

DEPARTMENT OF LABORATORY MEDICINE  
UNIVERSITY OF WASHINGTON, SCHOOL OF MEDICINE (SOM), SEATTLE CAMPUS  
BACHELOR OF SCIENCE DEGREE IN MEDICAL LABORATORY SCIENCE (MLS)  
MASTER OF SCIENCE DEGREE (MS)

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## SECTION I. OVERVIEW OF ORGANIZATION

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As this self-study focuses on Medical Laboratory Science (MLS) undergraduate and Master of Science in Laboratory Medicine (MS) programs in the Department of Laboratory Medicine (Lab Medicine) at the University of Washington (UW), we feel it is important to first define the scope of Lab Medicine. Simply put, Lab Medicine is a branch of medicine in which human specimens of tissues, fluids (blood, serum, plasma, urine, feces, saliva, sweat), or other body substances are examined outside of the person in a certified laboratory. Specialty fields within Lab Medicine include Microbiology, Chemistry, Hematology, Immunology, Genetics, Molecular Diagnostics, Transfusion Medicine, and more recently, Medical Informatics.

The MLS Bachelor of Science program accepts undergraduate and post-baccalaureate students into a cohort-based, two-year professional program. The program provides medical education with a focus on the clinical laboratory and trains students to be healthcare professionals impacting patient care from the laboratory. Specimen testing and result analysis performed by MLSs is reported to care providers guiding medical diagnosis, treatment, and the monitoring of disease. After completion of the program, graduates take a national examination offered by the American Society for Clinical Pathology Board of Certification (ASCP BOC). Certification is required to work as a Medical Laboratory Scientist. The MS program accepts students who have MLS or non-MLS undergraduate degrees and provides advanced training, providing additional management, technical and scientific skills necessary for leadership positions within the clinical laboratory. There is a requirement to perform research that results in a thesis. Thus, the MLS and MS Programs provide the essential “human link” between doctors, who prescribe tests and procedures, and the test results that are generated and reported by the MLS/MS graduates that work in the clinical diagnostic lab.

### MISSION & ORGANIZATIONAL STRUCTURE

The Department of Laboratory Medicine was established in the School of Medicine at the UW in July 1969 to integrate the clinical laboratories at the University Hospital (now University of Washington Medical Center) and Harborview Medical Center (HMC). The department now employs over 1000 people who work at University of Washington Medical Center (UWMC), HMC, and many other clinical and research facilities in the area.

### DEPARTMENT CREDO

- The personal dignity of each patient served will be courteously maintained.
- Each student will be offered maximum opportunity to learn and to acquire professional competence.
- All members of the faculty and staff will be encouraged to achieve professional fulfillment.
- The Department is committed to vigorous application of the diversity policies of UW.

### MISSION

The primary purpose of Lab Medicine is to serve as a regional resource for clinical laboratory services required for patient care and for educational programs in Laboratory Medicine.

### PATIENT CARE

The patient care services provided will exemplify the highest achievable quality and will serve as a model of excellence for other clinical laboratories across the nation. The Department will be managed to minimize the cost of delivering these services without compromising quality, and they

will be made available to patients throughout the region as well as patients in the UW teaching medical centers.

## EDUCATION

The Department will be organized to facilitate effective development of educational programs for undergraduate, graduate, medical residents and post-doctoral fellows. These programs will include opportunities for undergraduate students to obtain a Bachelor of Science degree in Medical Laboratory Science and graduate students to obtain a Master of Science degree. Courses in Lab Medicine will be conducted for medical students, and training will also be provided for residents and fellows seeking specialty or subspecialty certification in Clinical Pathology, Clinical Chemistry, or Clinical Microbiology. The faculty and staff of the Department will also represent a resource for residents training in clinical departments who desire exposure to related areas in Lab Medicine and for medical laboratory scientists, physicians and scientists desiring courses in continuing medical education.

## RESEARCH

The Department will foster an environment conducive to the performance of high quality research and development, and consultation and referral services will also be provided for investigators throughout the University.

## BACKGROUND AND HISTORY

Lab Medicine was established in the School of Medicine at the UW as of July 1, 1969. Dr. Paul Strandjord was recruited from the University of Minnesota to be Chair of the new department. One of the charges given to the new department was to integrate the clinical laboratories at the UWMC and HMC, and to eliminate duplication of services wherever such could be accomplished without compromising the quality of patient care or educational programs of the school.

Prior to this time, responsibility for clinical laboratory services was shared by four departments. At the UH, Dr. Alex Kaplan in the Department of Biochemistry was Director of the Clinical Chemistry laboratory, Dr. John Sherris in the Department of Microbiology was Director of the Clinical Microbiology laboratory. The Departments of Pathology and Medicine shared responsibility for provision of Clinical Laboratory Hematology services. At HMC the clinical laboratories were under the direction of the Department of Pathology and the Departments of Pathology and Medicine shared responsibility for direction of the Hematology laboratory.

The department struggled in its early years. However, with the help of dedicated faculty and staff the department has evolved to become one of the several strongest Departments of Laboratory Medicine in the country, and its national reputation is well established. The foundation is sound, and traditions of excellence are firmly in place. We look forward to the opportunity to continue to serve our school, University and region.

## MLS AND MS NECESSITY

Locally and nationwide, there is a shortage of certified MLSs required to fill important positions in the clinical laboratory (<http://www.labtestingmatters.org/responding-to-the-continuing-personnel-shortages-in-laboratory-medicine/>). To quote this recent publication:

*The BLS (Bureau of Labor Statistics) reports that employment of medical laboratory technologists and technicians is expected to grow by 13%, from 330,600 in 2010 to*

*373,500 in 2020. This translates into about 11,300 laboratory technologist/technician job openings annually through 2018 (including 7,000 through attrition as well as 4,300 new positions). Unfortunately, the programs preparing tomorrow's laboratory workforce are training only about a third of what is needed. Fewer than 5,000 individuals are graduating each year from accredited training programs. Compounding the problem, since 1990, the number of laboratory training programs has decreased almost 25%.*

This labor shortage has not gone unnoticed by national organizations like the American Association of Clinical Chemistry (AACC):

<https://www.aacc.org/publications/cln/articles/2015/november/the-laboratory-workforce-shortage-demands-new-solutions>

Moreover, many of the current slate of MLS belong to the Baby Boomer generation, so many of these laboratorians are facing retirement. Thus, the need for Lab Medicine's MLS and MS Programs has never been greater.

## DEGREES OFFERED BY THE DEPARTMENT OF LABORATORY MEDICINE

### MEDICAL LABORATORY SCIENCE UNDERGRADUATE PROGRAM

The Department of Laboratory Medicine has offered a Medical Laboratory Science Program (MLSP) at the UW, Seattle has graduated over 1200 students in 65 years. The MLSP is a 2 + 2 program that culminates in a Bachelor of Science in the major of Medical Laboratory Science. The first two years are offered either at UW or other accredited universities, colleges or community colleges and constitute the pre-professional phase of the program. The third and fourth years are the professional phase of the program and are taught at the UW and administered by the MLSP, Department of Laboratory Medicine, School of Medicine.

Graduates of the MLSP are expected to have in-depth knowledge of the relationships between laboratory data and pathologic processes, and their relevance to clinical medicine.

Students will have experience in the performance of both routine and specialized testing procedures, as well as an understanding of the theoretical basis of these procedures. They have the experience performing trouble-shooting and resolving typical problems in the clinical laboratory. In addition, students work with laboratory information systems and are exposed to laboratory supervision and management, regulatory and compliance requirements, laboratory safety, quality management, and communication, research design and practice, professionalism and educational methodologies.

### Pre-Professional Program Requirements

During the first and second years, known as the pre-professional phase, students must earn a minimum of 90-quarter credits, including both prerequisite courses for Medical Laboratory Science and general education courses required for graduation from the UW. The required prerequisites are the following courses or equivalent courses:

- General Biology 180, 200, 220
- General Chemistry 142, 152, 162
- Organic Chemistry 237, 238, 239 or 223, 224
- Human Physiology, Biology 118
- Statistics – 1 quarter or semester

## Professional Program Requirements

The last two years of study constitute the professional phase. Courses in the first year of this phase are designed to provide students with an appropriate theoretical background and with the basic technical skills that will enable them to function effectively in the clinical laboratory. The following subjects are included in the professional phase of the curriculum and are taught by faculty in the Departments of Laboratory Medicine and other UW academic departments:

- Biochemistry
- Immunology
- Clinical Chemistry
- Hematology & Coagulation
- Medical Bacteriology
- Medical Virology
- Medical Mycology & Parasitology
- Molecular Diagnostics
- Urinalysis & Body Fluid Analysis
- Immunohematology
- Phlebotomy
- Laboratory Operations

The final year (3 quarters) takes place in the clinical laboratories of UW Medicine and its affiliates. Core clinical rotations are offered in Chemistry, Hematology, Immunohematology, Microbiology, and Phlebotomy. In addition to core rotations, students complete an enrichment rotation in research. Research topics include method development and validation and basic science research. Research rotations occur in clinical, research and forensic laboratories at UW Medicine and affiliate sites.

The UW MLSP is separately accredited by the National Accrediting Agency for Clinical Laboratory Science. National accreditation by this agency allows for graduates of the MLSP to be eligible to take the ASCP BOC examination. Graduates must maintain certification as Medical Laboratory Scientists to work in the field. Certification must be renewed every three years and requires completion of thirty-six credits of continued education. In 2017, the UW MLSP completed a seven-year reaccreditation cycle, including a self-study and site visit. The NAACLS site visit report and the preliminary reaccreditation award letter are listed in Appendix A, Document. 1 Site Visit Report UW, and Document. 2 Accreditation Approval Status.

Please refer to Appendix A for the following tables and figures- Table 1. Graduation Rates, Figure 1. ASCP BOC Passing Rates, Figure 2. ASCP BOC Scores, and Table 2. Graduates Job Placement Rates.

### Academic and Non-Academic Staffing

Didactic instruction, including student laboratories, in the professional program is provided primarily by the faculty and staff of the Department of Laboratory Medicine, but students also take courses offered by the UW Departments of Microbiology and Immunology.

Clinical rotations in the Professional Program are coordinated by the staff of Lab Medicine MLSP. Clinical rotation sites are provided primarily by the UW Medicine System, including UW Medical Center, UWMC, HMC, Northwest Hospital, Valley Medical Center, and UW Roosevelt Clinics, but also at other affiliate sites. Except for the facilities in the UW Medicine System, each affiliate site is

administered and operated independently of the UW or MLSP. The UW MLSP and each affiliate site, including those within the UW Medicine System, are formally related through affiliation agreements. Please refer to Appendix A, Document 3. Affiliate Agreement Valley/UW for an example affiliate agreement.

Key program staff, including the program director, program operations specialist and many faculty, have offices in the Department of Laboratory Medicine. This allows for timely interactions between faculty, staff and students.

The faculty/staff listed below are employed by Lab Medicine and have major responsibilities to the program on either a full or part-time basis. Faculty/staff are listed in alphabetical order by classification with brief reference to the courses they support. All faculty have academic appointments at the Lecturer, Senior Lecturer, Assistant Professor, Associate Professor or Professor level. These academic positions do not have formal position descriptions. All other full and part-time staff have the education listed as part of their position descriptions. Please refer to Appendix A, Figure 3. Organizational Chart.

#### *Faculty*

- Daniel Bankson SM, PhD, MBA, DABCC, FAACC; Clinical Chemistry, Clinical Biochemistry
- Tina Lockwood PhD, DABCC, FAACC; Molecular Diagnostics
- Laurianne Mullinax MS, MLS (ASCPcm); MLSP Director, Laboratory Analysis of Urine and Body Fluids, Medical Microbiology, Clinical Hematology, Foundations of Medical Laboratory Science
- Monica Pagano MD; Immunohematology, Clinical Hematology, Clinical Coagulation
- Daniel Sabath MD, PhD; Clinical Hematology, Clinical Coagulation
- Min Xu MD, PhD; MLSP Research Rotation Coordinator, Research Mentor, Clinical Hematology

#### *Staff, Full-Time*

- Heather Eggleston MEd; Program Operations Specialist, Academic Adviser, Instructor- Senior Seminar
- Miriam Kim MLS (ASCP SH); Clinical Rotation Coordinator, Laboratory Instructor in Hematology, Chemistry, UA/Body Fluids, Coagulation, Immunohematology
- Gretchen Van Kekerix MT (ASCP); Clinical Rotation Coordinator, Laboratory Instructor in Foundations of MLS, Clinical Hematology, Virology, Clinical Chemistry, Clinical Microbiology

#### *Staff, Part-Time*

- Patty Callahan MT (ASCP); Clinical Microbiology Course Coordinator & Assistant Laboratory Instructor, Clinical Site Trainer
- William Eng MT (ASCP); Laboratory Assistant Instructor in Clinical Chemistry, Foundations of MLS; Clinical Site Trainer
- Joanne Estergreen MT (ASCP); Clinical Coagulation Assistant Laboratory Instructor, Research Mentor, Clinical Site Trainer
- Max Louzon MS, SBB, MT (ASCP); Immunohematology Course Coordinator, Clinical Site Trainer
- Lara Williamson BA; Program Coordinator

The faculty and staff carry out the core duties of the MLSP including teaching in the classroom or student laboratory, reviewing curriculum, planning courses, supervising clinical rotations, performing educational research, recruiting students, reviewing applications, selecting new students, participating in the ongoing accreditation process, managing course evaluations, and administering other aspects of the program.

In addition to the core group of MLSP faculty and staff, many faculty and staff of Lab Medicine have some educational responsibility, be it through presenting lectures or student laboratory participation, curriculum review committees, research mentorship, or training students during clinical rotations. Lab Medicine also trains Lab Medicine residents, fellows and Master degree enrolled students who all participate in the MLS program by giving lectures, helping with exam review, or assisting in the student laboratories. MLSP staff in the clinical laboratories also give lectures, assist in the student laboratories and train students during clinical rotations.

The MLSP admits up to 30 students per year to the program, which means there is a maximum of 60 MLS students at any given time in the whole program between the junior and senior class. Enrolled students join the program in the fall quarter, typically the last week in September. Students are in classes or on rotation continuously until they graduate seven quarters later. There is one course director per lecture course of 30 students. The student laboratory sessions frequently split the students into two groups of 15 students (or even 3 groups of 10) and two laboratory instructors (this includes assistant instructors) are typically in each student laboratory session. For the summer Clinical Microbiology session, all students attend the laboratory at the same time and 2-3 laboratory instructors (this includes assistant instructors) are typically in each laboratory. MLS staff from the clinical laboratories frequently assist in our student laboratories so the student to teacher ratio is routinely below 15:1.

#### Program Assessment and Continuous Quality Improvement

The MLSP utilizes several outcome measures for ongoing assessment of the program.

Student Evaluations - Evaluations of overall courses (both the didactic and student laboratory sections), individual course lecturers and end of program evaluation. Course directors use student evaluations during curriculum review meetings, in preparation for the course the following year, in faculty and staff reviews and promotions, and in MLSP meetings to assess overall course and program success.

ASCP BOC Exams scores - Our ongoing assessment of the BOC pass rate not only looks at the overall performance of our program against the national and university average, but considers the individual discipline scores. The overall program average and discipline scores are shared with general Lab Medicine faculty/staff and affiliate staff on an annual basis, and with the MLSP team regularly as part of the ongoing curriculum development by course directors, and with the guest faculty and staff for individual course in preparing lecture content.

Monthly/Bimonthly MLSP Meetings - MLSP teaching and administrative faculty and staff meet to discuss:

- Status of old business/action items from previous meetings
- New business/action items
- Status of junior and senior students' performance
- Status of overall program progress



Curriculum Review Meetings - Annual curriculum review includes Lab Medicine faculty/staff and affiliates in the evaluation of curriculum for instruction. Course lectures and laboratory exercises are presented to attendees to address content in terms of MLS entry-level competencies, current local laboratory practice and fundamental concepts. Feedback from attendees is incorporated into the course for the following offering or considered for future offerings.

Annual Affiliate Advisory Meeting - Gathering of affiliate site lab representatives working directly with our students. Feedback/suggestions from the affiliate advisory meeting are used in the assessment of our student laboratories and clinical rotations. Topics include:

- Clinical rotations (including schedule updates and changes to content/expectations) are discussed
- Student training guidance/suggestions are shared between the MLSP and affiliate sites and between the affiliate sites themselves
- Student outcomes (graduation rates, BOC scores, job placement) are presented
- Changes to the MLSP organization are disclosed
- General feedback/suggestions from affiliates are sought
- Discourse of discipline related feedback/suggestions is promoted

Employer/Graduate Surveys - Surveys are sent to local employers and recent graduates approximately one year after graduation to assess student preparedness in their new jobs including technical skills and affective domain qualities. Information from employers and students is utilized at the strategic planning meetings to assess objectives for the following year.

MLSP Strategic Planning Meetings - Annual and, more recently, biannual meetings of MLSP teaching and administrative faculty and staff to discuss the status of the program, the success of the goals set forth in the previous Management By Objective document (MBO) and establishing new goals for the next MBO, the performance of students, ongoing changes/updates to the program including structure, expectations and curriculum, and incorporating past MLSP monthly meeting minutes, student evaluations, admissions/application process, curriculum review information and feedback from the affiliate advisory meeting and employer/graduate surveys.

Please see Appendix A for the following documents as examples of MLSP review and assessment: Document 4. Student Course Evaluation, Document 5. Student Clinical Rotation Evaluation, Document 6. Student Exit Interview, Document 7. Monthly Meeting Minutes, Document 8. Curriculum Review Meeting Agenda, Document 9. Affiliate Advisory Committee Meeting Minutes, Document 10. Employer Survey, Document 11. Alumni Survey, Document 12. Strategic Planning Meeting Agenda, Document 13. MBO.

#### MASTER OF SCIENCE GRADUATE PROGRAM

The MS program was established in 1980 by Chair Dr. Paul Strandjord (see Appendix B, Figures 1 and 2, for original documents confirming establishment of Program).

Since that time, the program has graduated 88 students (average 2.2 graduations per year; Appendix B, Figure 3). The program tends to attract more females (66) than males (21) although our current class consists of 3 women and 3 men (Appendix B, Figure 4). Since 2008, the MS Program has had an annual enrollment of 7-13 students (Appendix B, Figure 5).

## Program Prerequisites

Prospective students who apply to the MS program must have an undergraduate degree in a field appropriate to Lab Medicine (e.g. Medical Laboratory Science), with a minimum GPA of 3.0 in their last 2 years of study; ASCP certification as Medical Laboratory Scientist, or as a specialist in the field of Medical Laboratory Science. If the applicant is not an ASCP certified MLS, but rather has an undergraduate degree in Microbiology, Chemistry/Biochemistry or Biology, a minimum 3.2 GPA is required for their last 2 years of study.

The Master degree program consists of course work and thesis level Master of Science research project and presentation. Full-time students shall complete the program within 24 months (eight quarters in residence). For a full-time student, the first year is generally spent on course work, while the thesis research, committee meetings, and thesis write-up and defense is conducted in year 2. The Masters cannot be completed in less than 2 years. Part-time students have 6 years to complete the program. Full time students in the Combined Undergraduate/Graduate Program (CUG) may complete the graduate part of the program in less than 24 months if proper course and research planning is done in advance. Students can also switch from full-time to part-time and part-time to full-time throughout the program.

## Program Requirements

Pathways – a student should identify a Pathway by the end of the first quarter of study. The requirement for depth in one area in Lab Medicine is a key intellectual component of the MS degree. Selection of a specific Pathway helps focus the student in a specialty area. The following six Pathways are available for in-depth study:

- Blood Bank / Transfusion Service
- Chemistry / Immunology
- Hematology / Coagulation
- Microbiology / Virology
- Genetics / Molecular Diagnostics
- Management / Informatics

## Required Coursework

Students are responsible for completing a minimum of 36 credits (27 course credits and a minimum of 9 credits of thesis). Required courses must be completed with a grade of 3.0 or higher. The following are required courses:

- BIOST 511 Medical Biometry I (4 credits)
- LAB M 502 Grand Rounds (1 credit each, must complete 3 credits)
- LAB M 510 Research Conference (1 credit each, must complete 3 credits)
- LAB M 520 Organization and Management in Laboratory Medicine (3 credits)
- LAB M 601 Laboratory Medicine Teaching Internship (3 credits)
- LAB M 700 Thesis (9 credits minimum)
- Thesis

Presentation of research is a requirement for completing the degree program. A thesis is developed through advisory meetings with the student's mentor, supervisory committee, and also attendance of LAB M 510 Research Conference. For more information about how to develop and write a thesis,

students can refer to the instructions available on the Graduate School website at the following link: <https://grad.uw.edu/for-students-and-post-docs/thesisdissertation/>.

The entire supervisory committee must review a thesis prior to, and must attend, the thesis defense. It is the student's responsibility to coordinate a time and location for the defense that also accommodates the supervisory committee members' schedules. The academic advisor can assist with determining event space availability for the date of the defense.

*Staff (see Appendix B, Figure 6)*

- Director: Stephen J. Polyak, PhD Research Professor, Lab Medicine, 30% full time effort (FTE)
- Admissions Committee (includes Lab Medicine faculty and staff):
  - Brian Shirts, MD, PhD
  - Jonathan Fromm, MD, PhD
  - Stephen Salipante, MD, PhD
  - Susan Fink, MD, PhD
  - Laurianne Mullinax MS, MLS (ASCP<sup>cm</sup>); MLSP Director, Lecturer
  - Heather Eggleston, MEd
- Administration
  - Heather Eggleston MEd; Academic Advisor, 10% FTE
  - Lara Williamson BA; Program Coordinator, 12.5% FTE

## BUDGET & RESOURCES – MEDICAL LABORATORY SCIENCE PROGRAM

The sources of financial support for the MLSP come directly from Lab Medicine and represent a combination of resources, including department-generated revenue, and UW Medicine compensation for clinical services related to the management of the clinical laboratories of UW Medicine. The University provides program support through infrastructure and some academic administrative oversight. Lab Medicine is a large department with over 1000 employees. This enterprise generates millions of dollars through its reference laboratory operation. Additionally, indirect costs from faculty academic grants and contracts support the departmental administrative infrastructure. Since the founding of the MLS program, Lab Medicine has covered all program expenses and we expect that this will continue to be a priority. MLS graduates have an extremely high hire rate: over 95% of all graduates find jobs in clinical laboratories at the UW or in other regional, state or national labs. This fact underscores the importance of the MLS program to the continued success of the Department of Laboratory Medicine. Thus, the Department recognizes the importance of the program every year when allocating resources.

Instrumentation and equipment in use in the MLSP student laboratories are either purchased with departmental funds or have been donated to the MLSP from department laboratories. Vendors occasionally provide instrumentation and/or equipment for the duration of a course. The annual new equipment budget is based on need as determined through the Management By Objective process. The MLSP Medical Director meets annually with the Department Chair, Dr. Geoff Baird to review new equipment needs and other major expenses. All equipment maintenance and repair, teaching supplies, textbooks, reagents, etc., are purchased with departmental funds.

Faculty and staff attend scientific or professional meetings in the area of their specialty. Most of the travel support for approved meetings is funded by the department, or, when appropriate, by grants. Grant-supported travel is typically the norm when faculty are traveling to present the results of their funded study.

Faculty and staff positions are established in departmental budgets. Some faculty are supported jointly by departmental and hospital budgets. The salary support shown does not include research funding, which applies to some of the faculty involved directly in the program.

There is no direct line item support for teaching in the clinical laboratory budget of UW Medicine. It does, however, receive an allocation from the state of Washington in support of the many teaching programs that take place in the UW Medicine System. The clinical laboratories of the UW Medicine System are one unit (with the exception of Valley Medical Center) under the direct administration of the chair of the Department of Laboratory Medicine.

Please see Appendix A, Document 14. Statement of Financial Support.

## **BUDGET & RESOURCES – MASTER OF SCIENCE PROGRAM**

The MS Program is supported by budgets from a variety of sources that are controlled and managed by the Chair of the Department of Laboratory Medicine. The School of Medicine does not provide any support for the educational programs in the Department.

The budget for the MS Program consists of Departmental Support for the Director (30% FTE), Program Coordinator, 100% FTE, Heather Eggleston MEd; Academic Adviser, 10% FTE, Lara Williamson BA; Program Coordinator, 12.5% FTE.

MS students pay their own tuition for the program, which takes a minimum of 2 years to complete if the student is enrolled full time. Often, MS students also work as MLS in a UW clinical laboratory. In these instances, the students may enroll in the MS with part time status. Moreover, the UW offers tuition exemption for employees who are at least 50% FTE. This program provides employees with up to 6 credits per quarter tuition-free with the exception of 600 and 700-level courses.

In addition, mentors provide in kind support for laboratory consumables for thesis-related work. Depending on the nature of the project, which can range from bench work, to computation, to patient chart review. These costs can be up to approximately \$1000 per month per student, or \$12,000 per year per student, if the student is working full time on his or her thesis. Funding for consumables comes from a variety of sources, including Departmental allocation and funded research projects in the mentor's laboratory.

Finally, Lab Medicine has an endowment that was established by our founding Chair, Dr. Paul Strandjord. A portion of the endowment is used to provide a small stipend of \$500 per month for 10 months to 2-3 graduate students per year. The Strandjord scholarship is usually geared towards second year students. Students submit an application to the Department, which is reviewed by the Admissions Committee.

## **ACADEMIC UNIT DIVERSITY**

### **PROGRAM ACCEPTANCE**

In selection of applicants to the MLS and MS program, the admission committee considers all aspects of an applicant's application in an effort to accept the most qualified and diverse individuals as an ongoing process of program improvement. Please see Appendix A, Table 3. Student Demographics demonstrating the demographics of students admitted into the MLSP over the past three years.

## PROGRAM OUTREACH

The MLSP participates in outreach events both at UW and in the community in an attempt to recruit a diverse pool of qualified applicants. Here is a list of the recruitment events of the last several years:

- Annual MLSP Information Session
- Annual Dawg Daze Information Sessions and Resource Fair
- Expanding Horizons Conference for WA state high school girls interested in STEM
- Green River Community College recruitment visit
- UW Essence of Success Conference
- UW Filipino Association for Health Careers recruitment visit
- UC Davis Pre-Health Conference designed to expand diversity of applicants inviting pre-health students from across the nation
- UW Multicultural Outreach & Recruitment iDub Resource Fair
- UW Multicultural Outreach & Recruitment Multicultural/Native Transfer Day Resource Fair
- Women in STEM at Highline College lab demonstrations
- UW Multicultural Outreach & Recruitment Native American Student Day lab demonstrations
- UW OMAD Purple & Gold Resource Fair: First-generation, low-income, students of color
- LAB M 201: MLS Introductory Seminar Course open to non-majors

### Master of Science Program

The demographics of Seattle are reflected in our classes (Appendix B, Table 1.). In selection of applicants to the MS Program, the admission committee considers all aspects of an applicant's application in an effort to accept the most qualified and diverse individuals as an ongoing process of program improvement.

Moreover, Ms. Eggleston attended a School of Medicine (SOM)/Center for Health, Equity, Diversity & Inclusion (CEDI) Diversity Leadership Symposium. She attended this half-day workshop with many other UW School of Medicine (SOM) faculty and staff and the take-home message was that the SOM and University has a great deal of work to do regarding diversity and the first step in starting this work is to build a departmental diversity committee or council. Since this symposium Ms. Eggleston has attended the following diversity-related events:

- Presentation by Dr. Eddie Moore, Sept. 2017
- SOM/CEDI Diversity Leadership Symposium, Part II, Oct. 2017
- Working with Student Veterans Workshop, Nov. 2017
- Became a member of the Health Professions Recruitment Collaborative formed by SOM/CEDI to focus on outreach to under-represented student populations. The group meets once a month and attend outreach events all year long, Jan. 2018
- Departmental Diversity Committee Workshop: Creating a Diversity Committee organized by the Graduate School and GO-MAP, Feb. 2018.
- Diversity Council Workshop: Building a Diversity Committee organized by OMAD, Feb. 2018
- SOM/CEDI Diversity Leadership Symposium, Part III, will be attending May 2018.

Ms. Eggleston has gathered a number of resources from this past year of workshop attendance and plans to create a Laboratory Medicine Diversity & Inclusion Committee. The latest Diversity Blueprint 2017-2021 (<http://www.washington.edu/diversity/diversity-blueprint/>) put forth by

President Cauce and UW's Office of Minority Affairs and Diversity (OMAD) states six main goals that the University is working to achieve. These goals will form the starting point for our diversity committee to take this blueprint and adapt it to our departmental needs.

## SECTION II: TEACHING & LEARNING

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### STUDENT LEARNING GOALS AND OUTCOMES – MEDICAL LABORATORY SCIENCE PROGRAM

Graduates of the Medical Laboratory Science Program are expected to have in-depth knowledge of the relationships between laboratory data and pathologic processes, and their relevance to clinical medicine. Students will have experience in the performance of both routine and specialized testing procedures, as well as an understanding of the theoretical basis of these procedures. They have the experience performing trouble-shooting, and resolving typical problems in the clinical laboratory. In addition, students work with laboratory information systems and are exposed to laboratory supervision and management, regulatory and compliance requirements, laboratory safety, quality management, communication, research design and practice, professionalism and educational methodologies.

#### EVALUATING STUDENT LEARNING

Didactic Examinations of Students - Every course offered by the MLSP has an examination system in place, with the exception of LAB M 427, which is a seminar-type course. Depending on the course we use a variety of assessments including quizzes, exams, midterms, final exams, wet/dry practicals, term papers, in-class presentations, case studies, Medical Training Solutions (MTS) online tutors and affective domain assessment of student laboratory performance.

Clinical Rotation Evaluations of Students - The MLSP has developed cognitive, psychomotor, and affective domain goals and objectives for each core clinical rotation as well as for enrichment rotations based on the ASCP BOC exam content outlines, the ASCLS entry level curriculum, and the competencies the UW MLSP has found to be important locally. The goals and objectives are revised and updated annually, with input from the department faculty and staff, affiliate site training staff, and clinical rotation coordinators. These goals and objectives are given to the students along with a competency checklist, training log, or procedure validation/instrument checkout logs. The clinical rotation coordinators are responsible for assigning student schedules for specialized laboratory areas and training. Each affiliate laboratory has an individual (supervisor or MLS), known as the teaching coordinator, assigned to the special responsibility of coordinating the day-to-day training of the MLS students while in their lab. The affiliate teaching coordinators are provided with the goals and objectives and the competency checklists or logs that are expected of the students. Students indicate when each competency has been completed and, in some cases, the teaching coordinator signs and dates the checklist or log to verify completion. In addition to the goals and objectives, the students may also be given case studies and examinations to evaluate their understanding of theory and application. MLSP faculty/staff physically or virtually visit students at all affiliate sites during their core rotations. Discussions are held with both the students and the teaching coordinators, separately and together and notes often taken to record these conversations. In addition, the MLSP faculty/staff are in regular communication with the affiliate teaching coordinators, scientists and the students by email and telephone. At the end of every clinical rotation, each student is encouraged to fill out an evaluation of the clinical site, indicating strengths and weaknesses of the laboratory experience. After their clinical rotations, the student's

competency assessment checklists or logs and evaluations are compiled and reviewed by the MLSP faculty and staff to determine if there are critical competencies that must be addressed. Any issues identified in this evaluation are then communicated to the teaching coordinators at each site. Clinical rotation expectations, objectives and assignments are evaluated annually by clinical rotation coordinators in conjunction with Lab Medicine faculty and staff, and affiliate staff. Feedback about clinical rotation curriculum is sought during the Affiliate Meeting and during site visits. Additionally, clinical rotation curriculum is measured against ASCP BOC testing guidelines and ASCLS entry-level competencies.

**Affective Domain Evaluations of Students** - Affective domain evaluation occurs in a didactic course once per quarter starting the second quarter of the program. Students and laboratory instructors both complete an affective domain evaluation for each student. Students then meet with laboratory instructors to discuss their evaluations noting any positive attributes, discrepancies, and areas for improvement. Some students have recounted that this feedback was a “wake-up call” for them as far as developing a more professional attitude to their laboratory work that helped them in their approach to senior clinical rotations. Please see Appendix A, Document 15. Affective Domain Evaluation.

**Student Satisfaction** - Students evaluate overall courses (both the didactic and student laboratory sections), individual course lecturers and end of program evaluation. Course directors use student evaluations during curriculum review meetings, in preparation for the course the following year, in faculty and staff reviews and promotions, and in MLSP meetings to assess overall course and program success. When on clinical rotations, students have weekly check-ins where they can journal about their learning experiences and give feedback indirectly to their clinical trainers.

**Assessment of Learning** - Students who graduate from the MLSP are required to take the ASCP BOC exam if they want to be certified to work as a MLS. As a measure of the success of our didactic and rotation courses, we compare the performance of our MLSP students to national performance of this exam. Consistently, our students have a higher pass rate and higher overall score than what is seen nationally (Appendix A, Figures 1 & 2).

**Outcome-Based Assessment** - In order to assess the quality of our MLS Program and ensure continuous quality improvement, we convene a strategic meeting yearly to set our standards and develop Management by Objectives (MBO), by which we follow and evaluate our progress during our subsequent weekly meetings. We use the MBO to set our objectives, describe our current status and develop the targets and indicators of progress for each objective. The entire MLS team is involved and everyone is able to voice their opinion and give suggestions about the importance of each objective and how to achieve it. As we progress through the year, we are able to make the changes and meet our objectives. Conversely, if we recognize there is an impediment to achieving our goals, we discuss how or if the impediment should be overcome, thereby assessing the validity of the goals within the new context. Please see Appendix A, Document 13. MLSP MBO.

Our ongoing assessment of the BOC pass rate not only looks at the overall performance of our program against the national and university average, but considers the individual discipline scores including the sub-specialty scores within disciplines. The overall program average and discipline scores are shared with general Lab Medicine faculty/staff and affiliate staff. The sub-specialty discipline scores are shared within the MLSP and, as part of the ongoing curriculum development by course directors, and with the guest faculty and staff for individual course in preparing lecture

content. Also, discipline scores and sub-specialty scores are compared over time to look for trends and to assess if changes made to the curriculum content are positively reflected in scores.

As of Fall 2017, only undergraduates in the MLS major take courses offered by the MLSP.

Please see Appendix A, Table 4. Entry-Level Competency Training in Didactic and Rotation Courses to see how the organization of courses and assignments promote student readiness for the MLS field.

## STUDENT LEARNING GOALS AND OUTCOMES – MASTER OF SCIENCE PROGRAM

In graduate school, the expectation is that the student is the one who must define their learning. The student sets the goals and determines standards of daily achievement, they decide on the correct combination of education and research, and they bear the ultimate responsibility for the outcome. Faculty and administrative personnel are available to help, but the student is responsible for their path, to meet both their current needs (course work, research and teaching experience, etc.) and their plans for the future (a career in research, teaching, industry, etc.). This includes taking charge of regular meetings with the student's thesis mentor, thesis committee, program staff, and program director.

Graduate students normally spend the first year of graduate studies taking a sequence of courses in their specialized field within Laboratory Medicine and a series of core courses in the program. During their initial coursework, students often begin to develop their research project. As studies progress and exposure to the clinical laboratory and research expand, the project continues to develop and is compiled into a thesis.

The goal is for students to apply principles learned in class towards critical thinking, related to clinical diseases, research, and diagnostics.

Evaluating Student Learning - Most of the courses in the MS Program, with the exception of Research Conference and Grand rounds, has an examination system in place. Depending on the course we use a variety of assessments including quizzes, exams, midterms, final exams, term papers, and in-class presentations.

Student Satisfaction - At the end of a course, students provide evaluations of overall courses and individual course lecturers. Course directors use student evaluations during curriculum review meetings, in preparation for the course the following year, in faculty and staff reviews and promotions, and in MS Program meetings to assess overall course and program success.

Outcome-Based Assessment - In order to assess the quality of our MS Program and ensure continuous quality improvement, we convene a strategic meeting each year to set our standards. The approach, known as Management by Objectives (MBO), is attended by all faculty who supervise the many labs and programs in the Department. We use the MBO to set our objectives, describe our current status and develop the targets and indicators of progress for each objective. As we progress through the year, we are able to make the changes and meet our objectives. Conversely, if we recognize there is an impediment to achieving our goals, we discuss how or if the impediment should be overcome, thereby assessing the validity of the goals within the new context. Recent MBOs are included in Appendix B.



## **INSTRUCTIONAL EFFECTIVENESS – MEDICAL LABORATORY SCIENCE PROGRAM**

Standardized teaching evaluation forms - Students evaluate overall courses (both the didactic and student laboratory sections), individual course lecturers and end of program evaluation. Course directors use student evaluations during curriculum review meetings, in preparation for the course the following year, in faculty and staff reviews and promotions, and in MLSP meetings to assess overall course and program success. When on clinical rotations, students have weekly check-ins where they can journal about their learning experiences and give feedback indirectly to their clinical trainers.

Training in Teaching - Faculty and staff have the opportunity to attend the Clinical Laboratory Educators' Conference (CLEC) held annually by the American Society for Clinical Laboratory Scientists (ASCLS). The goal of this conference is to identify trends and strategies, manage change, enhance instructional skills, or develop innovative teaching techniques specifically for laboratory educators. At annual strategic planning meetings, opportunities to improve instruction are discussed. For example, at the Fall 2017 meeting an in-service about giving quality feedback was held, which included a video and group work with role play. Graduate students from the Master of Science in Laboratory Medicine program have the opportunity to lecture and assist in MLS student laboratories as part of their training. Course directors and MLSP laboratory instructors help guide the graduate students' experiences. Additionally, the graduate students are recommended to take a medical education course BIME 520 Teaching Methods in Medical Education.

Examples of Instructional Change - For each class, each year, the course director writes a summary of the changes made to the course that offering, drawing upon previous student evaluations, affiliate and curriculum review meeting feedback and ASCP BOC score data. Please see Appendix A, Document 16. Course Assessment as an example of continued course assessment and modification of one of our MLSP courses.

## **INSTRUCTIONAL EFFECTIVENESS – MASTER OF SCIENCE PROGRAM**

As with the MLS Program, the MS Program uses standardized teaching evaluation forms. Students evaluate the overall course, individual course lecturers at the end of the course. Course directors use student evaluations during curriculum review meetings, in preparation for the course the following year, and for faculty and staff reviews and promotions.

Dr. Polyak also attended the annual Clinical Laboratory Educators' Conference (CLEC) in Boston in 2017 (see MLSP section above). As part of their training, graduate students in the Laboratory Medicine MS program have the opportunity to lecture and assist in MLS student laboratories. Course directors and MLSP laboratory instructors help guide the graduate students' teaching experiences. Additionally, the graduate students are recommended to take a medical education course BIME 520 Teaching Methods in Medical Education.

## **TEACHING AND MENTORING OUTSIDE THE CLASSROOM – MEDICAL LABORATORY SCIENCE PROGRAM**

The MLSP faculty and staff know the program students by name and make great effort to support them throughout their program tenure. Although it is technically a course, LAB M 427 Selected Studies (also known as Senior Seminar) is designed specifically to help the students have a well-rounded education experience by exploring topics of leadership, ethics, professionalism, and

employment. Each student within the MLSP participates in research, producing a research paper, poster and gives a presentation under the mentorship of a Lab Medicine or affiliate faculty.

Paths to program success are clear and expectations are reinforced in every LAB M course taken by the MLSP students. Students are given timely feedback in regards to all of the skills they are obtaining and one-on-one teaching available, as needed. We regularly refer students to upper campus resources, such as DRS or tutoring for courses, when appropriate.

In addition to the seminar course we offer, our academic advisor does individual resume review and coordinates a job fair for our students every year. We have laboratory managers speak to the students about expectations of everyday work, how to get a job, and the professionalism needed for patient care.

## TEACHING AND MENTORING OUTSIDE THE CLASSROOM – MASTER OF SCIENCE PROGRAM

The MS faculty and staff know the program students by name and make great effort to support them throughout their program tenure. As described above, MS students are required to attend two seminar courses, Grand Rounds (LAB M 502), and Research Conference (LAB M 510). MS Faculty attend these weekly seminars as well, which provides opportunities for MS Faculty, particularly Dr. Polyak, to check in with each student's progress. Moreover, Dr. Polyak and Ms. Eggleston regularly meet with students who are nearing graduation, to discuss timelines and milestones that need to be met in order for students to graduate in a particular quarter.

The MS Director also meets with Lab Medicine faculty who are mentoring students for their thesis.

Dr. Polyak also schedules twice-yearly social events with graduate students to discuss work related topics in an informal social environment.

## SECTION III: SCHOLARLY IMPACT

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### MEDICAL LABORATORY SCIENCE PROGRAM

Every student in the MLPS participates in a research project under the mentorship of Lab Medicine or affiliate faculty. Students produce a paper, poster and give a presentation. Students take part in the UW Undergraduate Research Symposium and/or present a poster at the ASCLS NW annual meeting. For the 2016-17 school year, seven of our students presented at UW URS and four in ASCLS. For graduation, one of our students is selected to present their research findings at our departmental graduation.

With the growing ubiquity of molecular diagnostics testing, the MLSP has increased its offering of molecular diagnostics curriculum both didactically and in the student laboratory. This is in advance of any educational requirements of the national MLS training requirements.

The MLSP has affiliate agreements with the following hospitals/institutions in the area:

- Bloodworks Northwest
- Evergreen Healthcare
- Franciscan Health Care System
- Kaiser Permanente
- Harborview Medical Center (HMC)
- LabCorp/Dynacare

- Northwest Hospital and Medical Center
- Providence Everett Medical Center
- Providence St. Peter Hospital
- Seattle Cancer Care Alliance
- Seattle Children's Hospital
- Swedish Medical
- Tacoma General Hospital/MultiCare
- UW Medical Center (UWMC)
- Valley Medical Center
- Veterans' Affairs Puget Sound Health Care System (VAPSHCS)
- Virginia Mason Medical Center
- Washington State Patrol Crime Laboratory

Please see Appendix A, Document 17. Research Rotation Syllabus to see the expectations during their scholarly work.

## MASTER OF SCIENCE PROGRAM

Students are required to give at least three presentations relating to their thesis work. Two presentations must be in the seminar class called Research Conference (LAB M 510) and the third presentation is their public Thesis Defense.

The Department offers annual awards to trainees including Lab Medicine Residents, Post-Doctoral Fellows, and Students who espouse the ethos of Lab Medicine. These awards derive from the Paul Strandjord and Kathleen Clayson Endowed Educational Fund in Laboratory Medicine. This fund supports the education of future clinical laboratory scientists, scholars, and investigators in clinical pathology and laboratory medicine by supporting the department's education, training, and student assistance programs. The Awards are named after the Department's Founding Chair and Faculty Members, Dr. Paul Strandjord and Kathleen Clayson MS, MT. Over the years, several graduate students have won this award.

Scholarly impact also arises from research the MS students perform as part of their thesis work, in the form of peer reviewed publications. For example, Ms. Kathryn McLean, who graduated last year from the program, published a paper with her mentor, Dr. Stephen Salipante in the prestigious journal MBio. 2017 Oct 31;8(5). pii: e00517-17. doi: 10.1128/mBio.00517-17. PMID: 29089424.

Molecular Biology, genetics, and omics technologies have affected all fields of clinical research and Lab Medicine is no exception. As such, Lab Medicine offers tracks for specialization in both the MLS and MS Programs including Informatics and Molecular Diagnostics. These programs typically focus on computation and omics technologies including Next Generation Sequencing and Metabolomics.

## SECTION IV: FUTURE DIRECTIONS

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### UNIT DEFINED QUESTIONS - MEDICAL LABORATORY SCIENCE PROGRAM

**Question 1:** In Washington state and nationwide, there are currently more open MLS staff positions than there are MLS graduates. How can we increase awareness of our profession to improve recruitment so that we continue to have an excellent candidate pool and a full program?

**Answer 1:** In January 2018, our program joined the Health Professions Recruitment Collaborative (HPRC) sponsored by the UW School of Medicine and the UW Center for Health Equity, Diversity and Inclusion. Through this new collaboration, the MLSP has increased recruitment activities by at least 50%. Here is the mission statement of the HPRC:

*The Health Professions Recruitment Collaborative was created as one of the priorities under the auspices of the Health Sciences Diversity Committee. The group consists of recruiters from the six UW Health Sciences schools including Dentistry, Medicine, Nursing, Pharmacy, Public Health, and Social Work. Additional members include the Department of Rehabilitative Medicine, MEDEX and Speech and Hearing Sciences. A priority of this collaborative is to: increase outreach to middle and high schools, colleges and universities and community organizations to grow the number of underrepresented and disadvantaged students in the health professions.*

For a detailed list on outreach events and activities, please see the Academic Unit Diversity section on Program Outreach.

A new opportunity we are investigating is outreach to high school students by joining the National Association for College Admission Counseling (NACAC) to be able to attend National College Fairs in the future.

**Question 2:** MLS graduates must pass a national board of certification exam in order to practice. How do our students compare against students nationwide and what are we doing to help keep our students competitive?

**Answer 2:** For the last ten years, graduates of the MLSP have scored above the national average on the ASCP BOC exam. In the past three years we have had 100% pass rate for first-time test takers.

The MLS faculty, staff and department invest considerable time and resources into the education of our undergraduate students. For example, at our recent site visit by our national governing agency, National Accrediting Agency for Clinical Laboratory Science (NAACLS), the program was assessed in the following areas: didactic and student laboratory curriculum, student satisfaction, quality of clinical rotation training, program outcomes, thoroughness of internal assessment and change management, and affiliate relationships. We had an outstanding review with no program deficiencies. The site visitors were impressed with the level of support the department and affiliates give to the MLSP. This support allows the program to remain competitive on a national level.

**Question 3:** In what ways do you see our MLS curriculum needing to expand so that students have the proper entry-level skills when they enter the clinical lab?

**Answer 3:** On an annual basis the MLSP holds an affiliate meeting where clinical rotation trainers and laboratory managers attend to discuss entry-level competencies in the various hospital systems. The purpose of these meetings is to ensure that the curriculum of the MLSP is in line with what is current in the field and what is required of new hires.

The MLSP curriculum was expanded in 2015 to include a Molecular Diagnostics didactic course ahead of the requirements by NAACLS. This course was incorporated into our program because of the ubiquitous nature of molecular testing in our field. Additionally, a new clinical rotation in Molecular Diagnostics was approved in February 2018 by the School of Medicine. The Class of

2019 will be the first MLSP student group to have a one-week clinical rotation in molecular diagnostics in a variety of disciplines.

**Question 4:** The National Survey of Student Engagement put together a report outlining the best ways to engage undergraduates, which included the following:

- Learning community or some other formal program where groups of students take two or more classes together
- Courses that included a community-based project (service-learning)
- Work with a faculty member on a research project
- Internship, co-op, field experience, student teaching, or clinical placement
- Study abroad
- Culminating senior experience (capstone course, senior project or thesis, comprehensive exam, portfolio, etc.)

How is our MLS program promoting these engagement recommendations?

**Answer 4:** Learning community – the MLSP students are taught in cohorts helping them to build learning communities while in the program and fostering professional relationships once they enter the field.

Community-based projects – each year students are given the opportunity to participate in the Martin Luther King, Jr. Day of Service. Also, UW will be hosting the 2018 Special Olympics and students will be encouraged to participate in a variety of volunteer positions.

Research – every MLSP student completes a 5-week research rotation under the mentorship of department faculty or MLS staff. Students write a paper, prepare a poster and give a presentation as part of the rotation requirements. At the end of the year students give their presentation and do a poster demonstration to MLSP students, faculty, and staff to fulfill their senior project requirement. Additionally, students have the opportunity to present their poster at the UW Undergraduate Research Symposium, MLSP graduation event, and the ASCLS regional conference.

Internships – every MLSP student completes 5, 5-week clinical rotations in all Laboratory Medicine disciplines: Chemistry, Hematology, Microbiology, and Transfusion Medicine. All students follow a prescribed curriculum including proficiencies, weekly quizzes, unknowns, case studies, presentations, and final exam. Furthermore, they receive direct training from certified MLSs and are evaluated on how well they meet cognitive, psychomotor, and affective domain essential functions.

Study Abroad – Due to the constraints of the MLSP didactic course schedule and clinical rotations, students do not have time to fit in a traditional study abroad experience that would take them away from the UW campus for a quarter or more. However, the MLSP understands the value of study abroad and therefore created a non-traditional exchange program with the Gunma University MLSP in Maebashi City, Japan. Each year during spring quarter 2-3 students from Gunma University spend two weeks at UW with the MLS students, faculty, and staff attending MLS lectures and labs, touring various clinical laboratory facilities, and sightseeing in Seattle. The MLSP utilizes the on-campus FIUTS office to match students with a host family for their two-week stay. In exchange 2-3 UW MLS students travel to Maebashi City, Japan during summer quarter to experience a similar homestay and campus visit with the Gunma University MLSP.

Culminating Senior Experience – see Research above.

## UNIT DEFINED QUESTIONS - MASTER OF SCIENCE PROGRAM

**Question 1:** The MS program typically gets many foreign applications each year, but fewer applicants are from the US. How can we increase local, regional, and national visibility of both the MS and MLS programs within the School of Medicine, UW, and to the general public?

**Answer 1:** Dr. Polyak assumed directorship of the Program officially in Jan 2017 as the former Director retired. Prior to this, there were no regular outreach activities. With the support and leadership of Ms. Eggleston, the MS Program has begun participating in outreach events both at UW and beyond including:

- SACNAS 2012 Conference: 10/11/12 to 10/14/12
- Western Washington University Health Professional and Grad School Fair: 10/2012 & 10/2017
- Central Washington University Graduate Programs Fair: 5/12/14
- UW Health Program Graduate Fair: 5/13/14
- Seattle University Health Career Fair: 5/14/14
- UW Graduate Recruitment Fair: 5/15/14
- UW Graduate School Fair: 10/25/16 and 10/26/17

**Question 2:** How can we attract more certified Medical Laboratory Scientists to the graduate program?

**Answer 2:** Lab Medicine is currently in discussions with the Department of Global Health (DGH) to set up new curricula related to improving clinical diagnostics in resource-limited countries (RLCs). Essentially, we are considering establishing a new Global Laboratory Medicine program that would benefit both the MS Program in Lab Medicine and foster interactions and training with laboratorians in RLCs. This program would require online didactic course work in the form of video lectures, tests, and in-country mini courses. Online learning would certainly help attract more students to the MS Program who already have MLS degrees and certification. In fact, we regularly get asked by MLS who work full time in a clinical laboratory if we have an online MS program. Thus, many employed MLSS are interested in the graduate program but are unable to attend during the day. For these potential students, an online program would be very attractive. If an online graduate program can be created, the MS academic adviser can focus more time and effort on recruiting events by attending ASCLS and other national meetings that certified MLSS attend in order to advertise the program. In order for the Global Laboratory Medicine Program to be realized, funding is absolutely required. Dr. Polyak recently submitted an application with Dr. Lucy Peronne, Assistant Professor, DGH, backed by both Lab Medicine and DGH leadership and by the UW's International Training and Education Center for Health (ITECH) and School of Public Health, to President Cauce's Population Health Initiative Grand Challenge. This small grant, if awarded, will begin to allow us to lay the groundwork for expanding the MS Program.

**Question 3:** Is our MS graduate program curriculum in line with the needs of our students given their career aspirations and goals, which includes students with either MLS or non-MLS (i.e. BS) degrees? How can we better support the MLS-oriented and basic science-oriented students?

**Answer 3:** The MS Program is considering a few changes to the curriculum including an increase in the number of core courses that are offered by the department. Please see below for more details. It is important to mention that since the UW SOM does not provide budgetary support for

either the MLS or MS Programs, moving in this direction would require additional investment by the Department and/or establishment of a new financial structure with the SOM.

**Question 4:** The graduate program course offerings in Lab Medicine are very specific and limited in number, requiring students to seek out courses in other departments. Recognizing this, how can the department advertise and facilitate better interactions with other departments and faculty in terms of mutual research and instructional interests?

**Answer 4:** Our assessment of the core curriculum reveals that it is rather limited and forces students to seek classes outside of the MS Program. As the intention of the MS Program is to sharpen the scientific and managerial skills of the applicants, regardless of whether they go on to work in a clinical laboratory or to a basic research laboratory in industry or academia, we propose to add 10 credits to our core curriculum within Lab Medicine. Adding the new classes will achieve the goal of providing rigorous scientific training and management skills that are geared towards the clinical laboratory, and these skills will also be applicable to non-clinical work environments. Critically, adding 10 credits will increase the minimum credits from We propose adding 4 new courses, offered by Lab Medicine, to the core course requirements for the MS Program:

**LAB M 515 RESEARCH DESIGN (3 credits, graded):** The intention of this class is to expose the MS students to the principles of designing properly controlled experiments that are relevant to the clinical diagnostic lab. The concepts of positive and negative controls, sensitivity, specificity, precision, reproducibility, coefficient of variation, etc., will be covered and applied to assays used in the various clinical labs along the 6 major pathways of Lab Medicine specialization. There will be a series of lectures and each class will consist of a 20-minute lecture and hands on, in class problem solving. Dr. Polyak will design and coordinate the course and recruit faculty members to provide guest lectures. Grading will be based on a combination of attendance, class participation, pop quizzes, weekly homework, and a final take home exam/report. This class will be offered in fall quarter so that the students take it when they are taking Medical Biometry (BIOST 511).

**LAB M 516 CRITICAL THINKING (1 credit, not graded):** This class will teach the MS students how to critically read and evaluate published papers on basic research and/or diagnostic techniques that are part of the clinical laboratory. Dr. Polyak will coordinate this course and will recruit Lab Medicine faculty members to mentor specific classes. This will be a journal club style class where the faculty mentor will assign a review article and a peer-reviewed publication to students in advance of the class. Each week, 1-2 students will give a 10-15 minute overview of the research topic followed by the presentation of the research paper. The faculty mentor will guide the discussion to focus on the strengths and weaknesses of the paper, the scientific contribution, and questions that might be addressed through additional experimentation. This is a credit/no credit course based on attendance, class participation and preparation.

**LAB M 520 Organization and Management in Laboratory Medicine (5 credits, graded):** This class will be an update of the current LAB M 520 class and will focus on the Human Resources component of effective laboratory management. It will focus on management of people, conflict resolution, etc., through a series of guest lectures, in class group work, and presentations by students. It will also delve into next-level management skills for the clinical laboratory including budgeting, establishment and oversight of laboratory standard operating procedures, organization, quality control, and regulatory oversight. Dr. Polyak, Ms. Mullinax, and Ms. Eggleston will design and coordinate this course and recruit faculty members to lead specific classes. This class will be

offered in Winter Quarter. Students will be graded on a combination of attendance, class participation, pop quizzes, weekly homework, and a final take home exam/report.

With these proposed changes, the required courses will constitute 30 credits, leaving the students to find a minimum of 6 additional credits to fulfill the requirements for graduation. This will achieve two things. First, it will remove the challenge from students of finding additional classes. Second, the classes will add important educational components to our MS program that we can control and monitor. We submit that these proposed changes will add value to the MS program by giving directed education that will sharpen the skill set of our graduates as they enter the workforce.

We further propose the following changes in the core, required curriculum:

- BIOST 511 Medical Biometry I (4 credits)
- LAB M 502 Grand Rounds (1 credit each, must complete 2 credits)
- LAB M 510 Research Conference (1 credit each, must complete 2 credits)
- LAB M 515 Research Design (3 credits, graded)
- LAB M 516 Critical Thinking (1 credit, not graded)
- LAB M 520 Organization and Management in Laboratory Medicine (5 credits)
- LAB M 601 Laboratory Medicine Teaching Internship (3 credits)
- LAB M 700 Thesis (10 credits minimum)



## APPENDICES

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APPENDIX A - MEDICAL LABORATORY SCIENCE PROGRAM SUPPORTING DOCUMENTATION

APPENDIX B - LABORATORY MEDICINE DEPARTMENT AND MASTER OF SCIENCE PROGRAM SUPPORTING DOCUMENTATION

**APPENDIX A - MEDICAL LABORATORY SCIENCE PROGRAM  
SUPPORTING DOCUMENTATION**

## Document 1. Site Visit Report UW

This email constitutes official correspondence from NAACLS. If you require a paper copy, please print this email for your records.



National Accrediting Agency  
for Clinical Laboratory Sciences

November 17, 2017

Laurianne Mullinax, MS, MT(ASCP)  
Program Director  
University of Washington  
1959 NE Pacific, Box 357110  
Seattle, WA 98195

Dear Ms. Mullinax:

Attached is the Site Visit Report for your **MLS** program. We encourage you to share the report with members of your administration. **Please review the report carefully and respond in writing to any errors or misunderstandings.** It is necessary that your response and any additional documentation needed for clarification be received by **December 18, 2017**. This will allow your program to be considered at the February 2018 meeting of the Review Committee for Accredited Programs (RCAP). **Even if there are no corrections, we must have your concurrence in writing.**

There are two remaining steps in the process before an official accreditation action is transmitted back to you:

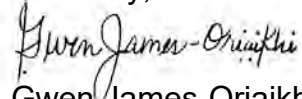
1. The RCAP will review your program and formulate a recommendation. The committee will advise you of the recommendation by March 2018.
2. The recommendation will be received and acted upon by the Board of Directors at its April 2018 meeting, with notification of your accreditation award sent to you by May 2018.

Please note that no recommendation is official until acted upon by the Board of Directors.

We ask that you take a few minutes to evaluate the quality of the site visit process by completing the *Post Site Visit Evaluation Form*. By clicking [HERE](#), you will be able to access our online version of the *Post Site Visit Evaluation Form*. Please complete this questionnaire as soon as possible after receiving this email. This is not considered a response to the Site Visit Report. The questionnaire is designed to evaluate two objectives of a site visit, namely, assessing the quality of educational programs and making recommendations for improvement where needed.

Please e-mail confirmation of receipt to me at [GJO@NAACLS.org](mailto:GJO@NAACLS.org) . We appreciate your cooperation and hope that the site visit process was beneficial to you.

Sincerely,



Gwen James-Oriakhi  
Accreditation/Approval Services Manager  
Executive Assistant

Enclosures · Site Visit Report: MLS  
· Online Post Site Visit Evaluation Form: [HERE](#)

# NAACLS SITE VISIT REPORT

Program Sponsor: University of Washington

Sponsor Type: University

Program Type: MLS

Program Location (City, ST): Seattle, Washington

## Standard I.A: Sponsorship – Sponsoring Institution NA

<b>A. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>A. Site Visit Question:</b> Accreditation status of sponsor is verified	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## Standard I.B: Sponsorship – Consortium Sponsor NA

<b>B. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<b>B. Site Visit Question:</b> At least one member of the consortium meets requirements of a sponsoring institution specified in I.A.	<input type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## Standard I.C: Sponsorship – Multi-location Sponsor NA

<b>C. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site**
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	<input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<b>C. Site Visit Question:</b> Accreditation status of sponsor is verified	<input type="checkbox"/> YES <input type="checkbox"/> NO**
<b>C. Site Visit Question:</b> Proof of minimum of certificate of completion given upon program completion	<input type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## **Standard I.D: Sponsorship – Responsibilities of the Sponsor**

<b>D. Concern from Self-Study Review:</b>  <u>1. No affiliation agreements for Harborview Med Ctr, Riverside Clinics and Univ of WA Med Ctr. These are listed as "None - UW Medicine, our supporting institution"</u> <u>2. Objectives, evals, etc are provided by the program.</u>	<input checked="" type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<b>D. Site Visit Question:</b> Documentation of ongoing communications between all clinical/academic sites and sponsor for exchange of information and coordination of the program have been verified.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA
<b>D. Site Visit Question:</b> Signed affiliation agreements that cover all provisions required by standards have been verified.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): <u>Reviewed self-study response documents and contracts on site for those outside of the UW system.</u>	

## **Standard II.A: Assessment and Continuous Quality Improvement – Systematic Assessment**

<b>A. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>A. Site Visit Question:</b> Evidence of mechanism for continually and systematically reviewing the effectiveness of the program has been provided.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

**Standard II.B: Assessment and Continuous Quality Improvement – Outcome Measures**

<p><b>B. Concern from Self-Study Review:</b></p> <p>_____</p>	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA <input type="checkbox"/> NA (initial program)
<p><b>B. Site Visit Question:</b> All outcomes measures statistics provided in the Self-Study have been verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA (initial program)
<p><b>B. Site Visit Question:</b> Reviews of results are documented, analyzed, and used in program assessment and continuous quality improvement of the program.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA (initial program)
<p><b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____</p>	

**Standard II.C: Assessment and Continuous Quality Improvement – Program Assessment and Modification**

<p><b>C. Concern from Self-Study Review:</b></p> <p>_____</p>	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA <input type="checkbox"/> NA (initial program)
<p><b>C. Site Visit Question:</b> Full set of minutes from advisory board meeting for the most recent three year period have been verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA (initial program)
<p><b>C. Site Visit Question:</b> Documentation of communication with clinical faculty has been verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA (initial program)
<p><b>C. Site Visit Question:</b> Any additional supportive documentation demonstrating data collection, review and evaluation that results in program improvement, along with documentation that links program improvement to changes made as a result of program review and evaluation, have been verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA (initial program)
<p><b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____</p>	

**Standard III.A: Resources – General Resources**



<b>A. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>A. Site Visit Question:</b> Faculty and staff are sufficient and appropriately qualified to perform the functions in documented job descriptions and to allow achievement of program goals.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<ul style="list-style-type: none"> <li>• Verification of the above included sample evaluation forms and teaching observations.</li> </ul>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<ul style="list-style-type: none"> <li>• Verification included documentation that resource assessment is a part of continuous program evaluation.</li> </ul>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<ul style="list-style-type: none"> <li>• Verification included program demonstration that resources are sufficient to allow achievement of program goals.</li> </ul>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

### **Standard III.B: Resources – Financial Resources**

<b>B. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>B. Site Visit Question:</b> Financial resources for the continued operation of the program are sufficient to achieve program goals.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

### **Standard III.C: Resources – Physical Resources**

<b>C. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>C. Site Visit Question:</b> Program's facilities are sufficient to achieve program goals.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>C. Site Visit Question:</b> Equipment and supplies for laboratory analyses in student laboratory is adequate.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**

<b>C. Site Visit Question:</b> Equipment and supplies for laboratory analyses in Clinical Laboratories is adequate.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>C. Site Visit Question:</b> Adequate information resources are current and available for learning.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>C. Site Visit Question:</b> Supporting instructional materials related to all content areas of the curriculum are current, available and utilized.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## Standard IV.A: Students – Publications and Disclosures

<b>A. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>A. Site Visit Question:</b> Verification through review of materials and interviews confirms that the following are clearly defined, published and readily available to prospective and enrolled students.	
a. Program mission statement	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
b. Program goals and competencies	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
c. Program accreditation/approval status including the name, address and contact information for NAACLS	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
d. Program outcomes identified in Standard IIB	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
e. List of clinical facilities	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA
f. Admission criteria, both academic and non-academic, including essential functions, advance placement, etc.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
g. A list of course descriptions with credit hours (if applicable)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
h. Names and academic rank of title of program director and faculty; (and medical director for Pathologists' Assistant programs)	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
i. Current tuition and fees with withdrawal and refund policy	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
j. Service work policies for students	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
k. Policies and procedures for:	
• Advising guiding students through the program while maintaining confidentiality and impartiality	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**

• Clinical assignment when placement cannot be immediately guaranteed	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
• Student grievance and appeals process	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
• Criteria for program completion including probation, suspension, and dismissal; academic calendar	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
I. Rules and regulations governing acceptable personnel and academic conduct, including behavior expectations for clinical experience	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## Standard IV.B: Students – Student Records

<b>B. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>B. Site Visit Question:</b> Evidence that student records are maintained and contain the materials required by Standard IV.B has been verified.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>B. Site Visit Question:</b> Transcripts/student records for individuals including legal names, grades and credits, and dates of admission and completion are permanently maintained information.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## Standard IV.C: Students – Health and Safety

<b>C. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>C. Site Visit Question:</b> The health and safety of students, faculty, and patients during educational activities are adequately safeguarded.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>C. Site Visit Question:</b> Documentation has been verified that students receive biohazard and safety training.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## Standard V: Operational Policies – Fair Practices

V.A-F. Concern from Self-Study Review:  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
A. Site Visit Question: Student recruitment and admission is non-discriminatory and in accordance with existing governmental regulations and those of the sponsor.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
E. Site Visit Question: Service work by students in clinical settings outside of academic hours is non-compulsory.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
F. Site Visit Question: Students are not substituted for regular staff during their student experiences.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
**COMMENTS (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

## Standard VI: Administrative: Maintaining Accreditation/Approval – Program/Sponsoring Institution Responsibilities

This Standard involves the administrative requirements for maintaining accreditation/approval throughout its award period, and therefore is not reviewed in the self-study or site visit process.

## Standard VII.A: Program Administration – Program Director

A. Concern from Self-Study Review:  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
A. Site Visit Question: The program director has input into the budget preparation	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
A. Site Visit Question: Evidence exists that the program director has regular and consistent contact with students, faculty, and program personnel.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
**COMMENTS (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

**Standard VII.B: Program Administration – Site Program Coordinator (required for Multi-location only, assigned to each participating site)**

<p><b>B. Concern from Self-Study Review:</b></p> <p>_____</p>	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<p><b>B. Site Visit Question:</b> The Site Program Coordinator is responsible for the required aspects of the program.</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO** <input checked="" type="checkbox"/> NA
<p><b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____</p>	

**Standard VII.C: Program Administration – Faculty**

<p><b>C. Concern from Self-Study Review:</b></p> <p><u>Missing faculty fact sheet for Xu.</u></p>	<input checked="" type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<p><b>C. Site Visit Question:</b> Evidence of adequate knowledge and proficiency of the faculty in their content areas was verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>C. Site Visit Question:</b> Evidence of didactic instructor appointments within the educational program was verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>C. Site Visit Question:</b> Evidence that faculty teach effectively at the appropriate level was verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>C. Site Visit Question:</b> Evidence of professional development of the clinical and didactic faculty was verified.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>C. Site Visit Question:</b> At least one clinical liaison is identified and appointed per clinical site.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA
<p><b>C. Site Visit Question:</b> When applicable, there is verification that the clinical liaison(s) meets qualifications required for the discipline and level of program as described in Standard VII.C.2.A.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA
<p><b>C. Site Visit Question:</b> Through review of documentation and interviews, verification is made that the clinical liaison is responsible for all aspects of program administration and management as described in Standard VII.C.2.B.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA
<p><b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): <u>Completed faculty fact sheets were reviewed on site and as part of the self-study response documents.</u></p>	

## Standard VII.D: Program Administration – Advisory Committee

<p><b>D. Concern from Self-Study Review:</b></p> <p><u><i>Names and relationship of advisory committee members could not be determined from the documentation included.</i></u></p>	<input checked="" type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<p><b>D. Site Visit Question:</b> Through review of minutes and interviews there is verification that an advisory committee is in place and active in providing input to the program relevancy and effectiveness.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): <u>List of advisory board members and relationships was reviewed in self-study response documents and on site.</u></p>	

## Standard VII.E: Program Administration – Education Coordinator (when required)

<p><b>E. Concern from Self-Study Review:</b></p> <p>_____</p>	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<p><b>E. Site Visit Question:</b> Through review of documentation and interviews, verification is made that the education coordinator is responsible for all aspects of program administration and management as described in Standard VII.E.2 (when applicable).</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO** <input checked="" type="checkbox"/> NA
<p><b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____</p>	

## Standard VII.F: Program Administration – Medical Director (for PathA Programs only)

<p><b>F. Concern from Self-Study Review:</b></p> <p>_____</p>	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<p><b>F. Site Visit Question:</b> Through review of documentation and interviews, verification is made that the medical director is responsible for all aspects of program administration and</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO** <input checked="" type="checkbox"/> NA

management as described in Standard VII.F.2 (when applicable).	
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

### **Standard VIII.A for Accredited Programs: Curriculum Requirements – Instructional Areas**

<b>A. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>A. Site Visit Question:</b> Through review of documentation and transcripts, and interviews, verification is made that the program meets the curricular requirements as described in the program specific Unique Standards VIII.A.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>A. Site Visit Question:</b> Prerequisites are identified, appropriate and met by current and past students as applicable	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>A. Site Visit Question:</b> Elements identified in Standard VIII.A.2. (and VIII.A.3. for Pathologists' Assistant) for each Unique Program are included in the curriculum, current and relevant.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

### **Standard VIII.B for Accredited Programs: Curriculum Requirements – Learning Experiences**

<b>B. Concern from Self-Study Review:</b>  _____	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<b>B. Site Visit Question:</b> Verification is made that learning experiences are appropriate, current and relevant for students to achieve entry level competencies as described for each program level/discipline in Standard VIII.	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO** <input type="checkbox"/> NA
<b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question): _____	

**Standard VIII.C for Accredited Programs: Curriculum Requirements – Evaluations**

<p><b>C. Concern from Self-Study Review:</b></p> <p>_____</p>	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input checked="" type="checkbox"/> NA
<p><b>C. Site Visit Question:</b> Verification is made that evaluation systems related to course content and support program competencies.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>C. Site Visit Question:</b> Verification is made through the review of documents and interviews with students, graduates and employers that evaluations used are appropriate and provide timely feedback for successful student academic standing and progression.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>C. Site Visit Question:</b> Verification is made that evaluation systems are reliable indicators of program effectiveness.</p>	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>**COMMENTS</b> (Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind “no” answer on site visit question): _____</p>	

**VIII. CURRICULUM REQUIREMENTS:** If outcomes measures listed in “II.B. ‘Accompanying Documentation for Self-Study’” are below NAACLS approved benchmarks (or if there is not three years worth of accumulated data, in the case of initial programs):  NA

<p><b>Concern from Self-Study Review:</b></p> <p>_____</p>	<input type="checkbox"/> Resolved in response to self-study review; verified on site** <input type="checkbox"/> Resolved on site** <input type="checkbox"/> Unresolved** <input type="checkbox"/> NA
<p><b>Site Visit Question:</b> Course syllabi and objectives for each subject area were reviewed.</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>Site Visit Question:</b> The program has appropriate objectives in the cognitive, psychomotor, and affective domains.</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>Site Visit Question:</b> Course objectives show progression to the level consistent with entry into the profession.</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>Site Visit Question:</b> Evaluation systems were reviewed for each subject area.</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO**
<p><b>Site Visit Question:</b> Evaluation systems in the affective domain were reviewed.</p>	<input type="checkbox"/> YES <input type="checkbox"/> NO**



**Site Visit Question:** Evaluation systems are employed frequently enough to provide faculty and students with timely indications of a student's academic standing and progress, and to serve as a reliable indicator of the effectiveness of instruction and course design.

- YES
- NO\*\*

**\*\*COMMENTS** (*Explain how any concerns from the self-study were resolved or left unresolved, or explain reasoning behind "no" answer on site visit question*): \_\_\_\_\_

# NAACLS SITE VISIT REPORT

## SUMMARY PAGE

The site visit team does not have the authority to speak on behalf of nor bind NAACLS regarding a program's compliance with the Standards, nor can they predict accreditation actions. These responsibilities rest solely with the NAACLS Board of Directors, which has the exclusive right to determine whether or not accreditation is to be granted or continued.

This document is compiled on the basis of information supplied to the site visit team by the program director and other officials. **NAACLS makes no representation as to its accuracy. The responsibility for accuracy of the information provided to the team rests solely with the program director and other officials.**

**Program Sponsor:**University of Washington

### **Type of Program(s) Visited:**

- Clinical Assistant
- Cytogenetic Technologist
- Diagnostic Molecular Scientist
- Histotechnician
- Histotechnologist
- Medical Laboratory Scientist
- Medical Laboratory Technician
- Phlebotomy
- Pathologists' Assistant

**Areas of Strength: The MLS program at UW has an exceptional level of support from the UW Department of Laboratory Medicine. A major asset to the MLS program is that the Clinical Pathology and Lab Medicine groups make the MLS program a priority in teaching, training, and the provision of resources to ensure that the faculty and staff are able to successfully train and develop students to be laboratory professionals. It's clear that the students and program are integral components of the feed forward cycle and priorities for the Department of Laboratory Medicine.**

### **Major strengths include:**

- **The 'culture of learning and teaching' in the institution and across the laboratories truly supports student learning and the clinical experience.**
- **The website created for the dissemination of clinical training documents, communication and orientation for clinical liaisons is excellent and ensures that all students are trained appropriately.**
- **The annual curriculum meetings involving faculty, staff, lecturers, and clinical liaisons/instructors and subsequent assessment review and program revision contributes to the strong graduate outcomes and experiences.**
- **The commitment of the course faculty to engaging the students, ensuring their understanding of the content, and the application of the content in the clinical laboratory.**

- The rigor of the courses, clear expectations, and appropriate content in the courses. The offering of a Biochemistry course that is geared towards the needs of an MLS student is very helpful in their success in the MLS Chemistry courses.
- The allocation of resources from the reference laboratory is critical to the continued support for laboratory needs and supplies, staffing, faculty and staff development, and student training.
- The program director and staff are greatly supported at all levels which includes the recent approval to increase the existing program coordinator efforts to 0.5 FTE.

Suggestions for continued excellence and improvement based on the interviews include:

- The provision of additional time prior to and after a course runs for the development of new course activities, revision of current content, review to ensure alignment with current guidelines, and grading of laboratory activities for staff who also hold bench appointments in the laboratories.
- The allocation of additional course support to ensure equivalent support for all courses.
  - o Immunohematology and Microbiology have dedicated course managers to oversee the course – provided by the departments. The courses in Chemistry do not currently have this resource.
  - o Explore adding an additional FTE who could assist with student laboratory course preparation and instruction, and the scheduling of clinical rotations.
- Increase student numbers to allow for a continued graduating class of 30 students based on requests from the community. This would also require additional clinical rotation slots and support.
- With the recent retirement of the medical director, there is a need for a faculty level (PhD or MD/PhD) individual to represent the MLS program for college meetings, task forces, and requests.
- Survey clinical laboratories to assess additional training opportunities and relevance of some clinical rotation tasks to align with entry-level expectations.
- Ensure program representation in guest lectures to assist with meeting the stated objectives, appropriate level of content delivery, and alignment with assessment.
- Provide clinical sites with feedback closer to the end of the experience to allow additional time for revision and preparation for the next cycle.
- Adding information sessions at non-traditional times to reach more potential students.

**Concerns Identified in the Self-Study Review Report:** This table has been removed, and all concerns that existed from the Self-Study Review must now be addressed within this Site Visit Report under the appropriate Standard.

Remaining Concerns Identified by the Site Visit Team:

Standard #	Concern
None	


## NAACLS SITE VISIT REPORT

### SIGNATURE PAGE

This page must be attached as the last page of the Site Visit Report.

**Program Sponsor:** University of Washington

**Program Type Visited:** MLS

**Dates:** 11/13/17-11/14/17

**Team Coordinator**

Name and Title: Elizabeth Gockel-Blessing, PhD, MLS(ASCP)cm  
 Institution: Saint Louis University  
 Address: 3437 Caroline Street, Suite 3113  
 City/State/Zip: Saint Louis, MO 63104  
 Telephone/Email: 314-977-8691

Signature: Elizabeth A. Gockel-Blessing

Date: 11/14/17

**Team Member**

Name and Title: Charity Accurso, PhD, MLS(ASCP)cm  
 Institution: University of Cincinnati  
 Address: 3202 Eden Ave.  
 City/State/Zip: Cincinnati, Ohio 45267  
 Telephone/Email: 513-558-7493

I concur with the Site Visit Report.  YES  NO

Signature: Charity Accurso

Date: 11/14/17

**Educator Generalist**

Name and Title: \_\_\_\_\_  
 Institution: \_\_\_\_\_  
 Address: \_\_\_\_\_  
 City/State/Zip: \_\_\_\_\_  
 Telephone/Email: \_\_\_\_\_

I concur with the Site Visit Report.  YES  NO

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

***If a team member does not concur with the report, a minority report describing disagreements must be submitted to NAACLS.***

## Document 2. Accreditation Approval Status

This email constitutes official correspondence from NAACLS. If you require a paper copy, please print this email for your records.



May 4, 2016

Laurianne Mullinax, MS, MT(ASCP)

Program Director

University of Washington

1959 NE Pacific, Box 357110

Seattle, WA 98195

Dear Ms. Mullinax

This is your notification of accreditation renewal for the **MLS** program at your institution. Attached to this email are:

- An Application for Continuing Accreditation (return immediately)
- 2012 Standards
- Standards Compliance Guide
- Self Study Template for Spring 2017 Submissions

*Please note that your program will be reviewed under the new Standards that were adopted by the NAACLS Board of Directors in October 2012. Several new documents have been created to guide you through the process of being reviewed under the new Standards, including a new Guide to Accreditation & Approval and a Standards Compliance Guide. These documents can also be downloaded from the NAACLS website: <http://www.naacls.org/>*

Two copies of your Self Study Report are due to the NAACLS office no later than **April 3, 2017**. Please use the attached Self Study Template and submit the Self Study Report via flash drives.

Your site visit should be scheduled during **September of 2017**. Around the time of the Self-Study Report due date, we will request that you select three site visit dates. Once these dates are received, NAACLS will begin to arrange for site visitors. Your program is responsible for paying all direct expenses for the site visit.

If you anticipate requesting a coordinated joint site visit, please contact the NAACLS office immediately. We require considerable lead time (preferably one year) to make the necessary arrangements for such site visits. We will cooperate with your institution in this regard.

Please e-mail confirmation of receipt to **Gwen James-Oriakhi** at **GJO@NAACL.ORG**.

Sincerely,

Gwen James-Oriakhi

Accreditation/Approval Services Manager

Executive Assistant

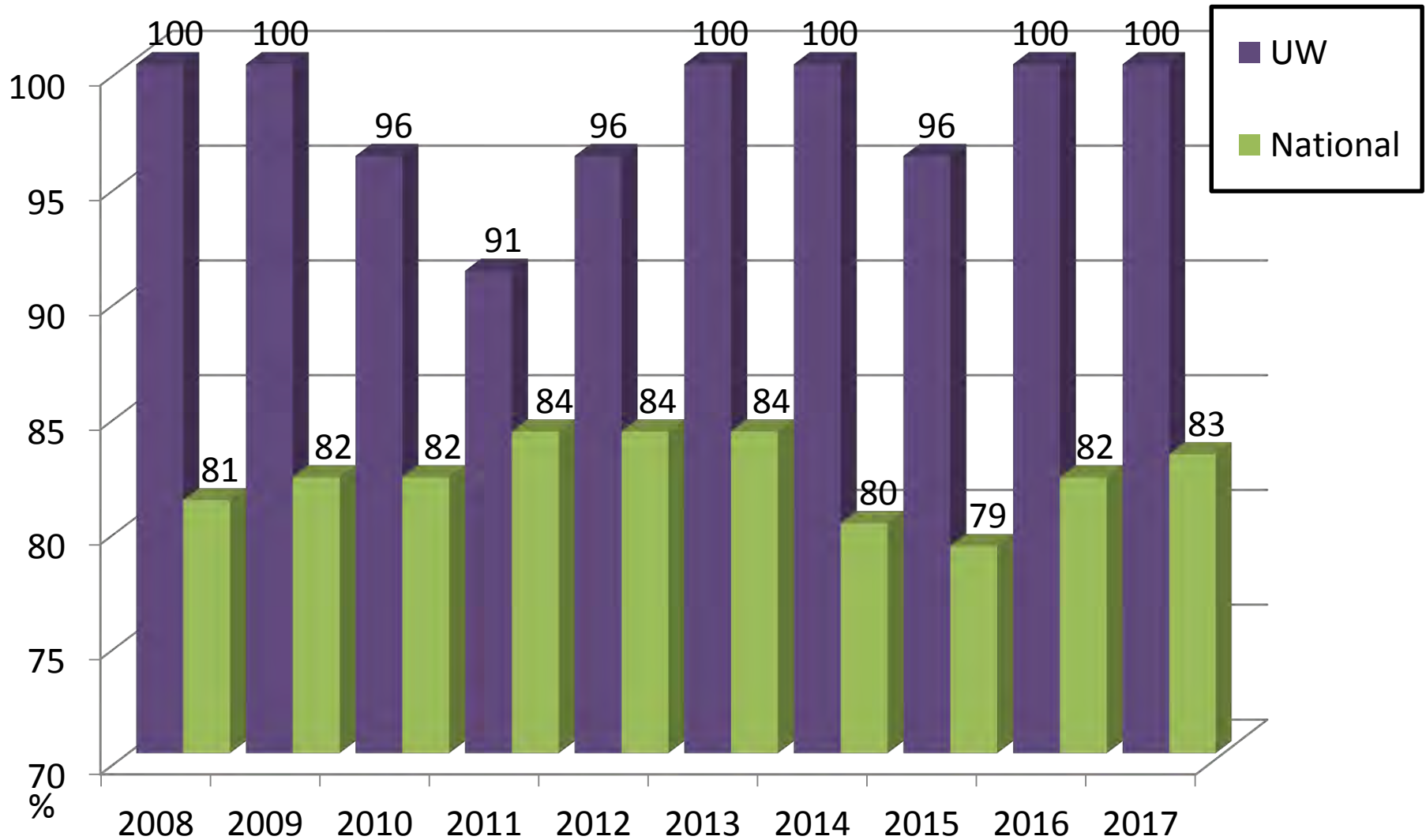
Table 1. Graduation Rates



<u>GRADUATION/ATTRITION RATES</u>	<b>For Students slated to graduate in the time periods below:</b>		
	7/1/13 – 6/30/14	7/1/14– 6/30/15	7/1/15 – 6/30/16
A) # who began the “final half” of the program	<u>28</u>	<u>25</u>	<u>28</u>
B) # who began the “final half” of the program but subsequently left (voluntarily or involuntarily)	<u>0</u>	<u>0</u>	<u>0</u>
C) # who began the “final half” of the program but are still currently enrolled	<u>0</u>	<u>0</u>	<u>0</u>
D) # who began the “final half” of the program during the given time period and have since graduated	<u>28</u>	<u>25</u>	<u>28</u>
<b><u>Yearly Attrition Rate: (B/A)</u></b>	<u>0%</u>	<u>0%</u>	<u>0%</u>
<b><u>Yearly Graduation Rate: D/(A-C)</u></b>	<u>100</u>	<u>100</u>	<u>100</u>
<b><u>*Three Year Average Graduation Rate: [total "D"/((total "A" - total "C"))]</u></b>	<u>100</u>		
<p>NAACLS BENCHMARK FOR GRADUATION RATES: Three years consecutive results of graduation rates demonstrating an average of at least 70%** of students who have begun the final half of the program go on to successfully graduate from the program as calculated by the most recent three year period. <b><u>Please explain how you have determined what the “final half” of the program is, as used in your statistics above:</u></b></p>	<p>We are a 2+2 program, therefore the "final half" is the second year of the program:  September 2013 to June 2014 for Class of 2014  September 2014 to June 2015 for Class of 2015  September 2015 to June 2016 for Class of 2016</p>		

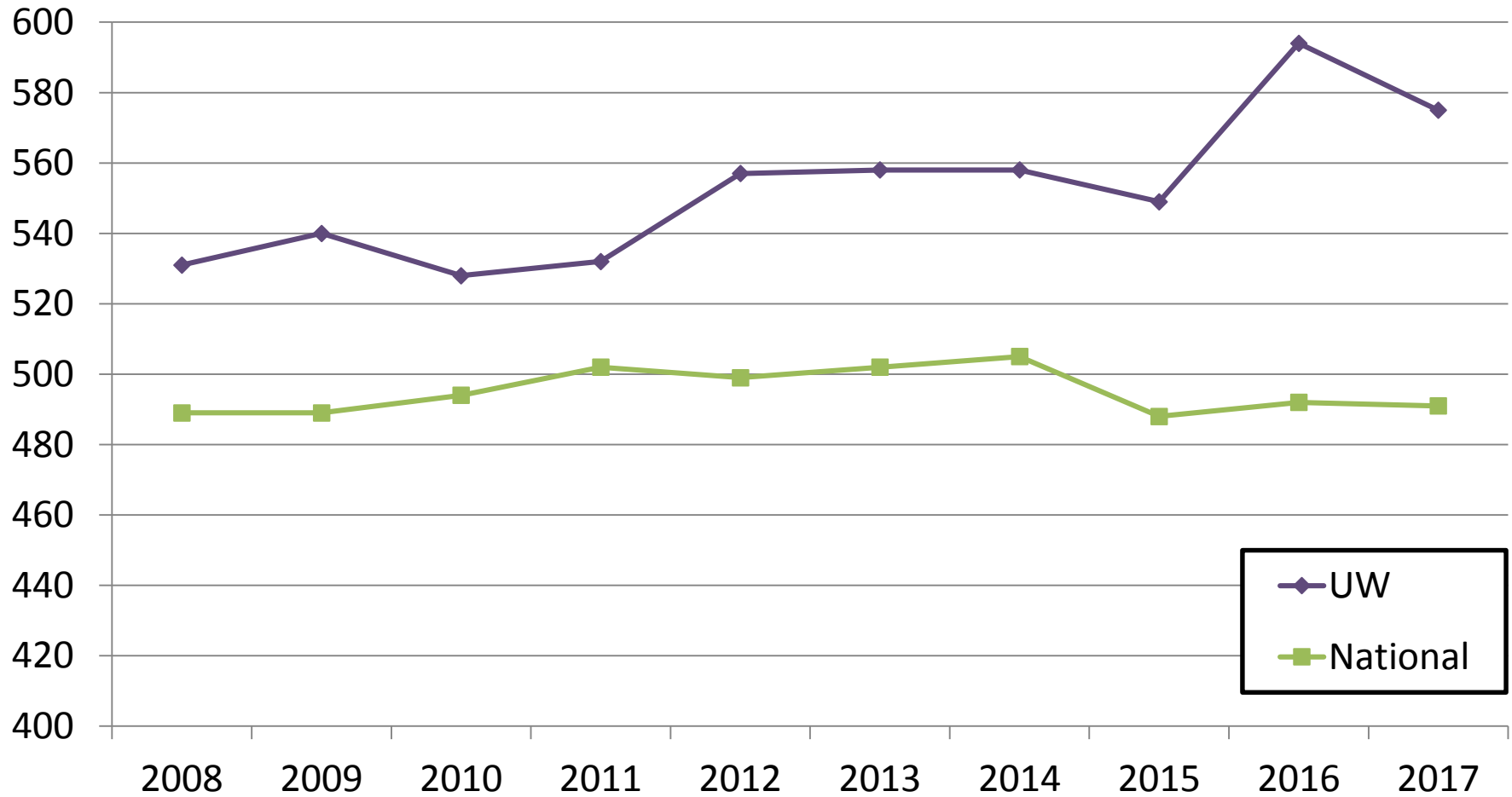
Figure 1. ASCP BOC Passing Rates

# Figure 1. MLSP 1<sup>st</sup> Time Pass Rate



## Figure 2. ASCP BOC Scores

# Figure 2. MLSP Mean Certification Scores



## Table 2. Graduates Job Placement Rates

<u>PLACEMENT RATES</u>  Please "check" which successive years to use to determine Three Year Averages:	<b>For the students who graduated between:</b>			
	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	7/1/12 – 6/30/13**	7/1/13 – 6/30/14	7/1/14 – 6/30/15	7/1/15 – 6/30/16
	** Programs with Self-Study Due Dates between 2/1/17 and 6/29/17 may choose to use this column since a full year will not have gone by to collect data for the last column. Those submitting on or after 6/30/17 cannot use this column.			
A) Total # of Graduates	<u>30</u>	<u>28</u>	<u>25</u>	<u>28</u>
B) # that found employment (in the field or in a closely related field) and/or continued their education within one year of graduation	<u>29</u>	<u>24</u>	<u>25</u>	<u>27</u>
C) # that did neither listed above?	<u>0</u>	<u>1</u>	<u>0</u>	<u>0</u>
D) # that do you NOT have any information for?	<u>1</u>	<u>3</u>	<u>0</u>	<u>1</u>
<b><u>Yearly Average Placement Rate: (B)/(B+C)</u></b>	<u>100</u>	<u>96</u>	<u>100</u>	<u>100</u>
<b><u>*Three Year Average Placement Rate:</u></b> <b><u>[Total "B" / (Total "B" + Total "C")]</u></b>	<u>99%</u>			

## Document 3. Affiliate Agreement Valley UW



This Agreement is effective as of **April 1, 2017**, between Public Hospital District No. 1 of King County, a non-profit Washington municipal corporation, **d/b/a Valley Medical Center** (hereinafter the "*Hospital*"), located at Renton, Washington, and **University of Washington School of Medicine** ("*School*"). The purpose of this Agreement is for the **Hospital** and **School** to achieve their mutual goal of providing educational opportunities in the clinical setting to students interested in health care and related fields. In consideration of the mutual covenants and agreements set forth below, the **Hospital** and **School** agree as follows:

### GENERAL PROVISIONS

1. The **Hospital** and **School** agree that contemporaneous with or following execution of this Agreement and within the scope of its provisions, they will work together to formalize operational details of the clinical education program. These details include, but are not limited to, the following:

- Beginning dates and length of experiences (to be mutually agreed upon at least four weeks before the beginning of each experience);
- Number and type of students eligible to participate in each experience;
- Specific days, hours and locations for each experience;
- Specific learning objectives and performance expectations for students;
- Specific allocation of responsibilities for **School's** faculty liaison and The **Hospital's** clinical education liaison referenced elsewhere in this Agreement;
- Deadlines and format for student progress reports and evaluation forms.

Operational details will be confirmed by letter agreement signed by authorized representatives of each party, which will be attached to this Agreement. Details contained in such letter agreements may be modified by subsequent letter agreements signed by authorized representatives of each party. Exchange of information will be maintained by on-site visits when practical and by letter or telephone in other instances.

2. The **Hospital** and **School** will instruct their respective staff, faculty, and students participating in the clinical education program, to maintain confidentiality of patient and student information as required by law and by the policies and procedures of the **Hospital** and **School**.

3. There will be no payment of charges or fees between the **Hospital** and **School**.

4. The **Hospital** and **School** are not partners, joint venturers, or each other's agents in any respect.

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5. Neither the **Hospital's** nor **School's** employees will be considered each other's employees or agents. Neither the **Hospital** nor **School** assumes any liability under any law relating to Worker's Compensation on account of each other's employees performing or traveling pursuant to this Agreement.

6. There will be no discrimination against any program participant covered under this Agreement because of race, color, religion, creed, honorably discharged veteran or military status, genetic information, pregnancy, national origin, age, sex, or sexual orientation or the presence of any sensory, mental or physical disability or the use of a trained guide dog or service animal by persons with a disability. The **Hospital** and **School** both affirm that they do not engage in such discrimination in their respective institutions.

### **SCHOOL'S RESPONSIBILITIES**

7. **School** will provide information to the **Hospital** concerning its curriculum, and the professional and academic credentials of its faculty who will be involved in student clinical experiences under this Agreement. **School** will designate an appropriately qualified and credentialed faculty member to coordinate and act as the liaison with The **Hospital**. The faculty liaison will directly supervise students on-site at the **Hospital** if at all possible. **School** will be responsible for instruction, and administration of the students' academic educational programs. **School** will notify the **Hospital** in writing of any change or proposed change of its liaison. **School** will have the final responsibility for evaluating and grading students.

8. **School's** faculty will meet with the **Hospital** clinical education liaison at the beginning and end of the clinical experiences to discuss and evaluate the clinical education program. These meetings will take place in person if practicable, otherwise by telephone conference. **School** is responsible for arranging and planning the meetings.

9. **School** will provide the names and information pertaining to relevant education and training, for all students enrolled in a clinical experience at least two weeks before the beginning date of the experience. **School** is responsible for supplying any additional information required by the **Hospital** as set forth in this Agreement, prior to the arrival of students. **School** will notify the **Hospital** in writing of any change or proposed change in a student's status.

10. **School** will obtain evidence of current immunizations against diphtheria, tetanus, measles, mumps, rubella (or a positive rubella titer), and of hepatitis B immunization status for those students who will be in contact with patients/clients. For each student born after 1956, **School** will maintain on file records of positive titer or of post-1967 immunization for rubella and rubeola. At the time of immunization, students with no history of exposure to chicken pox will be advised to get an immunization titer. **School** will require PPD testing every twelve months, or follow-up as recommended if the students are PPD-positive or have had BCG. **School** will provide information to the **Hospital** regarding student status concerning the above requirements.

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11. **School** will ask each student who may be placed in the **Hospital** to obtain his/her criminal history background record from the Washington State Patrol, pursuant to RCW 43.43.834 and RCW 43.43.838, to release a copy of that record to the School and to authorize the School to transmit that record or copy thereof to Hospital. Before the start of training, School will provide Hospital with the names of any students who have failed to provide the requested records, or who refuse to authorize the release of records to Hospital. The student will be informed that, whether or not they agree to obtain the record and agree to release it to the School and the Hospital, Hospital may conduct the background inquiry directly and the Hospital may refuse placement of a student who does not provide the requested records or who has a record of prior criminal conduct.

12. **School** will assign to the **Hospital** only those students who have satisfactorily completed the prerequisite didactic portion of the curriculum and who have current CPR certification. **School** will provide information to the **Hospital** regarding student status with respect to current licensure.

13. **School** will comply with, and ensure to the extent possible that students comply with, the policies and procedures established by The **Hospital**. **School** will notify each student of his/her status and responsibilities under to this Agreement.

14. **School** will encourage each student participating in the clinical education program to acquire comprehensive health and accident insurance that will provide continuous coverage of such student during his or her participation in the education program. **School** will inform students that they are responsible for their own health care costs, health insurance coverage, and their own health needs.

#### **THE HOSPITAL'S RESPONSIBILITIES**

15. The **Hospital** will provide students with a desirable clinical education experience within the scope of health care services provided by The **Hospital**. The **Hospital** will designate in writing one person as the **Hospital** clinical education liaison, who will maintain contact with the **School**-designated liaison to assure mutual participation in and review of the clinical education program and student progress. The **Hospital** will submit in writing to **School** upon request the professional and academic credentials for the **Hospital** clinical education liaison. The **Hospital** will notify **School** in writing of any change of the **Hospital** clinical education liaison.

16. The **Hospital** will provide students with access to sources of information necessary for the students' clinical education within The **Hospital's** policies and procedures and commensurate with patients' rights, including applicable state and federal law.

17. The **Hospital's** clinical education supervisor will provide information about his/her knowledge of students' performance as requested by **School**.

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18. The **Hospital** retains full responsibility for the care of patients/clients, and will not rely on the students' clinical training activities for staffing purposes. Affiliation under this Agreement must not detract from The **Hospital's** medical mission, or the education and training needs of The **Hospital's** employees and medical staff.

19. The **Hospital** will have the right to take immediate temporary action to correct a situation where a student's actions endanger or reasonably may endanger patient care, or disrupt the efficient operation of the facility. As soon as possible thereafter, The **Hospital's** clinical education liaison will notify **School** of the action taken. All final resolutions of the student's academic status in such situations will be made solely by **School** after reviewing the matter and considering whatever written factual information the **Hospital** provides for **School**. The **Hospital**, however, reserves the exclusive and ultimate right to permanently terminate the use of its facilities by a particular student.

20. Except as provided elsewhere in this Agreement, or as otherwise provided by applicable law, the **Hospital** will have no obligation to furnish medical or surgical care to any student. Students will be financially responsible for the cost of health care or first aid that becomes necessary while students are on-site.

#### **STUDENTS' STATUS AND RESPONSIBILITIES**

21. Students will have the status of learners and will not replace the **Hospital** staff. Any service rendered by students is incidental to the educational purpose of the clinical education program.

22. Students are required to adhere to the standards, policies, and regulations of the **Hospital** during their clinical education program.

23. Students will wear appropriate attire and name tags, clearly identifying them as **School's** students, and will conform to the standards and practices established by **School** during their clinical education program at The **Hospital**.

24. Students assigned to patient care areas will complete certification in point of care testing via all applicable the **Hospital** educational modules pertaining to the assigned unit(s).

25. **School** agrees to obtain consent from the student's parent/guardian for any students under eighteen (18) years of age, as well as agreement from the parent/guardian that the student will abide by the terms of this Agreement.

26. Students assigned to the **Hospital** will be and will remain students of **School**, and will in no sense be considered employees of The **Hospital**. The **Hospital** assumes no liability under any law relating to Worker's Compensation on account of any **School** student's performing, receiving training, or traveling pursuant to this Agreement. Students will not be entitled to any monetary or other remuneration for services performed by them at The **Hospital**, nor will the **Hospital** otherwise have any monetary obligation to **School** or its students by virtue of this Agreement.

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## **LIABILITY COVERAGE AND INDEMNIFICATION**

27. To the extent permitted by law, **School** will defend, indemnify and hold the **Hospital** harmless from any loss, claim or damage (including reasonable attorneys' fees and costs) arising from the negligence of its faculty, employees, and agents in the performance of this Agreement. Neither party will be considered the agent of the other party and neither party assumes any responsibility to the other party for the consequences of any act or omission of any person, firm or corporation not a party to this Agreement. School is covered by the State of Washington Self-Insurance Program and the Tort Claims Act (Chapter 4.92 RCW). Claims against School and its employees, officers and agents in the performance of their duties under this Agreement will be paid from the tort claims liability account as provided in Chapter 4.92. RCW. **In order to be accepted at the Training Site, students will be required to have medical malpractice and general liability coverage, whether through the student medical malpractice and general liability policies offered by the State of Washington, Office of Financial Management, Risk Management division, or otherwise, while working in the Hospital.**

28. To the extent permitted by law, **the Hospital** will defend, indemnify and hold **School** harmless from any loss, claim or damage (including reasonable attorneys' fees and costs) arising from the negligence of its employees, officers and agents. The **Hospital** will maintain professional liability coverage with limits of not less than \$1 million per occurrence and \$3 million annual aggregate (or an equivalent program of self-insurance).

29. Both parties will provide proof of coverage upon request. In addition, the **Hospital** and **School** agree to notify each other in the case of material modification or cancellation of coverage, and to provide subsequent proof of coverage thereafter.

## **TERM**

30. This Agreement is effective beginning **April 1, 2017** and will continue thereafter for three (3) years. After the initial term, this contract shall auto-renew for one (1) year periods until terminated. This agreement will be reviewed at the request of either party. The **Hospital** and **School** will jointly plan student placement in advance of each academic term, taking into account the needs of the **School** for clinical placement, maximum number of students for whom the **Hospital** can provide a desirable clinical education experience, and the needs of other disciplines or schools requesting clinical placements.

31. This Agreement may be canceled without cause at any time, by either party. The **Hospital** may cancel on ninety (90) days' written notice; **School** may cancel on thirty (30) days' written notice. Termination by the **Hospital** would not become effective for students presently enrolled in the clinical education program if the termination would prevent the completion of requirements necessary for the students' clinical education program.

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## **PROVISIONS REGARDING BLOOD-BORNE PATHOGENS**

32. **School** certifies that it has trained each student it sends to the **Hospital** in universal precautions and transmission of blood-borne pathogens, and that it will send to the **Hospital** only students who have been trained in using universal precautions. **School** has provided all participating students with the opportunity to receive the Hepatitis B (HBV) vaccine before assignment to The **Hospital**. The **Hospital** will provide personal protection equipment that is appropriate for the tasks assigned to **School's** students.

33. In the event a student sustains a needle-stick injury or other substantial exposure to bodily fluids, or to other potentially infectious material while participating in the clinical education program at The **Hospital**, students will be seen by The **Hospital's** employee health service and/or emergency department as soon as possible after the exposure. Students will be financially responsible for the cost of this health care. The source patient's HBV, HCV and HIV status will be determined by the **Hospital** to the extent possible, and consistent with The **Hospital's** usual procedures. The **Hospital** does not accept liability for any illness or injury subsequent to such exposure, except as provided by the indemnification provisions of this Agreement.

## **MISCELLANEOUS PROVISIONS**

34. Provision for HIPAA Protection. School voluntarily provides students with training on the requirements of the Health Insurance Portability and Accountability Act (HIPAA). Hospital will provide additional training on Hospital's specific HIPAA policies and procedures. School will direct its students and faculty to comply with the policies and procedures of Hospital No protected healthcare information (PHI) is anticipated to be exchanged between Hospital and School. Solely for the purpose of defining students' role in relation to the use and disclosure of Hospital's PHI, students acting pursuant to this Agreement are defined as members of the Hospital's workforce. However, School's students and faculty shall not be considered to be employees of Hospital.

35. Entire Agreement. This Agreement constitutes the entire agreement between the parties, and supersedes all prior oral or written agreements, commitments, or understandings concerning the matters provided for herein.

36. Amendment. This Agreement may be modified only by a written Amendment incorporating the remaining terms of this Agreement, which is executed by the parties and attached to this Agreement. The provisions in this Agreement may not be modified by any other attachment.

37. Order of Precedence. Any conflict or inconsistency in this Agreement and its attachments will be resolved by giving the documents precedence in the following order:

- a) Fully executed amendments to this Agreement;
- b) This Agreement;
- c) Other Attachments to this Agreement in reverse chronological order.

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38. Governing Law. The parties' rights or obligations under this Agreement will be construed in accordance with, and any claim or dispute relating thereto will be governed by, the laws of the State of Washington.

39. Notices. All notices, demands, requests, or other communications required to be given or sent by the **Hospital** or **School**, will be in writing and will be mailed by first-class mail, postage prepaid, or transmitted by hand delivery or facsimile, addressed as follows:

To the Hospital: Public Hospital District No. 1 of King County  
d/b/a Valley Medical Center  
400 South 43<sup>rd</sup> Street/ PO Box 50010  
Renton, WA 98058-5010  
P: (425) 656-5049/ F: (425) 656-4202

To the School: Laurianne T. Mullinax, M.S., MLS(ASCP CM)  
Medical Laboratory Science Program Director  
University of Washington  
Department of Laboratory Medicine - Box 357110  
Seattle, Washington 98195  
206-598-0428  
latarver@uw.edu

Each party may designate a change of address by notice in writing. All notices, demands, requests, or communications that are not hand-delivered will be deemed received three (3) days after deposit in the U. S. mail, postage prepaid; or upon confirmation of successful facsimile transmission.

40. Survival. The **Hospital** and **School** expressly intend and agree that the liability coverage provisions of this Agreement will survive the termination of this Agreement for any reason.

41. Severability. If any provision of this Agreement, or of any other agreement, document or writing pursuant to or in connection with this Agreement, shall be wholly or partially invalid or unenforceable under applicable law, said provision will be ineffective to that extent only, without in any way affecting the remaining parts or provisions of said agreement.

42. Waiver. Neither the waiver by any of the parties of a breach of or a default under any of the provisions of this Agreement, nor the failure of either of the parties, on one or more occasions, to enforce any of the provisions of this Agreement or to exercise any right or privilege hereunder will thereafter be construed as a waiver of any subsequent breach or default of a similar nature, or as a waiver of any of such provisions, rights or privileges under this Agreement.

43. Arbitration. In the event that a dispute between the parties arising out of this Agreement cannot be mutually resolved, the parties agree to submit the dispute to binding arbitration in King County, Washington, under the Commercial Rules of the American

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Arbitration Association, whereupon judgment may be had in any court of competent jurisdiction. Each party shall bear its own costs, and attorneys' fees with respect to any such arbitration.

44. Inspection. The **Hospital** will permit, on reasonable notice and request, the inspection of clinical facilities by agencies charged with responsibility for accreditation of **School**.

*[Signature Page Follows]*



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IN WITNESS WHEREOF, **School** and the **Hospital** have executed this Agreement as of the day and year first above written.

**HOSPITAL:**

**PUBLIC HOSPITAL DISTRICT NO. 1** of King County,  
a non-profit Washington municipal Corporation  
d/b/a **VALLEY MEDICAL CENTER**

By: Theresa Braungardt  
Theresa Braungardt, MN, RN  
Senior VP- Chief Nursing Officer

Date: 3/13/17

**SCHOOL:**

**UNIVERSITY OF WASHINGTON SCHOOL OF  
MEDICINE**  
*Medical Laboratory Science Program*

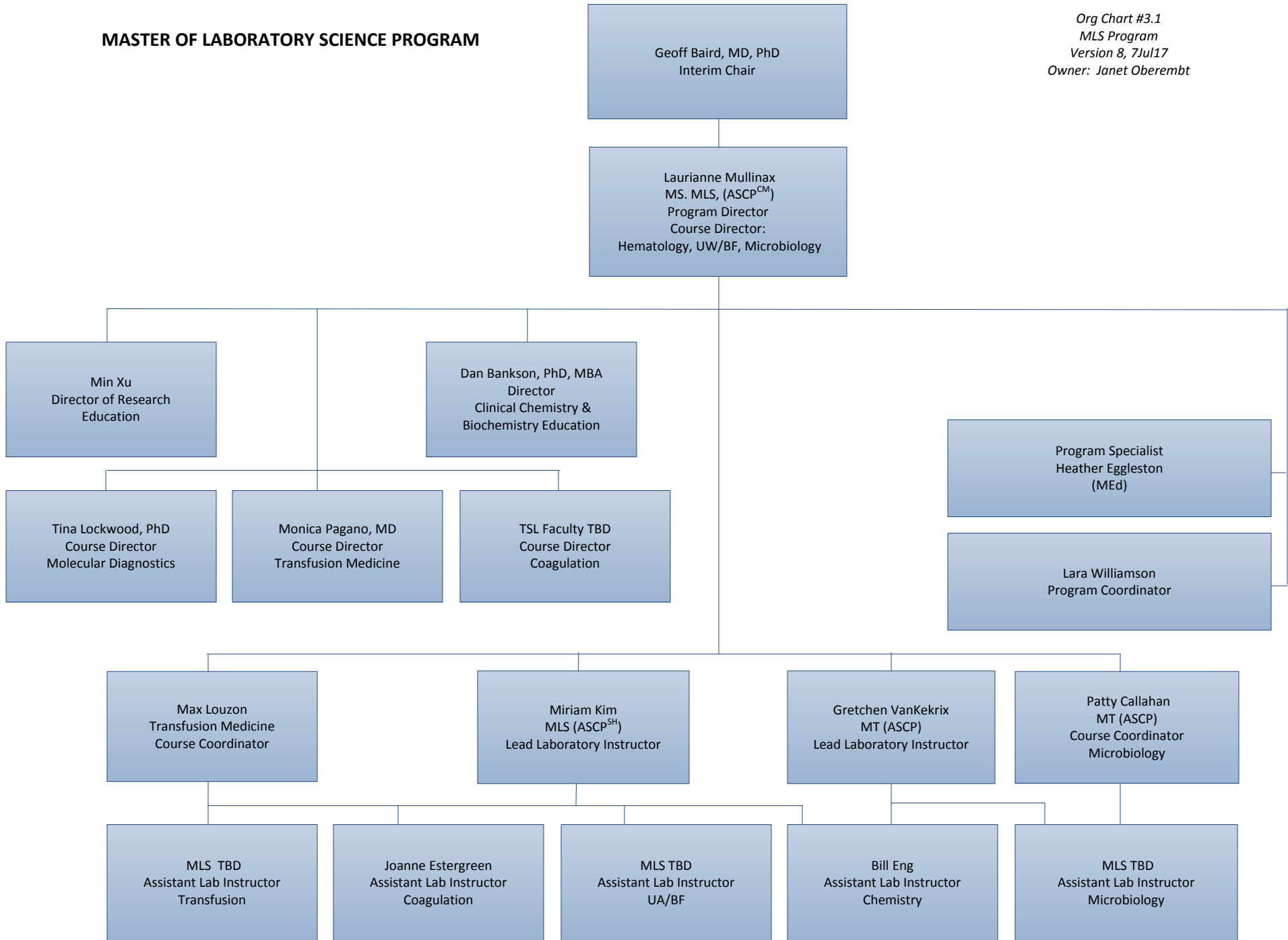
By: Suzanne M. Allen  
Suzanne M. Allen, M.D., M.P.H.  
Vice Dean for Academic, Rural and  
Regional Affairs

Date: 23 Mar 17

Figure 3. Organizational Chart

# MASTER OF LABORATORY SCIENCE PROGRAM

Org Chart #3.1  
MLS Program  
Version 8, 7Jul17  
Owner: Janet Oberembt



## Document 4. Student Course Evaluation

**Statistics for 2014 LM 426 Course Evaluation**

Total submissions: 11

\* Calculated using numeric values

Matrix - one answer per row (button) Question				Response statistics*	
Please select the most appropriate answer for each question below.				Row1	
Row 1				Mean	
The course followed a syllabus that outlined and defined course expectations				1.64	
Total responses (N): 11 Did not respond: 0				Median	
Numeric value				2.00	
Answer				Mode	
Frequency				1, 2	
Percentage				Min/Max	
1	Excellent	5	45.45%	1/3	
2	Good	5	45.45%	Standard deviation	
3	Fair	1	9.09%	0.67	
4	Poor	0	0.00%	Row2	
5	Very Poor	0	0.00%	Mean	
Row 2				1.82	
The course used objectives or study questions to focus my learning.				Median	
Total responses (N): 11 Did not respond: 0				2.00	
Numeric value				Mode	
Answer				1	
Frequency				Min/Max	
Percentage				1/3	
1	Excellent	5	45.45%	Standard deviation	
2	Good	5	45.45%	0.87	
3	Fair	1	9.09%	Row3	
4	Poor	0	0.00%	Mean	
5	Very Poor	0	0.00%	1.36	
Row 3				Median	
The course instructors answered questions clearly and promptly either individually or in class discussions.				1.00	
Total responses (N): 11 Did not respond: 0				Mode	
Numeric value				1	
Answer				Min/Max	
Frequency				1/2	
Percentage				Standard deviation	
1	Excellent	5	45.45%	0.50	
2	Good	3	27.27%	Row4	
3	Fair	3	27.27%	Mean	
4	Poor	0	0.00%	1.64	
5	Very Poor	0	0.00%	Median	
Row 4				1.00	
The course instructors used relevant teaching techniques that enhanced learning (audiovisual aids, case studies, discussions, papers, projects, assignments, internet links, etc.).				Mode	
Total responses (N): 11 Did not respond: 0				1	
Numeric value				Min/Max	
Answer				1/3	
Frequency				Standard deviation	
Percentage				0.69	
1	Excellent	7	63.64%	Row5	
2	Good	4	36.36%	Mean	
3	Fair	0	0.00%	1.45	
4	Poor	0	0.00%	Median	
5	Very Poor	0	0.00%	1.00	
Row 5				Mode	
The course encouraged me to apply problem-solving skills				1	
Total responses (N): 11 Did not respond: 0				Min/Max	
Numeric value				1/3	
Answer				Standard deviation	
Frequency				0.69	
Percentage				Row6	
1	Excellent	6	54.55%	Mean	
2	Good	3	27.27%	1.45	
3	Fair	2	18.18%	Median	
4	Poor	0	0.00%	1.00	
5	Very Poor	0	0.00%	Mode	
Row 5				1	
The course encouraged me to apply problem-solving skills				Min/Max	
Total responses (N): 11 Did not respond: 0				1/2	
Numeric value				Standard deviation	
Answer				0.47	
Frequency				Row7	
Percentage				Mean	
1	Excellent	6	54.55%	1.55	
2	Good	3	27.27%	Median	
3	Fair	2	18.18%	1.00	
4	Poor	0	0.00%	Mode	
5	Very Poor	0	0.00%	1	
Row 5				Min/Max	
The course encouraged me to apply problem-solving skills				1/2	
Total responses (N): 11 Did not respond: 0				Standard deviation	
Numeric value				0.47	
Answer				Row8	
Frequency				Mean	
Percentage				1.27	
1	Excellent	6	54.55%	Median	
2	Good	3	27.27%	1.00	
3	Fair	2	18.18%	Mode	
4	Poor	0	0.00%	1	
5	Very Poor	0	0.00%	Min/Max	
Row 5				1/2	
The course encouraged me to apply problem-solving skills				Standard deviation	
Total responses (N): 11 Did not respond: 0				0.47	

and to think analytically.				Row9	
Total responses (N): 11 Did not respond: 0				Mean	1.91
Numeric value				Median	2.00
Answer	Frequency	Percentage	Mode	1	
1 Excellent	7	63.64%	Min/Max	1/5	
2 Good	3	27.27%	Standard deviation	1.22	
3 Fair	1	9.09%			
4 Poor	0	0.00%			
5 Very Poor	0	0.00%			
Row 6				Row10	
Extra help was provided when needed.				Mean	1.27
Total responses (N): 11 Did not respond: 0				Median	1.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/2	
1 Excellent	7	63.64%	Standard deviation	0.47	
2 Good	3	27.27%			
3 Fair	1	9.09%			
4 Poor	0	0.00%			
5 Very Poor	0	0.00%			
Row 7				Row11	
Constructive feedback was provided on my progress.				Mean	1.91
Total responses (N): 11 Did not respond: 0				Median	1.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/5	
1 Excellent	6	54.55%	Standard deviation	1.30	
2 Good	4	36.36%			
3 Fair	1	9.09%			
4 Poor	0	0.00%			
5 Very Poor	0	0.00%			
Row 8				Row12	
The course instructors were knowledgeable in the subject matter.				Mean	1.91
Total responses (N): 11 Did not respond: 0				Median	2.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/5	
1 Excellent	8	72.73%	Standard deviation	1.22	
2 Good	3	27.27%			
3 Fair	0	0.00%			
4 Poor	0	0.00%			
5 Very Poor	0	0.00%			
Row 9				Row13	
Course activities were used that adequately prepared me for exams.				Mean	1.50
Total responses (N): 11 Did not respond: 0				Median	1.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/3	
1 Excellent	5	45.45%	Standard deviation	0.71	
2 Good	4	36.36%			
3 Fair	1	9.09%			
4 Poor	0	0.00%			
5 Very Poor	1	9.09%			
Row 10				Row14	
My questions were answered in a timely manner.				Mean	1.82
Total responses (N): 11 Did not respond: 0				Median	2.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/3	
1 Excellent	8	72.73%	Standard deviation	0.87	
2 Good	3	27.27%			
3 Fair	0	0.00%			
4 Poor	0	0.00%			
5 Very Poor	0	0.00%			
Row 9				Row15	
Course activities were used that adequately prepared me for exams.				Mean	1.36
Total responses (N): 11 Did not respond: 0				Median	1.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/2	
1 Excellent	5	45.45%	Standard deviation	0.50	
2 Good	4	36.36%			
3 Fair	1	9.09%			
4 Poor	0	0.00%			
5 Very Poor	1	9.09%			
Row 10				Row16	
My questions were answered in a timely manner.				Mean	1.27
Total responses (N): 11 Did not respond: 0				Median	1.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/2	
1 Excellent	5	45.45%	Standard deviation	0.47	
2 Good	4	36.36%			
3 Fair	1	9.09%			
4 Poor	0	0.00%			
5 Very Poor	1	9.09%			
Row 10				Row17	
My questions were answered in a timely manner.				Mean	1.27
Total responses (N): 11 Did not respond: 0				Median	1.00
Numeric value				Mode	1
Answer	Frequency	Percentage	Min/Max	1/2	
1 Excellent	5	45.45%	Standard deviation	0.47	
2 Good	4	36.36%			
3 Fair	1	9.09%			
4 Poor	0	0.00%			
5 Very Poor	1	9.09%			

<i>value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	8	72.73%
2	Good	3	27.27%
3	Fair	0	0.00%
4	Poor	0	0.00%
5	Very Poor	0	0.00%

<i>Row18</i>	
<i>Mean</i>	1.82
<i>Median</i>	2.00
<i>Mode</i>	1
<i>Min/Max</i>	1/4
<i>Standard deviation</i>	0.98

*Row 11*  
The course activities were clear and understandable.

<i>Row19</i>	
<i>Mean</i>	1.82
<i>Median</i>	2.00
<i>Mode</i>	1
<i>Min/Max</i>	1/4
<i>Standard deviation</i>	0.98

Total responses (N): 11 Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	6	54.55%
2	Good	2	18.18%
3	Fair	2	18.18%
4	Poor	0	0.00%
5	Very Poor	1	9.09%

*Row 12*  
The presentations maintained my interest.

Total responses (N): 11 Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	5	45.45%
2	Good	4	36.36%
3	Fair	1	9.09%
4	Poor	0	0.00%
5	Very Poor	1	9.09%

*Row 13*  
Opportunities were provided for students to express themselves.

Total responses (N): 10 Did not respond: 1

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	6	60.00%
2	Good	3	30.00%
3	Fair	1	10.00%
4	Poor	0	0.00%
5	Very Poor	0	0.00%

*Row 14*  
Reasonableness of assigned work was:

Total responses (N): 11 Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	5	45.45%
2	Good	3	27.27%
3	Fair	3	27.27%
4	Poor	0	0.00%
5	Very Poor	0	0.00%

*Row 15*  
Scheduling of laboratory time was reasonable:

Total responses (N): 11 Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	7	63.64%
2	Good	4	36.36%
3	Fair	0	0.00%
4	Poor	0	0.00%

5	Poor Very Poor	0	0.00%
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Row 16

Laboratory exercises enhanced my understanding of course material.

Total responses (N): 11    Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	8	72.73%
2	Good	3	27.27%
3	Fair	0	0.00%
4	Poor	0	0.00%
5	Very Poor	0	0.00%

Row 17

The course instructors modeled professional behavior.

Total responses (N): 11    Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	8	72.73%
2	Good	3	27.27%
3	Fair	0	0.00%
4	Poor	0	0.00%
5	Very Poor	0	0.00%

Row 18

Overall I would rate this course's teaching as:

Total responses (N): 11    Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	5	45.45%
2	Good	4	36.36%
3	Fair	1	9.09%
4	Poor	1	9.09%
5	Very Poor	0	0.00%

Row 19

The course as a whole was:

Total responses (N): 11    Did not respond: 0

<i>Numeric value</i>	<i>Answer</i>	<i>Frequency</i>	<i>Percentage</i>
1	Excellent	5	45.45%
2	Good	4	36.36%
3	Fair	1	9.09%
4	Poor	1	9.09%
5	Very Poor	0	0.00%

Long response  
Question

What aspects of this course contributed most to your learning?

Total responses (N): 7    Did not respond: 4

Statistics are not calculated for this question type.

Long response  
Question

What suggestions do you have for improving the course?

Statistics are not calculated for this question type.



Total responses (N): 7    Did not respond: 4

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Questions or comments?  
[Contact us](#) or email [catalysthelp@uw.edu](mailto:catalysthelp@uw.edu)

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2014 LM 426 Course Eval

What aspects of this course contributed most to your learning?
All of the worksheets were very helpful!
Lab exercises. Great guesses lectures.
Lectures from Dr. [REDACTED] and Dr. [REDACTED] (sp?) and labs
Repetition of course material in lecture and lab- really helped in getting all the information down in this accelerated time frame. The amount things I needed to know for the course was managable and the faculty for this course provided great support.
The assigned exercises and lab procedures were helpful in learning the lecture material.
The only time I felt like I learned was in lab and more specifically it was when I had to pry the answers out from the instructor with a million questions. The lab also really helped us put it all together, but it didn't do much in the way of theory sometimes, just the methodology. Rachael's review talks were also very helpful and her bingo game was awesome!
The overall structure of the course was helpful for my learning--starting with a general overview and then focusing in on each aspect as they fit together (antigen systems, clinical applications, etc). Unlike some of the other courses I've taken, the linkage between lecture and lab was very close, which I really appreciate. Helps me to better understand things when I can learn about the theory and put it into practice together.

What suggestions do you have for improving the course?
<ul style="list-style-type: none"><li>- More in-class examples and scenerios to help answer homework questions. ☐</li><li>- Emphasize points in guest lecture presentations that may be tested for.☐</li><li>- Reschedule the practical and written final on the same day to allow for a free day before clinical rotations.☐</li><li>- More prompt postings of lectures and keys☐</li><li>- Maximum lab exercise scores did not reach 5 points.</li></ul>
Having worksheets and such is helpful, but at times it felt like it approached the level of "busy-work." Sometimes less is more with respect to that sort of thing. Also, the scope of the latter portion of lectures seemed a little off--perhaps a little bit above the scope of understanding or usefulness to an entry-level MLS type of course.

It felt like she didn't care that we learned. Her words to us on the first day off class were, "I expect you to teach yourselves. Every year I get the reviews and they all say, "I had to teach myself," but I have a job." It felt like she didn't care if we learned because she had a job and that was more important or it didn't matter if we learned because she had a job and she knew it and that she would have the job no matter what happened to us. Most of the lecturers she invited she was not present for and she picked lectures that discussed material that was way above the scope of our understanding or gave lectures targeted at other professions (i.e. nurses and residents). Like I said the only time I felt like she did any teaching was when I sat there and battered her with question after question. Class time was not used wisely most of the time because as I said most of the time we got nothing from the lectures and then she would make us do group activities and teach each other on a topic we had just heard and did not understand. Therefore, we spent a lot more time teaching ourselves. Overall, I hate to give this harsh review, but I did enjoy the class and the material all I ask is teach some more and do away with some of your guest lecturers. You are a good teacher and I learned almost everything by asking you questions and for help. It would've saved a lot of us a lot of frustration and anxiety if you had just done more of that kind of teaching. I understand my education is my responsibility, but it is partially also yours.☹

Please audibly record the lectures and lab instructions.

Put lecture and lab schedule in the calendar on Canvas, as well as worksheet due dates. The way Canvas was organized for this course made it difficult to follow sometimes.

Since the students are expected to "teach themselves" during this course, clear study guides for each of the quizzes and final exam would be really helpful. Many of us felt we had no clear direction in that regard. Also, I personally learned the most from Dr. Nester's teaching style of using case study handouts in lieu of powerpoint slides. Would be great if all of the lectures were done in that manner.

The first week or so was really rough. The "review" presentations didn't feel like review. An actual lecture going over the bloodbank basics would have been really helpful, because I was definitely lost for awhile. Also just mark the book as mandatory. We had to have it to complete homework so not having it initially really set me back learning-wise (there just aren't enough you have to check out). Some of the early homework was really frustrating because it didn't feel like we'd covered the material yet and it would take 30-40minutes of searching online just to find an answer to a single question that may or may not have even been correct. Just make sure we can find the answers in our book or presentations maybe.

## Document 5. Student Clinical Rotation Evaluation

	Which Clinical Site are you evaluating? Please look through all the options before you select your site.	Which Clinical Rotation are you evaluating?	Who was your research rotation PI/mentor?	The length of the rotation was just right.	The management of my time was well organized.
R2	UW	Microbiology		Agree	Agree
R2	UW	Microbiology		Disagree	Agree
R3	UW	Microbiology		Strongly agree	Agree
R3	UW	Microbiology		Agree	Strongly agree
R4	UW	Microbiology		Somewhat agree	Agree
R4	UW	Microbiology		Agree	Somewhat agree
R5	UW	Microbiology		Somewhat disagree	Strongly agree
R5	UW	Microbiology		Neither agree nor disagree	Somewhat agree
R1	UW	Microbiology		Strongly agree	Agree

	I was given the opportunity to perform "hands on" activities/testing.	My prior coursework in this discipline adequately prepared me for this clinical rotation.	The technologists were interested and supportive.	All the major areas of the clinical rotation were covered.	After my clinical rotation, I am prepared to work in this type of setting.	Overall, my clinical rotation was a pleasant and productive experience.
R2	Agree	Agree	Agree	Agree	Somewhat agree	Agree
R2	Agree	Somewhat agree	Strongly agree	Agree	Somewhat agree	Agree
R3	Strongly agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree	Strongly agree
R3	Strongly agree	Strongly agree	Agree	Strongly agree	Strongly agree	Strongly agree
R4	Agree	Strongly agree	Strongly agree	Strongly agree	Agree	Strongly agree
R4	Agree	Agree	Agree	Agree	Agree	Agree
R5	Agree	Strongly agree	Strongly agree	Strongly agree	Agree	Strongly agree
R5	Agree	Agree	Somewhat agree	Somewhat agree	Neither agree nor disagree	Somewhat agree
R1	Agree	Strongly agree	Agree	Agree	Strongly agree	Strongly agree

	Please provide a suggestion for improvement.
R2	Have all the techs allow students to perform "hands on" work since only a few of them do this.
R2	It would be nice if the rotation was longer. There is so much to learn there!
R3	A day or two in antibiotics would be interesting.
R3	none
R4	It would be nice to have more time to do set up and have a day to learn AST set up with disk diffusion and the Trek setup
R4	
R5	More time on the bench and in mycology would have been incredible. Rounds were the best! So cool to see how the work affects the patient and having that personal context really helps my remember the organism and work-up.
R5	
R1	Some areas were not covered, and some areas I only got to rotate for a day. Hopefully they will even out all the major areas.

	Please provide any positive feedback for the site and/or personnel.
R2	Everyone was super friendly and welcoming, it made it a little less intimidating for the students.
R2	The techs were very welcoming and supportive. They treated us like friends/future coworkers instead of students.
R3	The lab as a whole was very welcoming and Mike specifically made me very comfortable the first day. He was always available for questions and genuinely seemed to enjoy working with students.
R3	thank you to everyone who taught me!
R4	Everyone was very supportive, nice, and encouraging. It was really interesting to see different things that can't be provided in class.
R4	everyone was welcoming and knowledgeable
R5	Julia, Tina and Mike were awesome trainer who really helped me start to feel that I could with more experience work in Clinical Microbiology.
R5	
R1	The techs were really nice and encouraging. Their humor made me feel less nervous and I enjoyed working with them.



	Any additional comments?
R2	Reviewing the theory behind important micro concepts would be very nice. ☒ Overall, everyone was very welcoming and helpful. It was a great learning experience and a very fun environment. ☒ I hope they keep it up!
R2	
R3	
R3	
R4	
R4	
R5	Overall when considering the rotation part of the program, I strongly think the time in the research rotation would have better sent in clinical rotations or in a choosen clinical enrichment rotation. A lot of us already worked in a research setting have decided that is not the path for us. Additionally the relevance of the projects was hit-or-miss in my opinion. Frankly tuition to the UW is way too much to spend 5 weeks doing something that may or may not be relevant to passing the board and working as an MLS. ☒ ☒
R5	
R1	

## Document 6. Student Exit Interview

## DOCUMENT 6. STUDENT EXIT INTERVIEW

### Questions:

1. Please indicate your plan for taking the ASCP Board of Certification examination.
2. Although you have not taken the ASCP MLS certification examination, do you feel the program has prepared you to perform well?
3. To what extent did each of the following courses prepare you to enter the lab profession workforce as a competent and skillful professional able to direct constructive changes in the continuously evolving field of laboratory medicine?

Rating Scale: 5 = A great deal; 4 = A fair amount; 3 = Some; 2 = A little; 1 = Not at all

- Immunology 441
  - Micro 442 - 445 (Bacteriology/Mycology/Parasitology/Virology)
  - LabM 428 Clinical Biochemistry for MLS
  - LabM 429 Foundations of MLS
  - LabM 430 Intro Clinical Hematology
  - LabM 418 Topics in Clinical Chemistry
  - LabM 419 Clinical Coagulation
  - LabM 420 Urinalysis & Body Fluids
  - LabM 421 Medical Microbiology
  - LabM 426 Bloodbank Lecture
  - LabM 423 Clin Chem Rotation
  - LabM 424 Clin Micro Rotation
  - LabM 425 Clin Hem Rotation
  - LabM 427 Senior Seminar
  - LabM 431 Blood Bank Rotation
  - LabM 432 Phlebotomy Rotation
  - Lab M 433 Research Rotation
  - Lab M 434 Virology Lab
  - Lab M 435 Molecular Diagnostics
4. Did you find value in your research rotation?
  5. If research was optional, would you still choose to do it?
  6. Please identify/describe the most valuable course you took or experience you had during your time in the UW MLSP.
  7. What course(s) or experience(s) should be added to the UW MLSP's curriculum? Why?
  8. What course(s) or experience(s) should be removed from the UW MLSP's curriculum? Why?
  9. The mission of the University of Washington's MLS Program is to improve the quality of health care by providing a superior didactic and clinical undergraduate educational program that will prepare knowledgeable, ethical, and critically-thinking laboratory professionals. Mission accomplished?
  10. Which of the following best describes your immediate future plans following graduation?

11. Please indicate 1) where (organization/name of employer, city, state), 2) in what capacity (MLS 1, research technologist, etc.) and 3) which discipline (generalist, BB, Chem, Hem, Micro, etc) you will be working following graduation.
12. Please provide any additional comments or information that you believe will help to improve our Medical Laboratory Science Program.

## Document 7. Monthly Meeting Minutes

**Meeting**

Date: **27Jun2016**  
 Where: NW150A  
 When: 3:30-4:30 PM

**Next Meeting:**

**18Jul2016**  
 NW150A  
 3:30-4:30 PM

**Attendees:** Dan Bankson, Patty Callahan, Miriam Kim, Laurianne Mullinax, Harvey Schiller, Gretchen Van Kekerix, Lara Williamson, Min Xu

**MINUTES**

**I. OLD BUSINESS**

- A. **Catalyst Survey to Determine Effectiveness of the Guest Lecturer Packet:** Laurianne worked up a rough list of questions and distributed to the team. Dan suggested we let new lecturers know that they will be evaluated by the students, both to warn them and to help motivate them to better prepare for their lectures. Laurianne will create the Catalyst survey and Lara will assist.
- B. **Scheduling Strategic Planning Meeting and Affiliate Meeting:** Laurianne proposed we do the strategic meeting on Monday, 19Sep2016 from 9 AM-3 PM, then the team will meet again midcycle to discuss progress on self-study (January meeting). Site visit will be Oct2017. The affiliate meeting will be Wednesday, 21Sep2016 from 2-4 PM.
- C. **Biochemistry/Chemistry & Foundations Curriculum Meeting Scheduling:** curriculum meetings are almost done for blood bank; Dan and Miriam will work on getting the curriculum meetings started for the Biochem and Chemistry classes. We will separate the biochemistry from the clinical chemistry curriculum meeting. For Foundations, it is hard to know whom to invite, but Dan suggested people with a MLS background (lab supervisors/managers). Miriam will help Dan as needed with the biochemistry class and Gretchen and Laurianne will work together on Foundations.

**II. STATUS OF FIRST YEAR STUDENTS**

- A. **Update on Students' Summer Quarter Performance:** students are progressing as expected.

**III. STATUS OF ROTATIONS AND SECOND YEAR STUDENTS**

- A. **Status of 2016-17 Rotation Sites:** Heather was not present to give a report.

**IV. NEW AGENDA ITEMS**

- A. **Winter Quarter Scheduling 2017:** Heather needs to know about any changes by 05Jul2017 as time table has been moved up (and she will be away).
- B. **How to fill in for loss of Drs. Rainey and Schiller:** discuss with Chemistry faculty during curriculum review meeting; involve a graduate student as teaching assistant.
- C. **Research Rotation Mentor Packets:** Laurianne needs the expectations for the students and the leaders. Only the syllabus exists. Laurianne, Min and Gretchen will develop a clear set of expectations. For students it is the syllabus and the time sheet. Syllabus needs some work (very fluid and needs refinement). Laurianne is working on a table of contents for the mentor packets.

**V. ITEMS FOR NEXT MEETING**

- A. **MLS projects for the Informatics fellow.**
- B. **Document control project**

**VI. ACTION ITEMS & DECISIONS**

- A. **Action Items**
  1. Laurianne is creating a table of contents for the mentor packets (added 27Jun2016).

2. Laurianne, Min and Gretchen will develop a clear set of expectations for the research rotations, both for the students and the mentors (added 27Jun2016).
3. Dan and Miriam will work on getting the curriculum meetings started for the Biochem and Chemistry classes; Miriam will help Dan as needed with the biochemistry class and Gretchen and Laurianne will work together on Foundations (added 27Jun2016).
4. Laurianne, with Lara's help, will create a Catalyst survey to determine the effectiveness of the guest lecturer packet (added 27Jun2016).
5. With the input of all course directors, the MLS team will create a survey (sent out after the lecturer's session) to determine the effectiveness of the guest lecturer packet (added 13Jun2016).
6. Harvey, Min, Laurianne and Gretchen will be meeting regarding research projects for next year (added 13Jun2016). Based on that meeting, we are developing a research mentor information packet (added 26Jun2016).
7. Heather will reformat the personal statement on the application to separate out the different questions being asked into sections (added 13Jun2016).
8. Students are not clocking enough hours for their research rotations. We are considering adding a method validation module to the list of requirements for the research rotation. We need to be coming up with online activities for students to do and need to come up with objectives for syllabus/put more structure to the objectives. Min and Laurianne will look at this together. Kathy Hutchinson has a method validation training she does internally for her MLSs and Dr. Wener mentioned that might be something for us to look at. Harvey and Laurianne will look at this. (28Mar2016) Laurianne met with Kathy Hutchinson on 5/5 and looked at the training module she has. It is very good but specific for Immunology. After discussing application of it with Dan, we need to look into other modules that are out there that could be incorporated into education. Dan has some good ideas that need more time to discuss. Will put on the agenda after graduation.
9. Laurianne will get a checklist of what the Washington State Patrol requires of a student, now that we have a WSP contract in place. 15Jul2016 DONE
10. All MLS instructions need to add the BOK information for your discipline and distribute to upcoming lecturers. The folder can be found at: [lilith2.labmed.washington.edu/Medtech/Course Information/Guest Speaker Packet](http://lilith2.labmed.washington.edu/Medtech/Course%20Information/Guest%20Speaker%20Packet). DONE
11. Laurianne will talk to Dr. Fine about hosting Dr. Saitoh from Gunma and what would be reciprocal. (22Feb2016). Dr. Fine directed Laurianne to talk to Vicky Spring about whether or not that will fit within the discretionary budget. Potentially ask Dr. Saitoh if he could present at Grand Rounds. LM will talk with Dr. Shirts regarding Grand Rounds, and then will talk with Dr. Saitoh.

**B. Decisions**

1. After guest lecturers give their lecture, we will send a Likert scale survey to them for an outcome-based assessment. Sample questions to include are: "Did you include objectives?" "Were there case studies at the end of your lecture?" "How many slides did you have?" Dan felt a more quantitative survey might be better. All course directors will be involved in the creation of the survey.
2. The team will potentially add verbiage to the postbac page to advise of "a GPA below XXX makes it unlikely that a postbac will be admitted due to the competitive nature of postbac admission to the UW...." The phrasing would need to be carefully crafted (added 13Jun2016).
3. For next year's application, a rubric might be created for the essay, there will only be one reference required and one letter of recommendation. The essay will stay in the process and remain a handwritten essay as writing does matter (added 13Jun2016).
4. At our 09Nov2015 MLS program meeting, it was proposed to start LabM 426 on the Monday before school starts to give that class extra time. That has been agreed upon and will be acted upon in 2016. (09Nov2015, 08Feb2016)
5. Starting in fall 2016, clinical rotations will be two rotations with twenty-three days (plus the final exam) and three rotations with twenty-four days (plus the final exam), and give the few extra days to the students as open. The downside would be that the program would need to pick the presentation with only two days.

The team suggested doing a few presentations on the same day as the final exam. The team agreed with the proposal and will enact it. (08Feb2016)



Document 8. Curriculum Review Meeting Agenda

## LAB M 418 Pre-Course Review: Wednesday, January 18, 2017

### Agenda:

- **Three goals for the meeting:**

1. Review the LAB M 418 Clinical Chemistry lecture schedule with the goal of limiting topics/lectures.
2. Review ASCP board scores (overall they are well above national average in Chemistry) but discuss how to help students improve scores in two areas:
  - a) Enzymes/Lipid/Lipoproteins
  - b) Proteins & Nitrogen
3. Review ideas about how to improve the Clinical Chemistry course. A list of **Other Recommendations** is on the last 2 pages of this document.

- **Other Thoughts:**

1. Redesign LAB M 428 from a biochemistry course to a clinical chemistry course?
2. Redesign LAB M 418 as a result of redesigning LAB M 418?
3. Discuss goal of fitting all of Clinical Chemistry into 20 weeks or 60 lectures?
  - LAB M 428 is 4 credits with no lab.
  - LAB M 418 is 6 credits with a 3-hour lab per week.
  - Both courses are 10 weeks long.

## LAB M 418 Pre-Course Review: Wednesday, January 18, 2017

Course #/Title:	LAB M 418 Clinical Chemistry			
Year/Quarter:	2016 Spring Quarter			
Instructor:	Dan Bankson			
BOC Scores:	UW (Chemistry)		National (Chemistry)	
Year:	2015	2016	2015	2016
Specialty:	528	618	497	499
Subspecialties:				
1. Carbohydrates/ Acid Base/ Electrolytes	554	595	526	518
2. Proteins & Nitrogen compounds	551	486	514	518
3. Enzymes/ Lipids/ Lipoproteins	458	464	519	508
4. Special chemistry	533	614	507	522

**Note:** Red-shaded scores are 25 points below the comparable national average while green-shaded scores are 25 points above.

### **Narrative 2016:**

The table for 2016 Spring Quarter, shows board scores for Clinical Chemistry for both 2015 and 2016. Overall, the UW graduates in 2016 (who took Clinical Chemistry in 2015) were well above the national average with a score of 618 versus a score of 499 for the national average. More about board scores and trends on board scores will be discussed later in the section on the most recent Clinical Chemistry Curriculum Review. In 2016, board scores increased for the 3rd consecutive year. The area of concern again was Enzymes/Lipid/Lipoproteins. Additionally, Proteins & Nitrogen compounds dropped below the national average. Both these topics are covered most intensely in the companion Clinical Biochemistry for Medical Laboratory Scientists course (LAB M 428). This suggests the need to improve lecture content in these areas, which we hope is helped by the modification of two review lectures.

In 2016, the number of number of formal lectures fell to 43 from 45 lectures as a result of combining 10 lectures into 5 lectures for a loss of 5 lectures and then adding 3 lectures for a net overall loss of two lectures compared to 2015.

The details are:

1. Combining two TDM lectures on classes of drugs into one lecture
2. Combining lectures on reproductive endocrinology and pregnancy
3. Combining lectures on cardiovascular and muscle markers
4. Combining lectures on clinical chemistry calculations and laboratory operations/management
5. Combining lectures on digestive and excretory markers

## LAB M 418 Pre-Course Review: Wednesday, January 18, 2017

6. Adding a lecture on specimen considerations and preanalytical errors
7. Adding a review on enzymes, carbohydrates and lipids and
8. Adding a review on amino acids, proteins and non-protein nitrogen

### **2016 Post-Class Assessment:**

Based on a suggestion from the previous year all quizzes went on-line this quarter to save time in class and allow for easier quantitation and more difficult questions. The online questions are multiple-choice compared to True/False questions that were given in the previous year. This change, however, requires much more time for instructor generation of the 10 online quizzes to enable an explanation of the correct answer for each potential multiple choice question answer. Quizzes were open book and a time limit was set of 15 minutes for the 6 questions given every week. Quizzes opened on Friday afternoon and closed at midnight on Sunday night.

Twenty students provided evaluations in 2016 and ranked the 16 lecturers (8 Faculty, 6 Fellows or Residents, and 2 Staff or Graduate students). The highest rating was 6.7/7 with a score of 7 being Excellent and a score of 6 being Very Good. The low score was a 4.0, which was equivalent to a rating of Average. The overall mean for the lecturers was 6 or Very Good.

The aspects of the course that were very good were taken from the overall course evaluation comments. Students like the labs because of hands-on experience and one-on-one instruction from laboratory instructors. For the lecture, students liked extra in-class examples to clarify information. They liked the Panopto recordings of lectures and having a course textbook to read. Students liked the questions provided by many lecturers at the end of their PowerPoint presentations that helped to focus on key concepts. Students appreciated the quick response to questions by email or on the course website. They appreciated the fair grading of examinations.

Suggestions made by students regarding course improvements include: Request for better lecture planning/content by some of the lecturers, consider obtaining a summary handout sheet for the lectures (like that provided for blood gases). They preferred to have more lectures from fewer lecturers rather than having 16 different lecturers. They wanted guest lecturers to decrease the amount of detail and increase important lecture objectives to focus studying. Some lecture material seemed redundant. Students suggested moving the time of the lecture to earlier in the day due to post-meal tiredness (the lecture is from 12:30 pm to 2:20 pm) but this is not possible due to other required courses. Suggestions specific to improving the LAB M 418 laboratory were: Consider having all students do the same laboratory exercise at the same time as it was hard doing a lab exercise before the material was discussed in lecture (this is not possible because we do not have enough work stations). Consider revising the laboratory manual, as some of the procedures and questions are not clearly stated. Allow more time for students to gain experience and work with the laboratory instruments.

**Post Spring Quarter Changes:** In the summer of 2016, the MLS program obtained 16 new Spectronic 200 spectrophotometers funded by the Department of Laboratory Medicine (**Figure 1**). These replaced aging Spectronic 20 spectrophotometers that were becoming hard to repair as the manufacturer discontinued them in 2011. We had several generations of these Spectronic 20s, which were first made in 1953. This required the

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maintaining an assortment of different operating instructions. The new Spectronic 200s allowed standardized operating instructions. Additionally, lab exercises now can be modified in the future because of improved instrument capability related to multi-wavelength monitoring and absorbance readings and printouts over time for enzymatic reactions.

**Figure 1: Spectronic 200 (purchased Summer 2016)**



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### Clinical Chemistry Curriculum Review September 2016 and Later Analysis:

The Clinical Chemistry Curriculum Review meeting was held on September 19, 2016. Attendees were 3 faculty from the Medical Laboratory Science Program (Laurianne Mullinax, Gretchen Van Kekerix, and Dan Bankson) and 5 faculty representing the Clinical Chemistry Division (Andy Hoofnagle, Geoff Baird, Dina Greene, Christina Lockwood and Dan Bankson) and 1 faculty representing the Molecular Division (Christina Lockwood) along with 2 current Clinical Chemistry post-doctoral fellows (Anna Merrill and Gabrielle Winston-McPherson).

Dr. Bankson showed that the University of Washington ASCP Overall Board Scores have always been greater (by 29 to 100 points) than the Overall National scores (for the last 10 years, from 2007-2016) (**Table 1**). Similarly, the University of Washington Board Scores for Clinical Chemistry over this time were equivalent (once in 2014) or greater than the National Board Scores for Clinical Chemistry (**Table 2**). The scores for 2016 were the highest over the last 10 years being 100 points greater for the overall score and 119 points greater for Clinical Chemistry board scores. The areas requiring improvement are shown in the sub-disciplinary board scores.

**Table 1: ASCP Generalist UW Overall Board Scores Compared to National Means.**

UW Board Scores			
Year	UW	National	DELTA (UW - National)
2007	521	491	30
2008	531	489	42
2009	540	489	51
2010	528	494	34
2011	532	502	30
2012	557	499	58
2013	558	502	56
2014	533	504	29
2015	549	488	61
2016	592	492	100

**Table 2: ASCP Clinical Chemistry Board Scores Compared to National Means.**

UW Clinical Chemistry Scores			
Year	UW	National	DELTA (UW - National)
2007	511	490	21
2008	508	486	22
2009	505	486	19
2010	500	495	5
2011	505	502	3
2012	531	498	33
2013	535	502	33
2014	505	505	0
2015	528	497	31
2016	618	499	119

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Table 3 shows the basic topics covered in the board exam. These are well covered in the Medical Laboratory Science curriculum.

**Table 3: ASCP Medical Laboratory Scientist Exam Topics for Clinical Chemistry Sub-Disciplinary Categories (9/2014).**

<b>Chemistry (CHEM)</b>	Carbohydrates, Acid Base, Electrolytes, Proteins & Other Nitrogen-Containing Compounds, Enzymes, Heme Derivatives, Lipids & Lipoproteins, Endocrinology, Tumor Markers, TDM, Toxicology	<b>17-22%</b>
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**III. CHEMISTRY (17-22% 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<sub>2</sub>, pO<sub>2</sub>
  - 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<sub>2</sub>, 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
  - 6) Other
- B. Lipids and Lipoproteins
  - 1) Cholesterol (total, HDL, LDL)
  - 2) Triglycerides
  - 3) Phospholipids (PG)
  - 4) Other lipids and lipoproteins

**4. Special Chemistry (Endocrinology, Tumor Markers, TDM, Toxicology)**

- A. Endocrinology and Tumor Markers
  - 1) T<sub>3</sub>, T<sub>4</sub>, 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)

**Table 4** shows an accounting of UW board scores in the four Clinical Chemistry sub-disciplinary categories. Two of our categories of teaching were very successful as indicated by the green arrows. Special Chemistry (Endocrinology, Tumor markers, TDM, Toxicology) was a focus for the LAB M 418 course and has always been above the national average. Carbohydrates/Acid Base/ Electrolytes had two of the topics (Acid Base and Electrolytes) covered exclusively in LAB M 418. One topic, Carbohydrates was more covered in the LAB M 428 Biochemistry course.

Two of the four sub-disciplinary categories (as emphasized by the red arrows) had scores lower than the national average and are of concern. Enzymes/Lipids/Lipoproteins was lower than the national average for 3 out of last 6 years. This was possibly because we spent more time with these topics in the first quarter Biochemistry course (LAB M 428). Similarly, the Proteins & Nitrogenous Compounds category was lower than the national average for 2 out of the last 6 years. Proteins and Nitrogenous Compounds are covered in both the LAB M 418 Chemistry class and the LAB M 428 Biochemistry course. Heme

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derivatives are covered partly in Biochemistry (myoglobin, hemoglobin, hemoglobin A1C, bilirubin, and urobilinogen), partly in Hematology (hemoglobin) and partly in Clinical Chemistry (myoglobin, hemoglobin A1c, and bilirubin).

**Table 4: ASCP Generalist Subcategory Clinical Chemistry Board Scores for the UW Compared to National Means.**

CARBOHYDRATE/ACID/BASE/ELECTROLYTES				ENZ/LIPIDS/LIOPROTS			
Year	UW	National	DELTA	Year	UW	National	DELTA
2012	546	503	+	2012	407	539	-
2013	476	510	-	2013	543	556	0
2014	508	511	0	2014	602	549	+
2015	554	526	+	2015	458	519	-
2016	595	518	+	2016	464	508	-

PROTEINS & NITROGEN CMPDS				SPECIAL CHEMISTRY			
Year	UW	National	DELTA	Year	UW	National	DELTA
2012	508	505	0	2012	530	506	+
2013	530	505	+	2013	557	512	+
2014	470	511	-	2014	505	514	0
2015	551	514	+	2015	533	507	+
2016	486	518	-	2016	614	522	+

The sub-disciplinary categories indicated by the green arrows have board scores that are well above the national average. This information will be used when planning the 2017 lectures.

In reality, our Clinical Chemistry course tries to cover much of what is outlined in the ASCP Chemistry Specialist Competency Overview (Table 5) and ASCP Chemistry Specialist Detailed Competencies (Table 6) with the exception of Laboratory Operations.

**Table 5. ASCP Chemistry Specialist Competency Overview**

SUBTESTS	DESCRIPTION	EXAM PERCENTAGES
General Chemistry (GC)	Biochemical theory and physiology, test procedures, and test result interpretation for carbohydrates, lipids and heme derivatives	C: 15% - 20%
		SC: 10 - 15%
Proteins and Enzymes (PE)	Biochemical theory and physiology, test procedures, and test result interpretation for enzymes, proteins and other nitrogen containing compounds	20% - 25%
Acid-Base, Blood Gases and Electrolytes (EAB)	Biochemical theory and physiology, test procedures, and test result interpretation for acid-base determinations and electrolytes	10% - 15%
Hormones and Vitamins (HV)	Biochemical theory and physiology, test procedures, and test result interpretation for endocrinology, vitamins and nutrition	10% - 15%
Toxicology and Therapeutic Drug Monitoring (TT)	Pharmacokinetics/Toxicokinetics, chemical/physical properties, test procedures, and test result interpretation for TDM and toxicology	5% - 10%
Instrumentation and Analytical Techniques (INST)	Principles, usage, and troubleshooting of equipment and methods used	5% - 10%
Laboratory Operations (LO)	C: Calculations, QC/QA, guidelines/regulations, safety	C: 15% - 20%
	SC: Management, QC/QA, safety, research and development, education, LIS, calculations, guidelines/regulations	SC: 20% - 25%



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Table 6. ASCP Chemistry Specialist Detailed Competencies

- |   |  |
|---|--|
| <p><b>I. GENERAL CHEMISTRY (C: 15%-20%; SC: 10 – 15%)</b></p> <p><b>A. Carbohydrates</b></p> <ol style="list-style-type: none"><li>1. Biochemical theory and physiology<ol style="list-style-type: none"><li>a. Metabolic pathways</li><li>b. Normal and abnormal states</li><li>c. Physical and chemical properties</li></ol></li><li>2. Test procedures<ol style="list-style-type: none"><li>a. Principles</li><li>b. Special precautions, specimen collection and processing, troubleshooting and interfering substances</li><li>c. Tolerance testing</li><li>d. Glycated proteins</li></ol></li><li>3. Test result interpretation</li></ol> <p><b>B. Lipids</b></p> <ol style="list-style-type: none"><li>1. Biochemical theory and physiology<ol style="list-style-type: none"><li>a. Metabolic pathways</li><li>b. Normal and abnormal states</li><li>c. Physical and chemical properties<ol style="list-style-type: none"><li>1) lipoproteins</li><li>2) phospholipids</li><li>3) triglycerides</li><li>4) cholesterol</li><li>5) apolipoproteins</li></ol></li></ol></li><li>2. Test procedures<ol style="list-style-type: none"><li>a. Principles</li><li>b. Special precautions, specimen collection and processing, troubleshooting and interfering substances</li></ol></li><li>3. Test result interpretation</li></ol> <p><b>C. Heme Derivatives</b></p> <ol style="list-style-type: none"><li>1. Biochemical theory and physiology<ol style="list-style-type: none"><li>a. Metabolic pathways</li><li>b. Normal and abnormal states</li><li>c. Physical and chemical properties<ol style="list-style-type: none"><li>1) porphyrins</li><li>2) hemoglobin</li><li>3) bilirubin</li><li>4) urobilinogen</li><li>5) myoglobin</li></ol></li></ol></li><li>2. Test procedures<ol style="list-style-type: none"><li>a. Principles</li><li>b. Special precautions, specimen collection and processing, troubleshooting and interfering substances</li></ol></li><li>3. Test result interpretation</li></ol> | <p><b>II. PROTEINS AND ENZYMES (C &amp; SC: 20% - 25%)</b></p> <p><b>A. Enzymes</b></p> <ol style="list-style-type: none"><li>1. Biochemical theory and physiology<ol style="list-style-type: none"><li>a. Metabolic pathways</li><li>b. Normal and abnormal states</li><li>c. Physical and chemical properties<ol style="list-style-type: none"><li>1) LD</li><li>2) CK</li><li>3) AST/ALT</li><li>4) GGT</li><li>5) lipase</li><li>6) amylase</li><li>7) alkaline phosphatase</li><li>8) other enzymes</li></ol></li></ol></li><li>2. Test procedures<ol style="list-style-type: none"><li>a. Principles</li><li>b. Special precautions, specimen collection and processing, troubleshooting and interfering substances</li></ol></li><li>3. Test result interpretation</li></ol> <p><b>B. Proteins and Other Nitrogen Containing Compounds</b></p> <ol style="list-style-type: none"><li>1. Biochemical theory and physiology<ol style="list-style-type: none"><li>a. Metabolic pathways</li><li>b. Normal and abnormal states</li><li>c. Physical and chemical properties<ol style="list-style-type: none"><li>1) proteins</li><li>2) amino acids</li><li>3) urea</li><li>4) uric acid</li><li>5) creatinine</li><li>6) ammonia</li><li>7) tumor markers</li><li>8) viral proteins</li><li>9) cardiac markers</li><li>10) other compounds</li></ol></li></ol></li><li>2. Test procedures<ol style="list-style-type: none"><li>a. Principles</li><li>b. Special precautions, specimen collection and processing, troubleshooting and interfering substances</li><li>c. Clearances</li></ol></li><li>3. Test result interpretation</li></ol> |
|---|--|

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## III. ACID-BASE, BLOOD GASES AND ELECTROLYTES (C & SC 10% - 15%)

### A. Acid-Base Determinations (Including Blood Gases)

1. Biochemical theory and physiology
  - a. Henderson-Hasselbach equation
  - b. pH and H<sup>+</sup> ion concentration
  - c. CO<sub>2</sub> and O<sub>2</sub> transport
  - d. Normal and abnormal states
2. Test procedures
  - a. Analytical principles
  - b. Special precautions, specimen collection and processing, troubleshooting and interfering substances
3. Test result interpretation

### B. Electrolytes

1. Biochemical theory and physiology
  - a. Sodium, potassium, chloride, CO<sub>2</sub>, bicarbonate
  - b. Calcium, magnesium, phosphorus, iron, TIBC
  - c. Trace elements
  - d. Normal and abnormal states
2. Test procedures
  - a. Principles
  - b. Special precautions, specimen collection

### B. Vitamins and Nutrition

3. Biochemical theory and physiology
  - a. Metabolism and action
  - b. Normal and abnormal states
  - c. Properties
4. Test procedures
  - a. Principles
  - b. Special precautions, specimen collection and processing, troubleshooting and interfering substances
3. Test result interpretation

## HORMONES AND VITAMINS (C & SC: 10% - 15%)

### A. Endocrinology

1. Biochemical theory and physiology
  - a. Metabolic pathways
  - b. Normal and abnormal states
  - c. Mechanism of action
  - d. Physical and chemical properties
    - 1) steroid hormones
    - 2) peptide hormones
    - 3) thyroid hormones
    - 4) other hormones
2. Test procedures
  - a. Principles
    - 1) fluorescence
    - 2) immunoassay
    - 3) chromatography
    - 4) other methods
  - b. Special precautions, specimen collection and processing, troubleshooting and interfering substances
  - c. Stimulation/suppression tests
3. Test result interpretation

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## V. TOXICOLOGY AND THERAPEUTIC DRUG MONITORING (C & SC: 5% - 10%)

### A. Therapeutic Drug Monitoring

1. Pharmacokinetics
  - a. Therapeutic states
  - b. Toxic states
  - c. Metabolism and excretion
2. Chemical and physical properties
  - a. Aminoglycosides
  - b. Cardioactive
  - c. Anti-convulsants
  - d. Anti-depressants
  - e. Immunosuppressants
  - f. Other drugs
3. Test procedures
  - a. Principles
    - 1) immunoassay
    - 2) chromatography
    - 3) other methods
  - b. Special precautions, specimen collection and processing, troubleshooting and interfering substances
4. Test result interpretation

### B. Toxicology

1. Toxicokinetics
  - a. Toxic effects, signs and symptoms
  - b. Metabolism and excretion
2. Chemical and physical properties
  - a. Alcohols
  - b. Heavy metals
  - c. Analgesics
  - d. Drugs of abuse
  - e. Other toxins
3. Test procedures
  - a. Principles
    - 1) immunoassay
    - 2) chromatography
    - 3) other assays
  - b. Special precautions, specimen collections and processing, troubleshooting and interfering substances
4. Test result interpretation

## VI. INSTRUMENTATION AND ANALYTICAL TECHNIQUES (C & SC: 5% - 10%)

### A. Spectrophotometry and Photometry

1. Photometry (ultraviolet to infrared)
2. Fluorescence
3. Nephelometry/turbidimetry
4. Reflectance

### B. Mass Spectrometry

### C. Osmometry

### D. Manual/Automated Analytics

1. General chemistry
2. Immunoassays
3. Other

### E. Electrophoresis

### F. Chromatography

### G. Electrochemistry

1. Potentiometry (including blood gas analyzers)
  - a. pH
  - b. pCO<sub>2</sub>
  - c. pO<sub>2</sub>
  - d. Ion selective electrodes
  - e. Other applications

### H. Centrifuges and Balances

### I. Molecular Techniques

### J. Point-of-Care Testing (POCT)

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## VIII. LABORATORY OPERATIONS FOR SPECIALIST IN CHEMISTRY ONLY (SC: 20% - 25%)

### A. Mathematics

1. Reagents
2. Graphs (Beers Law)
3. Statistics
4. Method evaluation/validation
5. Other calculations

### B. Management and Quality Assurance

1. Planning
  - a. Setting goals and objectives
  - b. Budget development
  - c. Applied research and/or development
2. Organizing
  - a. Personnel
  - b. Work flow
  - c. Computer operations
  - d. Interpersonal relations
  - e. Interdepartmental relations
3. Staffing
  - a. Selection
  - b. Training
  - c. Evaluation
  - d. In-service education
4. Directing
  - a. Communication (internal and external)
  - b. Productivity
  - c. Leadership
  - d. Motivation
5. Controlling
  - a. Infection prevention and safety
  - b. Laboratory accreditation (including regulations)
  - c. Performance standards (QC)
  - d. Inventory and purchases

### C. Safety

### D. Research and Development

### E. Education

### F. Laboratory Information Systems (LIS)

THE EXAMINEE IS EXPECTED TO KNOW HOW TO UTILIZE THE FOLLOWING CALCULATIONS AND REFERENCE INTERVALS:

#### Calculations

- % TRANSFERRIN SATURATION/UIBC/TIBC
- ANION GAP (*Any commonly used formula is acceptable for examination purposes*)
- CREATININE CLEARANCE/GFR OSMOLALITY/ OSMOLAL GAP (*Any commonly used formula is acceptable for examination purposes*)
- UNCONJUGATED BILIRUBIN
- LDL/FRIEDEWALD EQUATION/non-HDL
- TIMED URINE CALCULATIONS
- BEER'S LAW
- HENDERSON-HASSELBACH EQUATION
- DILUTIONS (INDIVIDUAL AND SERIAL)
- REAGENT PREPARATION: MOLARITY, NORMALITY, AND PERCENT

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### Reference Intervals

<u>Test</u>	<u>Conventional Units</u>	<u>SI Units</u>
Sodium	136-145 mmol/L	136-145 mmol/L
Potassium	3.5-5.1 mmol/L	3.5-5.1 mmol/L
Chloride	98-107 mmol/L	98-107 mmol/L
Carbon Dioxide (Total)	23-29 mmol/L	23-29 mmol/L
Magnesium	1.6-2.6 mg/dL	0.66-1.07 mmol/L
Calcium	8.6-10.2 mg/dL	2.15-2.55 mmol/L
Glucose (Fasting)	74-100 mg/dL	4.1-5.6 mmol/L
Blood Gases		
pH (Arterial)	7.35-7.45	7.35-7.45
pCO <sub>2</sub>	32-48 mmHg	4.26-6.38 kPa
pO <sub>2</sub>	>80 mmHg	>10.64 kPa
Urea Nitrogen, blood	6-20 mg/dL	2.1-7.1 mmol/L
Creatinine	0.9-1.3 mg/dL	80-115 µmol/L
Albumin	3.5-5.0 g/dL	35-50 g/L
Total Protein	6.0-8.0 g/dL	60-80 g/L

Unless otherwise stated, all values on the exam can be interpreted using the reference intervals above. These reference intervals will not be given on the exam. Other reference intervals will be provided as needed. These reference intervals are used for this exam only.

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### **Textbook revisions:**

The hardcopy text is not available online. The accessory texts are available at no cost online via the University of Washington libraries.

### **Suggested hard copy course text for 2017:**

1. Bishop, M.L., Fody, E.P. & Schoeff, L.E. (2013). Clinical Chemistry: Principles, Techniques, and Correlations (7th ed.). New York: Lippincott Williams & Wilkins. *[This text is recommended by ASCP for those writing the MLS exam or the Chemistry Specialist exam.]*

### **Recommended on-line accessory textbooks/resources (“\*” are new to the course):**

1. Burtis C. Tietz Textbook of Clinical Chemistry and Molecular Diagnostics, Fifth Edition. Elsevier. New York. 2012.
2. McPherson RA. Henry's Clinical Diagnosis and Management by Laboratory Methods, Twenty-Third Edition. Elsevier. New York. 2017.
3. \*Marshall WJ, Day A, Lapsley M. Clinical Chemistry. 8<sup>th</sup> Edition. Elsevier. New York. 2017.
4. \*Ferri FF. Ferri's Best Test: A Practical Guide to Laboratory Medicine and Diagnostic Imaging, Third Edition. Saunders. 2015.
5. \*Gaw A. Clinical Biochemistry: An Illustrated Colour Text, Fifth Edition. Elsevier. New York. 2013.
6. \*Polansky VD. Quick Review Cards for Medical Laboratory Science. 2<sup>nd</sup> Edition. FA Davis Co. Philadelphia. 2014.

### **Other recommendations:**

1. When possible limit the total number of formal lectures per week to 3 or 4. This is a 6-credit course with a laboratory. From the Registrar's website: 1 credit is “1 hour of weekly instruction and 2 hours of outside contact with the material”. We have 3 hours of lab, worth about 50% of the course. If we have 10 weeks of instruction then we should only be lecturing for 3 hours per week or 30 formal lectures.
2. Encourage instructors to develop worksheets and hands-on materials that help to illustrate or expand on the major points of the lecture.
3. Have one quiz or one exam per week but not both.
4. Add an optional “week-in-review” question session or even on-line questions.
5. Continue the use of Canvas as a learning management system and Panopto for lecture capturing.
6. Add Poll Everywhere to the live PowerPoint/Panopto recorded presentations. This will allow real time assessment of student knowledge.
7. Move the Online Test Guide project to the Clinical Chemistry course from the Medical Biochemistry course.
8. Move parts of Specimen Processing lecture to the introductory lecture, as some material was redundant with LAB M 429.
9. Optimize the cluster of analytical instrumentation topics closer to the beginning of the course. This help with student understanding of instrumentation early in the course and potentially before they encounter the instrument in the student lab.

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10. Optimize the Method Validation and Evaluation materials to allow completeness of the topic.
11. Eliminate the specific Lean, 5S and Six Sigma lecture but incorporate information about this into the Lab Management lecture.
12. Incorporate aspects of pharmacogenomics into the TDM lecture but eliminate it as a stand-alone lecture. Pharmacogenomics had become too long and esoteric so it will be cut as a stand-alone lecture.
13. Cover pain management as part of the acetaminophen/salicylates & drugs of abuse lecture.
14. Consider using the Gaw Clinical Biochemistry textbook subtopics. These are 2-page summaries of many clinical chemistry topics.
15. Modify the four review lectures at the end of the course to completely cover areas of sub-specialty weakness as identified by the ASCP board scores. This would cover topics that were all emphasized in the LAB M 428 course in the Fall Quarter of junior year.
  - a. Proteins/Nitrogen Compounds
  - b. Carbohydrates
  - c. Enzymes
  - d. Lipids/Lipoproteins
16. Direct students to board review materials, such as the Polansky VD. Quick Review Cards for Medical Laboratory Science. 2<sup>nd</sup> Edition. Then they can be exposed to these resources while they are taking the Clinical Chemistry course prior to their senior clinical rotations and a full year before their board exams.
17. Consider preparing a mass spectrometer exercise, likely for 2018 or later (could be paper/data exercise now for in class use).
18. Prepare for the replacement of the Beckman Access chemistry analyzer in the next few years.

Document 9. Affiliate Advisory Committee Meeting Minutes



MLS Advisory Board Meeting 2015  
Wednesday, September 23, 2015  
1:00-3:30, UW South Campus Center, Room 308

Minutes

1. Welcome and Introductions
2. What the 2015-16 academic year will bring:
  - a. New MLS Faculty/Staff: new program director, Laurianne Mullinax (replacing Kara Hansen-Suchy) and new Student Lab Instructor, Miriam Kim (replacing Rachael Lamma).
  - b. Outcomes: certification scores and employment
    - i. Showed PP with 2010-2015 Certification Outcomes: mean scaled scores UW vs. National, mean scaled scores by discipline UW vs. National and first time pass rate UW vs. National.
    - ii. Employment Report for Class of 2015: 25 graduates in June 2015. 25 of 25 employed as MLS's. 10 in the UW Medicine system and 15 in affiliate labs.
  - c. Online resources: another reminder to use the Catalyst website for all clinical rotation materials: syllabi, curriculum, competency requirements, case studies, grading requirements and all required forms – safety checklists, timesheets, evaluation forms, etc. The class photo, student contact information and current rotation schedule is also located here. Please send the link (Heather sent this in an email with the rotation schedule) to anyone who will be working with the students in your lab as this is an underutilized site and we are still trying to encourage all affiliate sites to use it.
3. What can you tell us:
  - a. How can we continue to support you? Not many suggestions as they gave positive feedback about how prepared our students are. Make sure students are completing HR on-boarding requirements early enough to be processed in time for their first day of rotation – must be cleared to start.
  - b. Future employment/are there enough graduates for open positions? Mixed response – some said no, some yes. UW labs seemed to have their needs met, where South Sound sites seemed to not be able to meet the employment demand. They requested that we try to schedule students at those sites for clinical rotations that might have an interest in working in their labs so they could use it for recruitment opportunities.
  - c. Suggestions for increasing numbers of graduates: postbac certificate program and online offerings = career bridge MLT to MLS
  - d. Status of clinical site visits by MLS department: no changes, come visit students once per rotation.

4. Breakout Sessions: minutes not recorded as these serve as more of a casual round table discussion and support for new trainers as provided by veteran trainers, but questions asked of each group are below.
  - a. Dan Bankson: Chemistry
  - b. Gretchen Van Kekerix: Microbiology
  - c. Roxann Gary: Blood Bank
  - d. Miriam Kim: Hematology
  - e. Topics for Discussion:
    - i. Tell the group about your division
    - ii. How does your division approach student training and competency?
    - iii. How can we prepare our students to work in the changing lab environment (new technologies/methodologies)?
    - iv. What will they need more or less of in their education?

## Document 10. Employer Survey

## DOCUMENT 10. EMPLOYER SURVEY

### Questions:

1. Your name and title:
2. Name of 2015 graduate that you are evaluating:
3. Name of institution:
4. Date of initial employment in your institution:
5. Job title/position at the time of initial hire:
6. Shift(s) worked: please select all that apply:
7. Laboratory areas in which employee works/worked:
8. Please list the top three qualities you look for in Medical Laboratory Scientists you hire.
9. Our goal in the Medical Laboratory Science Program is to provide our graduates with entry level skills for initial employment. In your opinion, has the goal been met?
10. Likert Scale:
  - Ability to develop and establish procedures for collection and processing specimens
  - Perform analyses of body fluids, cells, tissues, and other substances
  - Confirm and verify abnormal results; develop solutions to problems related to lab data validations
  - Correlate and interpret data
  - Develop, evaluate, select, and integrate new procedures, methods, instruments, and protocols
  - Implement and perform procedures which assure the timely reporting valid lab results
  - Identify and perform corrective and preventative maintenance on equipment and instruments
  - Comply with laboratory safety guidelines
  - Demonstrate professional conduct that promotes a positive work attitude, environment, and interpersonal relationships
  - Provide leadership in the practice of high ethical standards that promote the quality lab services
  - Use effective communication skills, both oral and written
  - Effectively teach and model professionalism
  - Use available resources and technology to participate in opportunities for professional growth
  - Recognize the fundamental components of the team approach to health care to provide responsive, patient-focused care
  - Identify regulations which impact the delivery of health care
11. Would you hire UW Medical Laboratory Science Program Graduates in the future?
12. Do you have any specific suggestions that might improve the MLS Program?

## Document 11. Alumni Survey

## DOCUMENT 11. ALUMNI SURVEY

### Questions:

1. Name
2. Date of initial employment following graduation (month/year):
3. Name of Institution in which you were initially employed:
4. Job Title/Position:
5. Shift(s) Worked
6. Laboratory areas in which you have worked:
7. Our goal in the Medical Laboratory Science Program is to provide our graduates with entry level skills for initial employment. In your opinion, has the goal been achieved?
8. Were there areas of your medical laboratory science education in which you believe additional training should have been included? If yes, please tell us which areas and what training should have been included. If no, please put N/A.
9. Likert Scale: Graduates of the University of Washington Medical Laboratory Science Program are expected to attain competencies, including technical skills, theoretical understanding, and professional characteristics, that are essential to beginning a career as a Medical Laboratory Scientist. Please evaluate your level of attainment of these competencies at the time of Initial Employment and then following your Training Period compared to other staff with a similar experience level. Please use the following scale: 5 = Excellent; 4 = Above Average; 3 = Average; 2 = Below Average; 1 = Poor; 0 = Not Applicable (N/A)
  - Ability to develop and establish procedures for collection and processing specimens
  - Perform analyses of body fluids, cells, tissues, and other substances
  - Confirm and verify abnormal results; develop solutions to problems related to lab data validation
  - Correlate and interpret data.
  - Develop, evaluate, select, and integrate new procedures, methods, instruments, and protocols
  - Implement and perform procedures which assure the timely reporting valid lab results.
  - Identify and perform corrective and preventative maintenance on equipment and instruments
  - Comply with laboratory safety guidelines.
  - Demonstrate professional conduct that promotes a positive work attitude, environment, and interpersonal relationships.
  - Provide leadership in the practice of high ethical standards that promote the quality lab services
  - Use effective communication skills, both oral and written.
  - Effectively teach and model professionalism
  - Use available resources and technology to participate in opportunities for professional growth
  - Recognize the fundamental components of the team approach to health care to provide responsive, patient-focused care.
  - Identify regulations which impact the delivery of health care
  - Ability to develop and establish procedures for collection and processing specimens
  - Perform analyses of body fluids, cells, tissues, and other substances
  - Confirm and verify abnormal results; develop solutions to problems related to lab data validation

- Correlate and interpret data
  - Develop, evaluate, select, and integrate new procedures, methods, instruments, and protocols
  - Implement and perform procedures which assure the timely reporting valid lab results.
  - Identify and perform corrective and preventative maintenance on equipment and instruments
  - Comply with laboratory safety guidelines
  - Demonstrate professional conduct that promotes a positive work attitude, environment, and interpersonal relationships.
  - Provide leadership in the practice of high ethical standards that promote the quality lab services
  - Use effective communication skills, both oral and written.
  - Effectively teach and model professionalism
  - Use available resources and technology to participate in opportunities for professional growth
  - Recognize the fundamental components of the team approach to health care to provide responsive, patient-focused care.
  - Identify regulations which impact the delivery of health care
10. Do you have any specific suggestions that might improve the Medical Laboratory Science Program?

Document 12. Strategic Planning Meeting Agenda



DEPARTMENT OF LABORATORY MEDICINE  
MEDICAL LABORATORY SCIENCE PROGRAM REVIEW

To: MLS Program faculty and staff  
 From: Harvey Schiller and Kara Hansen-Suchy  
 Dates: Monday - Tuesday, September 16-17, 2013  
 Location: Friday Harbor

**AGENDA**

<u>Monday, September 16</u>	<u>Topic</u>	<u>Presenter / Lead</u>
1:30 – 3:00 pm	Review of Program (list 2013 successes; post 2014 issues)	All <10'
3:00 – 4:00 pm	Short presentations of plans to revise courses	All <10'
4:00 – 4:30 pm	Break and snacks	
4:30 – 5:45 pm	Standardize clinical rotations and evaluations	Kara
5:45 – 6:45 pm	Review and revise support for: new clinical rotations / sites / trainers	Heather
6:45 –	dinner	
<u>Tuesday</u>		
8:00 – 9:30 am	Develop a new 1 credit Intro MLS undergrad course Should this be an on-line course?	Harvey
9:30 – 11:00 am	Discuss potential on-line MLT to MLS track	Kara
11:00 – 12:00 noon	Discuss immunology: new course vs add components to Program	Kara
12:00 – 1:00 pm	lunch break	
1:00 – 2:00 pm	Review MLS prerequisites	Kara & Heather
2:00 – 2:45 pm	Criteria for minimum grades; consequences	All
2:45 – 3:00 pm	Break	
3:00 – 5:00 pm	Develop MBO 2013 – 2014; Restate conclusions of meeting Get commitment/expected completion dates	All
6:00	dinner	

Document 13. MBO

## Department of Laboratory Medicine - Management by Objectives

DIVISION/PROGRAM	Education
SECTION OR AREA	Medical Laboratory Science Program
TIME PERIOD	January–December 2016
PARTICIPANTS	Dan Bankson, Patty Callahan, Heather Eggleston, Roxann Gary, Laurianne Mullinax, Harvey Schiller, Gretchen Van Keckerix, Miriam Kim, Lara Williamson, Min Xu

**Do you have any specific suggestions that might improve the Medical Laboratory Science Program? Draft Document: Version Date: 03/16**

<u>Objectives</u>	<u>Current Status</u>	<u>Targets and Indicators of Progress</u>	<u>Outcome</u>
<b>Enhance the quality and delivery of teaching</b>	<ol style="list-style-type: none"> <li>1. Curriculum needs review</li> <li>2. BB clinical rotations expanding at UW</li> <li>3. Lab exercises need updates</li> <li>4. Board scores could be improved</li> </ol>	<ol style="list-style-type: none"> <li>1. a) Molecular course expansion for 2017</li> <li>   b) Develop Introductory MLS course</li> <li>   c) Research rotation reassessment</li> <li>   d) Hematology course update</li> <li>   e) Coagulation leadership change</li> <li>2. Blood bank rotations need to expand at UW</li> <li>3. a) Incorporate molecular into Micro lab</li> <li>   b) Update in UA labs needed</li> <li>4. Improve targeted courses: Immunology</li> </ol>	<ol style="list-style-type: none"> <li>1. a) Adding more lecture hours to 435</li> <li>   b) Waiting for UW approval</li> <li>   c) Investigating method validation</li> <li>   d) Chen to support class 2017</li> <li>   e) Metcalf as new course director</li> <li>2. Blood bank training will meet needs</li> <li>3. a) MDX labs added for 2016 summer</li> <li>   b) UA lab update in progress</li> <li>4. New textbook, reinstated rotation with Immunology staff</li> </ol>
<b>Expand the teaching and educational input by Dept of Lab M faculty and staff in MLS Program</b>	<ol style="list-style-type: none"> <li>1. Department faculty and staff are not uniformly involved in each of the disciplines</li> </ol>	<ol style="list-style-type: none"> <li>1. Designate and meet with appropriate staff in each discipline to enhance their teaching and enhance MLS student education</li> </ol>	<ol style="list-style-type: none"> <li>1. Annual curriculum meetings including faculty/staff began</li> <li>2. Met with Tait: MDX course Lockwood</li> <li>3. Met with Sabath: Coag and Heme: Metcalf; Chen</li> <li>4. Will meet with Monica Pagano re: BB</li> </ol>
<b>Standardize our clinical rotations for chemistry, microbiology, blood bank and hematology</b>	<ol style="list-style-type: none"> <li>1. Quantity of assignments are not consistent</li> <li>2. Evaluations requirements variable</li> <li>3. Canvas sites are variable</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase equity of workload between rotations</li> <li>2. Standardize evaluation expectations</li> <li>3. Create continuity across Canvas sites</li> </ol>	<ol style="list-style-type: none"> <li>1. Equalized workload- case studies, objectives</li> <li>2. Evaluation schedule completed</li> <li>3. Canvas reorganized</li> </ol>
<b>Increase awareness and visibility of the MLS Program at local, state and national levels</b>	<ol style="list-style-type: none"> <li>1 Met with Advisory Board last year</li> <li>2. Provide outcomes on web: NAACLS</li> <li>3. Use bulletin board space to promote MLS program</li> <li>4. Faculty occasionally present at the state society meeting</li> <li>5. Update needed to MLS website</li> </ol>	<ol style="list-style-type: none"> <li>1 Meet annually with Board</li> <li>2. Report Board scores: percent who pass and number who are employed</li> <li>3. Develop rotating info on bulletin board</li> <li>4. Send seniors to Spring Seminar and encourage faculty to attend CLEC</li> <li>5. Reorganize/simplify website material</li> </ol>	<ol style="list-style-type: none"> <li>1 Advisory Board meetings every Sept.</li> <li>2. NAACLS requirement met</li> <li>3. MLS posters on dept. boards</li> <li>4. Six students presenting research; Faculty/staff presenting at CLEC/NW ASCLS</li> <li>5. Website in progress</li> </ol>

## Document 14. Statement of Financial Support

September 8, 2016

NAACLS Medical Laboratory Science Reviewers

Dear Reviewers:

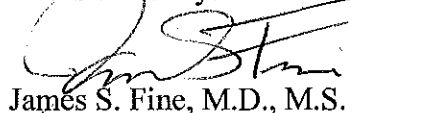
This letter addresses the question of the adequacy of fiscal support for operation of the Medical Laboratory Science Program in the Department of Laboratory Medicine at the University of Washington.

The Medical Laboratory Science Program is supported by budgets from a variety of sources that are controlled and managed by the Chair of the Department of Laboratory Medicine. The School of Medicine accounting system does not employ line items for any of the educational programs in the department. However, more than adequate resources are available, and information has been provided in this self-study concerning faculty support, supplies, reagents and preparation, instruments, etc. The multiple resources of the department are utilized in support of all the educational programs in the department. These programs include the undergraduate Medical Laboratory Science Program, the Master of Science graduate program, elective courses for medical students, the residency program in laboratory medicine (clinical pathology), and post-doctoral programs in clinical chemistry, hematology, immunology, microbiology, and virology. The Department is committed to provide high quality educational experiences for students at all levels.

Each year, the faculty prepares written objectives designed to improve the educational programs in the department. When additional resources are required to meet educational objectives, the required resources are allocated. All requests for instruments and supplies used in the undergraduate educational program and for faculty travel expenses, for example, during the past decade have been approved, and I can provide assurance that our Medical Laboratory Science program is given high priority. We will continue to allocate the resources necessary to provide the highest quality educational opportunities for our students. The visiting team will have an opportunity, of course, to review the educational facilities and resources available to faculty and students working in the department.

Thank you for your thoughtful consideration.

Yours sincerely:



James S. Fine, M.D., M.S.

Professor and Chair, Department of Laboratory Medicine,  
Paul E. Strandjord and Kathleen J. Clayson Endowed Chair and  
CIO, Information Technology Services, UW Medicine Health System

Department of Laboratory Medicine

### Table 3. Student Demographics

Table 3. MLSP Student Demographics

<b>Class of...(yr of graduation)</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>	<b>2008</b>
Total Applications	63	91	115	69	77	61	55	35	42	60
Number Qualified	58	81	109	60	74	60	50	34	40	55
Number Accepted	26	30	30	30	32	30	28	28	30	28
Started Program	25	28	30	30	30	28	27	28	22	26
Graduated	22	28	25	28	30	26	22	24	17	24
<b>Status (Accepted)</b>										
UW	10	13	12	15	15	10	13	16	13	17
UW-Postbaccalaureate	6	3	3	2	1	2	0	1	0	1
Transfer	9	8	8	5	5	10	7	11	11	8
Transfer-Postbaccalaureate	3	6	7	8	10	8	8	0	6	2
Mean Cum GPA (accepted)	3.37	3.53	3.5	3.5	3.43	3.54	3.37	3.41	3.43	3.39
Mean Sci GPA (accepted)	3.32	3.23	3.35	3.28	3.25	3.39	3.2	3.22	3.38	3.41
<b>All Applicants</b>	<b>2017</b>	<b>2016</b>	<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>	<b>2010</b>	<b>2009</b>	<b>2008</b>
Gender-Female	41	63	82	50	49	32	37	26	33	36
Gender-Male	22	28	33	19	28	29	18	9	9	19
Age Range	20-48	19-50	19-50	18-53	20-41	19-40	17-33	19-57	19-60	17-56
<b>Ethnic Heritage</b>										
Caucasian (incl Mid East)	26	33	52	22	38	24	20	15	17	19
African American/Black	5	3	9	6	7	8	3	1	4	8
Am. Indian/Alaska Native	0	1	0	0	1	2	0	1	0	0
<b>Asian American:</b>										
Vietnamese	9	10	12	3	7	9	4	4	10	8
Chinese	8	14	22	15	11	10	14	8	5	8
Korean	2	4	9	7	4	1	5	0	0	4
Japanese	2	1	4	3	2	2	0	3	0	1
Filipino	9	6	9	7	6	4	4	3	3	4
Asian Indian	0	1	4	1	1	0	0	2	2	2
Other Asian	0	0	0	0	1	4	0	0	1	2
Pacific Islander	0	2	3	0	1	1	0	3	0	0
Hispanic/Latino	4	4	4	0	4	0	2	0	0	0
Multiracial (2 or more ethnicities)	9	5								
Not Specified/Other	3	7	4	6	1	1	3	1	1	4

## Document 15. Affective Domain Evaluation



**AFFECTIVE DOMAIN EVALUATION**  
**INDIVIDUAL INSTRUCTOR RANKING OF STUDENT**  
 Laboratory Medicine 430 – Introduction to Clinical Hematology

**Student:** \_\_\_\_\_

**Date:** \_\_\_\_\_

Please grade yourself in each of the following characteristics and skills using the 0-2 rating.

- 2 Satisfactory/acceptable
- 1 Needs improvement/equivocal
- 0 Not observed

**A. Professional Characteristics**

1.	Arrives at the laboratory prepared for the lab exercise for that day and begins work promptly	
2.	Calls in a timely fashion when an illness or emergency delays or prevents attending laboratory	
3.	Follows written instructions when performing laboratory procedures	
4.	Listens carefully, follows verbal instructions, and seeks clarification, if necessary	
5.	Follows laboratory safety rules for handling/disposal of hazardous material	
6.	Performs appropriate quality control/quality assurance	
7.	Organizes work efficiently and completes an appropriate amount of work in the allocated class time	
8.	Leaves work area clean and reagents and supplies ready for use by the next person	
--	<b>Total Professional Characteristics</b>	16

**B. Interpersonal Skills**

1.	Shows awareness of and respect for faculty, staff and peers' feelings and needs	
2.	Cooperative, works effectively with staff and peers	
3.	Accepts and uses constructive criticism	
--	<b>Total Interpersonal Skills</b>	6

**C.** List 2 areas that you could improve upon in during your clinical rotations that will help you to become a better medical laboratory scientist.

- 1.
- 2.

**D. Comments:**

Table 4. Entry-Level Competency Training in Didactic and Rotation Courses

Course Number and Name	Clinically relevant case studies that help students correlate disease states to laboratory results	How do the learning objectives promote entry-level competency
LAB M 423, 424, 425, 431 Core Clinical Rotations	LabM 423, 431: Case studies are being updated each year to cover. Previously, same case studies used for many years. LabM 424,425: Case studies introduced in 2015 and new case studies added each year.	Learning objectives provide a broad range of <i>routine</i> testing available in a contempor
LAB M 432 Phlebotomy Rotation	N\A	Learning objectives provide information of routine testing available in a contemporary clinical laboratory. Students are required to accept responsibility for selection of appropriate tubes for testing performed in a contemporary clinical laboratory.
LAB M 433 Enrichment Rotation	N\A	Learning objectives provide research design/practice sufficient to evaluate published studies as an informed health care professional. Enhancement of writing and presentation skills enforcing a professional outlook and demeanor. Information management to enable timely, accurate, and cost effective reporting of their research findings or laboratory generated information.

How do the proficiency check lists promote entry-level competency	How does the training model promote entry-level competency	In-class activities that focus on the assessment of lab information for proper reporting	The use of the medtraining.org tutors and quizzes for student assessment, the competency system used by the clinical lab for annual assessment of MLS staff
Student must demonstrate current lab practices, including proper specimen handling, pipetting skills, overview of instrumentation, correlating patient results to clinical conditions.	By end of rotation and completion of checklist/ proficiency test, the students will be able to independently run a typical workload as appropriate per site according to procedure taking responsibility for analysis and evaluating results.	Demonstrate proper handling of a Critical result per lab policy (repeating, calling and appending comment in the computer system). Lab M 424: students are required to report unknowns as they would a patient specimen, i.e. sent to Public Health for further testing for GI pathogens.	LabM 424: Gram stain, Parasitology (which is not routinely included in clinical rotation), Mycology (which is not routinely included in clinical rotation).
By end of rotation , the student will be able to independent perform phlebotomy per site SOP	By end of rotation , the student will be able to independent perform phlebotomy per site SOP	N\A	Lab M 432: Patient ID and Basic Phlebotomy skill
N\A	N\A	N\A	N\A

## Document 16. Course Assessment

**University of Washington, Seattle  
Department of Laboratory Medicine  
Course Assessment**

Course #/Title:	LAB M 430 Clinical Hematology			
Year/Quarter:	2014 Winter			
Instructor:	Hansen-Suchy			
BOC Scores:	UW		National	
Year:	2013	2014	2013	2014
Specialty:	569	533	508	507
Subspecialties:				
RBC/WBC	589	517	517	522
Other Tests	510	466	506	507
Morph/Diff	627	519	533	533

In preparation for the Winter 2014 course, BOC scores were reviewed from the previous year. Performance in all areas was good.

However, based on feedback from laboratory instructions and students, the previously offered course needed to be updated. The general course from Weber (given previously by the current instructor) was not an appropriate level for MLS students. Made significant changes of curriculum from 2013 to make the content more robust. Improvements included, adding more content to each lab (i.e. increased lab from four spun hematocrits to smears, hematocrits and rule of three), and more emphasis on cell identification, in particular abnormal WBCs.

The lab practical was updated from 2013. The dry practical was changed from images in scopes to a power point presentation of images to standardize content, include a larger variety of content and to increase academic integrity.

**University of Washington, Seattle  
Department of Laboratory Medicine  
Course Assessment**

Course #/Title:	LAB M 430 Clinical Hematology			
Year/Quarter:	2015 Winter			
Instructor:	Hansen-Suchy, Schiller			
BOC Scores:	UW		National	
Year:	2014	2015	2014	2015
Specialty:	533	549	507	488
Subspecialties:				
RBC/WBC	517	564	522	507
Other Tests	466	599	507	511
Morph/Diff	519	590	533	506

Narrative:

In preparation for the Winter 2015 course, we wanted to maintain the quality in teaching reflected on the previous BOC scores. Very little gross changes were made to the previous years schedule or curriculum. We continued to have guest lecturers speak about their areas of expertise so that material would be inline with current laboratory practice. This was also done to help address the decrease in the “other tests” scores as seen in 2014, since guest lecturers tend to talk about different kinds of testing being performed.

Supplementary lectures were given/posted towards the end of the quarter to help reinforce cell maturation and morphology skills; areas the students indicated they wanted more help with.

Experienced bench MLSs in Hematology came to student lab to help support student morphological skills during peripheral blood slide set exercises.

Further updates were made to the dry practical from the year before to make sure the questions were more relevant and better represented the knowledge needed for entry-level competencies.

**University of Washington, Seattle  
Department of Laboratory Medicine  
Course Assessment**

Course #/Title:	LAB M 430 Clinical Hematology			
Year/Quarter:	2016 Winter			
Instructor:	Mullinax, Schiller			
BOC Scores:	UW		National	
Year:	2015	2016	2015	2016
Specialty:	549	620	488	494
Subspecialties:	564	570	507	509
	599	519	511	511
	590	669	506	517
	683	675	507	511

**Narrative:**

In preparation for Winter 2016, we reviewed the BOC scores from the past few years and noticed that from 2013 there was a small decrease in students' morphology scores. To address this, we included some additional in-class morphology exercises to help introduce students to cells earlier in the curriculum. To help students better prepare for course exams, we incorporated exam prep sessions where concepts from lecture were reviewed.

A new textbook was brought on that had positive feedback from MLS staff and faculty when they had the chance to review different materials.

Major revisions to the lab procedure took place to help bring student lab up to current practice.

More content experts were scheduled to give lectures than the year before so that information delivered could be current practice.

Evaluations from the 2015 class were reviewed and addressed as indicated:

In response to the sudden lack of staffing and support for the course, we hired an additional laboratory instructor for this year with extensive experience in heme and a heme specialty. Also to help with continuity, our previous lab instructor and co-course director were included in this year's class.

In response to number of quizzes and exams, assessments were streamlined and reduced so that essential material was examined and knowledge was assessed in other ways, like through case studies and in-class group work.

In response to the amount and organization of material, we used the text as an instructional guide and guided guest lecturers in the preparation materials by providing textbook summaries and help with level of instruction. The schedule was organized slightly differently to be more in line with the textbook so students could more easily follow the



**University of Washington, Seattle**  
**Department of Laboratory Medicine**  
**Course Assessment**

course progression. The labs were also revised to better fit the current textbook and material and to be more inline with the lecture schedule. Also, we tried to focus heavily on the fundamental material such as hematopoiesis so that students had a strong basis for hematological disorders.

Post-Class Assessment:

Evaluations for the 2016 class are listed below:

Reorganization of labs and having our new laboratory instructor give current practice information was well received. Correlation of lab and lecture material was praised.

In response to the amount of guest lecturer slides/material and lack of consistency in style/slides, new guidelines now go out to each guest lecturer listing parameters for length of material, including entry-level competencies to help guide level of instruction.

In response to the repeat of some lecture material, more emphasis will be placed on the specific topics for each lecture. For the 2015 course, some lecturers spent extra time speaking about favorite topics so there was some repeat of material.

In response to length, sheer number of lectures and the repetitiveness, the whole course schedule is being streamlined for the 2017 class and will actually contain less lectures overall, with the lectures that remain being more focused on essential material and less "pet project" information.

In response to the request for more supplemental material, such as crosswords, we will provide those for the 2017 class.

I reviewed the BOC scores for 2016. Discussion about other testing will be held during our curriculum review meetings. Clearly our emphasis on morphology and differentials is paying off but we don't want to lose sight of the other categories

**University of Washington, Seattle  
Department of Laboratory Medicine  
Course Assessment**

Course #/Title:	LAB M 430 Clinical Hematology			
Year/Quarter:	2017 Winter			
Instructor:	Mullinax			
BOC Scores:	UW		National	
Year:	2016	2017	2016	2017
Specialty:	620	604	494	IN PROGRESS
Subspecialties:	570 519 669 675	No Longer Provided by BOC	509 511 517 511	No Longer Provided by BOC

**Narrative**

In preparation for Winter 2017, we reviewed BOC scores, student evaluations, and curriculum review committee comments from fall 2016.

BOC scores for 2016 were well above the national average overall and in every sub-speciality. The class of 2017 BOC scores (in progress) are quite high and we are confident that they too will be above the national average for this discipline. BOC is no longer providing sub-speciality scores starting 2017 due to the statistical inaccuracy.

**November 2016 Curriculum Review Meeting Summary:**

**LECTURE**

- Case Studies-
  - We are having good outcomes with lectures in other classes when case studies are included at the beginning. It seems to help put the topic in more context and aids student understanding of how the laboratory is impacting patient care. Please adapt future lectures to that model, if possible.
- Hb Metabolism Lecture-
  - Consider adding a little more on the relationship between RBCs and CO2 in the tissues.
- Thalassemia Lecture-
  - Last year, thalassemia was discussed multiple times between different lecturers. Dr. Hess cautioned against deemphasizing hemoglobin disorders too much because they are a fundamental and difficult topic.
  - It was decided that we would keep the original overview in the Hb Metabolism lecture and the Thalassemia specific lecture but remove thalassemia discussion from intrinsic defects lecture.
  - The Thal lecture will occur before the Hemoglobinopathies lecture in the schedule.
- Intrinsic and Extrinsic Defects Lectures

**University of Washington, Seattle**  
**Department of Laboratory Medicine**  
**Course Assessment**

- Previously, these topics were given as two different lectures. This year, Drs. Hess and Pagano may combine lectures and only have one faculty member discuss both.
- 1hr50mins can be dedicated to this new lecture, which should be enough since thal and hemoglobinopathies will not be discussed.
- Unstable hemoglobins will get more coverage in the intrinsic defects section.
- New Review of Anemias Lecture-
  - Previously, an intro to anemias lecture was given prior to the various anemia lectures. This year, we'd like to have a review of anemias lecture that will help tie everything together.
  - Dr. Edlefsen recommended including an algorithm for the clinical differentiation of anemias.
  - More emphasis on physical presentations can be included here for the different conditions.
- Bone Marrow Failure and PNH Lecture
  - Dr. Chisholm recommends we scrap the old lecture because it is fellow level and not suitable for undergraduates.
  - For Bone Marrow week in the student lab, HP fellows taught at the multi-headed scope. They reported that the students struggled with basic bone marrow anatomy.
  - The textbook chapter is too detailed for what our students need and doesn't give enough coverage for the basic structure and function of the bone marrow.
  - Dr. Chisholm will create a new lecture that emphasizes basics and then will use the failures as an example of changes that can occur instead of having the lecture be based solely on the disease states.
  - The new lecture will be called Intro to the Bone Marrow.
- The lectures not being given by Dr. Schiller this year will be covered by Drs. Pagano and Hess. Thanks to both of them for volunteering.

**LAB**

**Suggested changes to labs:**

- Lab #1 Introduction to the Hematology Laboratory- add more on specimen integrity, making smears
- Lab #2 Manual Hematology Lab- Demo ESR using fresh specimens, making smears
- Lab #3 Sysmex analyzer : instrumentation, QC, comparing auto to manual, change student presentations to discussion. Run samples and make smears.
- Lab #4 CBC Part 1- Manual Cell Counts, Hemacytometers and Lab Math – No changes. Move to later in quarter.
- Lab #5 CBC Part 2: WBC and PLT Estimates- No changes
- Lab #6 Phlebotomy, RBC Morphology & Indices- UWMC, HMC to help with getting new slides of abnormal morphology. Students get to use own blood to make smears, run through analyzer.
- Lab #7 WBC Differentials- Add Cellavision exercises.

**University of Washington, Seattle**  
**Department of Laboratory Medicine**  
**Course Assessment**

- Lab #8 Practice Lab- no changes
- Lab #9 Examination of PB Smear & Correlating w/CBC Data: break up correlating data into smaller sections and introduce in earlier labs.
- Lab #10 Hematology Automation: Limitations, Interferences, Clinical Use: Add specimen lipemia, hemolysed and provide more printouts to work through as in class case studies.
- Lab #11 : Evaluating Anemia & Red Cell Disorders, Part 1 Reticulocyte Counts and Retic Indices
- Lab #12 Evaluating Anemia & Red Cell Disorders, Part 2 Interpretation of Reticulocyte Counts and Retic Indices- drop lab.
- Lab #13 Hemoglobinopathies Case Study- move to later in quarter
- Lab #14 Bone Marrow Evaluation: need to modify form to reflect what Hemopath would like to have them record. Need documentation for looking at slides with Hemopath.
- Lab #15 Thalassemia Lab- adding 2 more molecular labs, extraction and amplification
- Lab #16 Peripheral Blood Smears Exercise Day: More multihead scope time with abnormal.
- Lab #17 Review Laboratory – Wet Lab Practical, complete assigned slide sets.
- Lab #18 Case Studies: affective domain evaluations
- Lab #19 & #20: Practical Laboratory Exam: Dry practical to be part of written final.

Post-Class Assessment- Student Evaluations of 2017 Course

Comments in favor of 2017 Heme Course:

- Condensed lecture slides were very helpful.
- Group discussions when looking at case studies
- I learned a lot from the multiheaded scope when looking over abnormal slides.
- In class activities were very helpful.
- Posted study guides, practice quizzes

Comments for the improvement of the lecture portion were also provided. Responses addressing those comments are posted below each.

- I found the molecular labs to be distracting in the middle of heme.
- For the lab the molecular labs seemed to break up the hematology and distracted me from my learning.
- Look over the timing of the labs to make sure they line up with the lecture material.

Response: The additional MDX hematology-based labs were new this year to try to incorporate more molecular diagnostics into our curriculum. The timing of the labs has been changed on the schedule for 2018 so that they are less disruptive to the pure heme curriculum. Also, as much as possible, correlation between lecture and lab topics are being aligned.

**University of Washington, Seattle**  
**Department of Laboratory Medicine**  
**Course Assessment**

- Please have time in class to do diffs. having students come in early 6 times in the busiest quarter was difficult

Response: In-class time was available for all students to do diffs, but some needed more time and opportunities to come in early were provided. Only a few students had difficulty with the schedule. However, rearranging the MDX labs to be less intrusive will hopefully help give more time to slower students in 2018.

- Have some activities for the leukemias lectures, they were harder to learn, kind of like the anemia chart

Response: A leukemia/lymphoma activity is being added to the 2018 schedule

- I think not having the last week so lecture heavy would be helpful, for preparing for the final exam.

Response: For 2018, there are no new lectures in the week prior to the final exam.

Document 17. Research Rotation Syllabus



Seattle, Washington

**LABORATORY MEDICINE 433**  
**Enrichment/Research Rotation**  
**COURSE SYLLABUS**

Course Syllabus and Materials On-line at URL  
<https://canvas.uw.edu/courses/990800/settings>

**Course Description:** Selected research experience emphasizing application of knowledge and skills to perform a wide variety of testing in a research setting and further develop specific competency in writing and presentation skills.

Offered: Au, W, Sp.

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**DISCLAIMER:** Every attempt is made to ensure the accuracy and currency of the information contained in this syllabus. Any changes to content will be communicated to students as soon as possible.

## SYLLABUS

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### Demographics

**Name of the Course:** Medical Laboratory Science Enrichment/Research  
**Current Term/Year:** Class of 2016  
**Course Number:** LabM433  
**SLN:** Varies

### **Required Course Resources**

- There are no required textbooks for this course

### **Meeting Times & Places**

- *Clinical Rotation*
  - *Times and location will vary for each student*
  - *A schedule will be provided within the course*

**Course URL:** <https://canvas.uw.edu/courses/990800>

### About the Course Faculty and Staff

**Faculty Instructor:** Dr. Min Xu

**Office:** Seattle Children's Hospital, Laboratory Medicine

**Office Hours:** open door policy, please e-mail or call

**Office Phone:** 206.987.2576

**E-mail:** [min.xu@seattlechildrens.org](mailto:min.xu@seattlechildrens.org)

**Faculty Instructor:** Gretchen Van Kekerix

**Office:** UWMC NW 237

**Office Hours:** open door policy, please e-mail or call

**Office Phone:** 206.598.3373

**E-mail:** [gvankeke@u.washington.edu](mailto:gvankeke@u.washington.edu)

**Goals:** The student will possess basic knowledge, skills, and relevant experiences in the following:

*Goal 1* – Research design/practice sufficient to evaluate published studies as an informed health care professional.

*Goal 2* – Communications to enable consultative interactions with other members of the health care team, external relations, customer service and patient education.

*Goal 3* – Enhancement of writing and presentation skills enforcing a professional outlook and demeanor.

*Goal 4* – Information management to enable timely, accurate, and cost effective reporting of their research findings or laboratory generated information.



## **Disability Resources for Students**

 [www.washington.edu/students/drs](http://www.washington.edu/students/drs)

The University of Washington Disability Resources for Students Office (DRS) coordinates academic accommodations for enrolled students with documented disabilities. Accommodations are determined on a case-by-case basis and may include classroom relocation, sign language interpreters, recorded course materials, note taking, and priority registration. DRS also provides needs assessment, mediation, referrals, and advocacy as necessary and appropriate. Requests for accommodations or services must be arranged in advance and require documentation of the disability, verifying the need for such accommodation or service.

Technical and adaptive equipment is available through both DRS and Computing & Communications. Information about adaptive-technology computer software and equipment and their locations on campus may be obtained from DRS. Publications include [Access Guide for Persons with Disabilities](#), (showing classroom access, elevator locations, ramps, parking, and restrooms), *Campus Mobility Route Map*, and a quarterly newsletter, as well as other publications. Additional information is available from Disabled Student Services, 448 Schmitz, Box 355839, (206) 543-8924, (TTY) 543-8925, [uwdss@u.washington.edu](mailto:uwdss@u.washington.edu).

## **Academic Integrity**

Students are obliged to complete and submit their own work (i.e. no cheating and no plagiarism) in a manner consistent with the scholarly standards established by the University of Washington: UW Policy Directory: Presidential Orders, Policy for Addressing Allegations of Scientific and Scholarly Misconduct, Executive Order 61 located online at URL

<http://www.washington.edu/admin/rules/policies/PO/EO61.html>). Students are required to comply with all aspects of academic integrity, and specifically with the following.

***Cheating*** - is the unauthorized possession and/or use of non-permissible written, visual or oral assistance, including that obtained from another student, utilized on examinations, course assignments or projects. This includes the sharing of previously graded lab reports and working with others to complete individual assignments. This is a violation of academic integrity, both the one giving the information and also the one receiving the information. Students are encouraged to seek direction from lab instructors whenever they need clarification.

***Plagiarism*** - for the purpose of this course, plagiarism is the deliberate appropriation and use of another person's work without indicating the source or attempting to convey the impression that such work is original when in fact it is not.

Students who are suspected of not following the academic integrity policy for the program will be required to meet with the faculty member and the program director. Violation of these policies may be met with loss of points for the offensive work, a failing grade or dismissal from the program. Penalties are cumulative and based on severity of the offense.

## Grades

### Grade Scale for MLS Courses

Letter Grade	A		A-				B+			B			B-			
	100-98	97-94	93	92	91	90	89	88	87	86	85	84	83	82	81	80
GPA	4.0	3.9	3.8	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.0	2.9	2.8	2.7	2.6	2.5
Letter Grade	C+			C			C-				D+		D		D-	
	79	78	77	76	75	74	73	72	71	70	69-67		66-64		63	62
GPA	2.4	2.3	2.2	2.1	2.0	1.9	1.8	1.7	1.6	1.5	1.4 – 1.2		1.1 – 0.9		0.8	0.7

To satisfactorily complete this course, each student must achieve a grade of “C” (2.00 GPA) or better on a 4.00 GPA scale. As stated in the Medical Technology Program Policies Handbook, “any student who receives less than a 2.00 grade in any required Laboratory Medicine course is dismissed from the program.”

### How the Final Grade is Determined

Activity	% of Final Grade
Weekly Check Ins, Time sheet	5
Quizzes	10
Paper	40
Poster	25
Oral Presentation	10
Evaluations	10
Total	100

Except in cases of exceptional circumstance, i.e., documented illness, family emergency, etc., points are deducted from any late activity.

### Course Evaluation

Prior to the end of the course, students are asked to complete a course evaluation.

## ACCEPTABLE CONDUCT

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An expectation of professional education is that students comply with all policies and procedures of the university, the Medical Laboratory Science program, and the affiliate laboratory where the rotation is completed. At a minimum, students are expected to conduct themselves in a professional manner at all times while under the supervision of the affiliate laboratory personnel. This includes meeting the following minimum standards of performance:

- ❖ Being punctual.
- ❖ Attending all scheduled training activities.
- ❖ In cases where tardiness or absence is anticipated, the student will contact, well before hand and not after the fact, the affiliate supervising personnel and the MTP faculty.
- ❖ Dressing in appropriate attire that meets affiliate dress code\* requirements.
- ❖ Practicing laboratory safety and adhering to the affiliate's safety policies.
- ❖ Participating in the affiliate's quality assurance program.
- ❖ Maintaining the confidentiality of all patient information in accordance with affiliate standards and governing regulations (e.g., HIPAA) during and after training.

Students are also expected to read and to be knowledgeable of the contents of the program student handbook and policies of this course, and ask questions when they do not know or understand. They are expected to project an image of professionalism. Any behavior that is disruptive or jeopardizes the safety and welfare of fellow students, instructors, patients, or the public will result in disciplinary action and may be grounds for dismissal from the program. See the program policy handbook for additional information on acceptable conduct and progression in the program

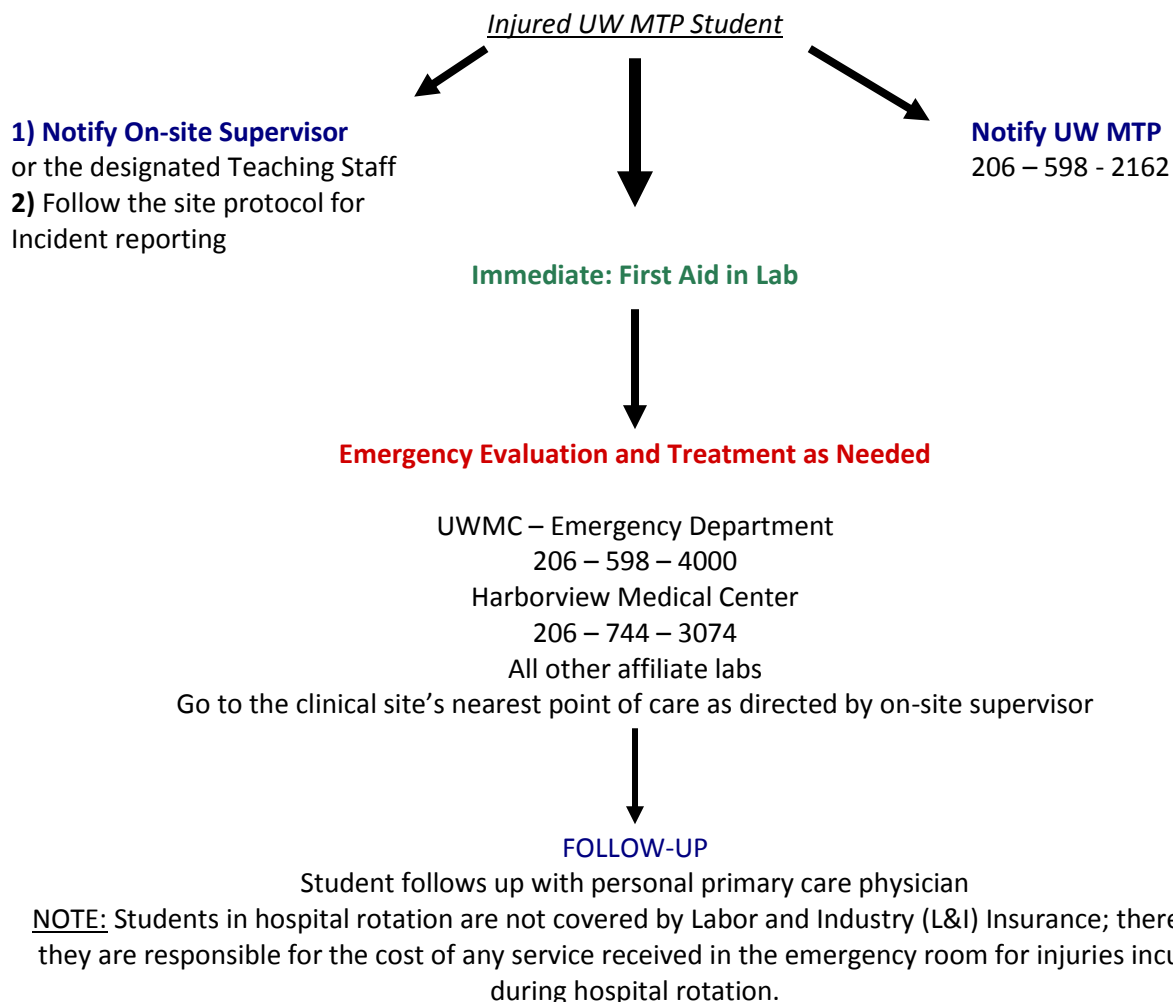
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## SAFETY POLICY

A fundamental belief in and active practice of laboratory safety is key to protecting students and others from potential accidents and life-threatening situations while working in the clinical laboratory. Therefore, all program students are expected to possess a working knowledge of and adhere to all safety regulations at their respective clinical lab sites. During the first week of rotation, the site education coordinator or designated teaching staff should provide each student a safety orientation. Once the training is finished, the rotation safety checklist form should be completed and submitted on line in Canvas.

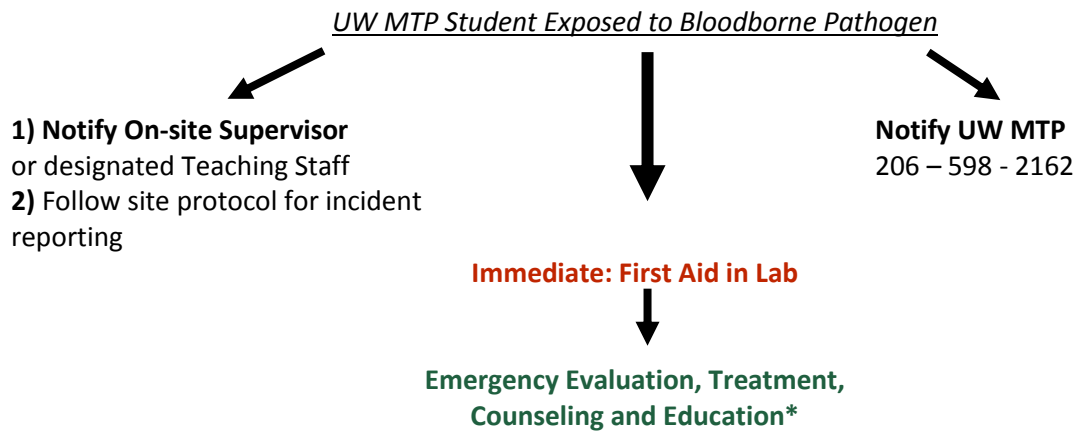
Should a student have an accident or suffer an injury during the hematology rotation that *does not involve exposure to bloodborne pathogens*, the following actions should be taken:

**Figure 1** – What to do if a UW MTP student is injured in rotation



Should a student have an accident or suffer an injury during the research rotation that **involves exposure to bloodborne pathogens**, the following actions should be taken:

**Figure 2** – What to do if a UW MTP student injury during the research rotation involves **exposure to bloodborne pathogens**



Per the clinical site’s workplace bloodborne pathogen exposure control plan

**Weekdays (M-F) – Day Shift**  
**UWMC – Campus Health Services**

7:30 am – 4:30 p.m.: NE210  
Telephone: 206-598-4848

**At Harborview-Employee Health**

7:00 am – 4:30 pm  
1 East Clinic, Room 21  
Telephone: 206-744-3081

**All Other Affiliate Sites**

Go to the clinical site’s  
ER or clinic as directed by  
the teaching coordinator

**All Other Times**

**Emergency Departments**

UWMC: 206-598-4000  
HMC: 206-744-3074

**All Other Affiliate Sites**

Go to the clinical site’s  
ER or clinic as directed by  
the teaching coordinator

**Follow-up**

Students must follow up all exposures (regardless of rotation location) by appointment through the UW Employee Health Center at (206) 685-1026 and be evaluated as soon as possible. If the exposure occurs after hours, please contact the nearest emergency room which may be located at either the UWMC (206) 598-4000 or HMC 206-744-3081. **NOTE:** All bills for initial bloodborne pathogen exposure treatment should be sent directly to: Steve Boerstler, Asst. Dir., Budget & Administration, UW Health Sciences Administration, Box 356355, Seattle, WA 98195-6355. These charges will be paid in full by the **STUDENT HEALTH FEE**.

**Due Dates and Assignments for LabM 433 Enrichment/Research rotation:** (See assignment in Canvas for rubrics and details)

1. ONE WEEK BEFORE ROTATION: E-mail your PI and remind them the date you are starting. Remember to ask any questions regarding who, what, where and when. Include a copy to Gretchen on email.
2. EACH WEEK: weekly check in, briefly let Gretchen know if things are going well and what you have been doing. The check in may not be submitted before Thursday and is due Saturday at 11:59 pm for each of the weeks you are working on your research project.

1. END OF FIRST WEEK:

- Safety Checklist submitted online by 11:59 on Saturday.
- Title and at least 5 references are due (Friday at 5 pm).
- Intellectual Properties Quiz is also due by Saturday at 11:59 pm.
- Weekly Check-in is due by 11:59 pm on Saturday
- Discuss with your PI or mentor, a day and time during the last 2 weeks of your rotation to schedule your oral presentation of your work for the site or PI. You may not have an exact date selected but your PI will need to schedule time for this well in advance. Email Gretchen with the date and time of the presentation.

2. END OF SECOND WEEK: Weekly check- in, in-service lesson plane and Poster quiz is due by 11:59 pm on Saturday.

3. END OF THIRD WEEK: Weekly Check-in is due by 11:59 pm on Saturday

4. END OF FORTH WEEK: Your first draft of your paper and poster is due (Friday at 5 pm). Your PI needs to review your first draft of your paper, poster and study questions for comments and feedback. Study questions are due week 5 with your final poster. Weekly Check-in is due by 11:59 pm on Saturday.

5. END OF FIFTH WEEK: Ask each faculty researcher or clinical mentor you have been working with to give you a Research Rotation Student Evaluation. You will need to give your oral presentation at your site.

Your final paper, poster and study questions are due (Saturday at 11:59 pm). An MLS faculty instructor will evaluate all final papers. Be sure to have the PI cc Gretchen with comments/approval. Weekly Check-in is due by 11:59 pm on Saturday

6. END OF SPRING QUARTER: The oral presentation will be given to the MTP faculty the week before finals. One presentation will be selected to present at the graduation ceremony.

**Students are encouraged to present their posters at ASCLS Spring Symposium April 27-28, 2017 (Kennewick, WA Red Lion) and/or UW Undergraduate Research Symposium (May 19, 2017).**

## Instructions: The Paper

### Paper page layout

1. The paper's text should be set only in **Times New Roman** or **Arial**, 12 point type, double-spaced, left-justified, with one-inch margins on all sides.
2. Number each page sequentially, including figure and table pages.
3. Cite each figure and table in numerical order in the text.
4. Do not indent paragraphs.

It is strongly recommended that students familiarize themselves with science paper writing by reviewing a recent issue of *Clinical Laboratory Science* or *Laboratory Medicine* or *American Journal of Clinical Pathology*.

### Paper style

1. **Title page** – prefaces the paper and should be unnumbered and includes the following information
  - a. Title - No word limit, but should be concise and clear about the project
  - b. The phrase “Submitted for course requirement in laboratory medicine 433”
  - c. Your name
  - d. Your student ID number
  - e. Date submitted
2. **Abstract** – All papers (regardless of the type) must contain an abstract. The abstract should be less than 500 words and be written to give the reader a synopsis of your project that includes the conclusion.
3. **Paper length** –General guidelines are for papers to be at least 2500 but not more than 5000 words. References, figure and text captions, and footnotes are not included in the word count. The length of *research papers* will undoubtedly vary. ASK the Faculty Researcher (the person you are working directly with on their research project) what s/he feels is appropriate for the research performed.
4. **Write using scientific format**—do not use personal pronouns
5. **Write using past tense**
6. **Citations and References** – *when writing a science paper, regardless of style, you substantiate what you say by including others' thoughts, ideas, data, and other works (e.g., pictures, graphics, charts, etc.) that have been or will be published into your work. However, it is never appropriate nor is it legal to simply piece together the works of others to write your paper.* The paper is written in your words as a reflection of your own thoughts and design. To avoid plagiarism and copyright infringement you must indicate in the text of your paper cited works using correct format. Additionally, you must list the references that contain the cited work on the last page(s) of your paper.

### **Citations**

Numbering should be in order of first citation in the text. *Quotations are not to be used.*

References are to be listed numerically on the last page(s) of the paper. The reference section of the paper must include at least 5 journal articles. Key references should have been published within the last 5 years. For references >5 years, provide justification for their use.

Example of justification- Smouse PE, Chakraborty R. The use of restriction fragment length polymorphisms in paternity analysis. *Am J Hum Genet.* 1986 Jun; 38(6): 918-939.

Justification: Research performed represents the original work and gold standard for this method.

Reference format should conform to the International Committee of Medical Journal Editors (ICMJE) uniform requirements, located at [http://www.nlm.nih.gov/bsd/uniform\\_requirements.html](http://www.nlm.nih.gov/bsd/uniform_requirements.html).

What follows are samples for a journal article (Author last name, first initial. Title. Journal Title. Year; Volume: pages), a book - (Author(s) last name(s), first initial(s). Chapter title. In: editor(s) name(s) (ed.), Book title. Edition number. City and state: publisher; year. pages) If there are more than 3 authors, list first 3, then "et al".

- a. Halpern SD, Ubel PA, Caplan AL. Solid-organ transplantation in HIV-infected patients. *N. Engl. J. Med.* 2002; 347:284-7.
  - b. Gilstrap LC 3rd, Cunningham FG, VanDorsten JP, editors. *Operative obstetrics*. 2nd ed. New York: McGraw-Hill; 2002.
  - c. If the laboratory procedure is cited, there is no need for authors. Write the title, name of the laboratory, and the year the procedure published or put into use.
  - d. If the manufacturer procedure is used, there is no need for authors. Write the title, name of the company, and location (city, state, and country).
7. **Trademarks and other sources** - Trademark names are essentially the same as brand names. If your paper makes reference to a kit, diagnostic instrument or other trademarked item, it is important to acknowledge trademarks and sources properly. *Federally registered trademarks* should be acknowledged by placing the symbol ® after the name. The symbol ™ can be used for a trademark that is not registered at the federal level. To determine which symbol is appropriate, check the manufacturer's Information found in the kit insert, instrument operator's manual, or the company's web page. It is also important to acknowledge sources of manufactured or trademarked items. The first time a manufactured item is mentioned, the manufacturer's company name, headquarters city, and state or country should be listed in parentheses. For example: "Assays were run using the Syva Emit® (Dade Behring, Deerfield, IL)."
8. **Figures** (illustrations and photographs) should be limited to those required to show the essential features described in the paper. Figures are defined to be black and white line drawings, graphs, or images. Figures should be formatted to fit a standard 8.5 x 11 inch portrait view page. A caption that does not duplicate text material must be supplied for each figure. If there are abbreviations or symbols in the figures, they must be defined in the figure legend. Please do not embed the caption text or figure legends into the figure image. Every figure needs a title.
9. **Tables** should have a title. Supply a brief heading for each column. All abbreviations used in the table should be explained in a footnote. Avoid use of horizontal lines, vertical lines, or shading within the table. Do not submit tables created using special table and equation functions. Instead, please insert tabs and hard returns to separate columns and rows. Tables must fit a standard 8.5 x 11 inch portrait view page. Indicate footnotes in tables by symbols in this order: asterisk, dagger, double dagger, section mark, parallels, paragraph symbol, number sign, double asterisk. Do not duplicate data in figures and tables in the text.
10. Use SI units of measure.



11. **All papers** should include the following sections in order:

- a. **Abstract:** Summarize briefly the whole paper without discussion.
- b. **Introduction:** State the background of the study, hypothesis being tested or the procedure being evaluated.
- c. **Materials and methods:** Briefly state what was done and what materials were used, including number of subjects. If it is a clinical study, include the clinical disorders, important eligibility criteria, and key socio-demographic features of patients. Also include the methods used to perform the experiments and assess the data.
- d. **Results:** Provide the findings of the study, including indicators of statistical significance. Include actual numbers, as well as percentages.
- e. **Discussion:** Compare the results with the original hypothesis or previously published data. Include any further study should be performed in the future.
- f. **Conclusion:** Summarize in one or two sentences the conclusions based on the findings.

The UW Libraries website has numerous online resources for writing topics including grammar and style, college writing, research and documentation, use and acknowledgement of sources. For further information, go to <http://www.lib.washington.edu/research/wri.html>. This site can also be reached from <http://www.washington.edu/uwin>

### **Instructions: The Oral Presentation**

Topic - The oral presentation should emphasize at least two significant or important findings written about in the research paper and which represent new information or are of particular interest to the medical laboratory science community. The length of the presentation should be no more than 10 minutes excluding time for questions.

Visual Aids - The use of visual aids greatly enhances a presentation. Under some circumstances, use of handouts may also be warranted.

Citation of Figures and Charts - Any figures, charts, and/or tables included, if original, should be so noted. If they are taken from a reference, they should be properly cited.

Presentation Evaluation - those in attendance using the following criteria will evaluate the presentation:

1. Length of presentation
2. Organization and presentation of at least two important points
3. Use of visual aids
4. Presentation quality
5. Coverage of topic
6. Presenter knowledge and oratory competency

### **Instructions: The Poster Presentation**

Please see separate document for poster instructions. There are instructions for both PC's and MACs. You can also get design advice at [http://depts.washington.edu/uwposter/design\\_help.html](http://depts.washington.edu/uwposter/design_help.html).

You should be working with your PI during your research rotation on your poster and the PI must give approval of the final poster via email to Gretchen. After the PI has approved of the poster, your poster will be printed by the MLS program for presentation at Undergraduate Research Symposium (if you register to present), ASCLS spring seminar (if you register to present), and at graduation.

**APPENDIX B - LABORATORY MEDICINE DEPARTMENT AND  
MASTER OF SCIENCE PROGRAM SUPPORTING DOCUMENTATION**

## APPENDIX B: MS PROGRAM FIGURES

### FIGURE 1. Original letter establishing the MS program

University of Washington Correspondence

INTERDEPARTMENTAL

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Paul E. Strandjord, M.D.  
Chairman  
Department of Laboratory Medicine  
SB-10

Dear Paul:

I was pleased to learn that the Ad Hoc Laboratory Medicine Degree Committee of the Graduate School has approved your proposal for development of a Master's Degree in Laboratory Medicine.

In reviewing their report I note that they have suggested that "evidence of support from the University administration and administration of resource hospitals . . ." should be provided prior to the transmission of their report to Operating Committee Group VII. Since I have followed the development of this proposal for the last several years, I am delighted to note the current progress. Accordingly, this letter can serve as the "evidence of support" requested by the committee. Dr. Winterscheid, Dr. Laws, and Dr. Wood recognize the advantages of having these individuals working in the clinical laboratories in reference to the development of new methods, and you can anticipate cooperation from all of our teaching hospitals.

Sincerely.

  
Robert L. Van Citters, M.D.  
Dean, School of Medicine

FIGURE 2. Press coverage of MS program

DEC 1 1977

Allen's P.C.B. Est. 1888

## U of W Offer Lab Master's Degree

By Bob Roseth

SEATTLE—The University of Washington Board of Regents Friday (November 18) approved a master's degree program in laboratory medicine.

The two-year graduate program students to specialize within a will provide the opportunity for division of the Department of Laboratory Medicine in the School of Medicine in areas like clinical chemistry, clinical immunology, clinical microbiology, hematology, coagulation or virology.

The regental action followed the recommendation of the Council establish the graduate degree for Post-secondary Education, to program.

Scientific aspects of laboratory medicine will be emphasized. Students will receive instruction in education and principles of laboratory management, according to Dr. Paul Strandjord, chairman and professor of laboratory medicine.

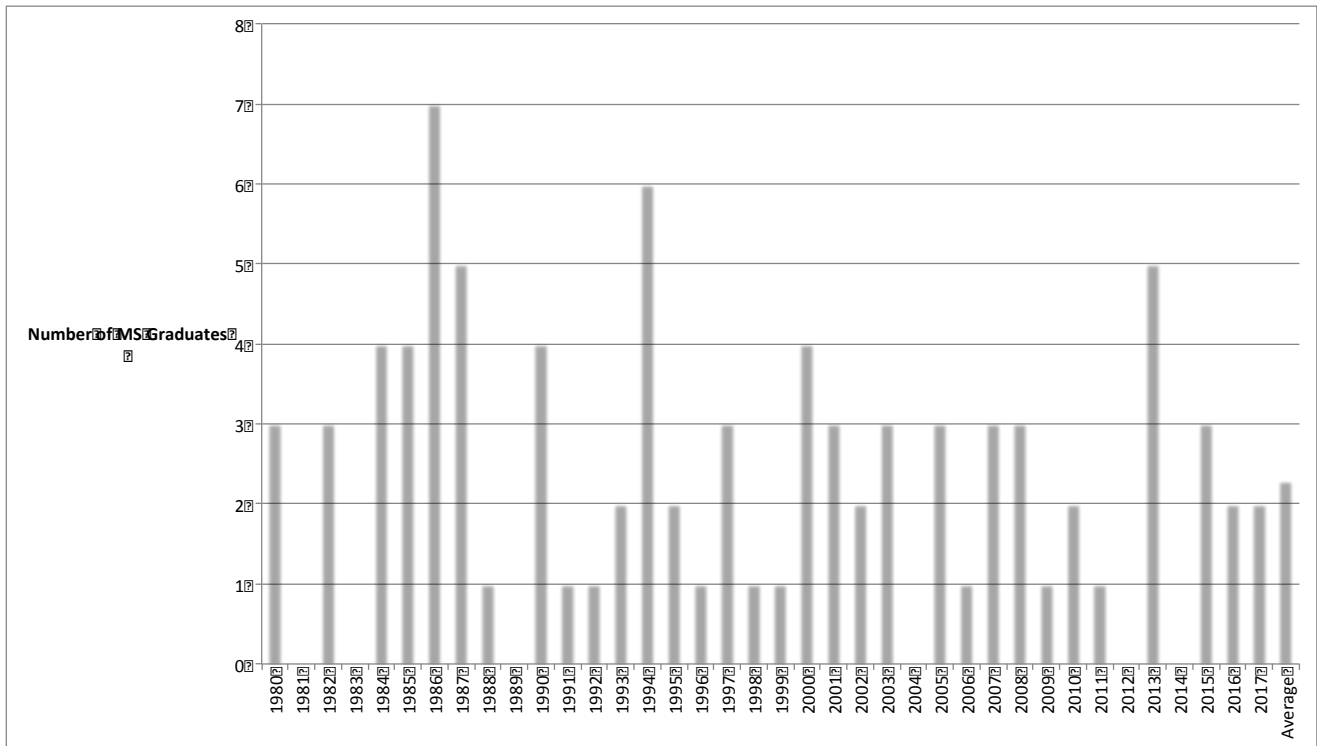
The Department of Laboratory Medicine hopes to begin accepting applications in the coming winter and spring and anticipates that the first students will be admitted for fall quarter 1978. Six new candidates will be accepted each year.

Students in the master's program will study in laboratories at the UW as well as in UW-affiliated hospitals.

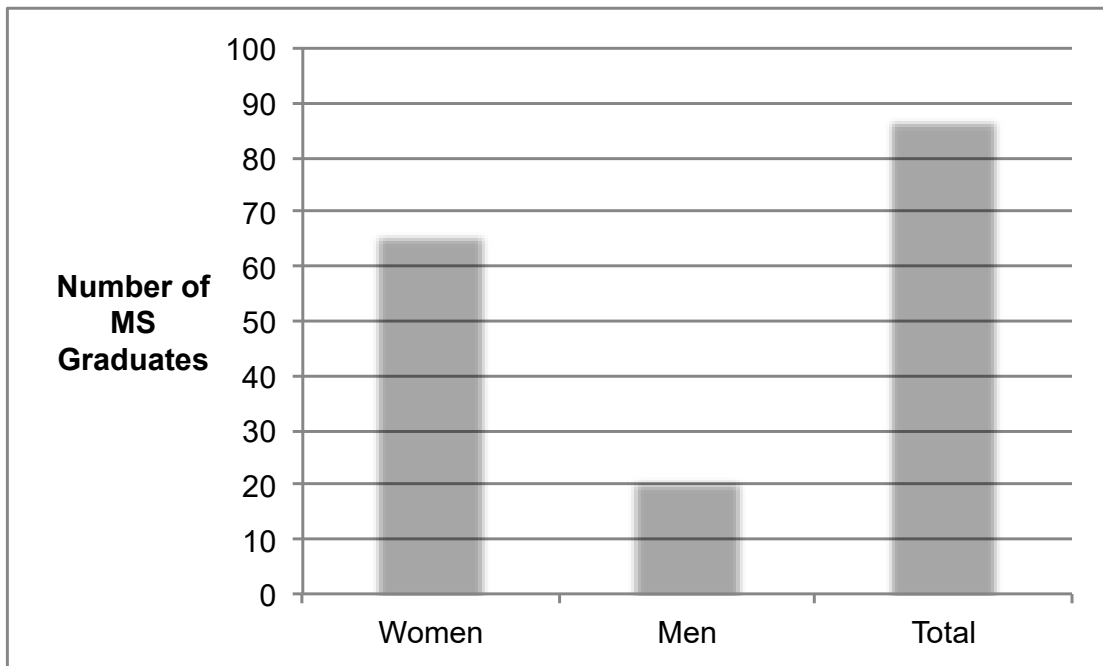
The nearest comparable graduate program is offered at the University of Oregon.

*Dear Kathy,  
A number of these  
are probably worth  
keeping in the file.  
Paul*

**FIGURE 3. MS program graduates per year**



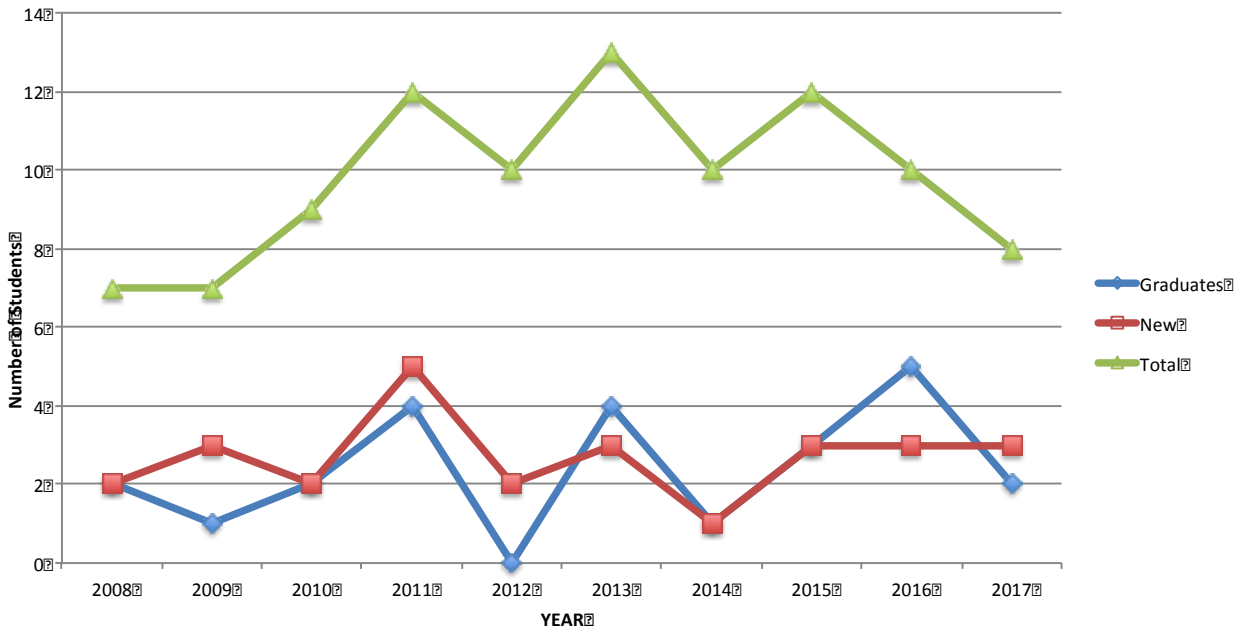
**FIGURE 4. MS program gender numbers**



**TABLE 1. MS Program Diversity**

Ethnicity	2015	2016	2017	2018
Caucasian	6	7	5	3
Asian	6	5	2	3
Totals	12	12	7	6

**FIGURE 5. MS program student numbers**



**FIGURE 6. MS Program Organizational Chart**

