advisory Committee meets 3 – 4 times per year to discuss trends in the industry and to discuss whether the MLT Program is meeting the needs of the community (see **Appendix F** for Advisory Committee minutes). The Advisory Committee is made up of managers and supervisors of affiliated hospital laboratories as well as MLT Program staff.

A 9-month post-graduate survey is sent to employers in the spring, many of who also serve as members of the Advisory Committee. Results from the survey offer direct feedback on preparedness of students for employment and are reviewed by SAC (see results from Post-graduation Surveys in **Appendix G**). As evidenced in *Section 7.C.i.*, students appear to be highly employable after graduating from the Program.

Annual ASCP board exam scores are reviewed and findings presented to the Advisory Committee, who then make recommendations to add or remove content, depending on its relevancy. For example, during the April 2014 meeting, members discussed 'other hematology tests', an area that has seen low scores for the last two cycles, to see if there were curricular changes needed in this area. Likewise, with a recent push toward more molecular testing, it was decided to enhance instruction in this area of the Program. MLT subcommittees, made up of lead techs from each subject area and MLT staff teaching those topics, meet periodically to review and recommend changes to specific checklists in the areas of hematology, chemistry, blood banking, microbiology, and phlebotomy.

In preparation to the MLT Program restructure, the Clinical Coordinator and Program Director worked closely with Advisory Committee members to ensure any changes made to the Program continue to meet the needs of the laboratory community. In 2014, meetings were conducted with individuals at each clinical site to ensure communications about changes were clear and to identify any issues that could impact training or future hiring practices of our students. During such discussions, members unanimously agreed that the Student Lab at Emanuel Hospital is a necessary component of the Program. The experience that students gain from the Student Lab better prepares them for their rotations at individual sites. Without this vital piece, students would receive 160 fewer training hours as the sites would not be able to pick up these extra hours. It should be noted that while technology is rapidly expanding, hospital staffing has been minimized, making training of students more challenging than ever. With this in mind, MLT staff is seeking ways to bring more technology into the classroom, such as with digital slides for practicing differentials, instrumentation/automation of laboratory methods to better reflect the industry, and maintaining their own continuing education/training in the field. With rapid changes to laboratory technology, it is increasingly more important that MLT instructors are able to attend lab-related trainings in order to stay current.

The Advisory Committee also includes members from outlying areas, involved in the training of distance students. As the DL program is placed on hiatus, these areas will be underserved and likely understaffed. Concerns on how to address these issues have been discussed in recent meetings since the PCC Program is the only MLT program in the state and projections indicate a substantial shortage in qualified laboratory technicians is imminent. A survey was conducted in

July 2014 in which distance learning affiliates were asked about the impact of closing the DL program. The response rate was 100% (see results of the DL Survey in **Appendix D**).

- 86% of survey participants claimed the DL program was "very useful" or "somewhat useful" for their institutions.
- 86% described themselves as 'very' or 'somewhat' concerned that the DL program was being halted.

With MLT's in high demand, both statewide and nationally, faculty are hopeful that the Distance Learning option can be revisited when funding becomes less restrictive.

B. How are students selected and/or prepared (i.e. prerequisites) for program entry?

Historically, selection has been based on a lottery system. Students are only required to have completed one basic (100-level) course in biology and one basic (100-level) course in chemistry. Additional coursework in chemistry and biology are built into the first year of the Program. Students must first be accepted into the Program in order to explore coursework related specifically to MLT.

A newly implemented point-based system will be in place when enrollment re-opens in 2015. Biology 121 & 122 and Chemistry 104, 105, & 106 will be pre-requisites for the Program and may be used to accrue points for Program admission. Students will also be able to accrue points for prior experience in the laboratory (hospital or other lab-related industries). An MLT survey course will be offered as an open enrollment course and used as an additional pre-requisite. This course will provide a path for students to explore the MLT career option without formal acceptance into the Program, but may also be used to assess skills and suitability for the career.

C. Job placement and employment opportunities.

i. Review job placement data for students over the last five years, including salary information where available.

Employment rates for MLT graduates are very satisfactory. The following data collected from post-graduation surveys conducted from 2009 – 2013 show the percentage of respondents receiving a job offer within nine months of graduation (see *Figure 7.1*):

- Within one month 22%
- Within three months.....52%
- Within six months.....76%
- Within nine months.....91%

The numbers have been declining slightly in the last three years but job placement for MLT graduates is still at a very satisfactory level.

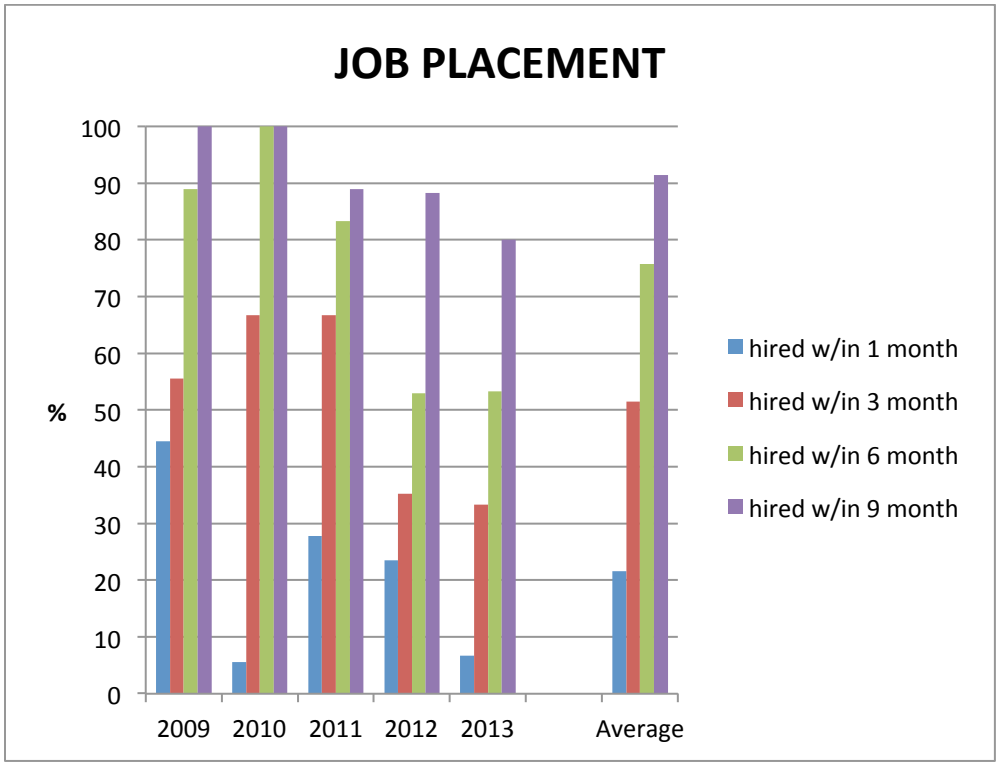


Figure 7.1 – Job placement from 2009 – 2013

Information from the 2013 Post Graduate survey showed the average starting hourly wage for MLT's was $20.76, ranging from $18.00 to $23.16. The Occupational Information Center of the Oregon Employment Department reports 2014 Wages of an average hourly rate of $23.51 and annual earnings of $48,909 (see Oregon Employment Department Data in **Appendix G**).

ii. Forecast future employment opportunities for students, including national or state forecast if appropriate.

Future employment for MLTs seems to be very promising both nationwide and statewide. Feedback from both the MLT Advisory Committee as well as national and state employment data (*see below*), indicate a growing need for trained medical laboratory technicians. The number of projected annual job openings over the next five years is more than double the expected number of graduates from our Program. Given that our Program is the only accredited MLT program in the state of Oregon it is with concern that the medical laboratory community and the MLT department see the closure of the distance learning option.

The following statistics and analysis come from the Occupational Information Center of the Oregon Employment Department for 2012 – 2022 (see *Figure 7.2* and Oregon Employment Department Data in **Appendix G**):

- The projected growth in employment for MLT's from 2012 – 2022 is 25.3%
- MLT is projected to experience the fifth highest job growth rate out of the 21 professions listed in the Health Technologists and Technicians Group.
- Increase of 278 new positions over a 10-year period.
- Projected annual openings (new positions and annual replacements): 57

- Statewide employment analysis:
    - *"Employment in this occupation in 2012 was at about the statewide average for all occupations. The total number of job openings is projected to be somewhat higher than the statewide average number of job openings for all occupations through 2022. This occupation is expected to grow at a somewhat faster rate than the statewide average growth rate for all occupations through 2022. Reasonable employment opportunities exist for trained workers."*

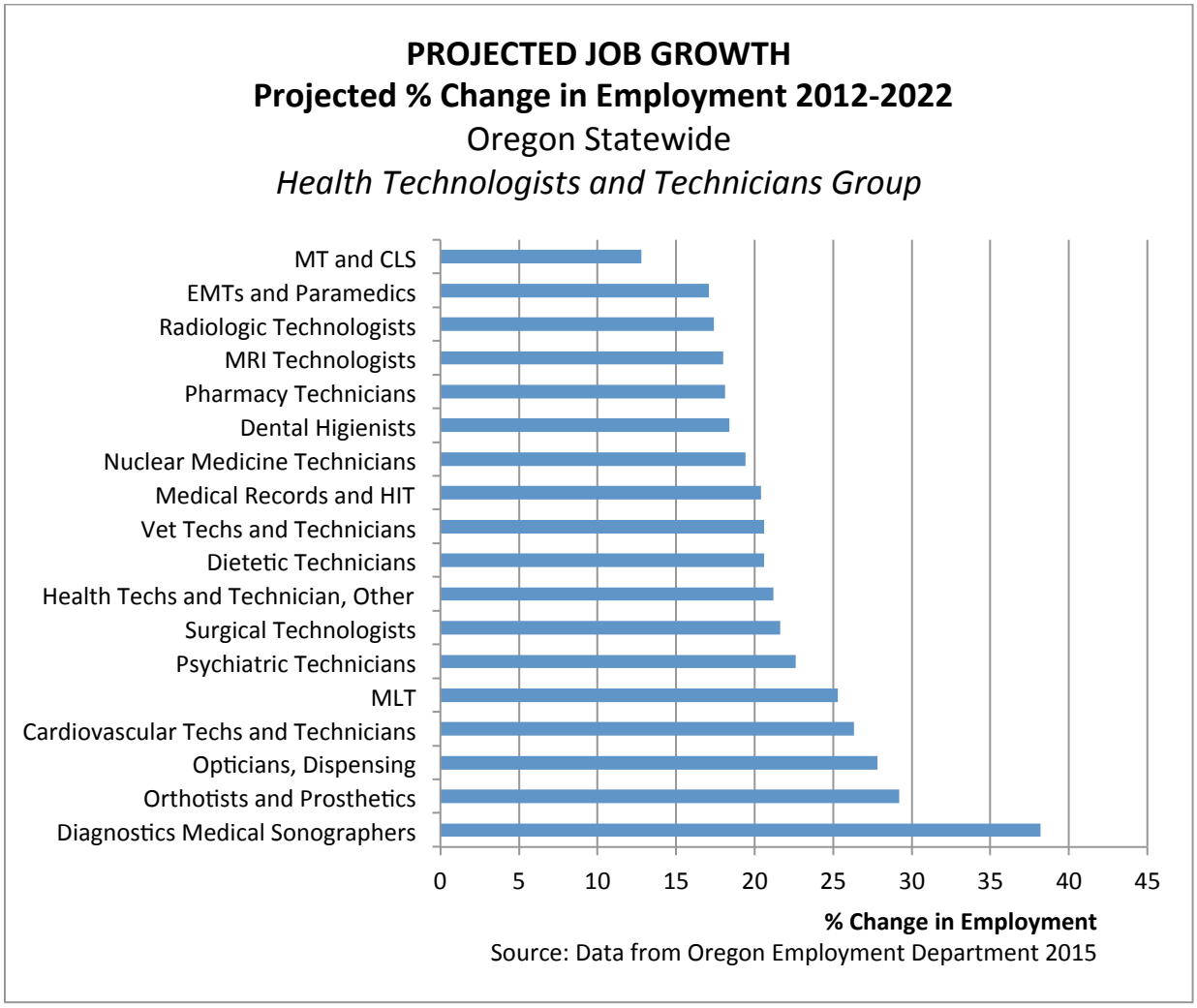


Figure 7.2 – Projected % Change in Employment 2012 – 2022

According to national data from the Bureau of Labor Statistics (BLS):

- The Job Outlook 2012 – 2022 for MLT is +30% (much faster than average)
- 2012 – 2022 Projected MLT Employment Change: 47,900 positions
- In 2012, the national median MLT annual salary was $47,820 per year

From the above data, one concludes that an MLT degree will continue to be very desirable and that employment opportunities and wages will easily help pay back the financial investment on education (see Bureau of Labor Statistics Data in **Appendix G**).

D. Degree/Certificate completion.

i. Present data on the number of students completing degrees and/or certificates in your program.

- The MLT Program graduates approximately 25 students per year, 20 Campus and 5 DL (see Graduation Numbers and Graduation Rates in **Appendix D**).

- The overall attrition rate is 50%
    - Campus attrition is 45%
    - DL attrition is 60%

ii. Analyze any barriers to degree or certificate completion that your students face, and identify common reasons that students may leave before completion.

Attrition rates are, on average, higher in first year (34%) than in second year (10%). Attrition rates are also higher in DL (44% in 1st yr., and 16% in 2nd yr.) than on Campus (29% in 1st yr. and 8% in 2nd yr.).

There are several factors that contribute to the higher attrition rate in first year:

- Financial difficulties
- Academic performance (including poor laboratory skills)
- Personal issues (marriage, divorce, children, health, family, etc.)
- Realization that MLT career does not fit personal interest

Once a student enters second year, the main reason that forces students to leave before completion is poor academic performance and/or unsatisfactory progress in the development of necessary laboratory skills.

As for the much higher attrition rates seen among DL students, several other factors have been identified in addition to the ones mentioned above:

- Unrealistic expectations regarding time management, level of commitment, and self-discipline required by online classes
- Heavier work load which is incompatible with required study time
- Online classes may not suit all learning styles

The Program restructuring should help with some of the factors that negatively impact student success. Creating an open enrollment survey course should give students the opportunity to explore clinical laboratory sciences before deciding if it is something they are interested in pursuing. This course may also help screen students with poor laboratory skills and advise them into different areas of study.

Given the high demand for trained MLTs throughout the state, the MLT Department recommends that the DL modality be revisited in the future and, at that time, it would be advisable to re-evaluate the admission criteria for DL applicants to address the high rates of incompletion.

E. Describe opportunities that exist or are in development for graduates of this program to continue their education in this career area or profession.

The MLT Department and the CLS Department at the Oregon Institute of Technology (OIT) have maintained an informal agreement for transfers of course work from PCC to OIT. Every year, on average, 1 or 2 MLT graduates transfer to OIT to complete their BS in Clinical Laboratory Science (CLS). In 2013, a formal agreement was redacted and exchanged between the two departments but was never signed due to the expected MLT Program restructuring. There is a friendly relationship between the directors from both programs; the informal agreement between Programs will be revised to accommodate the new MLT curriculum and formalized in 2015.

F. Describe and explain any additional changes that have been made to the program since the last program review.

No additional changes.

Section 8: Recommendations

A. What is the SAC planning to do to improve teaching and learning, student success, and degree completion?

The MLT Program outcomes describe Program graduates as meeting career entry-level requirements and becoming contributing members of the laboratory team and the healthcare delivery system. Assessment results of student learning outcomes provide evidence of competency in all areas taught in the MLT Program. Annual analysis of ASCP board examination data also shows the PCC MLT Program to be one of the top-performing programs in the nation. That being said, the SAC recognizes that there is more work to be done.

The primary endeavor currently undertaken by the SAC is the program revision and restructuring project. To summarize, the SAC is restructuring the Program to create a more equitable admissions process, lower attrition by improving student success, and to correct long-standing concerns regarding course credit and workload inequities. Please refer to *Section 3.F.ii*. for a detailed description of the Program Revision and Restructure project.

B. What support does the SAC need from administration in order to accomplish the planned improvements?

The MLT SAC proposes the following recommendations with the expectation that their implementation will allow us to refocus our resources and efforts on student success and be more responsive to the needs of the medical community and our economy.

It is recommended:

1. *That we maintain our current instructional support staff positions by replacing staff when they retire*.

   Concept and Importance: The department currently has two instructional support staff. They are both integral to the operation of the Program and to ensuring student success. Laboratory exercises that are conducted on campus and our Student Lab provide invaluable learning opportunities for students; however, they also pose the potential risk of exposure to various hazards associated with the laboratory setting such as blood and body fluids, needles, syringes, and pathogenic organisms. In addition, judgment of a student's suitability and understanding cannot be accomplished through written examination alone. An intricate part of the learning process is accomplished during the actual performance of laboratory testing procedures. Close supervision is mandatory to determine student progress and assist in the evaluation, correlation and proper reporting of laboratory data. In order to supervise and evaluate all students as procedures are being performed, instructional support staff provides much needed assistance to instructors.

2. *That we maintain the MLT Student Lab located at Legacy Emanuel Hospital, and by recognizing the unique nature of this facility, the college commits to advocating for its continued use as appropriate*.

   Concept and Importance: The MLT Student Laboratory, located within the Clinical Lab at Legacy Emanuel Hospital, is operated by PCC MLT staff and is

used for student instruction in the campus based Program. With its immediate access to clinical specimens and supplies, a Laboratory Information System (LIS), as well as the technical resources of the laboratory staff, the Student Laboratory provides a high quality, simulated training experience for students that cannot be duplicated on campus.

3. *That the laboratory classroom located in room 213 and the support lab located in room 212, both in Jackson Hall, be remodeled to address safety concerns and space and configuration requirements due to improvements made to instructional delivery*.

   Concept and Importance: The staff feels that JH 212 is under-utilized while the space in JH 213 is no longer adequate to meet the needs of the Program. Remodeling would:

   1. Improve the design of JH 212 making it more suitable for small group activities such as:
      a. Guided microscope work
      b. Make-up laboratory exercises
      c. Study groups and related activities
   2. Make room for staff meetings, small group advising, and student conferences.
   3. Accommodate storage of larger equipment such as serofuges, microscopes, and analytical instruments that we currently do not have adequate storage space for.
   4. Provide adequate storage for contaminated lab coats as well as a safe zone for students' personal items such as coats, book bags, etc. as these items cannot be brought into the lab due to the potential for contamination and/or safety hazards.

   Please refer to the **Appendix H** for a detailed explanation of the JH 212 Remodel Proposal request.

4. *That the following technology initiatives be supported:*
   a. Replacement of old and failing netbook computers with new laptop computers.
   b. Maintaining use of computer database services for Virtual Lab learning exercises.
   c. Increased use of automated analytical instruments in laboratory exercises.

5. *That the college support faculty and staff endeavors to participate in continuing education activities*.

   Concept and Importance: As with other medical professions, continuing education for practicing medical laboratory professionals is essential to the health of our community. With accelerating advances in medical technology, laboratory professionals must maintain and improve their knowledge and skills throughout their careers in order to provide safe, effective and high quality health care for the patients they serve.

Yet the same necessity for continuing education is not readily apparent concerning teaching faculty and staff. As laboratory educators, we envision for ourselves the same continuum of professional education throughout our teaching careers that we indoctrinate in our students. Continuing education that allows faculty to maintain their professional certification, credentials, and technical skills while keeping pace with technological advances not only benefits the staff, it benefits the college and the greater community by helping to improve the quality of education we are able to deliver to our students.

To achieve this vision, we encourage an understanding of and support for the responsibility and requirement of our faculty and staff to engage in quality continuing educational activities. It is to this end that we ask the college to assist our endeavors by providing funds for staff to attend seminars, workshops, and other quality educational activities. On occasion, educational opportunities result from local offers for training by our clinical affiliates, as a courtesy, and free of charge. A recent example of this is an offer by Kaiser Permanente to train our staff in the molecular diagnostics currently being used at their facility. However, it is often difficult for staff to take advantage of these opportunities due to scheduling issues. The staff believes it would be helpful if engaging in these free activities could be counted as "non-instructional" days.

6. *That the college recognize the laboratory activities associated with MLT classes are taught at a higher level than the current* 'Lab A' *designation and re-classify them as* 'Lab B'.

Concept and Importance: With very few exceptions, each laboratory exercise in each MLT course is taught and evaluated in a consistent manner. The instructor begins by giving a short introduction that reviews key concepts of the lessons that correlate with the lab exercise. In addition, the instructor will review the procedure, provides demonstrations and presents expectations for performing the lab activity.

Students then begin the activity. Throughout the class period, the instructor observes each student as they work, noting their attention to detail, technical skills, adherence to safe work practices, and progression in performing the procedure. If the instructor notices a problem or error in performing the procedure they often intervene (as appropriate) by asking the student to identify what step they are performing in the exercise and determine if the student has correctly interpreted the instructions or if they are using equipment incorrectly. Error recognition and problem solving is a critical component of the learning process since mistakes and errors in judgment may lead to incorrect diagnosis or serious harm to patients. As stated previously in the first recommendation, close observation and frequent interaction with students during lab exercises is essential in order to maintain a safe working environment as well as providing a basis for evaluating student progress and suggestions for improving performance.

Once the class is dismissed, the instructor will complete an evaluation for each student using a rubric developed by the staff in addition to correcting study questions that accompany each exercise.

The staff firmly believes that the manner in which we conduct our laboratory exercises meets the requirement for 'Lab B' designation as defined in section 6.2213 of the Faculty & Academic Professional Agreement.

7. *That the college support and help facilitate articulation and other such agreements with other colleges and institutions*.

   Concept and Importance: PCC's MLT Program has had a long-standing agreement with the Oregon Institute of Technology Clinical Laboratory Science (CLS) Program that allows our MLT graduates to substitute certain prerequisite courses required for admission to their Program. Over the last several years many graduates have taken advantage of this agreement, enabling them to earn a baccalaureate degree in Clinical Laboratory Science, which then qualifies them to sit for the Medical Laboratory Science (MLS) certification exam without having to retake courses in order to meet prerequisites for the CLS Program.

   The MLT Program is also investigating the feasibility of developing a similar agreement with the Clackamas Community College Clinical Laboratory Assistant (CLA) Program. In this case though, we are interested in ways that the CLA Program can articulate with the MLT Program, creating a career ladder that begins with a career entry-level position (the CLA), and progresses to the career professional levels (the MLT and then MLS). The feasibility of developing this type of career ladder has been greatly improved due to the current program revision and restructure project.

   The staff wishes to pursue similar agreements with other institutions in the hope that we can help students and graduates pursue their long-term career goals and professional development.

8. *That the college support the MLT Department in its efforts to research and determine the feasibility of reviving the distance learning program in the future*.

   Concept and Importance: The MLT distance-learning program that began in 2005 will be graduating its last cohort of students at the end of summer, 2015. Both staff and administration recognize the unsustainability of the program at this time. Both also appreciate the significant roll that the distance-learning program has played and the impact it has had across the state and beyond. With that said, the staff would like the opportunity to revisit the possibility of offering this type of program again in the future.

We strongly encourage the college administration to consider these recommendations as they will support the accomplishments achieved so far by the department and ensure continuation of the work that remains. The MLT faculty and staff appreciate your attention and involvement in this critically important effort.

Appendix Documents

Appendix A

- Current MLT Curriculum

Appendix B

- New MLT Curriculum
- Admission Point System
- Lab Evaluation Form and Rubric
- Program Outcomes
- Professional Objectives
- OIT Articulation Agreement Draft

Appendix C

- PCC Core Outcomes – MLT Program Outcomes Matrix
- MLT Course Outcomes – MLT Program Outcomes Matrix
- CLP Evaluation Form
- CLP Evaluation Rubric Guidelines
- ASCP Exam Content Guidelines

Appendix D

- Graduate Numbers and Graduation Rates
- DL Survey Results
- Email from affiliate

Appendix E

- Data from the PCC Office of Institutional of Effectiveness
- Graduation Comparison Data
- Program Application

Appendix F

- SAC Minutes (w/ new Instructor Qualifications)
- Advisory Committee minutes

Appendix G

- Post-graduation Surveys
- Oregon Employment Department Data
- Bureau of Labor Statistics Data

Appendix H

- JH 212 Remodel Proposal

CURRENT MLT CURRICULUM

MLT CURRICULUM: YEAR 1

Term	*Courses*	*Credit Hours*
Term 1: **Fall**	BI 121 Human Anatomy & Physiology I	4
	CH 104 Allied Health Chemistry I	5
	MLT 111 Medical Technology I	4
	WR 121 English Composition	4
Term 2: **Winter**	BI 122 Human Anatomy & Physiology II	4
	CH 105 Allied Health Chemistry II	5
	MLT 112 Medical Technology II	4
	Social Science (elective)	4
Term 3: **Spring**	CH 106 Allied Health Chemistry III	5
	MLT 113 Introduction to Medical Microbiology	4
	Arts & Literature (elective)	4

MLT CURRICULUM: YEAR 2

Term	*Courses*	*Credit Hours*
Term 4: **Fall**	MLT 221 Clinical Chemistry I	3
	MLT 250 Hematology	4
	MLT 261 Bacteriology I	4
	MLT 241 Immunohematology I	3
	MLT 271 Clinical Laboratory Practice I	3
Term 5: **Winter**	MLT 222 Clinical Chemistry II	4
	MLT 262 Bacteriology II	3
	MLT 242 Immunohematology II	3
	MLT 272 Clinical Laboratory Practice II	3
Term 6: **Spring**	MLT 223 Clinical Chemistry III	3
	MLT 263 Medical Parasitology	3
	MLT 264 Medical Mycology	3
	MLT 230 Body Fluids	3
	MLT 273 Clinical Laboratory Practice III	3
Term 7: **Summer**	MLT 281 Clinical Seminar	4
	MLT 274 Clinical	4

NEW MLT CURRICULUM (2015 – 2017)

MLT CURRICULUM: YEAR 1

First Term Fall	COURSE		LAB TYPE	Credits
	MLT 105 - PHLEBOTOMY FOR MLTs	20h lec/lab	Lec/Lab	1
	MLT 114 – LABORATORY OPERATIONS & TECHNIQUES	30h lec + 30h lab	B	4
	MLT 120 - URINALYSIS	15h lec + 15h lab	B	2
	MLT 113 - INTRODUCTION TO MEDICAL MICROBIOLOGY	20h lec + 30h lab	B	3
	MLT 115 - LABORATORY MATHEMATICS	10h lec	--	1
	MLT 110 – INTRO TO MLT (*)	30h Lec + 30h Lab	B	4
	General Education (*)		--	4

Second Term Winter	COURSE		LAB TYPE	Credits
	MLT 224 - CLINICAL CHEMISTRY I	30h lec + 30h lab	B	4
	MLT 241 - IMMUNOHEMATOLOGY I	20h lec + 30h lab	B	3
	MLT 261 – CLINICAL BACTERIOLOGY I	20h lec + 30h lab	B	3
	MLT 251? - HEMATOLOGY I	30h lec + 30h lab	B	4

Third Term Spring	COURSE		LAB TYPE	Credits
	MLT 242 - IMMUNOHEMATOLOGY II	30h lec + 30h lab	B	4
	MLT 225 - CLINICAL CHEMISTRY II	30h lec + 30h lab	A	4
	MLT 262 – CLINICAL BACTERIOLOGY II	30h lec + 30h lab	B	4
	MLT 252 - HEMATOLOGY II	30h lec + 30h lab	B	4

Fourth Term Summer	COURSE		LAB TYPE	Credits
	MLT 271 – CLINICAL LABORATORY PRACTICE I	72h Practicum	Practicum	2
	HE 113 – FIRST AID & CPR PROFESSIONAL	10h	--	1

MLT CURRICULUM: YEAR 2

Fifth Term Fall	COURSE		LAB TYPE	Credits
	MLT 253 - HEMOSTASIS	20h lec	--	2
	MLT 266 – IMMUNOLOGY & INFECTIOUS SEROLOGY	16h lec + 4h lab	B	2
	MLT 265 - CLINICAL MYCOLOGY & PARASITOLOGY	25Lec+ 15Lab HYBRID	A	3
	MLT 230 - BODY FLUIDS	15h lec + 15h lab	B	2
	MLT 272- CLINICAL LABORATORY PRACTICE II	72h Practicum	Practicum	2
	General Education (*)		--	4

Sixth Term Winter	COURSE		LAB TYPE	Credits
	MLT 273 - CLINICAL LABORATORY PRACTICE III	320h Practicum	Practicum	9
	MLT 282 - CLINICAL SEMINAR I	20h lec (HYBRID)	--	2
	General Education		--	4

Seventh Term Spring	COURSE		LAB TYPE	Credits
	MLT 274 - CLINICAL LABORATORY PRACTICE IV	320h Practicum	Practicum	9
	MLT 283 - CLINICAL SEMINAR II	20h lec (HYBRID)	--	2
	General Education		--	4

MLT PROGRAM Courses	80
Other Required Courses	17
DEGREE TOTAL	**97**

(*) from Prerequisites

Portland Community College

MEDICAL LABORATORY TECHNOLOGY – POINT SYSTEM

Information is subject to change. MLT Department will not consider degrees, work/volunteer experience, or courses earned for points if completed after application closure date.

POINTS **/40**

Pre requisite courses /23

Math 95 (Grade: A-3; B-2, C-2; D not accepted)	up to 3 points
Biology 121/122 or BI 231/232/233 (Grade: A-3; B-2, C-2; D not accepted)	up to 6 points
Chemistry 104/105/106 or CH 221/222/223 (Grade: A-3; B-2, C-2; D not accepted)	up to 9 points
MLT 111 (Grade: A-5; B-3, C-1; D not accepted)	up to 5 points

Program related Work Experience /6

Laboratory related experience (minimum 3 months)

3 – 6 months (480 – 959 hours)	1 point
6 months – 12 months (960 - 1919 hours)	2 points
> 12 months (>1920 hours)	3 points

Health Industry related experience (minimum 3 months)

3 – 6 months (480 – 959 hours)	1 point
6 months – 12 months (960 - 1919 hours)	2 points
> 12 months (>1920 hours)	3 points

Examples:
Laboratory related experience: clinical lab assistant, phlebotomist, laboratory work involving biological, chemical or environmental samples.
Health related experience: Clinical lab assistant, phlebotomist, medical assistant, nurse, NCA, health records, imaging, pharmacy.

Program related Volunteer Experience /6

Laboratory related experience (minimum 1 month)

1 – 2 months (160 – 319 hours)	1 point
2- 3 months (320 – 479 hours)	2 points
> 3 months (> 480 hours)	3 points

Health Industry related experience (minimum 1 month)

1 – 2 months (160 – 319 hours)	1 point
2- 3 months (320 – 479 hours)	2 points
> 3 months (> 480 hours)	3 points

Examples:
Laboratory related experience: laboratory setting involving biological, chemical or environmental samples.
Health related experience: volunteer in a health related setting such as doctor's office, clinic, hospital.

Recommendations /4

Recommendation form completed by employer, volunteer supervisor, counselor or teacher (other than PCC MLT instructor) with satisfactory ratings or above in all categories, up to 2 recommendations.

Rating average 3.0 - 4.4	1 point
Rating average 4.5 - 5.0	2 points

Public Service __ /1

Service in the US military (current service or honorable discharge), public office, fire fighter, police office

First come first serve in case of equal points __ .

NOTE: Information will be verified. Applications containing misinformation will be disqualified.

LAB EVALUATION

Student Name: _____ Lab Activity: _____

	0	1	2	na
Knowledge & Application (Cognitive Skills)				
Communicates effectively (reading, writing, listening, verbal skills)				
Explains facts and principles				
Applies knowledge to working situations				
Recognizes problems, errors, discrepancies in test results				
Troubleshoots and solve problems and/or suggest appropriate corrective action				
Interprets and correlates test results				
Performance (Psychomotor Skills)				
Adheres to Lab Safety policies				
Demonstrates good organizational skills (logical workflow and prioritization)				
Strives to increase productivity (timely output, economy of time and materials)				
Exhibits good manual dexterity (coordination, ease handling equipment)				
Achieves accuracy in test results				
Performs technique skillfully and pays attention to detail				
Employs good record keeping practices (complete, accurate, legible, lab notation)				
Professional Skills (Affective Skills)				
Demonstrates interest, enthusiasm and willingness to learn				
Shows initiative and motivation (independence performing tasks, seeks extra work)				
Adapts to stressful and/or new situations (composure and flexibility)				
Exhibits teamwork (cooperation, courtesy, respect and sensitivity towards others)				
Conveys positive attitude and appropriate level of confidence				
Demonstrates integrity (admission of errors, confidentiality)				
Acts responsibly and reliably (punctuality, attendance, complies with deadlines)				
Responds favorably to supervision and feedback				
Perseveres until task is completed satisfactorily				
Presents acceptable level of cleanliness (hygiene, documentation, workspace)				

LAB EVALUATION Score _____/38

LAB QUESTIONS Score _____/___

LAB SCORE _____ %

General Comments:

Instructor: _____ Date: _____

EVALUATION RUBRIC

Knowledge and Application (Cognitive Skills)			
	2 - Above Expectation	**1 - Satisfactory**	**0 – Needs Improvement**
Communicates effectively (reading, writing, listening, verbal skills)	Excellent written communication; answers to study questions are concise with proper grammar and spelling; follows all verbal instructions relating to changes in test procedure. Communication from student is clear and easy to understand.	Written answers are acceptable, occasional minor errors in grammar or spelling; makes changes to procedure based on verbal instruction but may ask for confirmation. Communication is generally good, errors do not distract from meaning.	Poor verbal or written communication; difficult to understand or uses grammar that changes the meaning of text, making it difficult to interpret; unable to follow verbal instructions; written explanations are excessively wordy, instructor has to search for meaning.
Explains facts and principles	Demonstrates thorough understanding of facts and test principles in answers to study questions and/or when asked in class; keen intellectual curiosity.	Answers to study questions indicate a basic understanding of facts and test principles; asks questions that demonstrate correct thought process, may seek validation.	Demonstrates poor understanding of facts or test principles. Answers are incomplete, incorrect, or out of context. Asks questions that do not demonstrate correct thought process.
Applies knowledge	Demonstrates excellent application of knowledge throughout the entire exercise and in answering critical thinking questions.	Demonstrates application of knowledge with some minimal coaching; shows progression in answering critical thinking questions.	Does not apply knowledge to working situations.
Recognizes problems	Demonstrates excellent problem recognition.	Recognizes problems, errors in performance, and/or discrepancies in results most of the time, some coaching required.	Demonstrates lack of awareness that a problem exists and/or is unable to explain which result is discrepant.
Solves problem and/or suggests corrective action	Exhibits excellent critical thinking; formulates plan of action on his/her own; promptly takes action to resolve; may ask instructor for confirmation.	Demonstrates some critical thinking ability; formulates plan of action, may require some coaching from instructor; takes action to resolve independently and/or with minimal guidance.	Doesn't know how to proceed or formulates incorrect plan of action; requires significant coaching.
Interprets and correlates test results	Correctly interprets results with minimal coaching; able to correlate lab results with clinical condition.	Interprets results accurately, may require some coaching; correlates results with clinical conditions, may require some (minimal) assistance.	Significant coaching needed and/or unable to interpret test results correctly; correlation is incorrect or lacking, even with prompting.

Performance (Psychomotor Skills)			
	2 - Above Expectation	**1 - Satisfactory**	**0 – Needs Improvement**
Adheres to lab safety policies		Adheres to lab safety policies with only occasional guidance; selects appropriate PPE for the task; handles specimens and reagents with caution.	Fails to adhere to lab safety policies or demonstrates a lack of concern for safety of self or others.
Demonstrates good organizational skills	Demonstrates excellent lab set-up, workflow, prioritization, ability to multitask, clean-up and attention to detail without requiring supervision.	Prioritizes tasks; organizes work space and maintains an easy to follow work flow at the bench with minimal supervision required; Demonstrates good attention to detail; leaves work area clean and restocked.	Does not know what to do first or loses track of sequence steps; workspace is disorganized, cluttered or untidy and, leaves work area without completing proper clean-up; lacks attention to detail; mislabels specimens.
Strives to increase productivity	Completes tasks ahead of expected. Improves speed easily; excellent time management; tries to avoid waste.	Completes tasks in the allotted time; increases speed on repetition; takes into account economy of time and materials.	Very slow in performance; does not improve speed even when performing tasks multiple times; wastes time and materials.
Exhibits good manual dexterity	Has excellent dexterity and coordination; handles equipment and supplies with ease.	Has adequate dexterity and coordination, manipulates equipment and supplies with care; proficiency will improve with further practice.	Poor dexterity and/or lack of coordination; mishandles equipment and supplies; mishaps or abuse.
Achieves accuracy in test results	Obtains results that are consistently very close to the expected results.	Achieve satisfactory results within the expected values.	Lacks accuracy; results are outside of the expected values.
Performs technique skillfully	Performs test correctly and independently; learns technique quickly, excellent concentration and very attentive to detail.	Performs test correctly with some coaching; follows all established guidelines; demonstrates adequate technique, good concentration and attention to detail.	Demonstrates significant difficulty with test performance; has difficulty learning the required techniques; easily distracted; pays little attention to details.
Employs good record keeping	Produces neat, legible, complete lab records and in accordance to proper lab notation.	Produces neat, legible, complete lab records and in accordance to lab notation (units and significant digits); record keeping may contain occasional mistakes, but does not distract from test performance or interpretation of results.	Lab records lack neatness, legibility, completeness and/or are not in accordance to proper lab notation.

Professional Skills (Affective Skills)			
	2 - Above Expectation	**1 - Satisfactory**	**0 – Needs Improvement**
Demonstrates interest and enthusiasm	Demonstrates enthusiasm for the learning process by leading others and showing efforts beyond class requirements.	Demonstrates interest by participating in class activities and discussions; asks good questions.	Looks bored or absent; does not participate in class; dozes in class; does not interact with others.
Shows initiative and motivation	Promptly initiates work and asks for additional tasks as time permits; performs lab monitor duties without reminders.	Initiates routine asks independently; comes prepared for class - level of questions and/or comments indicate prior study; asks for clarification but not excessive; performs lab monitor duties with only occasional prompting.	Requires step-by-step instruction; leans on peers or instructor for guidance; demonstrates minimal initiative even with coaching; neglects lab monitor duties.
Adapts to stressful and/or new situations		Maintains composure during stressful and or new situations; shows flexibility and ease when situations require modification from the routine path; is aware of own limitations and seeks instructor help when needed.	Does not cope well during stressful and or new situations; displays negative emotions; exhibits difficulty in maintaining composure; easily irritated, frustrated, tearful or unable to proceed.
Exhibits teamwork		Cooperates with others; shows courtesy, respect and sensitivity towards others; effective team skills.	Doesn't participate in team activities; lacks respect for others.
Conveys a positive attitude		Exhibits positive attitude towards work, others, and self; demonstrates an appropriate level of confidence.	Exhibits a negative attitude or a lack of positive attitude. Lacks confidence or is overly confident.
Demonstrates integrity		Demonstrates honesty in reporting results or taking examinations; checks for mistakes, repeats questionable results and admits mistakes; maintains patient confidentiality.	Results and/or answers are questionable as the student's own work; rarely checks for mistakes; only repeats questionable results when prompted; does not admit mistakes.
Acts responsibly and reliably		Is punctual, turns assignment in on time and returns lab equipment in proper condition to the correct location; promptly notifies if repair is needed	Is not punctual, assignment is late, or doesn't store lab equipment adequately.
Responds favorably to supervision and feedback	Responds promptly to instructions; seeks professional constructive criticism; takes corrective action to achieve improvement.	Responds well to instructions; accepts professional constructive criticism; attempts corrective action.	Does not follow instructions; does not take criticism well; defensive, combative or does not take any corrective action.
Perseveres until task is completed		Stays on task when trying to find answers or solutions to problems; draws on available resources.	Gives up easily and quickly when faced with difficult tasks; does not attempt to use available resources.
Presents an acceptable level of cleanliness		Presents adequate personal hygiene and maintains workspace clean and free of clutter.	Has poor hygiene habits and/or maintains a messy workplace.

PORTLAND COMMUNITY COLLEGE

MLT PROGRAM

PROGRAM OUTCOMES

Based on the Program's objectives, upon completion of the program of learning, the graduate at career entry will:

1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
2. Apply knowledge of theory and principles of related content areas (e.g. clinical chemistry, hematology, microbiology, immunohematology, etc.) to the clinical laboratory setting in making appropriate professional decisions.
3. Select, prepare, perform, correlate and evaluate appropriate laboratory procedures in a high quality, professional, accurate and timely manner.
4. Recognize and identify technical, mechanical and physiological problems within the laboratory and effect resolution of problems according to the protocols of the institution.
5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.

PORTLAND COMMUNITY COLLEGE

MLT PROGRAM

PROFESSIONAL OBJECTIVES

Theoretical knowledge, technical skills, and interpersonal relations and professionalism provide the cornerstones for success as a medical laboratory technician. Students must demonstrate competence in each of these areas to become competent medical laboratory technicians.

Knowledge & Knowledge Application (Cognitive Skills)

Upon completion of the MLT Program, students will:

1. Communicate effectively through reading, writing, listening, and verbal skills.
2. Explains facts and principles related to laboratory test procedures.
3. Apply knowledge to working situations.
4. Recognize problems, errors in performance, and discrepancies in test results.
5. Troubleshoot and solve problems as required and/or suggests appropriate corrective actions.
6. Interpret and correlate test results.

Performance (Psychomotor Skills)

Students will demonstrate the following skills with increasing ease throughout the sequence of laboratory courses:

1. Adhere to laboratory safety policies.
2. Demonstrate good organizational skills as seen by a logical workflow and ability to prioritize tasks.
3. Strive to increase productivity to include timely output, and economy of time and materials.
4. Exhibit good manual dexterity, coordination, and ease in handling equipment with a minimum of mishaps or abuse.
5. Achieve accuracy in test results.
6. Perform techniques in a skillful and orderly technique with good attention to details of the test procedure.
7. Employ good record keeping skills so that reports are complete, accurate, legible, and according to established protocol.

Professional Skills (Affective Skills)

Interpersonal skills and professionalism are essential for the medical laboratory technician in providing high quality patient care and in performing as a member of the health care team. Upon completion of the MLT Program, students will:

1. Demonstrate interest, enthusiasm, and willingness to learn as seen through active participation.
2. Show initiative and motivation as demonstrated by independence in performing routine procedures, preparation before class, decreased need for supervision,

willingness to go beyond the required assignments, and recognition of opportunities to improve quality and productivity of work.

3. Adapt to stressful and/or new situations by maintaining composure and flexibility without compromising individual integrity.
4. Exhibit teamwork through cooperation, courtesy, respect, and sensitivity towards others.
5. Convey a professional attitude as shown by an appropriate level of confidence and a positive outlook toward work and other people.
6. Demonstrate integrity as shown by the admission and documentation of errors, recognition of the potential danger of short cuts, and the maintenance of patient and co-worker confidentiality.
7. Act responsibly as measured by punctuality, attendance, dependability, and quality of work.
8. Respond favorably to supervision and feedback.
9. Persevere until tasks are completed satisfactorily.
10. Present an acceptable level of cleanliness as seen by one's personal hygiene, professional appearance, and maintenance of the workspace.

Portland Community College
Associate of Applied Science in Medical Laboratory Technology
to
Oregon Institute of Technology
Bachelor of Science in Clinical Laboratory Science

Articulation Agreement
2013-2014 Catalog

It is agreed that students transferring from Portland Community College's (PCC) Associate of Applied Science in Medical Laboratory Technology (MLT) to Oregon Institute of Technology's (Oregon Tech) Bachelor of Science in Clinical Laboratory Science program (CLS) will be given full credit for all selected courses listed below. This agreement is based on the evaluation of the rigor and content of the general education and technical courses at both PCC and Oregon Tech and is subject to a yearly reevaluation by both schools for continuance. The agreement is dated November 26, 2013.

Under this agreement students must have successfully completed PCC's MLT program, passed the ASCP Board Certification for MLT and hold a current certification before beginning the CLS program. Students must meet all other CLS program and Oregon Tech admissions requirements. Required biology and chemistry prerequisite course work must be completed within the last seven years prior to program entrance. If required biology and chemistry courses have not been completed within the seven year limit, t, then students will be required to take one chemistry and one biology course at the 200-level or above before entrance to the program. Completion of the MLT degree and certification does not guarantee admission into the competitive CLS program.

Baccalaureate students must complete a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division is defined as 300-and 400-level classes at a bachelor's degree granting institution. Baccalaureate students at Oregon Tech must complete 45 credits from Oregon Tech before a degree will be awarded.

Students are responsible for notifying the Oregon Tech Admissions and Registrar's Office when operating under an articulation agreement to ensure their credits transfer as outlined in this agreement. In order to utilize this agreement student must be attending PCC during the above catalog year. Students must enroll at Oregon Tech within three years of this approval.

By_____
Kendra Cawley
Dean of Instruction
Portland Community College

By_____
Marla R. Edge
Director, Academic Agreements
Oregon Institute of Technology

By_____
Sarah Tillery
Director, Allied Health
Portland Community College

By_____
Wendy Ivie
University Registrar
Oregon Institute of Technology

By_____
Ana Sacramento
Program Director, MLT
Portland Community College

By_____
Cara Calvo
Program Director, CLS
Oregon Institute of Technology

PCC Degree Courses & Oregon Tech Equivalent Credits

Portland Community College Course Number & Title	Qtr. Units	Oregon Institute of Technology Course Number & Title	Qtr. Units
BI 121 Introduction to Human Anatomy & Physiology I BI 122 Introduction to Human Anatomy & Physiology II MLT 113 Intro to Medical Microbiology MLT 241 Immunohematology I MLT 242 Immunohematology II MLT 250 Hematology MLT 261 Bacteriology I MLT 262 Bacteriology II MLT 263 Medical Parasitology MLT 264 Medical Mycology	4 4 4 3 4 4 4 3 3 3	CLS Prerequisite – At least 24 credit hours of Biological Science Lectures and Labs. [1]	24
CH 104 Allied Health Chemistry I CH 105 Allied Health Chemistry II CH 106 Allied Health Chemistry III MLT 221 Clinical Chemistry I MLT 222 Clinical Chemistry II MLT 223 Clinical Chemistry III	5 5 5 3 4 3	CLS Prerequisite – At least 24 credit hours of Chemistry Lectures and Labs	24
MLT 111 Medical Technology I MLT 112 Medical Technology II MLT 230 Body Fluids MLT 271 Clinical Laboratory Practice I MLT 272 Clinical Laboratory Practice II MLT 273 Clinical Laboratory Practice III MLT 274 Clinical Laboratory Practice IV MLT 281 Clinical Seminar	4 4 3 3 3 3 8 4	Elective	24
General Education (6 credit minimum): MTH 111 College Algebra (recommended) Social Science [3]	 5 4	 MATH 111 College Algebra(CLS prerequisite) Social Science	 4 4
WR 121 English Composition	4	WRI 121 English Composition	3
Total PCC Degree Credits [2]	**106**	**Total Oregon Tech Degree Credits** [2]	**83**

Please note students must also take one additional course in immunology to complete their CLS prerequisite courses. The immunology course may be completed at PCC or another accredited college or university.

Courses not required for PCC's Associate of Applied Science but are required for Oregon Tech's Bachelor of Science in Clinical Laboratory Science. Can be taken at PCC or Oregon Tech. These courses are prerequisites for entrance into the CLS program.

Portland Community College Course Number & Title	Qtr. Units	Oregon Institute of Technology Course Number & Title	Qtr. Units
Choose 3 courses from the following: WR 123 English Composition WR 227 Technical & Professional Writing I SP 140 Intro to Intercultural Communication SP 214 Interpersonal Communication: Process & Theory SP 215 Small Group Communication	12	Communication Electives (9 credit minimum): WRI 123 English Composition WRI 227 Technical Report Writing COM 205 Intercultural Communication COM 225 Interpersonal Communication SPE 321 Small Group & Team Communication (does not count as upper-division) Additional Communication Elective options are available at Oregon Tech -see page 35 of the 2013-2014 catalog.	9
Arts & Letters [4]	9-12	Humanities Elective [4]	9
Social Science [3]	8	Social Science Elective [3]	8
SP 111 Public Speaking	4	SPE 111 Public Speaking	3
WR 122 English Composition	4	WRI 122 Argumentative Writing	3
Additional PCC Credits	**37**	**Additional Oregon Tech Degree Credits**	**32**
Total PCC Credits [2]	**143**	**Total Oregon Tech Degree Credits** [2]	**115**

In addition to the above courses, the courses listed below are also required for the Bachelor of Science in Clinical Laboratory Science and should be completed at Oregon Tech.

Oregon Institute of Technology Course Number & Title	Qtr. Units
CLS 420 Clinical Immunology	4
CLS 432 Foundations of CLS I	4
CLS 424 Hemostasis	3
CLS 444 Microbiology I	6
CLS 415 Clinical Chemistry I	6
CLS 447 Practicum: Chemistry	6
CLS 445 Clinical Microbiology II	4
CLS 449 Practicum: Urinalysis	2
CLS 412 Pathophysiology	2
CLS 416 Clinical Chemistry II	2

CLS 442 Hematology I	6
CLS 443 Immunohematology I	4
CLS 446 Microbiology III	4
CLS 422 Molecular Methods	2
CLS 448 Infectious Serology	1
CLS 452 Hematology II	5
CLS 453 Immunohematology II	2
CLS 457 Practicum: Advanced Chemistry/Immunology Techniques	2
CLS 462 Foundations of CLS II	2
CLS 470 Clinical Laboratory Externship	4
CLS 471 Hematology Externship	4
CLS 472 Microbiology Externship	4
CLS 473 Immunohematology Externship	4
Additional Oregon Tech Credits [5]	**83**
Total Oregon Tech Degree Credits Accumulated [6]	**198**

1. Please note students must also take one additional course in immunology to complete their CLS prerequisite courses. The immunology course may be completed at PCC or another accredited college or university.
2. Excess credits will transfer to Oregon Tech as general elective credit; these credits will **not** be used toward the Bachelor of Science in Clinical Laboratory Science Degree.
3. Select courses from the following prefixes listed in PCC's Social Science: ATH, EC, GEO, HST, PS, PSY, SOC, WS or others designated as Social Science Electives by the Oregon Tech Registrar's Office.
4. Select courses from the following prefixes listed in PCC's Arts and Letters Discipline Studies: ART, ENG, HUM, MUS, PHL, R, TA, Second-Year Foreign Languages or others designated as Humanities by the Oregon Tech Registrar's Office. Please note that Oregon Tech only accepts 3 performance or studio based Humanities credits toward the 9 credit total.
5. Baccalaureate students must complete a minimum of 60 credits of upper-division work before a degree will be awarded. Upper-division is defined as 300- and 400- level classes at a bachelor's degree granting institution and 45 credits must be from Oregon Tech.
6. Oregon Tech's Bachelor of Science in Clinical Laboratory Science requires 198 total credits.

MEDICAL LABORATORY TECHNOLOGY

MAPPING OF STUDENT LEARNING PROGRAM OUTCOMES WITH COLLEGE CORE OUTCOMES

PCC CORE OUTCOMES ⇨	6. Self-reflection	5. Professional Competence	4. Cultural Awareness	3. Critical Thinking and Problem Solving	2. Community and Environmental Responsibility	1. Communication
MLT PROGRAM OUTCOMES ⇩						
1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.	X	X	X	X	X	X
2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.		X		X	X	X
3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.		X		X		X
4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.		X		X	X	X
5. Engage in continuing education and participate effectively as an active and positive member of the healthcare team.	X	X	X			X

MEDICAL LABORATORY TECHNOLOGY

MAPPING OF STUDENT LEARNING PROGRAM OUTCOMES WITH COLLEGE CORE OUTCOMES

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 110 – Introduction to Medical Laboratory Technology COURSE OUTCOMES ⇩					
1. Recognize the role of medical laboratory technology in the context of health care.	X				
2. Perform basic clinical laboratory procedures using appropriate laboratory techniques and instrumentation in accordance with current laboratory safety protocol.		X	X	X	
3. Calculate and properly report laboratory data.		X	X	X	X
4. Interpret laboratory results in accordance to laboratory protocol.		X	X	X	
5. Use effective written and verbal communication that represents competence and professionalism in the clinical laboratory setting.	X				X

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes..	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 105 – Phlebotomy for Medical Laboratory Technicians COURSE OUTCOMES ⇩					
1. Perform blood collection by venipuncture and skin puncture to obtain high quality specimens for clinical laboratory analysis.		**X**	**X**	**X**	
2. Collect and process blood specimens in a safe manner and according to laboratory protocol.		**X**	**X**	**X**	
3. Use effective written and oral communication when interacting with patients and other healthcare workers to improve patient care.	**X**				**X**

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 113 – Introduction to Medical Microbiology COURSE OUTCOMES ⇩					
1. Use an understanding of the normal and common pathogenic organisms associated with human infectious diseases to make appropriate and effective on-the-job professional decisions.	**X**	**X**	**X**	**X**	
2. Apply appropriate microbiology laboratory techniques, methodologies, instruments and equipment in accordance to current laboratory safety protocol.		**X**	**X**	**X**	
3. Calculate, record, and report clinical microbiology results according to clinical laboratory protocol.		**X**	**X**	**X**	**X**

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 114 - Laboratory Operations and Techniques COURSE OUTCOMES ⇩					
1. Use an understanding of laboratory organizational structure to make appropriate and effective on-the-job professional decisions.	**X**				**X**
2. Select and utilize laboratory safety measures and equipment to prevent accidents and exposure to bloodborne pathogens.			**X**		
3. Act professionally by maintaining patient confidentiality and communicating with other health workers in an effective manner according to laboratory protocol.					**X**
4. Use an understanding of laboratory regulations and quality assurance to ensure accuracy of test results.		**X**	**X**	**X**	
5. Operate basic laboratory equipment to process and evaluate patient samples according to laboratory protocol.		**X**	**X**	**X**	

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 115 – Laboratory Mathematics COURSE OUTCOMES ⇩						
1. Convert between units of measure commonly employed in the clinical laboratory.					**X**	
2. Calculate how to prepare reagents and specimens for laboratory testing given amount, concentration and equipment limitations.				**X**		
3. Report laboratory results using adequate scientific notation, significant digits and units.	**X**					

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems. .	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 120 – Urinalysis COURSE OUTCOMES ⇩					
1. Use an understanding of urine specimen adequacy, accurate performance of routine urinalysis procedures and correct interpretation of test results to make appropriate and effective on-the-job professional decisions.				**X**	
2. Perform urinalysis, assess laboratory data and report findings according to laboratory protocol.		**X**	**X**		**X**
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.		**X**	**X**	**X**	
4. Recognize normal and abnormal urinalysis test results and correlate the data with appropriate pathological conditions to accurately advise health care providers.	**X**				**X**

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 224 – Clinical Chemistry I COURSE OUTCOMES ⇩					
1. Perform accurate analytical testing of basic chemistry analytes: glucose, lipids, proteins, non-protein nitrogenous wastes and electrolytes.		**X**	**X**	**X**	
2. Report and interpret laboratory results and, correlate data with disease states.			**X**	**X**	**X**
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.	**X**	**X**	**X**	**X**	

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 224 – Clinical Chemistry II COURSE OUTCOMES ⇩					
1. Use an understanding of normal and abnormal test results for enzymes, blood gases and acid-base balance, thyroid hormones, toxicology and TDM and, their correlation with appropriate pathologic conditions to make appropriate and effective on-the-job professional decisions.		X	X	X	
2. Apply appropriate laboratory techniques, methodologies, instruments and equipment in the performance of clinical chemistry testing to effect quality patient care.		X	X	X	X
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.	X	X	X	X	

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 230 – Body Fluids COURSE OUTCOMES ⇩					
1. Use an understanding of the normal and abnormal constituents of body fluids and their correlation with appropriate pathological conditions to make appropriate and effective on-the-job professional decisions.		**X**	**X**	**X**	
2. Apply appropriate laboratory techniques, methodologies, instruments and equipment; and accurately calculate, record, and report body fluids results to improve patient care.		**X**	**X**	**X**	**X**
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.	**X**	**X**	**X**	**X**	

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 241 – Immunohematology I COURSE OUTCOMES ⇩					
1. Collect, properly identify, and process specimens; proper use of blood bank reagents; accurate performance of blood typing procedures and grading of reaction strengths by tube method; and correct interpretation of test results to make appropriate and effective on-the-job professional decisions.		**X**	**X**	**X**	**X**
2. Recognize normal and abnormal test results and correlate these data with appropriate pathological conditions to accurately advise health care providers.	**X**		**X**	**X**	
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.		**X**			

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes..	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 242 – Immunology II COURSE OUTCOMES ⇩					
1. Collect, properly identify, and process specimens; proper use of blood bank reagents; and accurate performance and interpretation of test results for ABO and Rh typing, antibody screen and identification, cross-match, antibody titer and acid elution to make appropriate and effective on-the-job professional decisions.		**X**	**X**	**X**	**X**
2. Recognize normal and abnormal test results and correlate these data with appropriate pathological conditions to accurately advise health care providers.	**X**		**X**	**X**	
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner		**X**			

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3 Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 251 – Hematology I COURSE OUTCOMES ⇩					
1. Use an understanding of blood specimen adequacy, preparation of reagents, accurate performance of routine hematology procedures and correct interpretation of test results to make appropriate and effective on-the-job professional decisions.				**X**	
2. Perform basic hematological laboratory testing, assess laboratory data and report findings according to laboratory protocol.		**X**	**X**		
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.		**X**			
4. Recognize normal and abnormal hematology test results and correlate the data with appropriate pathological conditions to accurately advise health care providers.	**X**			**X**	
5. Recognize anemia and classify it according to blood cell morphology and etiology.			**X**	**X**	

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4 Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 252 – Hematology II COURSE OUTCOMES ⇩					
1. Correlate hematological findings with those generated in other areas of the clinical laboratory, patient symptoms and clinical history, to make appropriate and effective on-the-job professional decisions.	**X**			**X**	
2. Perform basic hematological laboratory testing, assess laboratory data and report findings according to laboratory protocol		**X**	**X**		
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner		**X**			
4. Distinguish normal and abnormal hematological laboratory findings to predict the diagnosis of hematological disorders and diseases.				**X**	
5. Recognize laboratory results consistent with leukemia and other white blood cell disorders.				**X**	

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	. 4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 253 – Hemostasis COURSE OUTCOMES ⇩					
1. Use an understanding of hemostasis theory and coagulation test principles to make appropriate and effective on-the-job professional decisions.	**X**			**X**	
2. Recognize normal and abnormal coagulation test results and correlate the data with appropriate pathological conditions to accurately advise health care providers.	**X**			**X**	

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4 Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 261 – Bacteriology I COURSE OUTCOMES ⇩					
1. Use an understanding of the normal flora and common pathogenic organisms associated with the circulatory and central nervous systems, and genitourinary tract to make appropriate and effective on-the-job professional decisions.	**X**			**X**	
2. Apply appropriate microbiology techniques, methodologies, instruments and equipment to affect quality patient care.	**X**	**X**	**X**		
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.		**X**			

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 262 – Bacteriology II COURSE OUTCOMES ⇩					
1. Use an understanding of the normal flora and common pathogenic organisms associated with the gastrointestinal and respiratory tracts, and soft and solid tissues to make appropriate and effective on-the-job professional decisions.	**X**			**X**	
2. Apply appropriate microbiology techniques, methodologies, instruments and equipment to affect quality patient care.	**X**	**X**	**X**		
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.		**X**			

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4 Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 265 - Medical Mycology and Parasitology COURSE OUTCOMES ⇩					
1. Use an understanding of medical mycology and parasitology to make appropriate and effective on-the-job professional decisions.	**X**			**X**	
2. Apply appropriate laboratory techniques, methodologies, instruments and equipment; and accurately identify, record, and report results to improve patient care.	**X**	**X**	**X**		
3. Adapt laboratory techniques/procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.		**X**			

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4 Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 266 - Immunology and Infectious Serology COURSE OUTCOMES ⇩					
1. Use an understanding of general immunity, serology principles, accurate performance of serological assay procedures and correct interpretation of test results to make appropriate and effective on-the-job professional decisions.	**X**			**X**	
2. Perform basic serological laboratory testing, assess laboratory data and report findings according to laboratory protocol.	**X**	**X**	**X**		
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner.		**X**			

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3 Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 271 - Clinical Laboratory Practice I COURSE OUTCOMES ⇩					
1. Perform routine hematology, urinalysis, bloodbank and microbiology laboratory tasks in an accurate, timely and professional manner		**X**	**X**	**X**	**X**
2. Perform skillful specimen identification, processing, testing and reporting		**X**	**X**	**X**	**X**
3. Perform quality control	**X**	**X**	**X**	**X**	**X**
4. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner		**X**	**X**		
5. Utilize LIS with ease and maintain patient medical records confidentiality				**X**	**X**
6. Utilize universal precautions relevant to the clinical setting	**X**			**X**	
7. Utilize communication skills necessary for working in the health care setting	**X**				**X**
8. Exhibit professionalism, initiative, positive interpersonal skills, teamwork, respect and integrity.	**X**				**X**

MEDICAL LABORATORY TECHNOLOGY

MAPPING OF MLT COURSE OUTCOMES WITH MLT PROGRAM OUTCOMES

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4 Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3 Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 272 - Clinical Laboratory Practice II COURSE OUTCOMES ⇩					
1. Perform routine coagulation, body fluids, bloodbank and microbiology laboratory tasks in an accurate, timely and professional manner		**X**	**X**	**X**	**X**
2. Perform skillful specimen identification, processing, testing and reporting		**X**	**X**	**X**	**X**
3. Perform quality control	**X**	**X**	**X**	**X**	**X**
4. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to affect resolution in a professional and timely manner		**X**	**X**		
5. Utilize LIS with ease and maintain patient medical records confidentiality				**X**	**X**
6. Utilize universal precautions relevant to the clinical setting	**X**			**X**	
7. Utilize communication skills necessary for working in the health care setting	**X**				**X**
8. Exhibit professionalism, initiative, positive interpersonal skills, teamwork, respect and integrity.	**X**				**X**

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3 Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 273 - Clinical Laboratory Practice III COURSE OUTCOMES ⇩					
1. Perform routine laboratory tasks in an accurate, timely and professional manner		X	X	X	X
2. Perform skillful specimen collection, identification and processing		X	X	X	X
3. Performs specimen testing, quality control and result reporting in accordance with laboratory protocol	X	X	X	X	X
4. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner		X	X		
5. Utilize laboratory information system with ease and maintain patient medical records confidentiality				X	X
6. Utilize universal precautions relevant to the clinical setting	X			X	
7. Utilize communication skills necessary for working in the health care setting	X				X
8. Exhibit professionalism, initiative, positive interpersonal skills, teamwork, respect and integrity.	X				X

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4. Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 274 - Clinical Laboratory Practice IV COURSE OUTCOMES ⇩					
1. Prioritize and organize workload according to degree of urgency of test results	X			X	X
2. Perform laboratory technician tasks safely and accurately under minimal supervision to no supervision in accordance with laboratory protocol		X	X	X	
3. Adapt laboratory techniques and procedures in a corrective manner when errors and discrepancies in results are obtained to effect resolution in a professional and timely manner		X	X		
4. Utilize communication skills necessary for working in the health care setting	X				X
5. Exhibit professionalism, initiative, positive interpersonal skills, teamwork, respect and integrity	X				X

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4 Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3. Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 282 – Clinical Seminar I **COURSE OUTCOMES ⇩**					
1. Use knowledge of advanced issues pertinent to the medical laboratory in the clinical setting to make appropriate and effective on-the-job professional decisions.	**X**			**X**	
2. Utilize knowledge of employment and careers in the medical laboratory technology profession to research employment opportunities.	**X**				**X**

MLT PROGRAM OUTCOMES ⇨	5. Function effectively as a contributing member of the laboratory team and the broader healthcare delivery system.	4 Use critical thinking to recognize, troubleshoot and solve pre-analytical, analytical and post analytical problems.	3 Perform laboratory procedures accurately and in a timely manner, and evaluate and correlate results to affect positive patient outcomes.	2. Apply knowledge of theory and principles of related content to the clinical laboratory setting in making appropriate professional decisions.	1. Act professionally and adhere to ethical and legal responsibilities toward consistent quality patient care.
MLT 283 – Clinical Seminar II COURSE OUTCOMES ⇩					
1. Use an understanding of theoretical and procedural materials to prepare for board certification examinations	**X**				
2. Engage in continuing education activities for professional growth	**X**				
3. Prepare and update a professional portfolio	**X**				

PCC MLT PROGRAM
Clinical Laboratory Practice
Final Evaluation

Directions for using this form:
Supervisor evaluates student's progress at the end of rotation and reviews with student. Completed form is returned to PCC MLT Clinical Coordinator.

Rating Scale:
5 = Outstanding achievement
4 = Exceeds expectations
3 = Satisfactory progress
2 = Needs improvement
1 = Critical deficiency
na = not applicable, unable to evaluate

Name: _____
Trainer(s): _____
Department: _____
Affiliate/Location: _____
Dates of Rotation: _____

Knowledge and Application of Knowledge	na	1	2	3	4	5	Comments
Communicates effectively (writing, reading, listening, verbal skills)							
Explains facts and principles as needed for this level of education							
Applies knowledge to working situations							
Recognizes problems, errors in performance & discrepancies in results							
Solves problems as required and/or analyze course of action							

Performance	na	1	2	3	4	5	Comments
Accuracy & precision							
Efficiency & organization (logical work flow, productive & timely output)							
Technique (safe, skillful, orderly, attention to detail)							
Manual dexterity (coordination, ease of handling equipment)							
Record keeping (thorough, legible, accurate, good attention to detail)							

Interpersonal Skills & Professionalism	na	1	2	3	4	5	Comments
Interest (enthusiasm, willingness to learn)							
Initiative (independence in performing routine tasks)							
Adaptability (degree of composure during stressful and/or new situations)							
Personal relations (demonstrates cooperation and sensitivity toward others, both in the laboratory and throughout the healthcare facility; teamwork)							
Attitude (outlook toward work and other people, level of confidence)							
Cleanliness & Orderliness (personal hygiene, maintenance of work environment)							
Integrity (admission of errors, patient & co-worker confidentiality)							
Responsibility (dependability, punctuality, attendance, reliability)							
Supervision (response to supervision & instruction)							
Perseverance (completion of tasks)							

Overall, how would you rate this student's performance? (Please circle one.)
5 – outstanding achievement
4 – exceeds expectations
3 – satisfactory progress
2 – needs improvement
1 – critical deficiency

Please list suggestions to improve performance (especially important for "1" or "2" ratings):

Please list student's strengths:

_____ _____ _____ _____
Signature of Student Date Signature of Evaluator Date

Mail completed form to:
Erin Krauter, MLT Clinical Practice Coordinator
Portland Community College
Cascade Campus, JH 201
P.O. Box 19000
Portland, OR 97280-0990

OR
FAX with cover "Attention To:"
PCC MLT Clinical Coordinator
971-722-5257

PCC MLT PROGRAM
CLINICAL PRACTICE
GUIDELINES FOR EVALUATION

Outstanding Achievement (5):

- Consistently accurate and precise; finishes work in allotted time with time for extra work.
- Excellent grasp of theory and ability to apply it.
- Learns techniques very quickly.
- Work area is consistently neat and clean.
- Paperwork is easy to read, organized turned out without errors.
- Deserves confidence by staff.
- Proceeds on own after instructions are given; sees other things to be done and does them; asks for additional work as time permits.
- Will persevere until a solution is reached.
- Excellent concentration.
- Eager to improve; seeks constructive criticism.
- Cooperation and respect for the rights of others always extends beyond that which is expected.
- Always prepared; does extra outside reading; exhibits keen intellectual curiosity; always enthusiastic about work.

Exceeds Expectations (4):

- Makes only occasional errors.
- Often finishes work in the allotted time.
- Above average in understanding and ability to apply knowledge.
- Needs very little practice to learn proper techniques.
- Work area rarely cluttered or dirty. Paperwork is always neat.
- Always dependable and responsible.
- Punctual, completes tasks with minimal supervision, and always reports any necessary deviation from assigned schedule.
- Proceeds on own after instructions are given; occasionally seeks additional work as time permits.
- Possesses good concentration and always follows through on work.
- Receptive to criticism and suggestions and makes obvious improvement.
- Always cooperative and respects the right of others.
- Always prepared; does reading without reminders and occasionally does extra outside reading; shows notable interest and intellectual curiosity.

Satisfactory Progress (3):

- Accuracy and precision acceptable for this stage of education.
- Usually finishes work in allotted time.
- Adequate understanding of subject; usually able to apply knowledge to work.
- Needs a reasonable length of time to learn proper techniques.
- Work area is usually orderly and clean. Acceptable neatness of paperwork.
- Dependable and responsible.
- Requires the expected amount of direction and supervision to accomplish assigned tasks.
- Is able to concentrate; makes an effort to work out the difficulty. Follows through on work.
- Accepts criticism and suggestions with positive attitude; makes improvement from suggestions.
- Cooperative and shows respect for the rights of others.
- Usually prepared; does reading assignments without reminders.
- Shows a moderate degree of intellectual curiosity and enthusiasm.

Needs Improvement (2):

- Makes more errors than expected for this stage of education.
- Occasionally finishes work in allotted time.
- Limited understanding and ability to make application of knowledge.
- Has difficulty learning the techniques required
- Has more than expected number of accidents/errors with equipment and specimens.
- Work area seldom organized or clean. Seldom able to maintain neat paperwork.
- Occasionally not responsible or reliable. May be overly confident; may proceed before receiving adequate instructions.
- Needs a "push" to start or finish work.
- Easily distracted; makes a minimal attempt to overcome difficulty.
- Not hostile but accepts criticism with indifference and without making improvement. Exhibits minimal cooperation and respect for the rights of others.
- Has made minimum preparation; needs frequent reminders to do outside reading; indifferent to learning new procedures; does not show intellectual curiosity.

Critical Deficiency (1):

- Seldom accurate and lacks precision.
- Very poor organizer, consequently often does not finish work.
- Little or no understanding of subject or ability to apply it.
- Very awkward with equipment, messy work area and paperwork.
- Cannot be relied upon and shows little initiative.
- Needs constant prodding to start and/or complete work.
- Easily distracted. Appears frustrated at the first indication of difficulty.
- Uncooperative or resents criticism and suggestions.
- Respect for the rights of others is minimal.
- Rarely prepared and seldom does outside reading, frequently appearing bored.

American Society for Clinical Pathology
Board of Certification

MEDICAL LABORATORY TECHNICIAN, MLT(ASCP)
EXAMINATION CONTENT GUIDELINE

This document should serve as a useful guide for examination preparation. The Board of Certification criterion-referenced examinations are constructed to measure the competencies described in the Certification Levels Definitions. These competency statements are specified into task definitions, linked to each of the content outlines, and measured by the test items.

It should be noted that, for the medical laboratory technician, the Certification Levels Definitions refer to skills and abilities expected at career entry, not those that may be acquired with subsequent experience.

TECHNICIAN LEVEL

Knowledge

The technician has a working comprehension of the technical and procedural aspects of laboratory tests. The technician maintains an awareness and complies with regulatory requirements, safety regulations and ethical standards of practice. The technician correlates laboratory tests to disease processes and understands basic physiology recognizing appropriate test selection and abnormal test results.

Technical Skills

- Follows established procedures for collecting and processing biological specimens for analysis.
- Performs chemical, microbiologic, immunologic, hematologic and immunohematologic laboratory procedures that require limited independent judgement.

The technician comprehends and follows procedural guidelines to perform laboratory tests to include (1) specimen collection and processing; (2) instrument operation and troubleshooting; (3) result reporting and record documentation; (4) quality control monitoring; (5) computer applications and (6) safety requirements.

Problem Solving and Decision Making

- Recognizes unexpected results and instrument malfunction and takes appropriate action.

The technician recognizes the existence of procedural and technical problems and takes corrective action according to predetermined criteria or refers the problem to the appropriate supervisor. The technician prioritizes test requests to maintain standard patient care and maximal efficiency.

Communication

- Provides laboratory information to authorized sources.

The technician communicates specimen requirements, reference ranges, and test results, and prepares drafts of procedures for laboratory tests according to a standard format.

Teaching and Training Responsibilities

- Demonstrates laboratory technical skills to other laboratory personnel

The technician trains new technicians and students and maintains technical competence.

ASCP BOARD OF CERTIFICATION®

MEDICAL LABORATORY TECHNICIAN, MLT(ASCP) and INTERNATIONAL MEDICAL LABORATORY TECHNICIAN, MLT(ASCP^{i})

EXAMINATION CONTENT GUIDELINE & OUTLINE

EXAMINATION MODEL

The MLT(ASCP) and MLT(ASCP^{i}) certification examination is composed of 100 examination questions given in a 2 hour 30 minute time frame. All examination questions are multiple-choice with one best answer. The certification examination is administered using the format of computer adaptive testing (CAT).

With CAT, when a person answers a question correctly, the next test question has a slightly higher level of difficulty. The difficulty level of the questions presented to the examinee continues to increase until a question is answered incorrectly. Then a slightly easier question is presented. In this way, the test is tailored to the individual's ability level.

Each question in the test bank is calibrated for level of difficulty and is assigned a content area that matches with the subtest area of the content outline for a particular examination. The weight (value) given to each question is determined by the level of difficulty. Therefore, the examinee must answer enough difficult questions to achieve a score above the pass point in order to successfully pass the certification examination.

EXAMINATION SUBTESTS

The MLT(ASCP) and MLT(ASCP^{i}) certification examination questions encompass different subtests within the area of Medical Laboratory Science: Blood Banking, Urinalysis and Other Body Fluids, Chemistry, Hematology, Immunology, Microbiology and Laboratory Operations. Each of these subtests comprises a specific percentage of the overall 100-question certification examination. The subtests for the examination are described in the following table:

SUBTESTS	DESCRIPTION	EXAM PERCENTAGES
Blood Bank (BBNK)	Blood Group Systems, Antibody Screen & Identification, Crossmatch, DAT, Elution/Adsorption, Blood Donation, Transfusion Therapy, Transfusion Reactions, HDFN, Phenotyping/Genotyping, Antibody Titer, Pre-warm Technique	15-20%
Urinalysis and Other Body Fluids (UA)	Physical, Chemical & Microscopic Urinalysis and Body Fluid Analysis (CSF, Amniotic, Synovial, Serous, Semen & Feces)	5-10%
Chemistry (CHEM)	Carbohydrates, Acid Base, Electrolytes, Proteins & Other Nitrogen-Containing Compounds, Enzymes, Lipids & Lipoproteins, Endocrinology, Tumor Markers, TDM, Toxicology	20-25%
Hematology (HEMA)	Erythrocytes & Leukocytes, Reticulocyte Count, ESR, RBC/WBC Morphology & Differentials, Platelets, Hemostasis	20-25%
Immunology (IMMU)	Autoimmunity, Immune Responses, Physiology of the Immune System, Immunology of Viral & Microbial Infectious Diseases	5-10%
Microbiology (MICR)	General Microbiology, Aerobic Gram-positive Cocci, Gram-negative Bacilli, Gram-negative Cocci, Gram-positive Bacilli, Anaerobes; Fungus, Viruses, Mycobacteria, Parasites	15-20%
Laboratory Operations (LO)	Quality Assessment/Troubleshooting, Safety, Laboratory Mathematics, Instrumentation, Laboratory Information Systems	5-10%

For a more specific overview of the subtest areas on the MLT(ASCP) and MLT(ASCP^{i}) certification examination, please refer to the CONTENT OUTLINE on pages 2 – 4.

EXAMINATION CONTENT OUTLINE MEDICAL LABORATORY TECHNICIAN and INTERNATIONAL MEDICAL LABORATORY TECHNICIAN

IMPORTANT: Examination questions, which are related to the subtest areas outlined below, may be both theoretical and procedural. Theoretical questions measure skills necessary to apply knowledge, calculate results, and correlate patient results to disease states. Procedural questions measure skills necessary to perform laboratory techniques, evaluate laboratory data, and follow quality assurance protocols.

I. BLOOD BANK (15-20% of total exam)
- 1. Blood Group Systems
  - A. Genetics
    - 1) Basic
    - 2) Molecular
    - 3) Inheritance of blood groups
    - 4) Applied
    - 5) Parentage
  - B. Chemistry, Antigens
    - 1) ABO
    - 2) Lewis
    - 3) Rh
    - 4) MNS
    - 5) P, Globoside
    - 6) Ii
    - 7) Kell
    - 8) Kidd
    - 9) Duffy
    - 10) Lutheran
    - 11) Other
    - 12) Antigens of high incidence
    - 13) Antigens of low incidence
    - 14) HLA
    - 15) Platelet specific
    - 16) Granulocyte specific
  - C. Role of Blood Groups in Transfusion
    - 1) Immunogenicity
    - 2) Antigen frequency
- 2. Antibody Screen and Identification
  - A. Antibody Screen
  - B. Antibody Identification
    - 1) Duffy
    - 2) Ii
    - 3) Kell
    - 4) Kidd
    - 5) Lewis
    - 6) MNS
    - 7) P
    - 8) Rh
    - 9) Multiple antibodies
- 3. Crossmatch and Special Tests
  - A. Crossmatch
  - B. Special Tests
    - 1) DAT
    - 2) Phenotyping and genotyping
    - 3) Elution/absorption
    - 4) Antibody titer
    - 5) Pre-warm technique
    - 6) Rosette and Kleihauer-Betke
- 4. Blood Donation, Transfusion therapy, Transfusion Reactions and Hemolytic Disease of the Fetus and Newborn (HDFN)
  - A. Blood Donation
    - 1) Donor Requirements
  - B. Transfusion Therapy
    - 1) RBC
    - 2) PLT
    - 3) FFP
    - 4) Cryoprecipitated AHF
    - 5) RhIG
  - C. Transfusion Reactions
  - D. HDFN

II. URINALYSIS & OTHER BODY FLUIDS (5-10% of total exam)
- 1. Urinalysis
  - A. Physical
    - 1) Color and clarity
    - 2) Specific gravity/osmolality
  - B. Chemical
    - 1) Reagent strip
    - 2) Confirmatory tests
  - C. Microscopic
    - 1) Cells
    - 2) Casts
    - 3) Crystals
    - 4) Contaminants
    - 5) Artifacts/microorganisms
  - D. Physiology
- 2. Other Body Fluids (Qualitative and Quantitative)
  - A. CSF
  - B. Amniotic, Synovial, Serous, Semen and Feces

III. CHEMISTRY (20-25% of total exam)
- 1. Carbohydrates, Acid Base and Electrolytes
  - A. Carbohydrates
    - 1) Glucose
    - 2) Glycated hemoglobin
    - 3) Other carbohydrates (e.g. lactate)
  - B. Acid Base
    - 1) pH, pCO_2, pO_2
    - 2) Osmolality, base excess
  - C. Electrolytes
    - 1) Sodium, potassium, chloride, bicarbonate, anion gap
    - 2) Calcium, magnesium, phosphorus

2. Proteins and Other Nitrogen-Containing Compounds
   A. Protein and Other Nitrogen-Containing Compounds
      1) Total protein, albumin
      2) Globulins (alpha 1, alpha 2, beta, gamma)
      3) Ferritin, transferrin
      4) Iron and TIBC
      5) Ammonia
      6) Creatinine, BUN
      7) Uric acid
      8) Troponin
      9) Other (e.g., BNP)
   B. Heme Derivatives
      1) Hemoglobin (S, fetal, A_2, plasma)
      2) Bilirubin, urobilinogen
      3) Other (e.g., myoglobin)
3. Enzymes, Lipids and Lipoproteins
   A. Enzymes
      1) Amylase, lipase
      2) AST, ALT
      3) CK, LD
      4) ALP
      5) GGT
   B. Lipids and Lipoproteins
      1) Cholesterol (total, HDL, LDL)
      2) Triglycerides
      3) Phospholipids
      4) Other lipids and lipoproteins
4. Special Chemistry (Endocrinology, Tumor Markers, TDM, Toxicology)
   A. Endocrinology and Tumor Markers
      1) T_3, T_4, TBG, TSH
      2) hCG, FSH, LH, estradiol
      3) Other hormones (e.g., cortisol)
      4) Tumor markers (e.g., alpha fetoprotein, CEA, hCG, PSA)
   B. TDM and Toxicology
      1) Therapeutic drug monitoring
      2) Drugs of abuse
      3) Other toxicology (e.g., carbon monoxide)

IV. HEMATOLOGY (20-25% of total exam)
1. Erythrocytes and Leukocytes
   A. Red Blood Cells and Indices
      1) RBC count
      2) Hemoglobin, hematocrit and indices
   B. White Blood Cell Count
   C. CBC (includes count, morphology and/or differential)
2. Other Tests
   A. Reticulocyte Count and Other RBC Inclusions
   B. ESR
   C. Tests for Hemoglobin Defects (e.g., sickle cell tests)
   D. Other (e.g. G-6PD)
3. Morphology and Differentials
   A. Red Blood Cell Morphology
   B. White Blood Cell Morphology
   C. Differential
   D. Platelet Morphology
4. Platelets and Hemostasis
   A. Platelets
      1) Platelet count
      2) Platelet function
   B. Hemostasis
      1) PT, aPTT, TT
      2) Fibrinogen, FDP, D-dimer
      3) Factor assays
      4) Inhibitor anticoagulants
      5) Mixing studies
      6) Anticoagulant therapy

V. IMMUNOLOGY (5-10% of total exam)
1. Immunity
   A. Autoimmunity
      1) ANA, anti-DNA
      2) CRP/RF
      3) Thyroid antibodies
   B. Immune Responses
   C. Physiology of the Immune System
2. Infectious Diseases
   A. Viral
      1) EBV/infectious mononucleosis
      2) Hepatitis
      3) HIV/HTLV/CMV
      4) Rubella/measles
      5) Other viruses
   B. Microbial
      1) Syphilis
      2) Other microorganisms

VI. MICROBIOLOGY (15-20% of total exam)
Includes biochemical, immunologic, serologic, and molecular methodologies required for identification and detection of microorganisms and antimicrobial susceptibility testing
1. Aerobic Gram-positive Cocci
   A. Microbiology and Antimicrobial Susceptibility Testing
   B. Aerobic Gram-positive Cocci: Staphylococcus, Micrococcus, Streptococcus, Enterococcus
2. Gram-negative Bacilli
   A. Enterobacteriaceae: Citrobacter, Escherichia, Enterobacter, Klebsiella, Morganella, Proteus, Providencia, Salmonella, Serratia, Shigella, Yersinia
   B. Other Gram-negative Bacilli: Acinetobacter, Aeromonas, Bordetella, Brucella, Campylobacter, Francisella, Haemophilus, Legionella, Pasteurella, Pseudomonas, Burkholderia, HACEK Stenotrophomonas, Vibrio

3. Gram-negative Cocci, Gram-positive Bacilli and Anaerobes
   A. Aerobic Gram-negative Cocci (e.g., Neisseria, Moraxella)
   B. Aerobic or Facultative Gram-positive Bacilli: Bacillus, Corynebacterium, Gardnerella, Lactobacillus, Listeria
   C. Anaerobes
      1) Gram-positive: Clostridium, Peptostreptococcus, Propionibacterium
      2) Gram-negative: Bacteroides, Fusobacterium

4. Fungus, Viruses, Mycobacteria and Parasites
   A. Fungi
      1) Yeast (e.g., Candida, Cryptococcus)
      2) Dimorphic fungi (e.g., Blastomyces, Coccidioides, Histoplasma, Sporothrix)
      3) Dermatophytes (e.g., direct specimen examination)
      4) Zygomycetes (e.g., Rhizopus)
      5) Opportunistic molds/septate hyaline molds (e.g., Aspergillus, Penicillium)
      6) Pneumocystis
   B. Mycobacteria
      1) Mycobacterium tuberculosis complex (e.g., M. tuberculosis)
      2) Other Mycobacteria (e.g., M. avium-intracellulare, rapid growers) C. Viruses and Other Microorganisms
      1) Viruses (e.g., specimen collection/transport/processing, rapid antigen detection)
      2) Other microorganisms (e.g., Chlamydia) D. Parasites
      1) Blood and tissue protozoa (e.g., Plasmodium, Trypanosoma)
      2) Intestinal and urogenital protozoa (e.g., Cryptosporidium, Entamoeba, Giardia, and Trichomonas)
      3) Intestinal and tissue helminths (e.g., Ascaris, Enterobius, hookworm, Schistosoma, Taenia, Trichinella, Trichuris)

VII. LABORATORY OPERATIONS (5-10% of total exam)
1. Quality Assessment/Troubleshooting
   A. Pre-Analytical, Analytical, Post-Analytical
   B. Quality Control
   C. Compliance
   D. Regulation
2. Safety
3. Instrumentation
4. Laboratory Mathematics
5. Laboratory Information Systems

All Board of Certification examinations use conventional and SI units for results and reference ranges.

MLT PROGRAM - NUMBER of STUDENTS and GRADUATES

YEAR	1 st year				YEAR	2nd year				TOTAL GRADUATES
	CAMPUS		DL			CAMPUS		DL		
	Started	Completed	Started	Completed		Started	Graduated	Started	Graduated	
2005-2006	43	28	8	6	2006-2007	24	20	4	4	**24**
2006-2007	33	18	14	9	2007-2008	16	15	8	6	**21**
2007-2008	37	23	15	6	2008-2009	23	22	6	5	**27**
2008-2009	37	24	14	6	2009-2010	22	20	6	5	**25**
2009-2010	37	29	19	9	2010-2011	22	20	8	5	**25**
2010-2011	34	27	15	8	2011-2012	20	19	7	7	**26**
2011-2012	29	21	10	8	2012-2013	19	19	6	5	**24**
2012-2013	32	26	16	8	2013-2014	20	18	6	6	**24**
2013-2014	28	23	22	11	2014-2015	19		11		
2014-2015										
Average	34	24	15	8		21	19	6	5	**25**

MLT PROGRAM - PASSING RATES/GRADUATING RATES

YEAR	1 st year				YEAR	2nd year				YEAR	OVERALL		
	CAMPUS	DL	PROGRAM			CAMPUS	DL	PROGRAM			CAMPUS	DL	PROGRAM
	%	%	%			%	%	%			%	%	%
2005-2006	65	75	67		2006-2007	83	100	86		2005-2007	**47**	**50**	**47**
2006-2007	55	64	57		2007-2008	94	75	88		2006-2008	**45**	**43**	**45**
2007-2008	62	40	56		2008-2009	96	83	93		2007-2009	**59**	**33**	**52**
2008-2009	65	43	59		2009-2010	91	83	89		2008-2010	**54**	**36**	**49**
2009-2010	78	47	68		2010-2011	91	63	83		2010-2011	**54**	**26**	**45**
2010-2011	79	53	71		2011-2012	95	100	96		2010-2012	**56**	**47**	**53**
2011-2012	72	80	74		2012-2013	100	83	96		2011-2013	**66**	**50**	**62**
2012-2013	81	50	71		2013-2014	90	100	92		2012-2014	**56**	**38**	**50**
2013-2014	82	50	68										
Average	71	56	66			92	86	90			**55**	**40**	**50**

updated: Fall 2014

DL Survey

Date: July 2014
Target: 18 Clinical sites
Response: 18 (100%)
(Results in %, may not add to 100% due to rounding)

How would you describe your experience with past PCC MLT students?

I enjoyed training students, the experience was pleasant and/or rewarding	82
I was very busy but training students is part of my job as a lab tech	6
I don't like teaching students, I find it difficult and/or frustrating	0
Other	12

How would you rate past PCC MLT students' abilities?

	Excellent	Very Good	Fair	Poor	Very poor
Know ledge and know ledge application	29	47	24	0	0
Laboratory skills	29	47	24	0	0
Professionalism	65	23	12	0	0

Evaluate the following statements.

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion
PCC MLT Distance Learning Program is well structured and produces graduates of high quality	20	67	7	0	7
I have hired PCC MLTs in the past and I am satisfied with their education and skills	21	21	7	0	50
I would like to be able to continue hosting/training PCC MLT students in the future	40	40	13	0	7

Please rate the following statements in what concerns your institution:

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion
We will need to hire MLT/MTs in the next 5 years	60	20	0	0	20
We predict expansion of our laboratory services in the next 5 years	40	40	7	0	13
It is easy to find qualified applicants from outside PCC program to fill MLT positions	0	13	27	27	33

How useful is PCC MLT Distance Learning Program for your institution?

Very useful	36
Somewhat useful	50
NOT very useful	14
Other	0

PCC MLT Distance Learning Program is going to be halted starting September 2015. Which best describes your thoughts regarding this?

I am very concerned, it will negatively impact our ability to find MLTs	53
I am somewhat concerned but we should be able to hire MLTs from other programs	33
I am not concerned at all, there are plenty of available qualified MLT's in the market	0
Other	20

Portland Community College

Ana Sacramento <ana.sacramento@pcc.edu>

MLT Advisory Committee Meeting 2/19

Cease, Susan <Ethel.Cease@asante.org> Wed, Feb 12, 2014 at 3:13 PM
To: Ana Sacramento <ana.sacramento@pcc.edu>, Barbara Wyman <Barbara.Wyman@providence.org>, Carol Vogt <Carol.A.Vogt@kp.org>, "Carpenter, Anita :LPH LAB" <ACarpent@lhs.org>, Catherine Brooks <brooksca@ohsu.edu>, "Dewey, Catherine" <Catherine.Dewey@asante.org>, Char Morishita <cmorishi@lhs.org>, Charles Clement <ClemenCF@ah.org>, Chuck Huggins <chuggins@stcharleshealthcare.org>, "Boyer, Cindy" <Cindy.Boyer@asante.org>, Dawn Grose <dawn.grose@providence.org>, DeiVida Watkins <dwatkins@lhs.org>, Denise Jones <DJones@peacehealthlabs.org>, Don Toussaint <dtoussai@lhs.org>, "Dr. Juan Millan" <jmillan@lhs.org>, Elizabeth Gray <EAGray@lhs.org>, Jacque Jones <JacqueJones@chiwest.com>, Jamie Williams <WilliaJJ@sutterhealth.org>, Jeffrey Josifek <jjosifek@pcc.edu>, Jill Trulsen <Jill.A.Trulsen@kp.org>, John Hill <JHill@lhs.org>, John Saito <john.saito15@pcc.edu>, Judy Chang <judy.chang@salemhospital.org>, Karen Love <lovekl@ah.org>, Karen Oxley <karen.oxley@providence.org>, Karl Kamper <Karl.kamper@capellahealth.com>, Kathy Pallviny <Katherine.E.Pallviny@kp.org>, Kim Heath <Kim.Heath@providence.org>, Krauter Erin <ekrauter@pcc.edu>, Laura Lee Feiner <lfeiner@peacehealthlabs.org>, Lois Simth <LoisSmith@salemclinic.org>, Lorell Ortega <lortega@lhs.org>, Lynn Koetje <Lynn.Koetje@providence.org>, Marcia Gauthier <mgauthier@lhs.org>, Marco Castaneda <macastan@lhs.org>, Mark Zimmerdahl <mzimmerd@pcc.edu>, Mary Anne Vivier <VivierM1@ah.org>, Mona Crow <Mona.Crow@providence.org>, Nichy Lee <NLee@lhs.org>, Sandhya Chand <SaChand@lhs.org>, Sarah Tillery <sarah.tillery@pcc.edu>, Sharon Decicco <sdecicco@lhs.org>, Shauna Pratt <spratt@pcc.edu>, Stephanie Hawkins <Stephanie.Hawkins@providence.org>, Steve Marshall <smarshal@pcc.edu>, Steve Osgood <osgoods@ohsu.edu>, Tom Philbrick <Tom.B.Philbrick@kp.org>, William Reed <wreed@lhs.org>
Cc: "Cehelsky, Diane" <DIANE.CEHELSKY@asante.org>, "Boyer, Cindy" <Cindy.Boyer@asante.org>

Ana,

I will not be able to attend the Advisory Committee meeting on 2/19, but after reading the minutes, wanted to contribute thoughts from the DL/southern Oregon region.

- First—thank you to Karen Love for bringing a wonderful, big picture, strategic view to the meetings. What a great resource!

- The idea of marketing to the employers is consistent with the way we have viewed the program at ATRMC. As you know, we currently have three techs that completed the PCC DL program while working at our facility. They are fantastic employees and represent the best possible outcome for this program. We have a tuition reimbursement program that does not completely cover the total cost of school, but contributes the majority of the cost.

- We have had great success with our "working/DL" students—at least those employed in our lab. I believe it would be much more challenging for those working outside of the laboratory where they are interning.

- I would strongly support a PCC-RCC collaboration to develop the CLA as the first step in a career ladder and possibly give the students who complete the certificate extra points in applying for a slot in the MLT program.

    - As a sidebar, the BOC will be reviewing the competency/exam scope proposed for a certification exam for CLA/MLA, this spring. Having a certification will support the workplace in defining the job and offering an appropriate compensation level.

- While we (ATRMC) strongly support the program, we are one, small community hospital. I understand

the staffing constraints and competing priorities that everyone involved in healthcare and education are facing today. While challenging, I would suggest that the future of Laboratory Medicine depends on the level of professionals that staff our labs, and that includes the "front end" staff. If there is anything we can do to support and reinstate the DL portion of the MLT program, please let me know!

Thanks,

E Susan Cease MT(ASCP)

Laboratory Manager

Three Rivers Medical Center

500 SW Ramsey Avenue

Grants Pass, OR 97527

541.472.7172

ethel.cease@asante.org

From: Ana Sacramento [mailto:ana.sacramento@pcc.edu]
Sent: Wednesday, February 12, 2014 10:38 AM
To: Ana Sacramento; Barbara Wyman; Carol Vogt; Carpenter, Anita :LPH LAB; Catherine Brooks; Dewey, Catherine; Char Morishita; Charles Clement; Chuck Huggins; Boyer, Cindy; Dawn Grose; DeiVida Watkins; Denise Jones; Don Toussaint; Dr. Juan Millan; Elizabeth Gray; Jacque Jones; Jamie Williams; Jeffrey Josifek; Jill Trulsen; John Hill; John Saito; Judy Chang; Karen Love; Karen Oxley; Karl Kamper; Kathy Pallviny; Kim Heath; Krauter Erin; Laura Lee Feiner; Lois Simth; Lorell Ortega; Lynn Koetje; Marcia Gauthier; Marco Castaneda; Mark Zimmerdahl; Mary Anne Vivier; Mona Crow; Nichy Lee; Sandhya Chand; Sarah Tillery; Sharon Decicco; Shauna Pratt; Stephanie Hawkins; Steve Marshall; Steve Osgood; Cease, Susan; Tom Philbrick; William Reed
Subject: MLT Advisory Committee Meeting 2/19

Dear Committee Member,

[Quoted text hidden]

The SAS System

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Full Time Equivalent (Student FTE) Enrollment and % Change	2009-10	Percent Change: 08-09 to 09-10	2010-11	Percent Change: 09-10 to 10-11	2011-12	Percent Change: 10-11 to 11-12	2012-13	Percent Change: 11-12 to 12-13	2013-14	Percent Change: 12-13 to 13-14
	Total	%	Total	%	Total	%	Total	%	Total	%
Collegewide, Excl Campus 6	**102.8**	*6.9*	**89.5**	*-12.9*	**80.5**	*-10.1*	**79.2**	*-1.6*	**79.8**	*0.8*

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Unduplicated Headcount Enrollment and % Change	2009-10	Percent Change: 08-09 to 09-10	2010-11	Percent Change: 09-10 to 10-11	2011-12	Percent Change: 10-11 to 11-12	2012-13	Percent Change: 11-12 to 12-13	2013-14	Percent Change: 12-13 to 13-14
	Total	%	Total	%	Total	%	Total	%	Total	%
Collegewide, Excl Campus 6	**180**	*13.2*	**158**	*-12.2*	**145**	*-8.2*	**142**	*-2.1*	**147**	*3.5*

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Gender Distribution			Female	Male
		N	%	%
Collegewide, Excl Campus 6				
	2011-2012	**143**	79.7	20.3
	2012-2013	**140**	77.1	22.9
	2013-2014	**146**	76.0	24.0

Source: Banner End-of-Term Extracts, Excluding Campus 6

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Race/Ethnicity Distribution		Total	Foreign National	Multi-Racial	African American	Asian	American Indian/Alaska Native	Hispanic	White Non-Hispanic
		N	%	%	%	%	%	%	%
Collegewide, Excl Campus 6									
	2011-2012	126	.	.	4.8	16.7	0.8	3.2	74.6
	2012-2013	130	0.8	0.8	1.5	16.2	.	5.4	75.4
	2013-2014	136	1.5	0.7	2.2	15.4	0.7	7.4	72.1

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Age Distribution			18-20	21-25	26-30	31-40	41-50	51-60	61+
		N	%	%	%	%	%	%	%
Collegewide, Excl Campus 6									
	2011-2012	145	2.8	18.6	28.3	30.3	14.5	4.8	0.7
	2012-2013	142	2.1	20.4	25.4	33.1	11.3	7.7	.
	2013-2014	147	3.4	23.8	27.2	27.2	12.2	6.1	.

Source: Banner End-of-Term Extracts, Excluding Campus 6

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Percent Distribution of Students who Indicate they are Degree-Seeking or Non-Degree-Seeking		All	Degree Seeking	Non-Degree Seeking
		N	%	%
Collegewide, Excl Campus 6				
	2011-2012	145	99.3	0.7
	2012-2013	142	100.0	.
	2013-2014	147	100.0	.

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Percent Distribution of Students in the Subject Area who are Enrolled Full-, Half-, or Part-Time at PCC in Credit Courses (in this or other subject areas): Fall Term Only			Full Time Credit Courseload	Half Time Credit Courseload	Part Time Credit Courseload
			%	%	%
Collegewide, Excl Campus 6	Fall	2011-2012			
		2012-2013	52.1	26.0	21.9
		2013-2014	44.0	26.7	29.3

Source: Banner End-of-Term Extracts, Excluding Campus 6

Medical Lab Technology

COLLEGEWIDE TABLES (Excl Campus 6): Grades (Credit Courses Only) for 2013-14, by Course	Total	A	B	C	D	F/NP	W	Other/Incomp/Audit
	N	%	%	%	%	%	%	%
MLT 100	**43**	74.4	25.6	.	.	.	.	.
MLT 111	**49**	36.7	38.8	12.2	6.1	4.1	2.0	.
MLT 112	**41**	43.9	36.6	14.6	.	.	4.9	.
MLT 113	**39**	30.8	35.9	15.4	5.1	7.7	5.1	.
MLT 170	**4**	.	.	.	.	.	.	100.0
MLT 221	**26**	30.8	57.7	7.7	.	.	.	3.8
MLT 222	**25**	32.0	56.0	12.0	.	.	.	.
MLT 223	**24**	41.7	50.0	8.3	.	.	.	.
MLT 230	**24**	20.8	70.8	4.2	4.2	.	.	.
MLT 241	**26**	30.8	57.7	7.7	.	.	.	3.8
MLT 242	**25**	24.0	56.0	20.0	.	.	.	.
MLT 250	**26**	23.1	61.5	7.7	3.8	3.8	.	.
MLT 261	**26**	30.8	53.8	11.5	.	.	.	3.8
MLT 262	**25**	32.0	56.0	12.0	.	.	.	.
MLT 263	**24**	41.7	54.2	4.2	.	.	.	.
MLT 264	**24**	25.0	66.7	8.3	.	.	.	.
MLT 271	**27**	48.1	22.2	.	.	3.7	3.7	22.2
MLT 272	**25**	72.0	28.0	.	.	.	.	.

(Continued)

Source: Banner End-of-Term Extracts, Excluding Campus 6

COLLEGEWIDE TABLES (Excl Campus 6): Grades (Credit Courses Only) for 2013-14, by Course	Total	A	B	C	D	F/NP	W	Other/Incomp/Audit
	N	%	%	%	%	%	%	%
MLT 273	**24**	58.3	33.3	.	.	.	.	8.3
MLT 274	**24**	58.3	41.7	.	.	.	.	.
MLT 281	**24**	70.8	25.0	4.2	.	.	.	.

Medical Lab Technology

CAMPUS TABLES: Full Time Equivalent (Student FTE) Enrollment and % Change	2009-10	Percent Change: 08-09 to 09-10	2010-11	Percent Change: 09-10 to 10-11	2011-12	Percent Change: 10-11 to 11-12	2012-13	Percent Change: 11-12 to 12-13	2013-14	Percent Change: 12-13 to 13-14
	Total	%	Total	%	Total	%	Total	%	Total	%
Cascade	**102.8**	*6.9*	**89.5**	*-12.9*	**80.5**	*-10.1*	**79.2**	*-1.6*	**79.8**	*0.8*

Source: Banner End-of-Term Extracts, Excluding Campus 6

CAMPUS TABLES: Full-Time Equivalent (Student FTE) Enrollment, by Course		2011-12	10-11 to 11-12	Percent Change: 10-11 to 11-12	2012-13	11-12 to 12-13	Percent Change: 11-12 to 12-13	2013-14	12-13 to 13-14	Percent Change: 12-13 to 13-14
		Total	Change	%	Total	Change	%	Total	Change	%
MLT 100	**Cascade**	**5.3**	1.1	*25.6*	**5.2**	-0.0	*-0.8*	**4.6**	-0.6	*-11.5*
MLT 111	**Cascade**	**5.5**	-1.4	*-20.4*	**6.8**	1.3	*23.1*	**6.9**	0.1	*2.1*
MLT 112	**Cascade**	**4.4**	-1.0	*-19.0*	**5.8**	1.4	*32.4*	**5.3**	-0.5	*-8.9*
MLT 113	**Cascade**	**3.9**	-1.2	*-23.1*	**4.7**	0.8	*20.0*	**5.0**	0.4	*8.3*
MLT 150	**Cascade**	**0.9**	-5.0	*-84.6*	**.**	.	.	**.**	.	.
MLT 170	**Cascade**	**.**	.	.	**.**	.	.	**1.0**	.	.
MLT 213	**Cascade**	**.**	.	.	**.**	.	.	**.**	.	.
MLT 221	**Cascade**	**2.5**	-0.3	*-10.0*	**2.4**	-0.2	*-7.4*	**2.4**	0.1	*4.0*
MLT 222	**Cascade**	**3.5**	-0.3	*-6.9*	**3.1**	-0.4	*-11.1*	**3.2**	0.1	*4.2*
MLT 223	**Cascade**	**2.3**	0.2	*8.0*	**2.1**	-0.3	*-11.1*	**2.1**	0.0	*0.0*
MLT 230	**Cascade**	**1.7**	0.1	*8.0*	**1.6**	-0.2	*-11.1*	**1.6**	0.0	*0.0*
MLT 241	**Cascade**	**1.9**	-0.2	*-10.0*	**1.8**	-0.1	*-7.4*	**1.8**	0.1	*4.0*
MLT 242	**Cascade**	**3.5**	-0.4	*-10.0*	**3.1**	-0.4	*-11.1*	**3.2**	0.1	*4.2*
MLT 250	**Cascade**	**3.8**	-0.4	*-10.0*	**3.5**	-0.3	*-7.4*	**3.7**	0.1	*4.0*
MLT 261	**Cascade**	**3.8**	-0.4	*-10.0*	**3.5**	-0.3	*-7.4*	**3.7**	0.1	*4.0*
MLT 262	**Cascade**	**2.3**	-0.2	*-6.9*	**2.1**	-0.3	*-11.1*	**2.2**	0.1	*4.2*
MLT 263	**Cascade**	**2.3**	0.0	*0.0*	**2.1**	-0.3	*-11.1*	**2.1**	0.0	*0.0*
MLT 264	**Cascade**	**1.7**	0.1	*8.0*	**1.6**	-0.2	*-11.1*	**1.6**	0.0	*0.0*

(Continued)

Source: Banner End-of-Term Extracts, Excluding Campus 6

CAMPUS TABLES: Full-Time Equivalent (Student FTE) Enrollment, by Course		2011-12	10-11 to 11-12	Percent Change: 10-11 to 11-12	2012-13	11-12 to 12-13	Percent Change: 11-12 to 12-13	2013-14	12-13 to 13-14	Percent Change: 12-13 to 13-14
		Total	Change	%	Total	Change	%	Total	Change	%
MLT 271	**Cascade**	**5.5**	-1.0	*-15.5*	**5.1**	-0.4	*-7.4*	**5.5**	0.4	*7.7*
MLT 272	**Cascade**	**5.2**	-0.7	*-12.1*	**4.7**	-0.6	*-11.1*	**4.9**	0.2	*4.2*
MLT 273	**Cascade**	**5.2**	0.4	*8.0*	**4.7**	-0.6	*-11.1*	**4.7**	0.0	*0.0*
MLT 274	**Cascade**	**12.9**	1.6	*13.6*	**13.5**	0.5	*4.0*	**12.4**	-1.0	*-7.7*
MLT 281	**Cascade**	**2.1**	0.0	*0.0*	**2.1**	0.1	*4.0*	**2.0**	-0.2	*-7.7*

Medical Lab Technology

CAMPUS TABLES: Unduplicated Headcount Enrollment and % Change	2009-10	Percent Change: 08-09 to 09-10	2010-11	Percent Change: 09-10 to 10-11	2011-12	Percent Change: 10-11 to 11-12	2012-13	Percent Change: 11-12 to 12-13	2013-14	Percent Change: 12-13 to 13-14
	Total	%	Total	%	Total	%	Total	%	Total	%
Cascade	**180**	*13.2*	**158**	*-12.2*	**145**	*-8.2*	**142**	*-2.1*	**147**	*3.5*

Source: Banner End-of-Term Extracts, Excluding Campus 6

CAMPUS TABLES: Enrollment (Seats Taken), by Course		2011-12	10-11 to 11-12	Percent Change: 10-11 to 11-12	2012-13	11-12 to 12-13	Percent Change: 11-12 to 12-13	2013-14	12-13 to 13-14	Percent Change: 12-13 to 13-14
		Total	Change	%	Total	Change	%	Total	Change	%
MLT 100	**Cascade**	**49**	10	*25.6*	**41**	-8	*-16.3*	**43**	2	*4.9*
MLT 111	**Cascade**	**39**	-10	*-20.4*	**48**	9	*23.1*	**49**	1	*2.1*
MLT 112	**Cascade**	**34**	-8	*-19.0*	**45**	11	*32.4*	**41**	-4	*-8.9*
MLT 113	**Cascade**	**30**	-9	*-23.1*	**36**	6	*20.0*	**39**	3	*8.3*
MLT 150	**Cascade**	**2**	-11	*-84.6*	**.**	.	.	**.**	.	.
MLT 170	**Cascade**	**.**	.	.	**.**	.	.	**4**	.	.
MLT 213	**Cascade**	**.**	.	.	**.**	.	.	**.**	.	.
MLT 221	**Cascade**	**27**	-3	*-10.0*	**25**	-2	*-7.4*	**26**	1	*4.0*
MLT 222	**Cascade**	**27**	-2	*-6.9*	**24**	-3	*-11.1*	**25**	1	*4.2*
MLT 223	**Cascade**	**27**	2	*8.0*	**24**	-3	*-11.1*	**24**	0	*0.0*
MLT 230	**Cascade**	**27**	2	*8.0*	**24**	-3	*-11.1*	**24**	0	*0.0*
MLT 241	**Cascade**	**27**	-3	*-10.0*	**25**	-2	*-7.4*	**26**	1	*4.0*
MLT 242	**Cascade**	**27**	-3	*-10.0*	**24**	-3	*-11.1*	**25**	1	*4.2*
MLT 250	**Cascade**	**27**	-3	*-10.0*	**25**	-2	*-7.4*	**26**	1	*4.0*
MLT 261	**Cascade**	**27**	-3	*-10.0*	**25**	-2	*-7.4*	**26**	1	*4.0*
MLT 262	**Cascade**	**27**	-2	*-6.9*	**24**	-3	*-11.1*	**25**	1	*4.2*
MLT 263	**Cascade**	**27**	0	*0.0*	**24**	-3	*-11.1*	**24**	0	*0.0*
MLT 264	**Cascade**	**27**	2	*8.0*	**24**	-3	*-11.1*	**24**	0	*0.0*
MLT 271	**Cascade**	**27**	-5	*-15.6*	**25**	-2	*-7.4*	**27**	2	*8.0*
MLT 272	**Cascade**	**27**	-3	*-10.0*	**24**	-3	*-11.1*	**25**	1	*4.2*

(Continued)

Source: Banner End-of-Term Extracts, Excluding Campus 6

CAMPUS TABLES: Enrollment (Seats Taken), by Course		2011-12	10-11 to 11-12	Percent Change: 10-11 to 11-12	2012-13	11-12 to 12-13	Percent Change: 11-12 to 12-13	2013-14	12-13 to 13-14	Percent Change: 12-13 to 13-14
		Total	Change	%	Total	Change	%	Total	Change	%
MLT 273	**Cascade**	**27**	2	*8.0*	**24**	-3	*-11.1*	**24**	0	*0.0*
MLT 274	**Cascade**	**25**	3	*13.6*	**26**	1	*4.0*	**24**	-2	*-7.7*
MLT 281	**Cascade**	**25**	0	*0.0*	**26**	1	*4.0*	**24**	-2	*-7.7*

Medical Lab Technology

CAMPUS TABLES: Gender Distribution			Female	Male
		N	%	%
Collegewide, Excl Campus 6				
	2011-2012	**143**	79.7	20.3
	2012-2013	**140**	77.1	22.9
	2013-2014	**146**	76.0	24.0
Cascade	**2011-2012**	**143**	79.7	20.3
	2012-2013	**140**	77.1	22.9
	2013-2014	**146**	76.0	24.0

Source: Banner End-of-Term Extracts, Excluding Campus 6

CAMPUS TABLES: Race/Ethnicity Distribution		Total	Foreign National	Multi-Racial	African American	Asian	American Indian/Alaska Native	Hispanic	White Non-Hispanic
		N	%	%	%	%	%	%	%
Collegewide, Excl Campus 6									
	2011-2012	126	.	.	4.8	16.7	0.8	3.2	74.6
	2012-2013	130	0.8	0.8	1.5	16.2	.	5.4	75.4
	2013-2014	136	1.5	0.7	2.2	15.4	0.7	7.4	72.1
Cascade	2011-2012	126	.	.	4.8	16.7	0.8	3.2	74.6
	2012-2013	130	0.8	0.8	1.5	16.2	.	5.4	75.4
	2013-2014	136	1.5	0.7	2.2	15.4	0.7	7.4	72.1

Medical Lab Technology

CAMPUS TABLES: Age Distribution			18-20	21-25	26-30	31-40	41-50	51-60	61+
		N	%	%	%	%	%	%	%
Collegewide, Excl Campus 6									
	2011-2012	145	2.8	18.6	28.3	30.3	14.5	4.8	0.7
	2012-2013	142	2.1	20.4	25.4	33.1	11.3	7.7	.
	2013-2014	147	3.4	23.8	27.2	27.2	12.2	6.1	.
Cascade	2011-2012	145	2.8	18.6	28.3	30.3	14.5	4.8	0.7
	2012-2013	142	2.1	20.4	25.4	33.1	11.3	7.7	.
	2013-2014	147	3.4	23.8	27.2	27.2	12.2	6.1	.

Source: Banner End-of-Term Extracts, Excluding Campus 6

Medical Lab Technology

CAMPUS TABLES: Percent Distribution of Students who Indicate they are Degree-Seeking or Non-Degree-Seeking		All	Degree Seeking	Non-Degree Seeking
		N	%	%
Collegewide, Excl Campus 6				
	2011-2012	145	99.3	0.7
	2012-2013	142	100.0	.
	2013-2014	147	100.0	.
Cascade	2011-2012	145	99.3	0.7
	2012-2013	142	100.0	.
	2013-2014	147	100.0	.

Source: Banner End-of-Term Extracts, Excluding Campus 6

Return to document

CAMPUS TABLES: Percent Distribution of Students in the Subject Area who are Enrolled Full-, Half-, or Part-Time at PCC in Credit Courses (in this or other subject areas): Fall Term Only			Full Time Credit Courseload	Half Time Credit Courseload	Part Time Credit Courseload
			%	%	%
Cascade					
	Fall	2011-2012	47.0	18.2	34.8
		2012-2013	52.1	26.0	21.9
		2013-2014	44.0	26.7	29.3

Medical Lab Technology

CAMPUS TABLES: Percent Distribution of Students by the Area in which they Reside	Academic Year	
	2012-2013	2013-2014
	Campus	Campus
	Cascade	Cascade
	%	%
Upper North/Northeast Portland	3.5	6.8
Inner City/Holladay Park	3.5	2.7
Central East County	7.7	8.2
Southeast Portland	10.6	10.2
Lake Oswego/SW Portland	1.4	1.4

(Continued)

Source: Banner End-of-Term Extracts, Excluding Campus 6

Return to document

CAMPUS TABLES: Percent Distribution of Students by the Area in which they Reside	Academic Year	
	2012-2013	2013-2014
	Campus	Campus
	Cascade	Cascade
	%	%
Downtown/Inner NW/Inner SW Portland	1.4	2.0
Outer SW Portland/Beaverton	2.8	4.1
Aloha/Farmington	7.7	6.8
Tigard/Tualatin/King City	5.6	7.5
Hillsboro/Forest Grove	4.9	6.1
Yamhill County/Sherwood	0.7	1.4
Rock Creek/West District	0.7	.
Columbia County/Hwy 30 Corridor	0.7	1.4
Outer Northwest/St. Johns	3.5	2.0
Other Oregon	39.4	35.4
Washington State	5.6	4.1
All	**100.0**	**100.0**

Source: Banner End-of-Term Extracts, Excluding Campus 6

CAMPUS TABLES: Grades (Credit Courses Only), History		Total	A	B	C	D	F/NP	W	Other/Incomp/Audit
		N	%	%	%	%	%	%	%
Collegewide, Excl Campus 6	2011-2012	582	33.7	47.9	13.7	1.5	0.7	1.0	1.4
	2012-2013	563	30.9	48.1	14.9	2.5	.	0.5	3.0
	2013-2014	575	41.6	44.5	7.8	1.2	1.2	1.0	2.6
Cascade	2011-2012	582	33.7	47.9	13.7	1.5	0.7	1.0	1.4
	2012-2013	563	30.9	48.1	14.9	2.5	.	0.5	3.0
	2013-2014	575	41.6	44.5	7.8	1.2	1.2	1.0	2.6

Medical Lab Technology

CAMPUS TABLES: Grades (Credit Courses Only) for 2013-14, by Course		Total	A	B	C	D	F/NP	W	Other/Incomp/Audit
		N	%	%	%	%	%	%	%
MLT 100	Cascade	43	74.4	25.6	.	.	.	.	.
MLT 111	Cascade	49	36.7	38.8	12.2	6.1	4.1	2.0	.
MLT 112	Cascade	41	43.9	36.6	14.6	.	.	4.9	.
MLT 113	Cascade	39	30.8	35.9	15.4	5.1	7.7	5.1	.
MLT 170	Cascade	4	.	.	.	.	.	.	100.0
MLT 221	Cascade	26	30.8	57.7	7.7	.	.	.	3.8

(Continued)

Source: Banner End-of-Term Extracts, Excluding Campus 6

Medical Lab Technology

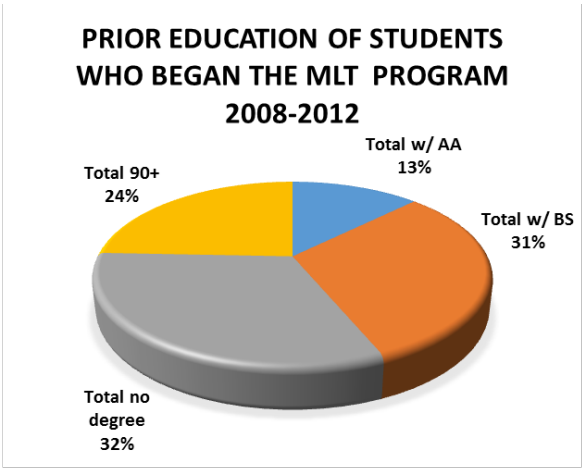
CAMPUS TABLES: Grades (Credit Courses Only) for 2013-14, by Course		Total	A	B	C	D	F/NP	W	Other/Incomp/Audit
		N	%	%	%	%	%	%	%
MLT 222	**Cascade**	**25**	32.0	56.0	12.0	.	.	.	.
MLT 223	**Cascade**	**24**	41.7	50.0	8.3	.	.	.	.
MLT 230	**Cascade**	**24**	20.8	70.8	4.2	4.2	.	.	.
MLT 241	**Cascade**	**26**	30.8	57.7	7.7	.	.	.	3.8
MLT 242	**Cascade**	**25**	24.0	56.0	20.0	.	.	.	.
MLT 250	**Cascade**	**26**	23.1	61.5	7.7	3.8	3.8	.	.
MLT 261	**Cascade**	**26**	30.8	53.8	11.5	.	.	.	3.8
MLT 262	**Cascade**	**25**	32.0	56.0	12.0	.	.	.	.
MLT 263	**Cascade**	**24**	41.7	54.2	4.2	.	.	.	.
MLT 264	**Cascade**	**24**	25.0	66.7	8.3	.	.	.	.
MLT 271	**Cascade**	**27**	48.1	22.2	.	.	3.7	3.7	22.2
MLT 272	**Cascade**	**25**	72.0	28.0	.	.	.	.	.
MLT 273	**Cascade**	**24**	58.3	33.3	.	.	.	.	8.3
MLT 274	**Cascade**	**24**	58.3	41.7	.	.	.	.	.
MLT 281	**Cascade**	**24**	70.8	25.0	4.2	.	.	.	.

Source: Banner End-of-Term Extracts, Excluding Campus 6

GRADUATION COMPARISON by PRIOR EDUCATION
MLT PROGRAM

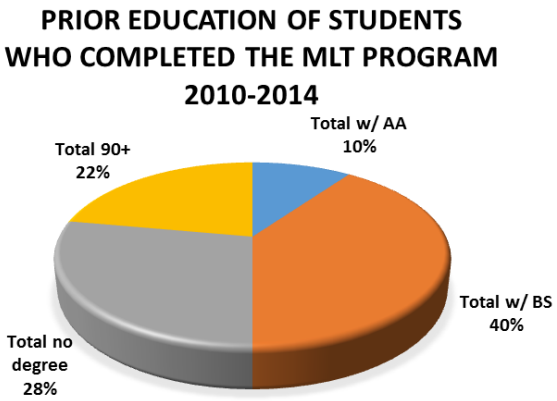
Began the program during the Fall

Degree	2008	2009	2010	2011	2012	Total
Total w/ AA	7	9	5	4	5	30
Total w/ BS	10	19	16	15	14	74
Total no degree	13	15	17	10	21	76
Total 90+	17	10	11	11	9	58
Total	47	53	49	40	49	238



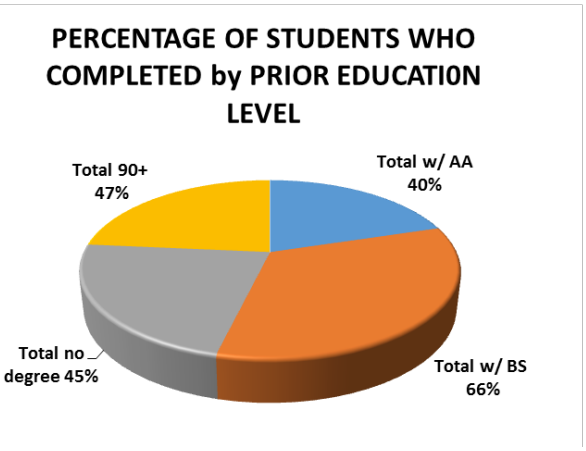
Graduated 2 years later (Summer)

Degree	2010	2011	2012	2013	2014	Total
Total w/ AA	4	4	2	1	1	12
Total w/ BS	6	10	10	12	11	49
Total no degree	3	7	9	5	10	34
Total 90+	10	4	5	6	2	27
Total	**23**	**25**	**26**	**24**	**24**	**122**



MLT Completion (%) by previous education

Degree	2008	2009	2010	2011	2012	Total
Total w/ AA	57%	44%	40%	25%	20%	40%
Total w/ BS	60%	53%	63%	80%	79%	66%
Total no degree	23%	47%	53%	50%	48%	45%
Total 90+	59%	40%	45%	55%	22%	47%
Total	49%	47%	53%	60%	49%	51%



Portland Community College

Medical Laboratory Technology Program Application

Date Received (office use only):_____

Return completed application and all documentation to:

Portland Community College
Allied Health Admissions, CA TEB 103
705 N. Killingsworth St.
Portland, OR 97217

healthca@pcc.edu
Fax: 971.722.5167
Phone: 971.722.5667

NOTE:

- Students are encouraged to attend an information session http://www.pcc.edu/programs/medical-lab/info- sessions.html or meet with the Admissions Coordinator before applying.
- Admission is competitive. Generally 20 students are chosen each year for the Medical Laboratory Technology Program. More students apply than we are able to place in the program.
- Students are encouraged to get as much health related experience as possible prior to application, and to get the best grades possible on all prerequisite coursework.
- It is your responsibility to ensure all contact information is current and correct, if you change addresses or phone numbers please contact admissions with the correct information.

Applicant Information – Please Type or Print Clearly

PCC ID # **G**_____

Name: _____
Last *First* *MI* *Maiden*

Home Address: _____

_____
City State Zip

Cell Phone: _____ Day Phone: _____ Evening Phone: _____

PCC email: _____ **@pcc.edu**

Do you have a prior degree? ☐ No ☐ Yes If yes: Please include proof

Previous college attended: College _____

Have you applied to the MLT program before: ☐ No ☐ Yes If yes: Year _____

Optional - In case of emergency, please notify:

Name: _____ Relationship _____

Address: _____

Home Phone: _____ Work Phone: _____

STUDENT SIGNATURE **DATE**

Important Information for Applying

Prerequisite Requirements – Must pass with a "C" or better

These classes must be completed or concurrently enrolled in during the term applications are being accepted.

- WR 121 – English Composition
- MTH 95 –Intermediate Algebra (or a higher level math)
- BI 121 – Introduction to Human Anatomy and Physiology I (or BI 231 & 232 or BI 211 & 212)
- BI 122 – Introduction to Human Anatomy and Physiology II (or BI 233 or BI 213)
- CH 104 – Allied Health Chemistry I (or CH 221)
- CH 105 – Allied Health Chemistry II (or CH 222)
- CH 106 – Allied Health Chemistry III (or CH 223)
- MLT 110 – Introduction to Medical Lab Technology

NOTE: All BI and CH classes must be taken as the complete series. In the event you wish to substitute a course taken at another school for a PCC program requirement please contact the Admissions Coordinator to ensure that this course is an acceptable substitute. In some cases you may need to provide a course description or syllabus for the course. All BI and CH classes need to be taken within the past seven years unless approval is granted by the MLT department chair.

Requirements for Application

- Complete all prerequisite requirements by the end of spring term 2015. You may turn in your application prior to the completion of prerequisite classes but need to pass all classes with a C or better by the end of spring term 2015.
- Your application will not be considered complete until all documents have been turned in.

❒ Complete the Supplemental Experience Questions on pages 3, 4 and 5.

❒ Submit two Recommendation Forms filled out by counselors, teachers or supervisors and placed in a **sealed envelope that is signed across the seal** on pages 8 and 9**.** If more than two are received, only the first two we receive will be scored.

❒ Provide unofficial transcripts from all colleges that you have attended ***other than*** Portland Community College. If you are currently enrolled in any prerequisite coursework at another college you must provide proof of enrollment with your application.

Application Timeline

- All application materials listed above will be accepted Monday, April 6, 2015 through Friday, June 19, 2015, and all materials must be turned in by 5:00 on June 19th.
- The application due date is firm, and all required documents must be in the Allied Health Admission office by that date or the application will not be processed.
    - All grades from in-progress prerequisite classes taken at other schools must be in the Admission office by one week after grades have posted.
- Applicants will be notified within a month of the close of the application period of their acceptance status, and applicants with the top points will be conditionally accepted and invited to a mandatory MLT new student orientation.
- Official acceptance will be sent after the MLT new student orientation has been successfully completed. At that time, any students who have taken MLT program coursework at a college other than Portland Community College will need to order official transcripts and have them evaluated by Student Records.

Application Evaluation

- Applicants will be given points using the point system and rubrics listed on the Advising Guide http://www.pcc.edu/programs/medical-lab/documents/mlt-prerequisite-worksheet.pdf
- In the event applicants have the same number of admission points, ties will be broken based on the date of application, so it is to your advantage to get your application turned in as early as possible.
- Two or more people will read all supplemental experience questions for evaluation purposes and the points given will be the average of these evaluations.

SUPPLEMENTAL QUESTIONS – Work Experience

Provide as much information as possible below. If you need more space for these questions, please attach a supplemental document, and title it SUPPLEMENTAL QUESTIONS ADDENDUM. This information must be verifiable. Worth up to 3 points each question – see Advising Guide for rubrics.

1. What experiences have you had working in a health related area?

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Total Hours Worked:_____

Briefly Describe Experience:

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email _____

Dates of Experience_____

Total Hours Worked:_____

Briefly Describe Experience:

2. What experiences have you had working in a laboratory environment? (This could be at the same site as listed in question 1)

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Total Hours Worked:_____

Briefly Describe Experience:

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email _____

Dates of Experience_____

Total Hours Worked:_____

Briefly Describe Experience:

SUPPLEMENTAL EXPERIENCE – Volunteer Experience

Provide as much information as possible below. If you need more space for these questions, please attach a supplemental document, and title it SUPPLEMENTAL QUESTIONS ADDENDUM. This information must be verifiable. Up to 3 points each – see Advising Guide for rubrics.

3. What experiences have you had volunteering in a health related area?

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Total Hours Volunteered:_____

Briefly Describe Experience:

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Total Hours Volunteered:_____

Briefly Describe Experience:

4. What experiences have you had volunteering in a laboratory environment? (This could be at the same site as listed in question 3)

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Total Hours Volunteered:_____

Briefly Describe Experience:

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Total Hours Volunteered:_____

Briefly Describe Experience:

SUPPLEMENTAL EXPERIENCE – Public Service Experience

5. **What experiences have you had serving your community in the Public Service sector? This could include military service, AmeriCorps service, holding a public office, fire fighter, police officer, or other public service occupations. Please attach documents proving your service, such as discharge papers.**

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Was this: ❒ Paid or ❒ Volunteer Total Hours Worked/Volunteered:_____

Briefly Describe Experience:

Location:_____

Supervisor's Name_____ Supervisor's Phone or Email

Dates of Experience_____

Was this: ❒ Paid or ❒ Volunteer Total Hours Worked/Volunteered:_____

Briefly Describe Experience:

STATEMENTS OF UNDERSTANDING

Please initial each of the statements below and sign

_____ I understand that the experiences listed in the work, volunteer and public service experience sections must be verifiable. Applicants accepted into the program may have the experiences listed verified prior to acceptance into the Medical Laboratory Technology program. Any misinformation may result in disqualification of the application.

_____ I understand that I must earn at least a "C" in all MLT program related courses. I understand that if I earn less than a "C" in any program related course, I will be dismissed from the program.

_____ I understand that after admission to the program I may be required to complete some or all of the following: criminal background check, proof of immunizations, and a ten-panel drug screening. If I am unable to pass the background check and drug screen, or provide proof if immunizations this may limit my ability to complete my clinical rotations and graduate from the program. There will be a cost associated with completing this requirement.

_____ _____

Student Signature Date

Student Information

Student Name		**Date**	
Evaluator's Name		**Evaluator's Phone Number**	
Evaluator's email		**How long have you known this student**	
How do you know this student			

Ratings

	No Basis for Comment	1 = Poor	2 = Fair	3 = Satisfactory	4 = Good	5 = Excellent
Knowledge/Preparation	☐	☐	☐	☐	☐	☐
Comments						
Work Quality/Organizational Skills	☐	☐	☐	☐	☐	☐
Comments						
Attendance/Punctuality	☐	☐	☐	☐	☐	☐
Comments						
Initiative	☐	☐	☐	☐	☐	☐
Comments						
Communication/Listening Skills	☐	☐	☐	☐	☐	☐
Comments						
Dependability/Reliability	☐	☐	☐	☐	☐	☐
Comments						
Emotional Maturity/Stability	☐	☐	☐	☐	☐	☐
Comments						
Judgment/Analytical Ability	☐	☐	☐	☐	☐	☐
Comments						

Evaluation

Additional Comments

Verification of Recommendation

Evaluator's Signature		Date	

Student Information

Student Name		**Date**	
Evaluator's Name		**Evaluator's Phone Number**	
Evaluator's email		**How long have you known this student**	
How do you know this student			

Ratings

	No Basis for Comment	1 = Poor	2 = Fair	3 = Satisfactory	4 = Good	5 = Excellent
Knowledge/Preparation	☐	☐	☐	☐	☐	☐
Comments						
Work Quality/Organizational Skills	☐	☐	☐	☐	☐	☐
Comments						
Attendance/Punctuality	☐	☐	☐	☐	☐	☐
Comments						
Initiative	☐	☐	☐	☐	☐	☐
Comments						
Communication/Listening Skills	☐	☐	☐	☐	☐	☐
Comments						
Dependability/Reliability	☐	☐	☐	☐	☐	☐
Comments						
Emotional Maturity/Stability	☐	☐	☐	☐	☐	☐
Comments						
Judgment/Analytical Ability	☐	☐	☐	☐	☐	☐
Comments						

Evaluation

Additional Comments

Verification of Recommendation

Evaluator's Signature		Date	

Fall, 2014 MLT SAC Meeting | MINUTES

Meeting date | time ***October 29*** | ***9:00 – 16:00*** | Meeting location ***CA JH-101***

MLT SAC:

☑ Jeff Josifek	☑ Shauna Pratt
☑ Erin Krauter	☑ Ana Sacramento
☑ Doug Lee	☑ Mark Zimmerdahl
☑ Steve Marshall	

Guests:

Karen Henry	
Sue Leung	
John Saito	

AGENDA TOPICS

Agenda topic: *Review minutes from last SAC meeting* | **Presenter:** *MLT SAC*

Discussion:

- Add "for DL" to the *Review minutes* section, 2nd bullet:
  - "Ana has separated the content for each exam for fall term (campus only). She will calculate separately student exam scores for each specific content area **for DL**."
- Ana will make exam shells for winter and spring terms, the appropriate instructor will populate each exam with applicable questions.
- MLT 170 will not be inactivated until the current 2nd year class completes the Program.
- Ana updated the CCOG for MLT 225 to include endocrinology.
- Training of lab monitors isn't going well:
  - Information is not getting passed from the current lab monitors to the next batch.
  - We will now have both trainer and trainee sign off that they trained/received training.

Action items	Person responsible	Deadline
1. Populate winter and spring term exam shells with appropriate questions.	MLT faculty	ASAP

Agenda topic: *Program Review* | **Presenter:** *Jeff*

Discussion:

The SAC reviewed what was discussed/accomplished at the October 22 program review work session. The following list of recommendations was prioritized and adopted for inclusion in section 8 of the program review document:

1. Maintain the Student Lab and retain current instructional support positions.

2. Remodel the Support Lab in JH-212 and our instructional lab in JH-213.
3. Technology replacements and improvements such as:
    a. Clinical analyzers/instruments
    b. Laptop computers to replace the current netbook computers
    c. Virtual lab simulators, etc.
4. Support for continuing education (i.e. seminars, workshops, local training opportunities such as molecular training at Kaiser Permanente, etc.)
5. Reclassify our laboratory exercises as "lab B"
6. Develop, implement, and maintain articulation agreements with other local institutions
7. Be able to revisit the DL option at some point in the future.

The SAC also discussed ideas and options for the program review presentation.

Action items	Person responsible	Deadline
1. Prepare a rough draft of the program review document and distribute to the SAC.	Jeff	Nov. 14, 2014
2. Develop the presentation for program review	Ana	Jan. 2015

Agenda topic: *Admissions Update* | **Presenter:** *Amanda Gallo, Ana*

Discussion:

Amanda Gallo was unable to attend the SAC meeting. Ana confirmed that MLT 199/110 will be offered again winter term, 2015. In order to help increase enrollment, it was suggested that the course be run as a hybrid. The SAC agreed to discuss the issue again in early winter.

Action items	Person responsible	Deadline
1. Meet early in winter to discuss the possibility of running MLT 110 as a hybrid course.	SAC	Early winter

Agenda topic: *Student Handbook 2015 – 2016* | **Presenter:** *Jeff*

Discussion:

- The new student handbook will contain program policies, forms, etc. (NAACLS requirements).
- Each course will have its own syllabus.
- Jeff will continue to work on the Student Handbook. However, at the end of spring term each year, he will email it to Ana for any additional changes and to send to the Print Center for printing.

Action items	Person responsible	Deadline
None		

Agenda topic: *Textbooks* | Presenter: *Jeff*

Discussion:

The SAC discussed textbooks for the redesigned program and agreed upon the following:

1. Term 1 (Fall) Textbooks:
    a. MLT 110 Linne & Ringsrud (recommended)
    b. MLT 120 Strassinger text of UA & BF (recommended)
    c. MLT 114 Chemistry textbook, Atlas of Hematology
    d. MLT 113 Microbiology textbook
2. Term 2 (Winter) Textbooks:
    a. MLT 110 Linne & Ringsrud (recommended)
    b. MLT 241 Blood bank textbook
    c. MLT 251 Hematology textbook
    d. MLT 100 MA textbook
3. Term 3 (Spring) Textbooks:
    a. MLT 110 Linne & Ringsrud (recommended)
4. Term 4 (Summer) Textbooks:
    a. MLT 271 CLP manual
    b. MLT 100 MA textbook
5. Term 5 (Fall) Textbooks:
    a. MLT 110 Linne & Ringsrud (recommended)
    b. MLT 266 Immunology/serology

Jeff will review and pass around the two copies of chemistry textbooks he recently received.

Action items	Person responsible	Deadline
1. Review Chemistry textbooks	MLT faculty	ASAP

Agenda topic: *Exam Questions per Subject* | Presenter: *Ana*

Discussion:

Mid-term exams/quizzes are now divided by subject. Some subjects (i.e. chemistry) may not have many questions on a particular exam, so even if a small number of questions are missed it has a big impact on the final course grade. It was suggested to scale individual exams in order to achieve a certain class average, perhaps 80%.

Action items	Person responsible	Deadline
None		

Agenda topic: *Program Restructure* | **Presenter:** *Ana*

Discussion:

Ana reported that all courses, CCOG's, pre-req's, etc. have gone to Curriculum for review and the approval process.

Action items	Person responsible	Deadline
None		

Agenda topic: *Lab Grading Rubric* | **Presenter:** *Erin*

Discussion:

Erin solicited feedback on using the new lab-grading rubric. Generally, the SAC agreed that it could be condensed somewhat in order to make it easier to use. It was also suggested to replace the number scale with verbiage criteria: needs improvement = (0), satisfactory = (1), exceeds expectations = (2).

The SAC also discussed ways to translate evaluations to a letter grade. After much debate it was decided to discuss this issue at a later date. We will continue to use the current rubric and assess its utility at the end of the term.

Action items	Person responsible	Deadline
1. Review lab grading rubric and make changes as appropriate.	SAC	End of fall term, 2014

Agenda topic: *Instructor Qualifications for MLT 110* | **Presenter:** *Ana*

Discussion:

The SAC reviewed the current instructor qualifications and discussed making any changes. The following details the current qualifications and changes the SAC approved.

~~**MLT 111, MLT 112, MLT 113 and all 200-level MLT courses**~~
MLT 113, MLT 114, MLT 115, MLT 120, MLT 224, MLT 225, MLT 230, MLT 241, MLT 242, MLT 251, MLT 252, MLT 253, MLT 261, MLT 262, MLT 265, MLT 266, MLT 282 and MLT 283

Minimum requirements:

- Bachelor's degree in a science related field or applicable area of study
- MLS (ASCP) or MLT (ASCP) certification or equivalent
- 3 years of recent experience working in a clinical laboratory setting performing testing or teaching experience in a related field

OR

- Master's degree in a science related field, education or a related area
- MLS (ASCP) or MLT (ASCP) certification or equivalent
- 2 years of recent experience working in a clinical laboratory setting performing testing or teaching experience in a related field

Preference will be given to candidates with a Master's degree.

MLT 100, MLT 110, MLT 271, MLT 272, MLT 273 and MLT 274

Minimum requirements:

- Associate degree in medical laboratory technology or related field
- MLT (ASCP) certification or equivalent
- 3 years of recent experience working in a clinical laboratory setting or teaching experience in a related field

OR

- Bachelor's degree in a science related field or applicable area of study
- MLS (ASCP) or MLT (ASCP) certification or equivalent.
- 2 years of recent experience working in a clinical laboratory setting or teaching experience in a related field

Preference will be given to candidates with a Bachelor's degree.

MLT 105, MLT 150 and MLT 170

Minimum requirements:

- ~~PbT (ASCP) certification or equivalent~~
- ~~5 years of recent experience working in the field including phlebotomy, and specimen processing~~

~~**OR**~~

- Associate degree in ~~medical laboratory technology or~~ a science related field of study
- PbT (ASCP) certification or MLT (ASCP) certification or equivalent
- ~~MLT (ASCP) certification or equivalent~~
- 3 years of recent experience working in a clinical laboratory setting, including phlebotomy

~~Preference will be given to candidates with an Associate degree.~~

Action items	Person responsible	Deadline
1. Forward updated Instructor Qualifications to Sue Leung and John Saito.	Jeff	ASAP

Agenda topic: *Steve Marshall's Position* | **Presenter:** *SAC*

Discussion:

Steve will retire effective July 1, 2015. That position will be needed to be prior to classes beginning in summer, 2016.

Action items	Person responsible	Deadline
None yet.		

Additional topic: *Update from John Saito* | **Presenter:** *John Saito*

Update:

Construction of a new Health Professions Center is in the exploratory phase now. If approved by the College Board, it could be located close to OMSI and the Central Portland Workforce Training Center. The building could potentially be around 85,000 square feet in size.

Several factors are driving interest in construction of a new building.

1. The health care programs at the Sylvania campus need new/more space (with that said, the college would move many healthcare programs there too)
2. The move would be good for simulation lab development too
3. Moving/consolidating many health care programs in one building would be ideal to facilitate "inter-disciplinary education"

Financing of the project:

1. ~$8.5M from state to update imaging, etc.
2. ~$11M from the current bond (unsure about this amount)
3. Approval for an additional $30M bond would be required from the College Board for this project

John asked for us as a department to deliberate whether the move to a new building would be good or not. We need to plan for this before the next potential district-wide bond could be planned for the 2017 – 2018 elections. He also informed us that chances are low for us getting money to renovate the support lab in JH-212 and the laboratory classroom in JH-213.

John also addressed questions surrounding continued use of the Student Lab (and the space it occupies) at Emanual Hosptial. We have been assured from Don Toussaint and Dr. Milan that the MLT Program will retain use and operation of the current space at Emanual. John stated he will write a letter to the Legacy Health Laboratory administration asking for written assurance of that for strategic planning purposes. Continued use of the Student Lab is important for many reasons, not least of which is access to patient specimens.

John also guaranteed the SAC that we will run MLT199/110 in winter and spring, 2015 regardless of enrollment numbers.

Minutes submitted by: Jeff Josifek

Next Meeting:
Date and Time: February, 2014
Location: Kaiser Airport Way Lab

PORTLAND COMMUNITY COLLEGE
MLT Program Advisory Committee
October 25th, 2013
Legacy Emanuel Hospital – MOB2 East

Present (X):

X Char Morishita, LHS, Hematology Subcommittee Chair
Marcia Gauthier, LHS Good Samaritan
John Hill, LHS Emanuel
Lorell Ortega, LHS Meridian Park
Liz Gray, LHS Mt Hood
X Sharon Decicco, LHS
Bill Reed, LHS Microbiology Subcommittee Chair
Nichy Lee, LHS Salmon Creek
X Steve Osgood, OHSU, Committee Chair
X Catherine Brooks, OHSU
Laura Lee Feiner, Peace Health Labs
Denise Jones, SWMC
Karl Kamper, WVMC
X Shanna Middaugh, WVMC
Jamie Williams, Sutter Coast Hospital
Cathy Dewey, Asante

X Karen Oxley, Providence Barbara
Wyman, Providence Dawn Grose,
PMC St. Vincent's Tom Philbrick,
Kaiser Permanente Carol Vogt,
Kaiser Permanente
X Karen Love, Adventist Medical Center
X MaryAnne Vivier, Adventist Medical Center
John Saito, PCC
X Sarah Tillery, PCC
X Erin Krauter, PCC
X Ana Sacramento, PCC
X Jeff Josifek, PCC
X Amanda Gallo, PCC

CALL TO ORDER: The meeting was called to order at 1000 AM.

July minutes were approved.

REPORTS:

PCC Cascade Update (Sarah): Dr. Preston Pulliams who had been District President for 9 years retired in July. Dr. Jeremy Brown, who is very interested in the MLT program and other Career Technical programs, is now the new District President. Dr. Algie Gatewood who was the Cascade Campus President for the past 8 years has taken a position elsewhere. The interim President, Dr. Craig Collins is temporarily filling in the position. A national search will be initiated with the aim of having a new Campus President by 2014. PCC is experiencing enrollment drops and some budget tightening due to state funding cuts. Mark Zimmerdahl , long time faculty member, retired in the Spring. Due to the resource deficits PCC is experiencing it was not possible to fill his position; instead, a couple of part time instructors were hired, Mark being one of them. PCC is trying to make things work with fewer resources so this as a good time to take the opportunity to take a hard look at the MLT Program to see what has been working and what changes can be done to improve it. One of the areas we are

looking at is the Distance Learning Program which was initially funded by a Grant but has never been fully funded.

MLT Program Update (Ana/Amanda): Admission to the MLT program has moved from a lottery based system to a point system (see Attachment). The new system will be implemented next year. There
are 40 possible points that can be awarded in a variety of ways: pre-requisite courses grades, other biology and chemistry courses, previous degree, working or volunteering experience in laboratory and/or health industry settings, recommendations and public service. The point system was created to screen for better suited students while at the same time, ensuring that access to College, which is one of the Community Colleges priorities, is maintained. The MLT Department sees the point system as a work in progress and plans to assess it in the future by correlating points with student success. The point system was welcomed by the Committee and 2 other factors were suggested to be included: previous leadership and computer experience. Although these suggestions won't be possible to implement next year, they will definitively be added in the following year. The MLT Department will continue assessing applicants' oral communication skills, similarly to what has been done in the past, by holding sessions where questions are asked to the applicants in order to evaluate their communication skills. A change that occurred this year was that a set of questions (random questions that may not have anything to do with MLT) was created to better assess students understanding and ability to answer questions. This was implemented because it had been noticed that some applicants were coming with a prepared monologue. The Committee emphasized that it is really important to make sure that students are able to communicate well, especially on the phone when they interact with other members of the health industry.

Last year, 24 students graduated from the program; 21 within the Portland area and 5 Distance Learning (DL). All but 3 have applied for the certification exam. This year, 49 students were admitted into first year; 28 in the Campus Program and 21 in Distance Learning. In the 2nd year there are currently 20 students on Campus and 6 in DL.

The calculated attrition rate (number of students graduating over students that start first year) is 50% overall. When comparing Campus and DL, the attrition is higher in DL. It is also higher in the 1st year (Campus 30% and DL 43%) than in the 2nd year (Campus 8% and DL 16%). These rates are expected to improve with the new admission system in place since selection will be made from a higher qualified pool of applicants. DL selection may not be similarly impacted since, unlike Campus, is site specific. For instance, 19 applicants applied from Eugene but because there are only 2 clinical sites in the area, only 6 out of 19 were admitted into first year hoping that 2 of them will go into 2nd year. On the other hand, for sites where there is only one applicant, there is no competition. Erin added that the pool of DL clinical sites is not as stable as the Portland area because sites may have training gaps. If there are no applicants in a particular area there could be a gap of one year or more where the clinical site does not train our students. In the Spring, when Erin asks a site if it can accept students, it is actually for the following year and, although they may confirm it, when it comes time

to train the students some of the sites back-out, which can be quite challenging. Additionally, DL students tend to be working while attending school which is not very conducive to success.

The comparison between Campus and DL students in terms of lab skills, done by comparing the Clinical evaluations and certification exam scores, indicates that the two groups are very similar and that there is no significant difference. So, in conclusion, the programs are both producing quality graduates but the attrition rate is much higher in DL and the Clinical Coordination piece is much more complicated in DL than on the Campus Program.

The MLT Program is going through Accreditation (NAACLS). The Self Study Report was submitted in June and the paper review was received back in the summer. Not many deficiencies were noted, the main one being the fact that not enough information was gathered on all the trainers from all the sites (a "resume" is required on all 200 trainers). The Department gathered as much info as possible and awaits the visitor's suggestions on this issue. The visit is occurring on November 6th and 7th . During the visit, meetings are scheduled with current students, graduates and members from clinical sites. An email was sent asking for participation and some sites have already confirmed their attendance. Ana thanked them for their support and asked other members to let her know of their availability. Sarah added that she is very thankful for all the work affiliates have contributed so far for the Accreditation and that she understands that maybe not all the information required to meet the NAACLS standard is available but that she, together with the Dean, intend to have a conversation with the visitors about this issue. Sarah asked for participation and thanked all the affiliates in advance. Karen Love stated that OIT is also going through Accreditation and that they have also asked for Clinical Fact Sheets for each trainer which is a lot of work to be done so, she suggested that maybe the two Programs could coordinate and gather this type of information once and share it.

Students' evaluations on their clinical experience were analyzed and overall the responses were extremely positive. Students really appreciated their training and emphasized how thankful they were regarding the willingness, patience, and knowledge of their trainers, and their experience as a whole. Ana expressed her thanks for the trainers' dedication to the Program. When asked about not so positive comments, Ana stated that one of the common comments seen is the fact that it is hard on the students when their training is done by different trainers every day, who don't know what has been covered the day before. It was suggested that students be advised to brief the trainer on what was learned the previous day and to clarify expectations ahead of time. There was a discussion on how different techs may do things differently and how confusing this can be for students. Sharon commented that all techs should be following the same basic protocol and Karen Oxley added that differences take place when SOPs do not provide enough level of detail. It was also suggested that students should not argue with trainers; if they feel confused with conflicting information it is best to address the issue with the supervisor.

Jeff stated that besides NAACLS Accreditation the MLT Program is also going through Program Review which is an internal process similar to the accreditation. A presentation is scheduled at PCC

on Friday, May 2nd. Jeff invited anyone who would like to come to the presentation and Sarah added that a more formal invitation will be sent ahead of time.

DISCUSSION TOPICS:

Distance Learning (Sarah) and CLP Structure (Erin): The Distance Learning Program is facing some challenges and the Department is struggling with what to do with it. There are issues in regards to maintenance of clinical sites and its coordination, attrition rates, number of graduates and high costs, all of these in face of budget cuts. The DL program was originally built on a Grant that has ended about 3 or 4 years ago, and the budget was never adjusted to account for the extra expenses of running the DL program. Examples of costs are travel expenses related to site visits of affiliated and new clinical sites, other community colleges, testing centers, and periodic lab exercises that take place at Lane Community College throughout the year. The Department needs to figure out how to proceed from here with one less faculty and fewer resources. Sarah added that Erin has been doing a fantastic job trying to coordinate DL sites but it has been very challenging. In light of these issues, the Department is looking at re-thinking the DL Program, either putting it on hiatus and reconfigure it or, putting it on hiatus and work with other regional community colleges to see if any of them want to run with it. Sarah asked for input from the Advisory Committee on this topic, adding that Rogue Community College is starting a Clinical Laboratory Assistant Program and that Sarah will be meeting with them to articulate some agreement between the two programs.

Erin added that, in light of possible changes to DL, it might be a good time to also look at the Campus Program. Erin asked if rotations are working the way they are currently structured and if the times spent in each rotation are adequate. Originally all this was established by the Advisory Committee but it is probably time to do a re-evaluation. Karen Love commented that she would like to see continuous training periods rather than every other week as currently scheduled. Erin explained that if a similar structure to OIT is implemented, with CLP at the end of academics, it would only be possible to put through half of the students. The way it is currently structure, a site is shared
between 2 students. Karen Love suggested to still have two students but in different departments, similarly to what is done with OIT students. The problem is for sites that are too small where that option is not viable or sites like Legacy Emanuel that trains 8 students in micro. Karen Love suggested that it could still be done 2 weeks at a time for a total of 16 weeks for all 8 students. Sharon added that it could be feasible as long as PCC students didn't overlap with OIT students. Shanna added that OIT is actually planning to change the way they do their clinical practice because some sites think that MLTs are better prepared than OIT students. Shanna stated that at her site the current MLT structure is preferable; OIT students are still not able to put it all together after 3 months of training, while MLT students, once they get to the summer rotation, they seem to be ready to fly. Mary Anne commented that students who are struggling seem to do better when their training is done in a consecutive manner without gaps in between, but that good students do very well, even with days off from their rotations. Mary Anne added that she thinks MLTs seem to be better

prepared than OIT students due to the Student Lab training they receive prior to coming to the Clinical sites.

Sharon added that OIT currently has 50 students and that Legacy can't accommodate more students than they already have. Sarah assured the group that PCC is meeting with OIT and that coordination between Programs will be done to avoid overwhelming the clinical sites.

Regarding DL sites, Karen Love suggested that hospitals could recommend students for the program. It was suggested that a contract could be made between the Hospital and the student, with the Hospital paying for the education expenses and the student would commit to continue being their employee for a certain number of years after graduation. Steve agreed and suggested that maybe PCC is marketing to the wrong people; PCC should be marketing to potential employers as opposed to students. Sarah asked for advice about what to with students that are recommended by managers but that don't succeed academically. How to grade the student and still maintain a good relationship with the manager? Karen defended that high standards have to be maintained and that it is Amanda's job in Admissions to make sure that good students are admitted. Erin stated that a system like that, where Hospitals would be recommending incumbent workers, might not work with the current MLT Program structure because, 2nd year is really designed for students who are not working. Currently, the DL Program is similar in structure to the Campus Program, with students "attending" class 40h/week. Mary Anne suggested that as part of the contract between the hospital and the student, the student would be released from their duties while attending school. Karen Love said that Kaiser did exactly that while some of their MLT's went through the OIT Program and that it would be advantageous to explore how that worked out. Erin added that, if the DL program structure changed to accommodate a Hospital based system, it would be really difficult for 3 faculty to manage 2 structurally different programs.

Karen Love stated that several managers at Adventist are going to retire and that it is not easy to find people willing to go into management. Karen Love suggested development of a Leadership Development program for MLTs or MTs who may be interested in management. This would be beneficial to students with prior degree seeking employment skills.

MANAGER'S REPORTS

OHSU (Steve) – The new lab opened in July. OHSU is expanding molecular testing with Nanosphere Verigene and Cephia. Micro samples are currently being sent to Kaiser but looking at doing more in house via molecular testing to minimize expenditures.

Legacy (Sharon) – Legacy is looking at recertification. CAP inspection has been moved from summer to the winter months with next inspection sometime between January and March 2014. In Microbiology, a MALDI-TOF will be implemented and Legacy is excited to provide this technology.

Adventist (Mary Anne) – The Microbiology Department is bringing a COBAS for Chlamydia and HPV; Hematology is looking at new hematology and coag analyzers, probably Beckman which is the

current contract. Some leadership opportunities in chemistry and microbiology as the current supervisors are going to retire soon.

Legacy Holladay Park Central Lab (Char) - The hematologist specialist, who is also responsible for UA and Body Fluids, has been validating the Siemens Advantus Urinalysis Dipstick Reader. In Coagulation, IL TOP 500 analyzers were installed for PT/PTT/Fibrinogen/Heparin Assay/FVIII Activity testing. Special Coagulation testing has been under verification since then. ROTEM POC Analyzer and Antithrombin & Heparin Assays were also installed in February. Hematology has plans to select new Hematology analyzers and install new ESR instruments.

Char also expressed her desire to step down from her role as Hematology Sub-Committee Chair; stating that it has been nice to be involved in the Program since its inception but it is time for someone else in the system to take this great opportunity.

Providence (Karen Oxley) – After their last CAP inspection, Providence decided to switch to Joint Commission for the Hospital labs and keep CAP for Core Lab. There is still an open manager position for Providence and Milwaukie sites. Several members of management are ready to either retire or leave for other opportunities so, the option of having the Leadership Development Program at PCC would be very welcome. A small laboratory is going to open in Marion County (Salem), similar to The Oregon Clinic; they are in the validation stage at the moment and there is still an opening position there as well. There have been many retirements, 5 in July alone, so a lot of knowledge was lost and a lot of pressure is now felt among the younger staff.

Willamette Valley Medical Center (Shanna) – CAP Inspection was just finished last week and went really well, with only 1 deficiency and another that was fixed on site. A new Sysmex XN was just brought in for hematology; training will soon be initiated. Karl took on some new administrative duties so Shanna learned a lot about his position. It has been an exciting year.

Meeting was adjourned at 11:40.

NEXT MEETING: *TBA*

Attachment: MLT Admission 2014-2015 Point System (distributed to participants at the meeting)

Distribution:

MLT Program Advisory Committee
MLT Program Staff
Kurt Simonds, Dean of Instruction, PCC
Dr. Juan Millan, MLT Program Medical Director, Legacy Health System

Minutes submitted by: Ana Sacramento/Erin Krauter

Portland Community College

MEDICAL LABORATORY TECHNOLOGY – POINT SYSTEM

Information is subject to change. MLT Department will not consider degrees, work/volunteer experience, or courses earned for points if completed after application closure date.

POINTS **/40**

Pre requisite courses /12

Math 95 (A–4; B-3, C-2; D not accepted) up to 4 points Biology 100 level or higher (A–4; B-3, C-2; D not accepted) up to 4 points Chemistry 100 level or higher (A–4; B-3, C-2; D not accepted) up to 4 points

Other College Biology Courses 100 level or higher with a C grade or higher /5

1 point per each 4 credit quarter course or equivalent

Other College Chemistry Courses 100 level or higher with a C grade or higher /5

1 point per each 4 credit quarter course or equivalent

Completion of prior degree /1

1 point will be awarded for completion of Associate's degree or higher

Program related Work Experience /6

Laboratory related experience (minimum 3 months)

3 – 6 months (480 – 959 hours)	1 point
6 months – 12 months (960 - 1919 hours)	2 points
> 12 months (>1920 hours)	3 points

Health Industry related experience (minimum 3 months)

3 – 6 months (480 – 959 hours)	1 point
6 months – 12 months (960 - 1919 hours)	2 points
> 12 months (>1920 hours)	3 points

Examples:
Laboratory related experience: clinical lab assistant, phlebotomist, laboratory work involving biological, chemical or environmental samples. Health related experience: Clinical lab assistant, phlebotomist, medical assistant, nurse, NCA, health records, imaging, pharmacy.

Program related Volunteer Experience /6

Laboratory related experience (minimum 1 month)

1 – 2 months (160 – 319 hours)	1 point
2- 3 months (320 – 479 hours)	2 points
> 3 months (> 480 hours)	3 points

Health Industry related experience (minimum 1 month)

1 – 2 months (160 – 319 hours)	1 point
2- 3 months (320 – 479 hours)	2 points
> 3 months (> 480 hours)	3 points

Examples:
Laboratory related experience: laboratory setting involving biological, chemical or environmental samples.
Health related experience: volunteer in a health related setting such as doctor's office, clinic, hospital.

Recommendations /4

Recommendation form completed by employer, volunteer supervisor, counselor or teacher with satisfactory ratings or above in all categories, up to 2 recommendations.

Rating average 3.0 - 4.4	1 point
Rating average 4.5 - 5.0	2 points

Public Service /1

Service in the US military (current service or honorable discharge), public office, fire fighter, police office

First come first serve in case of equal points .

NOTE: Information will be verified. Applications containing misinformation will be disqualified.

Next Meeting:
Date and Time: July 2014
Location: Kaiser Airport Way Lab

PORTLAND COMMUNITY COLLEGE
MLT Program Advisory Committee
April 25, 2014
PCC, Cascade Campus, SSB 320

Present (X):

	Marcia Gauthier, LHS Good Samaritan	X	Barbara Wyman, Providence
	John Hill, LHS Emanuel		Dawn Grose, PMC St. Vincent's
	Lorell Ortega, LHS Meridian Park	X	Tom Philbrick, Kaiser Permanente
	Liz Gray, LHS Mt Hood		Carol Vogt, Kaiser Permanente
	Sharon Decicco, LHS		Karen Love, Adventist Medical Center
	Bill Reed, LHS Microbiology Subcommittee Chair		MaryAnne Vivier, Adventist Medical Center
	Nichy Lee, LHS Salmon Creek	X	Jacque Jones, Mercy Medical Center
X	Steve Osgood, OHSU, Committee Chair		John Saito, PCC
	Catherine Brooks, OHSU	X	Sarah Tillery, PCC
	Laura Lee Feiner, Peace Health Labs	X	Erin Krauter, PCC
	Denise Jones, SWMC	X	Ana Sacramento, PCC
X	Karl Kamper, WVMC	X	Jeff Josifek, PCC
	Shanna Middaugh, WVMC	X	Amanda Gallo, PCC
	Jamie Williams, Sutter Coast Hospital		
	Cathy Dewey, Asante		
	Karen Oxley, Providence		

CALL TO ORDER: The meeting was called to order at 1000 AM.

October minutes were approved.

REPORTS:

PCC Cascade Update (Sarah): Cascade Campus just hired a new President, Dr. Karen Edwards, she is coming from a Community College system in Connecticut and she will start sometime in July.

Construction is continuing on Campus with a few buildings becoming operational this year.

The State funding for Community Colleges is pretty low and all PCC enrollment has dropped. Most community colleges across the state are hurting a little bit. Lane CC just announced they are in a 12 million dollar deficit for next year's budget and will have to make serious cuts to accommodate the deficit. Last year Lynn-Benton CC laid off 38 full time faculty and staff members due to the budget situation. PCC is a larger College, therefore weathered the budget cuts and enrollment a little better but it is starting to be felt at PCC too. Enrollment has been dropping consistently since 2012, as a Campus we are down 5% from last year. In light of this situation, PCC is strategically trying to figure out how to use the money so that the programs in place can be funded without having to get to the situation that is occurring in other colleges.

MLT Program Update (Ana): The MLT Program received NAACLS Accreditation for a period of 5 years. There were 2 marginal citations about which the Program has to submit a progress report in April 2015.

NAACLS new Standards now have 3 benchmarks to assess Program effectiveness:

- Pass rate on certification exam (Minimum required is 75%; the pass rate for PCC MLT graduates has been 100% for the last 10 years)
- Graduation rate for students who start 2nd year (Min. required is 70%; the graduation rate for the Program has exceeded 90% for the last 2 years)
- Employment rate 1 year post graduation (Min. required 70%; more than 90% of graduates from the Program are employed within six months)

The ASCP board exams scores for the year 2013 was presented. All students that graduated in 2013 have taken the exam except one and all that took the exam have passed (compared to 79% nationally). The mean Program score was 672 and the mean National score was 498. Our minimum score was 449, which is pretty close to the National average score. In the individual lab areas, the program scores are all above the national scores with exception of special chemistries (554 vs. 557) and "other tests" in hematology (476 vs. 504). The advisory committee discussed the results and concluded that overall the program scores are very good. It was suggested to alert students to the areas that in the past have been less successful. It was also suggested by Ana to add some endocrinology to the Seminar course.

Current enrollment:

1st yr. students: 23 (Campus); 16 (DL)
these students will start clinical rotations this coming summer (2014)
2nd yr. students: 18 (Campus); 6 (DL)
these students will graduate this coming summer

(Erin) Currently there are 16 students in DL, 6 from the Eugene area, 2 in Roseburg, 2 in Corvallis/Albany, 1 in Southern Oregon, 1 in Brookings, 1 in Salem, 2 in Central Oregon and 1 in La Grande. So far there are 12 confirmed sites so most of the students have a site close to their area of residence. Students that are not geographically bound may be able to re-locate to wherever the clinical sites are available. As for Campus, we currently have 23 students and Erin will soon start to contact sites to confirm that we can accommodate 20 students in second year.

DISCUSSION TOPIC:

Program Re-structure (Ana): Most of the Portland area clinical sites have been recently visited by Ana and Erin to gather feedback on the proposed program re-structure. Feedback received was very positive from all clinical sites.

The newly re-structured program will have the following modifications:

- Same curriculum content but organized differently
- Start in the fall and graduating in the spring (7 terms)
- Chemistries and A& P courses required as pre-requisites, as opposed to imbedded in the program
- An introductory MLT course will be offered every term as open enrollment to give students the opportunity to explore clinical sciences (this course will be required as a pre-requisite)
- Clinical rotations will take place after completion of didactics, at the end of the program, January to June (same number of days as currently)
- Student lab will only run 2 terms a year, summer and fall
- Admission will be based on a point system

The committee discussed the relevance of maintaining the student lab component to help students transition from the academic world to the clinical environment. Ana stated that she met with Dr. Millan (Legacy Clinical Diagnostics VP and MLT Medical Director) and Don Toussaint (Legacy Laboratory Services VP) to discuss the new program. Legacy will continue to support the program by providing the space for Student Lab and access to lab samples for educational purposes.

The proposed Program is in the process of being presented to the Dean and once accepted it will be submitted to Curriculum Office. Expected to start in Fall 2015 with the first graduates in Spring 2017.

The advantages and disadvantages of having an MLT Introductory course as open enrollment were discussed. It was suggested that maybe students that already have a BS or have experience in the lab could have the course waived.

MANAGER'S REPORTS

Mercy Medical Center (Jacque) – A position as Lab Director will be opening soon.

Providence (Barbara) – Providence is going through a lot re-structuring, moving towards regionalization and standardization across the state. There are now fewer laboratory managers (3 instead of 8). The students rotate throughout several facilities which may feel overwhelming at first but it ends up being a very positive experience. Providence hired several graduates last year and they are all doing really well.

WVMC (Karl) – Going through re-structuring. Bringing in new methodology takes longer now (6 to 8 months) with all the set-up, prep work, validation, competencies, etc. It has been very useful to have PCC students; it is a good partnership because there is a need for MLTs. It is a challenge to retain them because they come in as PRN on-call status, and sometimes they leave for other institutions. There is an opening right now.

OHSU (Steve) – OHSU lab is stable after relocation; trying to do more with the existent resources. Molecular continues to see growth.

Kaiser (Tom) – Molecular is an area of growth and frustration because the technology is moving so fast that as soon as one test is validated there is an updated version in the market. Molecular is primarily in infectious disease but also starting to branch into genetics; talking about bringing in the next Gen sequencer in the next year. One of the difficulties with molecular techniques is that sometimes there is no adequate technical support from the manufacturers' side. After opening of the new hospital there were several staff changes but the situation is now stable. The new hospital lab is more spacious so a rotation in blood bank might be a possibility.

Meeting was adjourned at 11:30.

NEXT MEETING: July, date TBA

Distribution:

MLT Program Advisory Committee
MLT Program Staff
Kurt Simonds, Dean of Instruction, PCC
Dr. Juan Millan, MLT Program Medical Director, Legacy Health System

Minutes submitted by: Ana Sacramento/Erin Krauter

Next Meeting:
Date and Time: 2015
Location: Portland Medical Center

PORTLAND COMMUNITY COLLEGE
MLT Program Advisory Committee
October 17th, 2014
Legacy Emanuel Hospital, MOB2 West

Present (X):

	Marcia Gauthier, Legacy Good Samaritan		Karen Oxley, Providence Milwaukie Hospital
	Lorell Ortega, Legacy Meridian Park	X	Barbara Wyman, Providence
	Liz Gray, Legacy Mt Hood		Dawn Grose, Providence St. Vincent's
X	Sharon Decicco, Legacy Central Lab	X	Julie Landolf, Providence St. Vincent's
	Bill Reed, Legacy Emanuel Hospital	X	Tom Philbrick, Kaiser Permanente
	Nichy Lee, LHS Salmon Creek		Carol Vogt, Kaiser Permanente
X	Sandhya Chand, Legacy Emanuel Hospital		Karen Love, Adventist Medical Center
X	Thomas Whitcomb, Legacy Salmon Creek		MaryAnne Vivier, Adventist Medical Center
X	Steve Osgood, OHSU, Committee Chair	X	Ryan Howey, Adventist Medical Center
	Catherine Brooks, OHSU	X	Jacque Jones, Mercy Medical Center
	Laura Lee Feiner, Peace Health Labs	X	John Saito, PCC
X	Denise Jones, Peace Health Labs Vancouver	X	Sue Leung, PCC
X	Karl Kamper, WVMC	X	Erin Krauter, PCC
	Shanna Middaugh, WVMC	X	Ana Sacramento, PCC
	Jamie Williams, Sutter Coast Hospital		Jeff Josifek, PCC
	Cathy Dewey, Asante		

CALL TO ORDER: The meeting was called to order at 1000 AM.

April minutes were approved.

REPORTS:

PCC Cascade Update (John - PCC): Sue Leung has taken the role of Interim Director for Allied Health while Sarah Tillery has step up to become Interim Dean of Social Sciences; Sue has been in her role for about one month. An update on Bond construction was presented: a new multipurpose building (Cascade Hall) including classrooms and a child care center has already opened; an underground 200 spaces parking garage has also been opened and, a new building, which will house the students' union, will open in Jan. 2015.

Funding from the Legislature continues to be an issue; it is predicted that the number is not going to be significantly higher than in the last biennial. PCC continues to face financial challenges but not as much as other colleges where student debt is jeopardizing future student financial aid. PCC is concerned for the students as well as for the institution itself. The PCC rate of student loan default is about 19% and it is not anticipate to be above 22-23% which, comparatively to other colleges, puts PCC in fairly good shape.

MLT Program Update (Ana - PCC): Twenty three students graduated in Sept. 2014 (one expected to graduate at the end of Fall 2014). Twenty have already applied for ASCP board exam and of these, one (a DL student) has taken the exam and passed with a high score of 779.

Current enrollment (2nd yr. students only): 19 (Campus); 10 (DL)(2 Bend, 1 La Grande, 1 Brookings, 1 Salem, 1 Eugene, 1 Corvallis, 2 Roseburg and 1 in Medford). These 29 students will be doing their clinicals in 2015 (some have already started) and are expected to graduate in Sept. 2015. There are no first year students this year because the program was halted while we proceed with the Program re-structuring.

The MLT Department has experienced a good amount of changes with the Program re-structuring and management changes; nonetheless there has been a good effort in keeping everyone informed and in compliance with deadlines. The re-structuring proposal has been submitted to Curriculum Office from whom it is expected to have approval in mid-November.

DISCUSSION TOPICS:

Program Re-structure (Ana - PCC): Assuming the Re-structuring is approved, admissions will start in the Spring 2015 and the newly revised program will be initiated in the Fall 2015. Clinicals will take place Winter to Spring 2017 with graduation at the end of Spring 2017. This means that there will be no MLT students in clinicals for an entire year (Fall 2015 - Fall 2016), the exception being Student Lab at Legacy Emanuel Hospital, which will operate Summer and Fall 2016.

John (PCC) explained that halting the program for one year was necessary in order to give faculty time to work on the program re-structure, but there could be a vacuum in the clinical sites for a year which can give the perception that the sites are no longer necessary. John (PCC) made a plea to the advisory committee to keep their clinical sites available for the PCC students that will come back in 2017.

Steve (OHSU) asked how PCC could re-assure affiliates/employers that students in the new program will still have an adequate level of preparedness and competency. John (PCC) stated that he expects no change in student quality. Ana (PCC) added that she is confident the students will have the same or higher quality given the changes to be implemented. The curriculum content is for the most part the same but organized differently: it will consist of (7 terms), starting in the fall and graduating in the spring; Chemistries and A& P courses will be required as pre-requisites, as opposed to imbedded in the program; an introductory MLT course will be offered every term as open enrollment to give students the opportunity to explore clinical sciences - this course will be required as a pre-requisite and will give staff the opportunity to evaluate students' lab and communications skills; clinical rotations will take place after completion of didactics, at the end of the program, January to June (same number of days as currently); Student lab will only run 2 terms a year, summer and fall; admission will be done on a point system based on prerequisite grades, experience in lab/health and professional recommendations. Currently, ASCP exam scores and Clinical evaluations are used as tools to evaluate the Program success. The same will be done in the future to assess the impact of the re-structure in the Program Outcomes. The Department is confident that the re-structure will bring about positive benefits but only time will tell.

Ana (PCC) stated that only the Campus Program will re-start next Fall, the DL option will be on halt until further notice. A survey was sent in July to 18 DL clinical sites to gather information on their opinion about the MLT Program, DL students and future needs. The survey was completed by all 18 participants. A rough summary of the results was distributed to the committee and briefly analyzed. From the results (see attached), it seems apparent that the Program is well received, the students have satisfactory lab skills and, that the demand for MLTs continues to be felt. Given the budget constraints that PCC is currently experiencing at the moment it is not possible to re-initiate the DL Program at this time but it is obvious that

there is a need that should be addressed in the future. John (PCC) stated that he is also concerned but that at this point in time the college cannot afford the DL option. The DL program was initiated under a Department of Labor Grant that involved PCC, LCC, RCC and COCC but once the grant was cut off, PCC was the sole bearer of the overall cost which is no longer viable. Until the state raises the per capita expenditure on education, the DL option cannot be afforded by PCC. Jacque (Mercy) added that she has hired 2 MLT students and they are fantastic. Ryan (Adventist) said they are also very satisfied with the DL MLT graduate they hired; another employee was interested in completing the program and was very disappointed that admission is no longer open to DL. John (PCC) reiterate that he is also concerned and that the issue should be revisited in the future; possible with other options on the plate, such as didactics on distance and clinicals at regional sites but charging the costs to the students to be revenue neutral. Ryan (Adventist) suggested that maybe rural hospitals may be interested in supporting students under that model.

Ana (PCC) stated that the MLT Department is going through internal Program Review this year and that might be useful to have a similar survey conducted for the Campus clinical sites. Steve (OHSU) suggested including not only the people in the committee but other labs as well; labs that do not necessarily train MLTs but that hire them. Sharon (Legacy) suggested Portland Clinic, Oregon Medical Group and small hospitals in the gorge.

Instruments Ana (PCC): announced that Sysmex donated a brand new hematology instrument to the Department for education purposes, a XS1000iC with reagents and maintenance at least for 1 year. In addition, faculty and students will have access to a training web site that includes continuing education activities that can be used for certification maintenance. Ana asked the committee members to keep MLT in mind when getting rid of old bench top instruments and to advocate for more donations from vendors. It would be nice to have small instruments for chemistry, coagulation and urinalysis.

Essential Functions (Steve - OHSU): Ability to distinguish colors and hearing abilities were discussed. Sharon (Legacy) suggested looking into CLIA regulations to compare with the current Essential Functions posted by PCC. Employers have to screen prospective employees for color ability and in certain cases, accommodations have to be provided. Barbara (Providence) suggested that if there are MLT students that have some color deficiencies it should be disclosed to the clinical affiliates. Ana (PCC) stated that in the past, and in the current cohort, there have been several students with some degree of color blindness but that they all had been examined by a physician who stated that they were able to perform the essential functions without restrictions.

Clinicals (Erin – PCC): clinical schedules have been finalized and there are sites for all the current students both campus and DL.

Health Requirements (Erin - PCC): explained that the department is experiencing some difficulties interpreting the current state health student passport. TB screening tests were discussed. The committee indicated preference for the Quantiferon test. Regarding the recommended flu shot, the committee suggested that each site should offer flu shots to the students.

MANAGER'S REPORTS

Willamette Valley Medical Center (Karl) - Getting ready for respiratory season, bringing *Pertussis* as a PCR test (Illumigene by Meridian) which will also be used to transition Group B and *C. Diff*. to molecular. Several activities have been dedicated to preparedness for Ebola. Conducting self-inspection in preparation for next year's inspection.

Kaiser (Tom) – Kaiser is also working on Ebola preparedness. Keeping instrumentation up to date; lines being replaced. Some staffing difficulties and fewer students to fill those needs. Normal day- to-day operations.

Providence (Barbara) – Providence has also been busy preparing for an Ebola event; looking into safe transportation of Ebola patients. Continuing to work towards standardization, all labs now have the same CBC analyzers – Coulter; for flu season, looking at bringing Cephia onboard and also doing a BioFire respiratory study this coming season.

Legacy (Sharon) – building a new laboratory facility adjacent to the existing Central Lab building, expected to be completed in summer 2015. This winter there will be ISO certification through CAP. All instruments are standardized throughout Legacy systems; just maintaining and upgrading the existing instruments.

OHSU (Steve) – Expanding molecular capabilities: bringing the BioFire respiratory pathogenic panel (bought by bioMérieux) to the other 2 platforms already in place (Cephia and berA gene); looking at partnerships in the industry and some consolidation. Most instrumentation is new so just optimizing and standardizing.
Adventist (Ryan) – Upgrading instruments; looking possibly upgrading automated chemistry; bringing molecular onboard; regionalizing, upgrading molecular in micro and virology to support Tillamook facility; staffing is a major issue in all facility labs.

Providence (Julie) – Bloodbank regionalization: Providence labs (Seaside, Hood River, Newberg) are all onboard sharing the same computer system.

Legacy Emanuel Hospital (Sandhya) – Legacy Emanuel Hospital lab has recently been hired a new Bloodbank manager and is in the process of hiring a new Lab Manager.

Meeting was adjourned at 11:30.

NEXT MEETING: 2015, date TBA; Providence Portland Medical Center

Distribution:

MLT Program Advisory Committee
MLT Program Staff
Kurt Simonds, Dean of Instruction, PCC
Dr. Juan Millan, MLT Program Medical Director, Legacy Health System

Minutes submitted by: Ana Sacramento/Erin Krauter

DL Survey

Date: July 2014
Target: 18 Clinical sites
Response: 18 (100%)
(Results in %, may not add to 100% due to rounding)

How would you describe your experience with past PCC MLT students?

I enjoyed training students, the experience was pleasant and/or rewarding	82
I was very busy but training students is part of my job as a lab tech	6
I don't like teaching students, I find it difficult and/or frustrating	0
Other	12

How would you rate past PCC MLT students' abilities?

	Excellent	Very Good	Fair	Poor	Very poor
Know ledge and know ledge application	29	47	24	0	0
Laboratory skills	29	47	24	0	0
Professionalism	65	23	12	0	0

Evaluate the following statements.

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion
PCC MLT Distance Learning Program is well structured and produces graduates of high quality	20	67	7	0	7
I have hired PCC MLTs in the past and I am satisfied with their education and skills	21	21	7	0	50
I would like to be able to continue hosting/training PCC MLT students in the future	40	40	13	0	7

Please rate the following statements in what concerns your institution:

	Strongly agree	Agree	Disagree	Strongly disagree	No opinion
We will need to hire MLT/MTs in the next 5 years	60	20	0	0	20
We predict expansion of our laboratory services in the next 5 years	40	40	7	0	13
It is easy to find qualified applicants from outside PCC program to fill MLT positions	0	13	27	27	33

How useful is PCC MLT Distance Learning Program for your institution?

Very useful	36
Somewhat useful	50
NOT very useful	14
Other	0

PCC MLT Distance Learning Program is going to be halted starting September 2015. Which best describes your thoughts regarding this?

I am very concerned, it will negatively impact our ability to find MLTs	53
I am somewhat concerned but we should be able to hire MLTs from other programs	33
I am not concerned at all, there are plenty of available qualified MLT's in the market	0
Other	20

Return to document Section 4 **- or -** Return to document Section 7

POST GRADUATION SURVEYS
2010-2013

SOURCE	NUMBER				PERCENTAGE				AVERAGE 2010-2013
Employer Survey	2013	2012	2011	2010	2013	2012	2011	2010	**2010 - 2013**
Number of Respondents	16	1	3	6					
Number who hired graduates	12	1	3	6					
- graduate performs at higher level than expected	6	0	2	4	50%	0%	67%	67%	**46%**
- graduates performs at expected level	5	1	1	2	42%	100%	33%	33%	**52%**
- graduate performs below expected level	1	0	0	0	8%	0%	0%	0%	**2%**
Graduate Survey									
Number of Respondents	15	17	18	18					
- Engaged in Higher Education	0	2	3	2	0%	12%	17%	11%	**10%**
- Planning to engage in Higher Ed next 6 months	3	5	4	6	20%	29%	22%	33%	**26%**
- Holds a BS	8	5	5	6	53%	29%	28%	33%	**36%**
- Working	12	15	16	18	80%	88%	89%	100%	**89%**
Graduate Survey									
Graduates who have taken the ASCP Certification Exam	12	16	16	17	80%	94%	89%	94%	**89%**
Level of preparation for the ASCP Certification Exam									
- Received excellent preparation	7	7	6	12	58%	44%	38%	71%	**53%**
- Received good preparation	5	7	8	4	42%	44%	50%	24%	**40%**
- Received average preparation	0	2	2	1	0%	13%	13%	6%	**8%**

Medical Laboratory Technician Program
Cascade Campus and DL Program
Questionnaire Response - 2010

This was the third year that Survey Monkey was used to collect and organize the questionnaire. The graduating class of 2010 totaled 25 students, 20 campus and 5 DL students. The MLT program had contact information for 24 of them. The graduates were sent an explanation email with a link to the survey site. The graduates completed the program in August 2010 and the survey was conducted in May 2011. The lag was to give enough time for the graduates to utilize the skills acquired and be able to make an informed assessment. The number of responses was improved over last year due to a specific effort of the staff to maintain non-PCC electronic contact information. Of the 25 graduates, the department had the contact information for 24. Eighteen (18) graduates responded to the survey for an approximate 75% rate. Again, this year a second email was sent as a reminder and it was noted that the majority of the responses were received after this was done.

The manner of contacting the potential employers was modified this year. In an effort to target only those employers who hired a 2010 graduate, a question was included in the graduate's survey asking for the contact information of that graduates supervisor. It was assumed that if the graduate offered the email address and knowing the supervisor would be sent a questionnaire, that this constituted agreement on the part of the Graduate. Of the 18 graduate responses, five (5) gave the contact information for their supervisor.

An additional explanation email and the link to a different survey was sent to the five (5) employers. Collection was also done using Survey Monkey. The identity of the hired graduate was not disclosed. Four employer responses were submitted. In addition, an email was received from one supervisor explaining that his facility had hired three (3) of the 2010 graduates, but that Survey Monkey would not allow him to do more than one survey. I have incorporated that information in the summary for a total of 6 employers contacted. This number is in line with the percentage of employer questionnaires seen in the old mail in method.

As intended, the identity of the graduate could not be discerned from the questionnaire. All 18 graduates were working at the time of the questionnaire and had been employed from 5 to 9 months. Most graduates (14) have been working in laboratories in the Greater Portland area, one in Washington State and three in states other than Oregon or Washington. Fourteen (14) were working in a hospital setting, one (1) in a multiple physicians clinic laboratory, one (1) in a reference lab, one (1) in a research lab and one (1) in an industrial lab. Eleven (11) are working on the bench only, six (6) have bench as well as phlebotomy/specimen processing duties and one (1) graduate listed his/her duties as bench and specimen processing duties without phlebotomy. When asked about their work week, fourteen (14) claimed to be working full time, one (1) was working part time by choice, one (1) was working part time not by choice and two (2) were on call. The "on call" workers claim to be working approximately 35 to 40 hours a week.

The question pertaining to continued education was again included in the survey this year. At the time of the survey, two (2) graduates were enrolled in a university; six (6) said they planned to enroll within the following six months; three (3) did not intend to continue formal education and six 6) reported that the question did not apply as they already had a bachelors degree. One respondent skipped this question

Seventeen (17) of the eighteen graduates have taken the board exam. It is unclear why the one graduate skipped the reminder of the survey. The 17 graduates rated the board exam preparation they received at PCC as excellent (12), good (4) and average (1). When asked if there were any questions on the board exams not covered in the MLT program, five (5) reported that all questions encountered had been covered. Twelve (12) reported that there were questions on the board exam which were not covered. Six (6) could not remember to what the questions pertained. The other six (6) mentioned mycology media, viruses, serology, homocysteine, fluorescence of bacteria, and blood bank, without being any more specific.

This year, the survey suggestions for program improvement were divided between didactic instruction and hospital instruction. Suggestions for didactic improvement received from two (2) graduates included; “molecular” and “chemistry”. At least two (2) graduates suggested the need for less didactic emphasis on antiquated methodologies. When asked what could be done to improve the hospital instruction, Three (3) graduates felt a need for a longer microbiology rotation and two thought that a specimen processing component would be helpful. Two (2) graduates felt a need for less hospital time in phlebotomy and chemistry.

Six (6) Employer Questionnaire were received. All were supervisors in the greater Portland area. Five are in a hospital setting and one is in a reference laboratory. Approximately 50% of the employers claimed the graduates to be especially well trained in Hematology and Chemistry and Urinalysis. For the remaining clinical areas, at least one (1) employer said their graduate was well prepared. One (1) employer reported the hired MLT was not adequately trained in Blood Bank, Coagulation, Microbiology, Phlebotomy, and Specimen Processing. The remaining employers felt there was no area of deficiency. Two (2) employers reported the graduate was able to perform at a level consistent to that expected at career entry. Two (2) employers claimed their graduate to be trained at a level greater than expected. The supervisor who hired multiple 2010 graduates said “all three have been outstanding”.

One employer suggested the need for “better customer service skills and exposure to phlebotomy and specimen processing”.

Submitted by,

Shauna Pratt

Medical Laboratory Technician Program
Cascade Campus and DL Program
Questionnaire Response - 2011

Survey Monkey was used to collect and organize the questionnaire again this year. 25 graduate questionnaires were sent out using the student contact information on file. As in past years, the graduates were sent an explanation email with a link to the survey site. The graduates completed the program in August 2011 and the survey was conducted in May 2012. The lag was to give enough time for the graduates to utilize the skills acquired and be able to make an informed assessment. Of the 25 graduates contacted, eighteen (18) graduates responded to the survey for an approximate 75% rate. Again, this year a second email was sent as a reminder and it was noted that the majority of the responses (13) were received from the initial email and the remaining 5 after the reminder was sent.

The manner of contacting the potential employers was the same as last year. A question was included in the graduate's survey asking for the contact information for that graduates supervisor. It was assumed that if the graduate offered the email address and knowing the supervisor would be sent a questionnaire, that this constituted agreement on the part of the graduate. Of the 18 graduate responses, five (5) gave the contact information for their supervisor.

An additional explanation email and the link to a different survey was sent to the five (5) employers. Collection was also done using Survey Monkey. The identity of the hired graduate was not disclosed. Three employer responses were submitted. This number is in line with the percentage of employer questionnaires seen in the old mail in method.

As intended, the identity of the graduate could not be discerned from the questionnaire. Of the 18 graduates, 16 (89%) were working at the time of the questionnaire while 2 were not working. Those who were employed have been working from 1 to 9 months. Of the 16 employed graduates, fifteen (15) stated that they felt adequately prepared to enter the work force while one (1) did not feel adequately prepared. Ten (10) have been working in laboratories in the Greater Portland area, 4 in Oregon locations outside of the Greater Portland metroplex and 2 in Washington State. Nine (9) were working in a hospital setting, six (6) in a physicians clinic laboratory, one (1) in a reference lab. This is an increase in the number of MLT's hired by physician laboratories
compared to hospitals when compared to previous years. Five graduates (5) are working on the bench only, nine (9) have bench as well as phlebotomy/specimen processing duties and two (2) graduates listed his/her duties as bench and specimen processing duties without phlebotomy. When asked about their workweek, twelve (12) are working full time and four (4) are working part time not by choice.

The question pertaining to continued education was again included in the survey. At the time of the survey, three (3) of the 18 graduates were enrolled in a university. It was noted that one of the unemployed graduates is currently enrolled. Four graduates (4) said they planned to enroll within the following six months; six (6) did not intend to continue formal education and five (5) reported that the question did not apply as they already had a bachelor's degree.

Sixteen (16) of the eighteen graduates have taken the board exam, while two (2) had not. The 16 graduates rated the board exam preparation they received at PCC as excellent (6), good (8) and average (2). When asked if there were any questions on the board exams not covered in the MLT program, seven (7) reported that all questions encountered had been covered. Nine (9) reported that there were questions on the board exam which were not covered. Five (5) could not remember to what the questions pertained. The other four (4) mentioned microbiology, antibiotics, blood bank and "almost everything" without being any more specific.

The survey suggestions for program improvement were divided between didactic instruction and hospital instruction. Suggestions for didactic improvement were varied. Some responses were very specific and so a list is being submitted:

1. Distinguishing features of malignant cells in body fluids (e.g. sarcoma, adenoma)
2. Blood Bank, Gram Stain Reading/Reporting
3. More case studies applying the pathology of the test results to the cause. Somehow a different approach to micro that emphasizes source/organism/outcome and more information about automated micro analysis
4. Automative CBC, trouble shooting, problem solving, blood bank typing discrepancy
5. Microscopic
6. Chemistry correlation
7. Manual differentials with supervision so questions can asked in the moment not after the differential is done
8. Remedial lab math and Nocardia
9. Body Fluids, Quality Control,
10. Electrolytes

At least two (2) graduates suggested the need for less didactic emphasis on outdated methodologies. In addition, it was suggested that summer classes be eliminated. When asked what could be done to improve the hospital instruction, Three (3) graduates felt a need for a longer microbiology and blood bank rotations and two thought that more hematology would be helpful. Three (3) graduates each felt a need for less hospital time in either hematology, urinalysis or coagulation.

Three (3) Employer Questionnaire were received. Two were supervisors in the greater Portland area and one was in a location in Oregon outside of the greater Portland metroplex. All are in a hospital laboratory setting. Approximately 66% of the employers claimed the graduates to be especially well trained in Hematology and Coagulation and Chemistry. For the remaining clinical areas, at least one (1) employer said their graduate was well prepared. One (1) employer reported the hired MLT was not adequately trained in each Blood Bank, Hematology stating that "Cell identification in Hematology a little weak"; Phlebotomy, and Specimen Processing. One employer felt there was no area of deficiency. One (1) employer reported the graduate was able to perform at a level consistent to that expected at career entry. Two (2) employers claimed their graduate to be trained at a level greater than expected.

When asked for suggestions for program improvement, one employer wrote "Too many students are accepted into the program. It is too difficult to fulfill meaningful training rotations when students are doubled up at sites. Better scrutinizing of applicants, especially in meeting the academic and professional standards required." Another wrote "Excellent graduates. No concerns".

Submitted by,
Shauna Pratt

Medical Laboratory Technician Program
Cascade Campus and DL Program
Questionnaire Response - 2012

As in the past few years, Survey Monkey was again used to collect and organize the questionnaire. The release of information form was used to glean the most recent contact information. Due to the age of the release of information form, each graduate was telephoned using the last known number on the form, prior to sending the survey. The purpose was to confirm the email address to be used. 20 of the 26 graduates were contacted and relayed a viable email address. Of the 20 graduates, it was discovered that nine (9) email addresses on the release of information form were still viable while eleven (11) had changed. The remaining 6 graduates were sent the questionnaire using the last known, unconfirmed email address.

As in past years, the graduates were sent an explanation email with a link to the survey site. The graduates completed the program in August 2012 and the survey was conducted in May 2013. The lag was to give enough time for the graduates to utilize the skills acquired and be able to make an informed assessment. Of the 26 graduates contacted, eighteen (17) graduates responded to the survey for an approximate 65% rate. Because the graduates had been contacted prior to sending the initial survey, they were not sent a follow-up email this year.

Once again, a question was included in the graduate's survey asking for the contact information for that graduates supervisor. It was assumed that if the graduate offered the email address and knowing the supervisor would be sent a questionnaire, that this constituted agreement on the part of the graduate. Of the 17 graduate responses, five (5) gave the contact information for their supervisor.

An additional explanation email and the link to a different survey was sent to the five (5) employers. Collection was also done using Survey Monkey. The identity of the hired graduate was not disclosed. Only one (1) employer response was submitted.

As intended, the identity of the graduate could not be discerned from the questionnaire. Of the 17 graduates, 15 (88%) were working at the time of the questionnaire, one (1) was working in a job other than laboratory work and one (1) was not working. Those who were employed have been working from 1 week to 5.5 years. It is assumed that the employees who had been working longer than 2 years were incumbent workers. The shortest time working and the longest time working were removed from calculation and the remaining were averaged. This averaged time came to 5.5 months. All fifteen (15) employed graduates stated that they felt adequately prepared to enter the work force. Nine (9) have been working in laboratories in the Greater Portland area, three (3) in Oregon locations outside of the Greater Portland metroplex; one (1) in Washington State; one (1) in New York City and one (1) skipped the question. Ten (10) are working in a hospital setting,

three (3) in a reference lab, one (1) in a veterinary lab and one (1) skipped the question. Four (4) graduates are working on the bench only, four (4) have bench as well as phlebotomy/specimen processing duties and six (6) graduates listed his/her duties as bench and specimen processing duties without phlebotomy. This appears to be a shift away from phlebotomy duties when compared to previous years. When asked about their workweek, twelve (12) are working full time and two (2) are working on call. One (1) working graduate did not answer the question.

The question pertaining to continued education was again included in the survey. At the time of the survey, two (2) of the 17 graduates were enrolled in a university. Five graduates (5) said they planned to enroll within the following six months; five (5) did not intend to continue formal education and five (5) reported that the question did not apply as they already had a bachelor's degree.

Sixteen (16) of the seventeen graduates have taken the board exam, while one (1) had not. The 16 graduates rated the board exam preparation they received at PCC as excellent (7), good (7) and average (2). When asked if there were any questions on the board exams not covered in the MLT program, eight (8) reported that all questions encountered had been covered. Nine (9) reported that there were questions on the board exam which were not covered. Four (4) could not remember to what the questions pertained. The other five (5) mentioned blood bank (2); microbiology (2), one specifying the use of controls in microbiology; parasites (1) and the general comment of "disease".

Suggestions for program improvement were divided between didactic instruction and hospital instruction. Suggestions for didactic improvement were varied. Three (3) noted a need for more Blood banking. Two (2) thought there was more need for body fluids differentials. Two (2) other graduates believed that microbiology should be increased. There were other suggestions sited by one student each to include: therapeutic drug names, the addition of a double headed microscope for teaching cell identification, and more correlation between laboratory results and the corresponding pathologies in both chemistry and hematology.

At least two (2) graduates suggested the need for less didactic emphasis on parasitology and mycology. Also sited by one student (1) were less need for discussion on rare disorders, disease symptoms and outdated chemistry tests.

When asked what could be done to improve the hospital instruction, three (3) graduates felt a need for a longer blood bank rotation. Two students (2) thought that more should be included in chemistry instrumentation, QC and troubleshooting. One student (1) would have benefited from more specimen processing and advanced phlebotomy techniques. Two graduates (2) thought that student lab be revised or eliminated.

One (1) Employer Questionnaire was received. This employer is located in the greater Portland area. He/she reported that the hired graduate was well prepared in the areas in which the graduate worked. These were all areas, except blood banking. The employer stated that the hired graduate performed at a level expected at career entry and made no suggestions for program improvement.

Submitted by,
Shauna Pratt

Medical Laboratory Technician Program
Cascade Campus and DL Program
Questionnaire Response - 2013

Survey Monkey was again used to collect responses. As in past years, the graduates were sent an explanation letter via email with a link to the survey site. There was an initial mailing with a follow-up reminder approximately two weeks later. The graduates completed the program in August 2013 and the survey was conducted in May 2014. This is done each year to give enough time for the graduates to utilize the skills acquired and be able to make an informed assessment. Of the 24 graduates, 20 were campus based and 4 were in the distance-learning program. The survey was not able to discern between the two. Fifteen graduates returned the questionnaire for a 62% return rate. This is a slightly lower percentage of return than in previous years

Once again, a question was included in the graduate's survey asking for the contact information for that graduates supervisor. It was assumed that if the graduate offered the email address and knowing the supervisor would be sent a questionnaire, that this constituted agreement on the part of the graduate. Of the 14 responding graduates, three gave the contact information for their supervisor.

This year, an Employer Survey was sent to the supervisors within the program affiliate cohort asking for feed back on any part of the questionnaire they could answer. This was also collected using Survey Monkey. The contact information from the three responding graduates was cross-referenced to be sure a survey would be sent. It was discovered that all three supervisor emails had already been sent.

As intended, the identity of the graduate could not be discerned from the graduate questionnaire. Of the fifteen respondents, 12 indicated they were working in a laboratory setting, 1 was working outside of a laboratory and two were not working. One graduate claimed to be working but declined to answer any other questions on the survey. Those who were employed have been working from 1 month to 8 months. Of the eleven employed graduates who responded to the remainder of the questionnaire, 10 stated that they felt adequately prepared to enter the work force and one claimed the preparation was not adequate. Six (6) have been working in laboratories in the Greater Portland area, three (3) in Oregon locations outside of the Greater Portland metropolis; one (1) in Washington State; one (1) in Idaho. Eight (8) are working in a hospital setting, two (2) in a physicians laboratory and one (1) in a reference lab. All eleven (11) graduates are working on the bench, with 75% also working in specimen processing and/or phlebotomy. When asked about their workweek, seven (7) are working full time, three (3) are working on call and one (1) graduate is working part time not by choice.

The question pertaining to continued formal education was again included in the survey. At the time of the survey, three graduates (3) said they planned to enroll in a university within the following six months; three (3) did not intend to continue

formal education and eight (8) reported that the question did not apply as they already had a bachelor's degree. It is unknown if those who already have a bachelor's degree plan to obtain CLS certification through work experience.

All fourteen responding graduates have taken the board exam. The 14 graduates rated the board exam preparation they received at PCC as excellent (7), good (5) and average (2). When asked if there were any questions on the board exams not covered in the MLT program, ten (10) reported that all questions encountered had been covered. Four (4) reported that there were questions pertaining to microbiology on the board exam which were not covered. One specified that the questions pertained to biochemical reactions.

Suggestions for program improvement were divided between didactic instruction and hospital instruction. Suggestions for didactic improvement were varied. Three (3) noted a need for more Blood banking. Two (2) thought there was more need for quality control. Other suggestions sited by one student each to include: automation, body fluids and more abnormal hematology manual differentials. Suggestions for less didactic emphasis included chemistry test principles, electrolytes, toxicology and manual cell counts.

When asked what could be done to improve the hospital instruction, two (2) graduates felt a need for an increase in blood bank rotation time. Another two (2) thought that the microbiology rotation should be longer. One graduate each thought the chemistry and hematology rotations could be reduced.

A total of sixteen (16) Employer Questionnaire was received, with twelve (12) indicating having recently hired a program graduate. This is a vast improvement in return rate compared to previous years. Six (6) of the twelve said their graduate performed at a level greater than that expected at career entry, five (5) said the graduate was at a level consistent to that expected and one (1) claimed the recent hire was performing below that expected. All of the hired graduates were working in multiple areas in the laboratory as a generalist. Six (6) of the employers felt their graduate was especially well prepared in all areas, five (5) felt the graduate could have been better prepared in one or more areas. The most consistent of these was blood banking (4), with phlebotomy and specimen processing sited by two (2) employers.

A few of the employers made suggestions for program improvement. These included a longer rotation in blood banking (2), working with ESL students to improve English communication, more emphasis on professionalism, and customer service skills development. One employer thought there should be more basic microscopy skills such as Gram stain and hematology hands on practice and sensitivity studies to support appropriate use of antibiotics.

Submitted by,
Shauna Pratt

State of Oregon Employment Department **Occupation Profiles**

The **Occupation Profiles** tool is located on **QualityInfo.org**, a website of the **Oregon Employment Department**

Medical and Clinical Laboratory Technicians
Oregon

Description: Perform routine medical laboratory tests for the diagnosis, treatment, and prevention of disease. May work under the supervision of a medical technologist.

Current Job Openings Listed with the Oregon Employment Department

Current job listings for this occupation: 24.

Job Title	Date Posted	Location	Wage Offered
1. Lead Laboratory Assistant	01/09/2015	Portland	DOE
2. Lab Assistant - Specimen Management Job	01/08/2015	Springfield	
3. Lab Assistant - Specimen Processing - Per Diem Job	01/08/2015	Springfield	
4. Lab Assistant Specimen Processing Job	01/08/2015	Bend	
5. Lab Assistant - Testing Services Job	01/08/2015	Springfield	
6. Lab Assistant - Testing Services Job	01/08/2015	Springfield	
7. Lab Assistant - Specimen Management Job	01/08/2015	Springfield	
8. Lab - Lab Specimen Processor	01/08/2015	Bend	
9. MT / MLT / MEDICAL LABORATORY TECHNICIAN / GENERALIST	01/08/2015	Salem	
10. Medical Laboratory Technician I - Temporary Employee	01/08/2015	Portland	
11. PT Blood Processing Technician (20 hrs/wk, Tues-Sat 3am - 7am)	01/02/2015	Portland	DOE
12. Histotchnician 1	12/25/2014	Portland	
13. Phlebotomist/Processor	12/24/2014	Pendleton	
14. Phlebotomist/Processor	12/24/2014	Hermiston	
15. PT Blood Processing Technician	12/23/2014	Portland	DOE
16. Blood Component Processing Tech (Days, Sun- Thurs)	12/23/2014	Portland	DOE
17. Med Tech or MLT	12/16/2014	Portland	
18. Med Tech or MLT	12/16/2014	Portland	
19. Phlebotomist/Processor	12/07/2014	Bend	
20. Med Tech or MLT	12/05/2014	Portland	

Job Openings from Other Websites

The following job openings have been automatically extracted from various sites across the Web. Oregon Employment Department cannot validate these openings nor endorse any of these external sites. Some of these jobs may no longer be open. In some cases, a single opening may be posted on multiple sites.

Total openings from other websites: 33.

Job Title	Date Posted	Location	Employer
1. Lab Assistant / Specimen Processor	01/06/2015	Medford	Rogue Valley Medical Center
2. Lab Assistant / Specimen Processor	01/06/2015	Medford	Asante Rogue Regional Medical Center
3. Lab Assistant - Specimen Management Job	01/02/2015	Springfield	Peace Health
4. Lab Assistant - Testing Services Job	01/02/2015	Springfield	Peace Health
5. Anatomic Pathology Asst - Holladay Park	01/02/2015	Portland	LEGACY HEALTH CARE
6. Lab Assistant Specimen Processing Job	01/02/2015	Bend	Peace Health
7. Lab Assistant - Specimen Management Job	01/02/2015	Springfield	Peace Health
8. Lab Assistant - Testing Services Job	01/02/2015	Springfield	Peace Health
9. Lab Assistant - Specimen Processing - Per Diem Job	01/02/2015	Springfield	Peace Health
10. Lab Assistant - Eugene Laboratory	01/02/2015	Eugene	LEGACY HEALTH CARE
11. Lab - Lab Specimen Processor	12/31/2014	Bend	SCHS
12. MT / MLT / MEDICAL LABORATORY TECHNICIAN / GENERALIST	12/31/2014	(NA)	Aureus Medical Group
13. PATHOLOGIST-LAB	12/29/2014	Hood River	Providence Health & Services
14. MT / MLT / MEDICAL LABORATORY TECHNICIAN / GENERALIST	12/29/2014	Salem	C&A Industries Inc.
15. Medical Laboratory Technician	12/29/2014	Corvallis	Good Samaritan Regional Medical Center
16. Histotchnician 1	12/29/2014	Portland	Providence Health & Services
17. Histotchnician 1	12/23/2014	Portland	Providence Health & Services
18. Travel Medical Laboratory Tech - ALLIED: LABORATORY	12/17/2014	Roseburg	Parallon Workforce Solutions
19. Medical Laboratory Technician	12/08/2014	Corvallis	Good Samaritan Regional Medical Center
20. MT / MLT / MEDICAL LABORATORY TECHNICIAN / GENERALIST	12/02/2014	(NA)	Aureus Medical Group

State of Oregon Licenses and Certifications

This occupation does not require a license or certification in Oregon.

Wage Range, 2014

Region	10th Percentile	25th Percentile	50th Percentile (Median)	75th Percentile	90th Percentile	Average Hourly	Average Annual
Oregon	$16.03	$18.89	$22.59	$28.12	$33.73	$23.51	$48,909
Multnomah / Washington	15.87	19.21	22.72	28.23	33.63	23.54	48,962
Marion / Polk / Yamhill	16.43	19.24	22.07	26.37	29.85	23.07	47,980
Benton / Lincoln / Linn	15.04	16.17	17.90	22.66	31.77	20.14	41,892
Douglas	13.78	17.27	21.86	25.33	31.80	22.13	46,029
Jackson / Josephine	16.71	20.50	27.61	32.55	35.75	26.76	55,662
Crook / Deschutes / Jefferson	16.35	18.06	22.64	26.91	29.53	22.95	47,717

Employment Outlook

Statewide Employment Analysis	Employment in this occupation in 2012 was at about the statewide average for all occupations. The total number of job openings is projected to be somewhat higher than the statewide average number of job openings for all occupations through 2022. This occupation is expected to grow at a somewhat faster rate than the statewide average growth rate for all occupations through 2022. Reasonable employment opportunities exist for trained workers.

Regional Employment Projections

Replacement openings are caused by existing workers permanently leaving their occupation. Many additional job openings occur due to job changes within occupations.

Region	2012 Employ-ment	2022 Employ-ment	Change	Percent Change	Annual Growth Openings	Annual Replace-ment Openings	Total Annual Openings
Oregon	1,098	1,376	278	25.3%	28	29	57
Clatsop / Columbia / Tillamook	3	4	1	33.3%	0	0	0
Multnomah / Washington	657	820	163	24.8%	16	17	33
Marion / Polk / Yamhill	79	99	20	25.3%	2	2	4
Benton / Lincoln / Linn	16	18	2	12.5%	0	0	0
Lane	105	136	31	29.5%	3	3	6
Douglas	9	10	1	11.1%	0	0	0
Coos / Curry	17	19	2	11.8%	0	0	0
Jackson / Josephine	56	70	14	25.0%	1	2	3
Gilliam / Hood River / Sherman / Wheeler / Wasco	1	1	0	0.0%	0	0	0
Crook / Deschutes / Jefferson	21	26	5	23.8%	0	1	1
Klamath / Lake	14	17	3	21.4%	0	0	0
Morrow / Umatilla	25	32	7	28.0%	1	1	2
Baker / Union / Wallowa	14	15	1	7.1%	0	0	0
Grant / Harney / Malheur	2	2	0	0.0%	0	0	0
Clackamas	70	84	14	20.0%	1	2	3

Industries of Employment

Industry	Ownership	2012 Employment
Total All Industries	All	1,098
Total All Industries	Private	937
Administrative and Support and Waste Management and Remediation Services	Private	44
Administrative and Support Services	Private	44
Employment Services	Private	44
Health Care and Social Assistance	Private	888
Ambulatory Health Care Services	Private	732
Offices of Physicians	Private	223
Outpatient Care Centers	Private	55
Medical and Diagnostic Laboratories	Private	385
Other Ambulatory Health Care Services	Private	61
Hospitals	Private	156
General Medical and Surgical Hospitals	Private	156
Total All Industries	Federal	16

Industries of Employment

Industry	Ownership	2012 Employment
Federal Government, Excluding Post Office	Federal	16
Total All Industries	State	16
State Government, Excluding Education and Hospitals	State	11
Total All Industries	Local	127
Educational Services	Local	96
Colleges, Universities, and Professional Schools	Local	96
Health Care and Social Assistance	Local	22
Hospitals	Local	22
General Medical and Surgical Hospitals	Local	22

Educational Requirements

The typical entry level education for this occupation is a postsecondary non-degree award. Those with an Associate's degree have a competitive advantage in the labor market.

Skills

- analyze blood samples
- apply bacteriology theory
- apply basic chemistry
- apply biological theory
- apply chemistry theory
- apply health and sanitation standards
- apply knowledge of hazardous disposal techniques
- apply medical laboratory techniques
- apply quality assurance techniques
- apply research methodology to health care
- calculate medical diagnostic test results
- collect clinical data
- conduct chemical analyses
- conduct laboratory research
- conduct medical laboratory tests
- follow hazardous materials specifications
- handle and store medical laboratory specimens
- label and process blood samples
- perform clinical laboratory procedures
- perform cytology procedures
- perform histology procedures
- perform microbiology procedures
- prepare human tissue samples
- prepare reports in timely manner
- prepare vaccines, biologicals and serums
- process records and maintain forms and files
- understand, use, and communicate technical information
- use basic mathematics
- use biological testing instruments
- use clinical sterilizing techniques
- use computers to enter, access and retrieve data
- use electronic and mechanical medical laboratory procedures
- use medical terminology
- use precision medical diagnosis machines and instruments
- work as a team member

Schools and Training Providers

The training providers listed below offer programs related to this occupation. This information is updated once per year. Anyone interested in a particular program should check with the training institution regarding its availability. Listing these training providers does not necessarily constitute or imply their endorsement, recommendation, or favoring by the State of Oregon.

School	City	Programs of Training		
Clackamas Community College	Oregon City	Program	Award	2012 Graduates
		Clinical/Medical Laboratory Assistant.	Postsec. Awards/Cert./Diplomas; <1 yr.	0
		Clinical/Medical Laboratory Assistant.	Postsec. Awards/Cert./Diplomas; 1-2 yrs.	16
Linn-Benton Community College	Albany	Program	Award	2012 Graduates
		Clinical/Medical Laboratory Science and Allied Professions, Other.	Postsec. Awards/Cert./Diplomas; <1 yr.	8
		Hematology Technology/Technician.	Postsec. Awards/Cert./Diplomas; <1 yr.	19
Portland Community College	Portland	Program	Award	2012 Graduates
		Clinical/Medical Laboratory Technician.	Associate Degree	25
Abdill Career College, Inc.	Medford	Program	Award	2012 Graduates
		Clinical/Medical Laboratory Assistant.	Variable Length Postsecondary Training	15

Career Pathways

These Oregon community colleges have defined career pathway roadmaps to facilitate entry into this occupation.

Clackamas Community College	• Clinical Laboratory Assistant
Portland Community College	• Phlebotomy
Rogue Community College	• Basic Health Care (BHC)
Rogue Community College	• Allied Health Clinical Lab Assistant (CLA)
Tillamook Bay Community College	• Phlebotomy
Tillamook Bay Community College	• Medical Laboratory Technology

Occupations with Similar Skills

The scores listed below indicates how closely the skills for Medical and Clinical Laboratory Technicians matches the occupation in the list. A score of 100% means the occupations have identical skill sets. A maximum of 10 occupations are displayed below.

Occupation	Skill Overlap
1. Medical and Clinical Laboratory Technologists	79%
2. Phlebotomists	32%

U.S. Bureau of Labor Statistics

Medical and Clinical Laboratory Technologists and Technicians

Summary

Clinical laboratory personnel examine and test body fluids and cells.

Quick Facts: Medical and Clinical Laboratory Technologists and Technicians	
2012 Median Pay	$47,820 per year $22.99 per hour
Entry-Level Education	See How to Become One
Work Experience in a Related Occupation	None
On-the-job Training	None
Number of Jobs, 2012	325,800
Job Outlook, 2012-22	22% (Much faster than average)
Employment Change, 2012-22	70,600

What Medical and Clinical Laboratory Technologists and Technicians Do

Medical laboratory technologists (commonly known as medical laboratory scientists) and medical laboratory technicians collect samples and perform tests to analyze body fluids, tissue, and other substances.

Work Environment

About half of all medical laboratory technologists and technicians were employed in hospitals in 2012. Others worked in doctors' offices or diagnostic laboratories.

How to Become a Medical and Clinical Laboratory Technologist or Technician

Medical laboratory technologists typically need a bachelor's degree. Technicians usually need an associate's degree or a postsecondary certificate. Some states require technologists and technicians to be licensed.

Pay

The median annual wage for medical laboratory technologists was $57,580 in May 2012. The median annual wage for medical laboratory technicians was $37,240 in May 2012.

Job Outlook

Employment of medical laboratory technologists and technicians is projected to grow 22 percent from 2012 to 2022, much faster than the average for all occupations. An increase in the aging population will lead to a greater need to diagnose medical conditions, such as cancer or type 2 diabetes, through laboratory procedures.

Similar Occupations

Compare the job duties, education, job growth, and pay of medical and clinical laboratory technologists and technicians with similar occupations.

More Information, Including Links to O*NET

Learn more about medical and clinical laboratory technologists and technicians by visiting additional resources, including O*NET, a source on key characteristics of workers and occupations.

What Medical and Clinical Laboratory Technologists and Technicians Do

Protective masks, gloves, and goggles often are necessary to ensure the safety of laboratory personnel.

Medical laboratory technologists (commonly known as medical laboratory scientists) and medical laboratory technicians collect samples and perform tests to analyze body fluids, tissue, and other substances. Medical laboratory technologists perform complex medical laboratory tests; medical laboratory technicians perform routine medical laboratory tests.

Duties

Medical laboratory technologists and technicians typically do the following:

- Analyze body fluids, such as blood, urine, and tissue samples, and record normal or abnormal findings
- Study blood samples for use in transfusions by identifying the number of cells, the cell morphology or the blood group, blood type, and compatibility with other blood types
- Operate sophisticated laboratory equipment, such as microscopes and cell counters
- Use automated equipment and computerized instruments capable of performing a number of tests at the same time
- Log data from medical tests and enter results into a patient's medical record Discuss results and findings of laboratory tests and procedures with physicians Supervise or train medical laboratory technicians

Both technicians and technologists perform tests and procedures that physicians and surgeons or other healthcare personnel order. However, technologists perform more complex tests and laboratory procedures than technicians do. For example, technologists may prepare specimens and perform manual tests that are based on detailed instructions, whereas technicians perform routine tests that may be more automated. Medical laboratory technicians usually work under the general supervision of medical laboratory technologists or laboratory managers.

Technologists in small laboratories perform many types of tests□ in large laboratories, they generally specialize. The following are examples of types of specialized medical laboratory technologists:

Blood bank technologists, or ***immunohematology technologists***, collect blood, classify it by type, and prepare blood and its components for transfusions.

Clinical chemistry technologists prepare specimens and analyze the chemical and hormonal contents of body fluids.

Cytotechnologists prepare slides of body cells and examine these cells with a microscope for abnormalities that may signal the beginning of a cancerous growth.

Immunology technologists examine elements of the human immune system and its response to foreign bodies.

Microbiology technologists examine and identify bacteria and other microorganisms.

Molecular biology technologists perform complex protein and nucleic acid tests on cell samples.

Like technologists, medical laboratory technicians may work in several areas of the laboratory or specialize in one particular area. For example, histotechnicians cut and stain tissue specimens for pathologists, who are doctors who study the cause and development of diseases at a microscopic level.

Technologists and technicians often specialize after they have worked in a particular area for a long time or have received advanced education or training in that area.

Work Environment

Medical laboratory technologists operate sophisticated laboratory equipment such as microscopes and cell counters.

Medical laboratory technologists held about 164,300 jobs in 2012. Medical laboratory technicians held about 161,500 jobs in 2012.

The industries that employed the most medical laboratory technologists and technicians in 2012 were as follows:

General medical and surgical hospitals; state, local, and private	50%

Medical and diagnostic laboratories	17
Offices of physicians	10
Colleges, universities, and professional schools; state, local, and private	5

Work Schedules

Most medical laboratory technologists and technicians work full time. Technologists and technicians who work in facilities that operate around the clock, such as hospitals and some independent laboratories, may work evening, weekend, or overnight hours.

Medical laboratory personnel are trained to work with infectious specimens or with materials that produce fumes. When they follow proper methods to control infection and sterilize equipment, few hazards exist. They wear protective masks, gloves, and goggles for their safety and protection.

Technologists and technicians can be on their feet for long periods, and they may need to lift or turn disabled patients to collect samples.

How to Become a Medical and Clinical Laboratory Technologist or Technician

Blood bank technologists, or immunohematology technologists, collect, type, and prepare blood and its components for transfusions.

Medical laboratory technologists typically need a bachelor's degree. Technicians usually need an associate's degree or a postsecondary certificate. Some states require technologists and technicians to be licensed.

Education

Universities and hospitals offer medical technology programs. An entry-level job for technologists usually requires a bachelor's degree in medical technology or life sciences.

A bachelor's degree program in medical laboratory technology includes courses in chemistry, biology, microbiology, mathematics, and statistics, as well as courses in clinical laboratory skills, management, and education. This degree often is known as a medical laboratory scientist degree.

The courses may be offered through a hospital-based program that students attend during their senior year of college. College graduates who major in other sciences and meet a program's prerequisites, such as having completed required courses in biology and chemistry, also may apply to a medical laboratory science program.

Medical laboratory technicians often complete an associate's degree program in clinical laboratory science. A limited number of 1-year certificate programs are available from hospitals for those who already have a degree in a related field, such as nursing. The Armed Forces and vocational or technical schools also may offer certificate programs for medical

laboratory technicians. The technician coursework addresses the theoretical and practical aspects of each of the major laboratory disciplines.

High school students who are interested in pursuing a career in the medical laboratory sciences should take courses in chemistry, biology, and mathematics.

Licenses, Certifications, and Registrations

Some states require laboratory personnel to be licensed or registered. To be licensed, a technologist often needs a bachelor's degree and must pass an exam. However, requirements vary by state and specialty. For specific requirements, contact state departments of health or boards of occupational licensing.

Certification of medical laboratory technologists and technicians is required for licensure in some states and by some employers. Medical laboratory technologists and technicians can obtain a general certification as a medical laboratory technologist or technician, respectively, or a certification in a specialty, such as cytotechnology or medical biology. Most credentialing institutions require that technologists complete an accredited education program in order to qualify to sit for an examination. Although certification is not required to enter the occupation in all cases, employers typically prefer to hire certified technologists and technicians.

Important Qualities

Ability to use technology. Medical laboratory technologists and technicians must understand how to operate complex machinery.

Detail oriented. Medical laboratory technologists and technicians must follow exact instructions from physicians in order to perform correct tests or procedures.

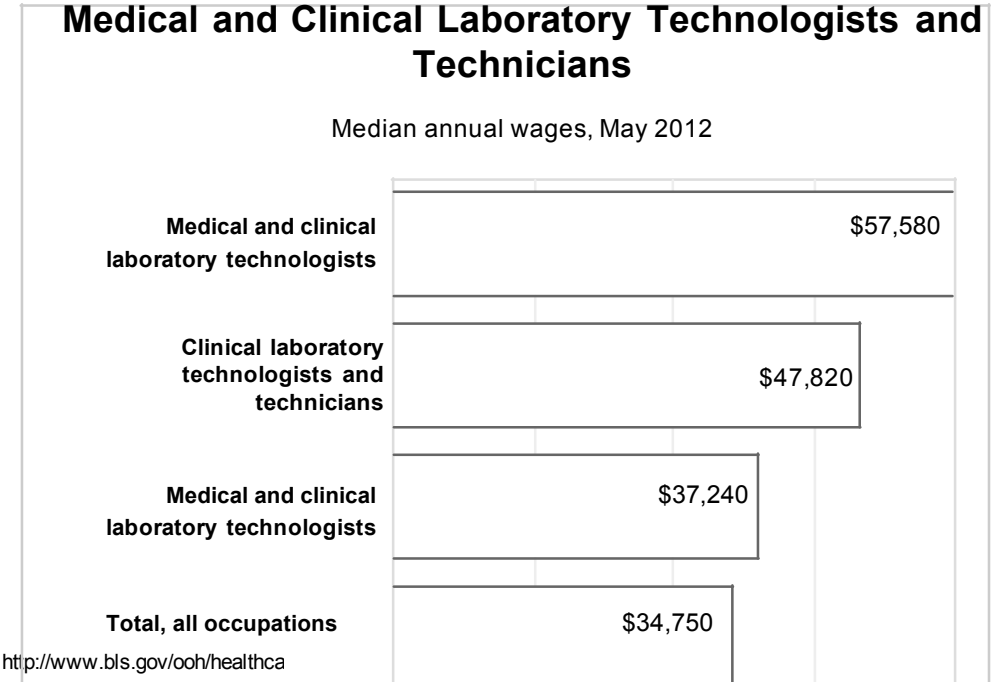
Dexterity. Medical laboratory technologists and technicians require skill while working with their hands. They work closely with needles and precise laboratory instruments and must be able to handle these tools effectively.

Physical stamina. Medical laboratory technologists and technicians may work on their feet for long periods while collecting samples. They may need to lift or turn disabled patients to collect samples for testing.

Advancement

After additional education, work experience, or certification, technologists and technicians may specialize in one of many areas of laboratory science, such as immunology, histotechnology, or clinical chemistry.

Pay



The median annual wage for medical laboratory technologists was $57,580 in May 2012. The median wage is the wage at which half the workers in an occupation earned more than that amount and half earned less. The lowest 10 percent earned less than $39,580, and the highest 10 percent earned more than $78,900.

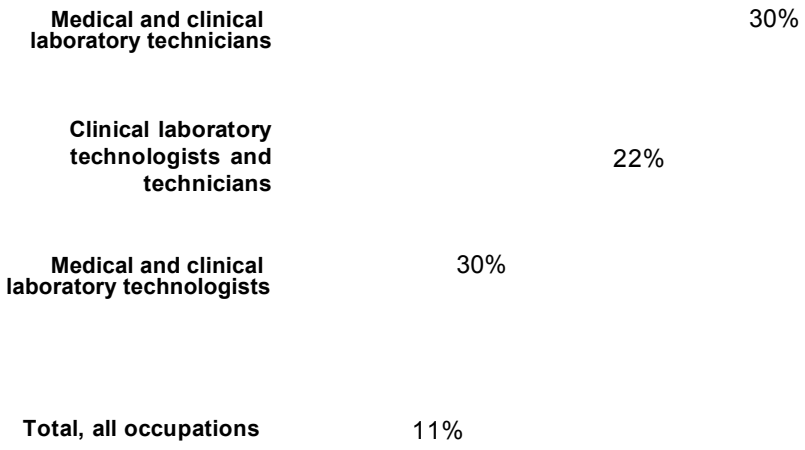
The median annual wage for medical laboratory technicians was $37,240 in May 2012. The lowest 10 percent earned less than $24,790, and the highest 10 percent earned more than $57,710.

Most medical laboratory technologists and technicians work full time. Technologists and technicians who work in facilities that are always open, such as hospitals and some independent laboratories, may work evening, weekend, or overnight hours.

Job Outlook

Medical and Clinical Laboratory Technologists and Technicians

Percent change in employment, projected 2012-22



Note: All Occupations includes all occupations in the U.S. Economy.
Source: U.S. Bureau of Labor Statistics, Employment Projections program

Employment of medical laboratory technologists is projected to grow 14 percent from 2012 to 2022, about as fast as the average for all occupations. Employment of medical laboratory technicians is projected to grow 30 percent from 2012 to 2022, much faster than the average for all occupations.

An increase in the aging population will lead to a greater need to diagnose medical conditions, such as cancer or type 2 diabetes, through laboratory procedures. Medical laboratory technologists and technicians will be in demand, to use and maintain the equipment needed for diagnosis and treatment.

Federal health legislation will increase the number of patients who have access to health insurance, increasing patient access to medical care. As a result, demand for the services of laboratory personnel will grow.

Employment projections data for Medical and Clinical Laboratory Technologists and Technicians, 2012-22

Occupational Title	SOC Code	Employment, 2012	Projected Employment, 2022	Change, 2012 – 22		Employment by Industry
				Percent	Numeric	
Clinical laboratory technologists and technicians	29-2010	325,800	396,500	22	70,600	[XLS]
Medical and clinical laboratory technologists	29-2011	164,300	187,100	14	22,700	[XLS]
Medical and clinical laboratory technicians	29-2012	161,500	209,400	30	47,900	[XLS]
SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program						

Similar Occupations

This table shows a list of occupations with job duties that are similar to those of medical and clinical laboratory technologists and technicians.

	OCCUPATION	JOB DUTIES	ENTRY-LEVEL EDUCATION	2012 MEDIAN PAY
	**Veterinary Technologists and Technicians**	Veterinary technologists and technicians perform medical tests under the supervision of a licensed veterinarian to help diagnose the illnesses and injuries of animals.	Associate's degree	$30,290
	**Biological Technicians**	Biological technicians help biological and medical scientists conduct laboratory tests and experiments.	Bachelor's degree	$39,750
	**Chemical Technicians**	Chemical technicians use special instruments and techniques to help chemists and chemical engineers research, develop, and produce chemical products and processes.	Associate's degree	$42,920
	**Chemists and Materials Scientists**	Chemists and materials scientists study substances at the atomic and molecular levels and the ways in which substances react with each other. They use their knowledge to develop new and improved products and to test the quality of manufactured goods.	Bachelor's degree	$73,060

Contacts for More Information

For more information about medical laboratory technologists and technicians, visit

American Society for Clinical Laboratory Science

American Society of Cytopathology

For a list of accredited and approved educational programs for medical laboratory personnel, visit

National Accrediting Agency for Clinical Laboratory Sciences

For information on certification, visit

American Association of Bioanalysts

American Medical Technologists

American Society for Clinical Pathology

O*NET

Medical and Clinical Laboratory Technicians

Medical and Clinical Laboratory Technologists

Cytogenetic Technologists

Cytotechnologists

Histotechnologists and Histologic Technicians

Suggested citation:

Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2014-15 Edition*, Medical and Clinical Laboratory Technologists and Technicians,
on the Internet at http://www.bls.gov/ooh/healthcare/medical-and-clinical-laboratory-technologists-and-technicians.htm (visited *January 13, 2015*).

Publish Date: Wednesday, January 8, 2014

U.S. Bureau of Labor Statistics | Office of Occupational Statistics and Employment Projections, PSB Suite 2135, 2 Massachusetts Avenue, NE Washington, DC 20212-0001

www.bls.gov/ooh | Telephone: 1-202-691-5700 | Contact OOH

May 8, 2012

TO: John Saito, AHELS Division Dean

FROM: Erin Krauter, MLT SAC Chair

CC: Jeff Josifek, MLT Dept. Chair/Program Director

Re: Proposed Improvements to JH 212/213

The MLT Department is seeking approval for changes to JH 212 and JH 213. JH 213 currently serves as the primary MLT classroom for both labs and lectures. JH 212 is used primarily for overflow storage as well as meeting space for staff and some limited individual student lab work. Staff feels JH 212 is being under-utilized while space in JH 213 is no longer adequate to meet the needs of the MLT department.

Purpose of proposal:

1. Improve the design of JH 212 so that it may serve as a support lab for the Medical Laboratory Technology program, which would be more suitable for small group activities such as:
    a. Guided microscope work
    b. Make up laboratory exercises
    c. Study-groups
    d. Distance learning labs
2. Improve the design to make room for staff meetings, small group advising sessions, and student conferences.
3. Reconfiguration to accommodate storage of larger equipment, such as serofuges and microscopes.

Proposed changes to JH 212:

1. Remove biosafety cabinet (hood) – the initial design of this room was based on a projected need to use this space for "student lab". This did not occur. Student lab is still housed at Legacy Emmanuel Hospital with no intent to move it to PCC.
2. Extend the bench-top/counter across the area vacated by hood; move the incubator to this site.
3. Remove center shelving and center bench/cabinet/sink console. (Open shelving above 6' is a safety hazard and the console cuts the room in half, limiting the use of this space.)
4. Move the sink to the main bench/counter on the south wall.

5. Move the storage cabinets (the deeper of the two designs currently in use) from the north wall to the area on the south wall vacated by console removal.
6. Install a white board on the western half of the north wall. (Lab coat rack will move to the eastern half of this wall.)
7. Add two moveable tables of bench height to the center of the room.
8. Add ten adjustable-height chairs with wheels for microscope work to be used at the tables.
9. Install a power source for the tables; staff would like to retain the ability to move tables into different configurations while still maintaining access to power for microscope work. (Ceiling?)

Proposed changes to JH 213:

1. Remove all bench-top gas spigots (student bench and perimeter), as they are not being utilized; plug holes in the counter tops. This will free up space for larger serofuges to be placed on the bench during labs.
2. Replace the hardware on existing student bench cabinets to permit storage of wider microscopes. (Hardware needs to be flush or microscopes will not fit without risk of damage.)