ACADEMIC PROGRAM REVIEW REPORT AY2023-24

Program(s) in the review: OEC Phlebotomist & AAS Medical Laboratory Technology & BS Medical Laboratory Science

Specialized Accrediting Agency (if applicable): National Accrediting Agency for Clinical Laboratory Sciences

Campuses where the program is delivered: ☒ Anchorage □ KOD □ KPC □ MSC □ PWSC

Year of last review: AY20

Final decision from last review: Continued Review

PROGRAM SECTION (Due on March 1)

The program review committee chair and committee members are assigned by the dean. All program faculty should be included in the review process, including faculty on the community campuses. After completing the Program Section below, the program review committee chair will enter their name and date, and email this form to the dean, copying all committee members. If the program is fully delivered on a community campus, copy the appropriate community campus director(s). The program review committee chair's name and date lines are at the end of the Program Section.

Program Review Committee:

Grace Leu-Burke, Assoc Professor, Medical Laboratory Science; Chair

Bridgett Mayorga, Asst Dean, Allied Health; Asst Professor, Diagnostic Medical Sonography; Member

Karen Kurtz, Term Asst Professor, Medical Laboratory Science; Member

1. Demonstrate that the program has responded to previous recommendations.

Recommendation 1: Conduct an analysis of the AAS and whether or not it attracts students and serves as a pipeline for the BS.

How do you know the recommendation has been successfully achieved? *(2500 characters or less)*

Programs in the Medical Laboratory Science department are articulated and designed to allow flexibility in degree completion. Entering as a cohort each fall semester, students seeking an AAS in Medical Laboratory Technician or a BS in Medical Laboratory Science take the same medical laboratory science courses the first three semesters. With the AAS Medical Laboratory Technician degree, the fourth semester is their clinical rotation and completion of degree. However, they have the option of changing their major to the BS Medical Laboratory Science and continue with the cohort through the upper division classes. Since 2020, each fall cohort has had at least one declared AAS MLT student change their major to the BS Medical Laboratory Science. It is important to recognize that a declared AAS MLT major can move up to the BS MLS degree, the student can also move down from BS MLS to an AAS degree. Financial challenges, health, family circumstances, even military duties can affect the ability to complete a bachelor's

degree. In these instances, we work with the students to graduate with the AAS MLT degree, providing them with the ability to work in a clinical laboratory. Since 2020, fifty percent of our AAS MLT graduates fall into this category. Therefore, our MLT program not only provides a pipeline towards a BS MLS degree, but also an avenue for student graduation when unexpected obstacles in their educational plans occur. AAS MLT graduates have the option to return to UAA, when they are able, to complete their BS MLS degree seamlessly with our articulated program.

Actions taken to date *(2500 characters or less)*

When advising students entering our program, we emphasize the flexibility of the medical laboratory science program with declared AAS MLT students' studying alongside the BS MLS students in the same cohort. Beginning in the Fall 2021, research surrounding bacterial antimicrobial resistance was embedded directly into MEDT A203 Clinical Microbiology curriculum, which is a required course for the MLT degree. MLT students are eligible to participate in the UAA MLS Research Team and encouraged to present at the UAA MLS Research Symposium. Student collaboration, along with conducting research, often increases student academic success and confidence that completion of a bachelor's degree is possible.

Evidence of success to date *(2500 characters or less)*

Student success is measured by graduation with an avenue towards employment and potential for further education. The Medical Laboratory Science Department articulated program allows students flexibility in moving between the AAS MLT and BS MLS degrees which has proven essential. During the pandemic, financial hardship affected several students, but we were able to assist their completion of an AAS MLT degree and provide much needed medical laboratory professionals for Alaska. In August 2022, two of these students returned to UAA to complete their BS MLS degree, with support from their employers. During this time, we also had a student complete AAS MLT degree due to a military spouse moved out of state. Because we maintain a close relationship with our alumni, I was able to assist her in finding a bridging program at a local university to complete her BS MLS degree. She wrote to me, so excited, that there were no issues in acceptance of her UAA degree and the university was familiar with the Medical Laboratory Science program, especially the high level of undergraduate research conducted. Finally, we had a young man start our AAS MLT program, struggling at first. But we recognized his commitment and strong desire to do well and supported his academic growth. When he joined the MLS Research Team, his contributions not only during the meetings, but development of research protocols, provided a boost that seemed to skyrocket both his academic and laboratory studies. He changed majors from the AAS degree continuing onto our BS MLS program and received high recommendation scores from his clinical sites graduating December 2023 with multiple opportunities for employment. When I asked him if he would be attending graduation ceremonies, he said "Absolutely! And I bought my very first suit for the occasion!" I believe these stories show evidence and continued need for the AAS Medical Laboratory Technician degree as a portal towards student success.

Recommendation 2: Explore the possibilities for enhancing the programs through distance delivery.

How do you know the recommendation has been successfully achieved? *(2500 characters or less)*

In AY22-23 faculty conducted research on the feasibility of implementing an online AAS Medical Laboratory Technology (MLT) program. Members of the Advisory Board, statewide Laboratory Directors, and Supervisors of the clinical affiliates' sites were surveyed. Of the twenty-three surveys collected, only two sites in rural Alaska displayed strong interest in supporting an online program indicating they had staff and resources to serve as a dedicated clinical affiliate for practical rotations. The sites showing moderate to strong interest were asked about projected student enrollment and each site thought they could support 1-2 students each year or a predicted cohort size of approximately 4 students a year. These projections did not seem promising in terms of longevity when deciding to build an online AAS MLT program. Furthermore, Alaskans can easily apply and get accepted to an existing, award-winning, NAACLS accredited, online MLT program offered through Weber State. Developing an online MLT program at UAA would mean competing with an already well-established program. Additionally, tuition for online classes at Weber State is highly affordable for non-Utah/Alaskan residents at $291/credit hour. Developing a dedicated online curriculum for the AAS would require growing the program and an additional faculty member. The in-person curriculum is currently articulated in conjunction with the BS Medical Laboratory Science program and does not require additional faculty. Finding qualified faculty may be too difficult to expand the program in this manner at this time.

Actions taken to date *(2500 characters or less)*

(See above for the discussion of actions taken) The findings discussed above suggest developing an online MLT program to support rural Alaskan communities would not be a feasible option at this time. Faculty and Advisory Board members continue to discuss other opportunities or development to support the clinical laboratories of Alaska. Additionally, the Phlebotomy OEC program continues to be offered as a distance learning course and can serve as an avenue for students interested in laboratory careers.

Evidence of success to date *(2500 characters or less)*

Although we do not have plans for an alternative to on campus learning, we continue to have conversations with our clinical affiliates to gauge the need for development of an online MLT program. To provide ongoing surveillance, we included questions measuring the potential interest for an online MLT program at UAA, in our annual survey delivered electronically to all clinical laboratories in Alaska. Recently the Alaska State Virology Lab indicated a need to increase the pool of qualified Microbiologists in the area. Our program continues to explore avenues for supporting this need, currently researching the feasibility of adding a Clinical Microbiology OEC.

2. Demonstrate the centrality of the program to the mission, needs, and purposes of the university and the college/community campus. Include how the program is integrating (or planning to integrate) intentionally designed opportunities for students to develop the four core competencies

(Effective Communication; Creative and Critical Thinking; Intercultural Fluency; and Personal, Professional, & Community Responsibility). ***(3000 characters or less)***

Personal, professional, and community responsibilities: Research under the One Health model is embedded into the medical laboratory science program starting in 2020. The One Health initiative is a collaborative, multisectoral, and transdisciplinary approach with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, and their shared environment. Students directly learn the responsibility of laboratory medicine and its impact on public health in their community, developing a sense of professionalism and purpose.

Effective Communication: For communication to be effective, confidence in the ability to formulate and express an idea must be developed. From the start of our program, students are provided opportunities to grow in written and oral presentation skills within the curriculum. An example of this staggered approach begins with MEDT A132 where a lecture discussing communication, including verbal repeat back and active listening followed by practice in a laboratory setting. MEDT A203, where students write and report about an unusual microbial organism. In MEDT A303, they investigate and discuss the outcome of a particular infectious disease, and by MEDT A401, they develop a medical literature review discussing not only clinical laboratory diagnosis, but current treatment options, and patient outcome, including potential sociological bias and presentation.

Intercultural Fluency diversity: To engage in effective communication, students must first recognize diversity. Recognition of our diverse populations and recognizing cultural fluency is integral in teaching the MLT and MLS students. During the first semester of all MLS programs, including the Phlebotomy OEC, students take MEDT A250, Cultural Diversity in Health Care. This course challenges students to examine their cultural biases and recognize the importance of cultural awareness towards providing exceptional medical care. The curriculum is designed to examine community, personal and family relationships through the lens of cross-cultural health and healing practices. Recently a student wrote “Diversity provides a platform to curb pre-existing concepts, bridging the gap between our own bias and what is true. By educating ourselves and others about marginalized people’s experiences we improve healthcare.”

Creative and Critical Thinking: Students are required to complete a capstone project in MEDT A302 which involves designing a functional clinical laboratory within the confines of an operating budget and in a small rural setting. This project requires students to be creative in considering the size and design of their space, the types of furniture required, the types of laboratory testing a small rural area should offer, and the various instrumentation they believe their lab should purchase. They are using critical thinking as they pull knowledge forward from their 200 level classes reflecting on the equipment, furniture, and testing they have learned and put it all together to “build” their lab from the ground up. They are required to consider everything from mandatory regulations and safety standards, to equipment and supplies, to employees and training, to instrumentation and testing, in addition to generating a monthly schedule for their employees, writing job descriptions, and deciding on a fair wage. This

multifaceted project is challenging and a great way for students to use creative and critical thinking for a real world situation.

3. Demonstrate program quality and improvement through assessment and other indicators.

a. Program Student Learning Outcomes Assessment and Improvement Process and Actions

i. BS Medical Laboratory Science

- *1) Demonstrate entry-level competencies for medical laboratory scientists in the following disciplines: hematology, chemistry, immunology, blood bank, urine and body fluid analysis, microbiology, and laboratory operations; 2) Demonstrate professional behavior including sound work ethics, cultural responsiveness and appearance while interacting with patients and health care professionals; 3) Evaluate published studies as an informed consumer; 4) Demonstrate continuing competency by certification maintenance; 5) Use educator skills to create and deliver an instructional unit; 6) Use laboratory management skills to plan, organize, staff and cost out a new clinical laboratory service; and 7) Demonstrate a commitment to the laboratory profession through active involvement in a professional organization.*

Describe your key findings for these outcomes. (3500 characters or less)

Student learning outcomes 1 and 2 are evaluated through the Core Abilities Assessment after completion of clinical rotations which evaluates their commitment to learning, interpersonal communication, bench level competency with effective use of time and resources, problem solving and critical thinking, and professionalism. For program assessment, we average all the rotation scores each semester with a threshold of 4.0. Our average score from 2020-2023 was 4.8. Student learning outcome 3 is monitored through Literature review scores for MEDT A401 and Exam 1 which determine the ability for students to read critically medical laboratory science literature, formulate a hypothesis, analyze and communicate. With a threshold set at 75% our average score of 88.75% from 2020-2023 exceeds expectations. The ASCP certification exam evaluates students' entry level bench competency and commitment to be an active member of the ASCP professional organization assessing student learning outcomes 4 and 7. We set our threshold along NAACLS required three year average of 75%. Our three year average pass rate 2020-2023 was 93% and current pass rate of 97%, exceeding NAACLS required expectation. In MEDT A302 Education and Management the capstone project on laboratory design and education module allows for continued evaluation of 5-6 with a threshold is set at 75%. The average score of 98.3% from 2020-2023 exceeded expectations. Survey reviews (Feb, October each year) from clinical partners throughout Alaska (also NAACLS).

Describe actions taken to improve student learning for these outcomes. (3500 characters or less)

Surveys from the MLS Advisory Board indicated an increased need for students to develop critical thinking skills in areas of hematology and clinical chemistry. In 2021, MEDT A307 Clinical Correlations was redesigned providing increased understanding of lab results and development of interactive study between laboratory disciplines towards disease processes. By applying

knowledge through case studies, students develop critical thinking and problem solving in all of the laboratory disciplines, emphasizing clinical interpretation and correlation at an advanced level. To provide updated, industry level curriculum in the area of clinical molecular diagnostics and maintain cost effective materials, we have adopted Open Education Resources (OER) for MEDT A301 Emerging and Molecular Diagnostics.

Describe evidence that these actions are working. (3500 characters or less)

From January 2020 to December 31, 2023 ASCP pass rate nationally dropped to 68% from a previous average of 82% (2016-2019). During the same time period, we had 38 students sit for the ASCP certification exam with a pass rate of 95%, far exceeding the national average. Also a NAACLS requirement is ongoing assessment through surveys of our clinical partners who reported in our 2022-23 annual survey, UAA students had the knowledge and skills for entry-level employment with 100% strongly agreeing that the UAA MLS teaching faculty prepare students with industry level clinical laboratory skills. Regarding the use of OER materials, student surveys conducted indicated 93% approval of OER materials. Several student comments were as follows: "Accessible and easy to use," "Enhanced the lectures - really helped to understand the material," "Better than a book," "This is the first course (MEDT A301) that I actually did the reading assignments." Clinical partners surveyed found a high level of advanced technical competency from graduating students, commenting "The level of understanding and use of molecular testing in a newly hired technologist was amazing. The new UAA graduate was immediately able to assist in the adoption of innovative test design for our hospital."

ii. AAS Medical Laboratory Technology

- *1) Perform routine clinical laboratory tests in the area of urinalysis, hematology, clinical chemistry, transfusion services, and microbiology; 2) Demonstrate professional and communication skills to support interaction with members of the medical team, customer service, patient care and education; 3) Demonstrate safety standards according to Occupational Safety and Health Administration, American Association of Blood Banks, American Society for Clinical Pathology and Clinical Laboratory Improvement Amendments; and 4) Demonstrate ethical behavior in the hospital or clinical settings.*

Describe your key findings for these outcomes. Programs may enter "See above" if there is a significant overlap of outcomes. (3500 characters or less)

Key findings for program learning outcomes 1 and 3 demonstrative bench level competency in clinical laboratory tests, including laboratory safety regulations are measured by the pass rate of ASCP national certification exam. We have set a benchmark of a three year pass rate of 75% which corresponds with NAACLS requirement. Since 2020 our MLT pass rate for the ASCP certification exam has been 100%. Student learning outcomes 1, 2, and 4 are evaluated through the Core Abilities Assessment after completion of clinical rotations. Core Ability scores measure student commitment to learning, interpersonal communication, bench level competency with effective use of time and resources, problem solving and critical thinking, and professionalism. For program assessment, we average all the rotation scores each semester with a threshold of 4.0. The average score from 2020-2023 was 4.9. Learning outcomes 1-4 are also measured by conducting Qualtrics surveys from clinical partners throughout Alaska to measure the quality of

student graduates as entry level employees. Average survey results from 2020-2023 report employers are highly satisfied with MLT skills, especially in the areas of Hematology and Clinical Chemistry. Often employers encourage UAA MLT graduates to attend UAA part-time and complete the BS MLS program as a part of their continuing education, often adjusting their work schedules to accommodate student lectures and labs.

Describe actions taken to improve student learning for these outcomes. Programs may enter "See above" if there is a significant overlap of outcomes. (3500 characters or less)

Continued success in ASCP pass rates, high core ability scores and employment has not indicated changes to be made in the curriculum. However, introduction of research in MEDT A203 allowed MLT students to participate in research, with several leading projects.

Describe evidence that these actions are working. Programs may enter "See above" if there is a significant overlap of outcomes. (3500 characters or less)

Several MLT students have presented posters in national conferences and won awards on their research abstracts. By participating in development of research data, MLT students have gained confidence and a sense of professional achievement which travels with them after graduation. MLT students also cite the opportunity to conduct research as a motivator to return to UAA to complete a bachelor's degree and later post-graduate education. In 2019, we had a first - generation Hispanic student who was academically a B/C student. He started attending the open MLS research weekly meetings, at first just listening, but soon recognized his ideas would be "heard" and became an active member. He eventually presented a poster to a national conference and had his abstract published in an Oxford Press publication. Two years after graduation, he came back to UAA to complete his BS MLS degree, with his employer's support. He is now on track to be a lead clinical laboratory supervisor in one of Anchorage's large hospitals.

iii. OEC Phlebotomist

- *1) Demonstrate entry-level competencies for phlebotomist including: a) Select the appropriate site and demonstrate the proper technique for collecting, handling and processing blood and non-blood specimens; b) Adhere to infection control and safety policies and procedures; c) Identify factors that affect specimen collection procedures and test results and take appropriate actions; d) Perform point-of-care testing according to standard operating procedures; e) Recognize legal implications when interacting with patients, peers, other health care personnel and the public; 2) Demonstrate professional conduct, stress management, interpersonal and communication skills with patients, peers and other health care personnel and the public; 3) Act upon individual needs for continuing education as a*

function of growth and maintenance of professional competence; and 4) Recognize opportunities for professional development with the laboratory.

Describe your key findings for these outcomes. Programs may enter "See above" if there is a significant overlap of outcomes. (3500 characters or less)

Outcomes 1a-e and 2 are embedded into the curriculum of MEDT A132 and demonstrated by students during labs and at their practicum sites in MEDT A132L and MEDT A195A/C respectively. These outcomes were assessed in two ways. First, a summative assessment of exam scores from both the final exam in MEDT A132 and the lab practical scores in MEDT A132L are tracked. For this assessment scores were compiled from three semesters (Fall 2022, Spring 2023, and Fall 2023). The final exam from the lecture course is comprehensive and aligns with the knowledge base outlined in outcomes 1 and 2. Cumulative scores from the three semesters show an average exam score of 90% suggesting that students are learning the necessary professional requirements of the trade. Demonstration of these skills are assessed during the lab practical final and after clinical rotations. Cumulative scores of the lab practical from the three semesters show an average score of 89% suggesting that students can demonstrate the skills required. Additionally, the students are evaluated during MEDT A195/C by trainers at the clinical affiliate sites. The sites submit formal Task Objective evaluations and Core Ability evaluations scoring the student's performance and professional skills. 100% of students earning the Phlebotomy OEC in the assessment period have met or exceeded the expectations of the clinical sites and have earned 5/5 scores on the Core Abilities displaying satisfactory integration of these outcomes. The majority of clinical sites in Alaska require a national board exam certification from ASCP for phlebotomy employees. Students are introduced to the ASCP organization during MEDT A132 and continuing education definition and requirements are covered in lectures about the certification process which correlates to outcome 3. Additionally, many students in the Phlebotomy OEC program continue into the Medical Laboratory Science program, or Medical Assisting program to earn a higher degree. Outcome 3 and 4 is observed in the students that see the Phlebotomy OEC as a stepping stone in professional development.

Describe actions taken to improve student learning for these outcomes. Programs may enter "See above" if there is a significant overlap of outcomes. (3500 characters or less)

The MEDT A132 course is asynchronous online and includes 3-4 optional synchronous meetings. Learning is facilitated by the instructor and students are given opportunities to review materials and ask questions. The recording is made available to the students that are not able to attend the session. These synchronous sessions were implemented prior to the RSI standards because the instructor identified a need for giving the students an opportunity to learn in a low-stakes environment prior to testing. Additionally, three interactive learning tools were developed using Course Arc. The activities are available to students in the MEDT A132 course and give students an opportunity to demonstrate proper blood collection, handling, and processing techniques by "dragging and dropping" the appropriate response into the correct category. MEDT A132 distance students report finding this activity useful especially since they are not able to simultaneously enroll in the laboratory course (MEDT A132L) like the local students.

Describe evidence that these actions are working. Programs may enter "See above" if there is a significant overlap of outcomes. (3500 characters or less)

Students are surveyed twice a semester through anonymous links to a Qualtrics survey. The mid semester survey asks questions such as, "In what ways is the instructor using teaching techniques that make it easier for you to learn?" and "How effective is your instructor's communication and feedback?" to gather insights on the instructor. It also asks questions such as, "Have you been keeping up with the assigned reading/materials in Blackboard?" and "What challenges are you facing this semester?" to assess student readiness. Three rounds of mid semester surveys have been collected (Fall 2022, Spring 2023, and Fall 2023). Instructor ratings are consistently high with 97% of students reporting instructor communication as "extremely effective" or "very effective". The end of the semester survey asks students to rank statements such as, "This course provided you with a basic understanding of concepts related to phlebotomy and specimen processing," and "Overall, how satisfied are you with the learning opportunity provided by this course," as well as "How would you rate the instructor?". Three rounds of end of semester surveys have been collected from students (Fall 2022, Spring 2023, and Fall 2023). The majority of students (77%) "Strongly Agree" MEDT 132 provides basic phlebotomy concepts, and 67% are "Extremely satisfied" with the learning opportunities, while the other 33% report being "Satisfied". Instructor ratings remain high with 91% of students rating the instructor as "Excellent".

b. Demonstrate program quality and improvement through other means, for example, maintaining specialized accreditation, using guidance from advisory boards/councils, responding to community partners and local needs, maintaining currency of the curriculum, implementing innovative program design, intentionally integrating high-impact teaching and learning practices into the program, and meeting indications of quality in distance education, such as the C-RAC Standards. ***(3500 characters or less)***

The UAA MLS/MLT program is evaluated annually by NAACLS with student outcomes related to retention, graduation rate, ASCP pass rate, and employment are evaluated. NAACLS establishes a threshold benchmark of ASCP pass rate three year average at 75% to maintain accreditation. Failure to meet that standard places the program immediately on probation. Currently our three year ASCP pass rate is 95% and has not been below 80% since 2019. NAACLS also requires programs to report on innovations in teaching, effective clinical partnerships, and since 2021 incorporation of diversity, equality and inclusion into the curriculum. Evaluation on delivery and effectiveness of all these outcomes is conducted during accreditation and site visit. The MLS and MLT programs were evaluated by NAACLS with a site visit in March 2021. In September, 2021 the MLS and MLT programs were awarded a 10-year reaccreditation with no deficiencies cited. Noted as exceptional by reviewers included robust simulated clinical student labs with assessments clearly aligned to learning outcomes, strong support from clinical and community partners, and undergraduate research throughout the program increasing awareness of professionalism. Along with maintaining NAACLS accreditation, UAA MLS Advisory Board meets twice a year to evaluate the effectiveness of MLS, MLT and Phlebotomy education and its' alignment with industry standards towards best practice in clinical laboratory medicine. Conducted via Zoom, the Advisory Board is made up of 35 clinical partners throughout Alaska, along with faculty, and student representatives. Meetings focus on NAACLS assessments, ASCP

certification, UAA curriculum, along with discussion on MLS research and implementation of new teaching models. The Advisory Board works together towards student recruitment and encourages visibility of the profession with outreach in the communities they service. The ongoing involvement of our clinical partners in the Advisory Board was noted by NAACLS site visitors as a strength in our program, showing community commitment to MLS education.

4. Demonstrate student success and the closing of equity gaps.

a. Analyze and respond to the disaggregated data in the data sheet for your program. Provide clarifications or explanations for any positive or negative trends indicated by the data, and discuss what you are doing to close any equity gaps. The Student Success program review metrics are Junior Graduation Rate, Associate Graduation Rate, Semesters to Degree – Graduate Programs, and Course Pass Rates by Course Level. ***(3500 characters or less)***

Reviewing the Associate graduation rates appears to be limited to white, females between the age of 18-24. However, this data is misleading as many of our MLT students actually continue on to a baccalaureate MLS degree where we have increased diversity with students identifying themselves as Asian, Hispanic, and 2 or more races. Junior Graduation Rate percentages are not always an accurate picture of degree completion, since many students enter our program after a period of time in the university and yet have not completed our required courses for the MLS degree. It also appears to be trending down from 2019 to 2023 for full-time students. However, that is a reflection of COVID pandemic where many students had disruption in their education resulting in more part-time students and delays in completing clinical rotations for both part-time and full-time students as hospitals restricted student internships. Course pass rates average over 87% or higher from 2019-2023, except for 80% in 2021, during the COVID pandemic where online delivery was pivoted from our fully face to face program. It is noted though, since the 2021 dip, it has trended upward with 98% for full-time and 92% part-time. Upper division course pass rates throughout race, full-time and/or part-time remain high with nearly all categories above 90%.

b. Numerous US universities, and a number of programs across UAA, have holistically evaluated their programs and courses to look for unintended barriers to student success. For example, the Purdue IMPACT (Instruction Matters: Purdue Academic Course Transformation) effort between 2011 and 2018 resulted in 325 courses being redesigned to incorporate research-based strategies known to increase student outcomes, while maintaining academic quality and rigor. Other efforts have involved course sequencing and scheduling, resulting in improved success even for graduate students. Please consider your program's graduation rate, course pass rates, and similar data sources to reflect on any barriers to students moving through the curriculum, and describe what steps you have taken (or are planning to take) for possible redesign of gateway courses, course sequence changes, course scheduling, or similar efforts. ***(3500 characters or less)***

The ability to move seamlessly through our program from Phlebotomy OEC to AAS Medical Laboratory Technology to BS Medical Laboratory Science provides flexibility for students in their ability to continue either as a full-time, part-time or returning student. This pipeline approach to scheduling courses allows students to fluidly move through our program providing support which is reflected in our high course pass rates. The challenge is recognition of our program

when students first start their academic studies. Because the length of our MLS program is three years, due to the stacking of courses required by NAACLS, it will take students more than four years to complete, unless they take the pre-requisites in their freshman year.

c. Provide evidence of the overall success of students in the program. For example, you might talk about the percent of students in post-graduation employment in the field or a related field, the percent of students who go on to graduate school or other post-graduation training, and/or the percent of students who pass licensure examinations. You might also give examples of students who have been selected for major scholarships or other competitive opportunities. [Please do not use personally identifiable information.] ***(3500 characters or less)***

Student employment rate in a clinical laboratory setting, within six months of graduating, for the past three years (2020-2023) has been Phlebotomy (87%), MLT (100%), MLS (97%). Qualtrics surveys from employers indicate high satisfaction in areas of entry level bench skills, interpersonal communication, and the ability to multitask. One recent comment from a local hospital employer stated “UAA laboratory graduates are the best! Ready to work, eager to learn, and committed to patient care. Keep up the good work.” However, it is not only important to prepare students for entry level industry skills. It is important to develop lifelong learners. Because research is embedded into the curriculum, students develop professionalism, leadership and commitment to science that continues on after graduation from UAA. Since 2020, there has been an increase in diversity in UAA MLS graduates pursuing post-graduate degrees. Previous to implementation of research into the microbiology curriculum, only students seeking departmental honors conducted any type of research representing a white, female demographic. By providing an open door to research and removing barriers, such as GPA or application process, diversity follows as they are also eligible to participate in the weekly research discussion meetings as part of the MLS Research Team. Exposure to laboratory research and the opportunity to further experience roundtable discussions provides an open access to development of critical thinking, academic confidence, and professionalism from the associates level to the bachelor's degree. Between academic years 2020 through 2023, sixteen MLS and MLT students have presented research at national conferences including the American Society for Microbiology, American Society for Clinical Pathology, Disease in Nature, the American Society for Clinical Laboratory Scientists, with several abstracts published. Of the sixteen students, 56% represented students of color, with 22% Alaskan heritage. Abstracts have also been selected for oral presentation at international conferences including the 2021 One Health Circumpolar International Conference where an AAS MLT student presented work on antimicrobial resistance and transfer risk from moose to companion animals. Currently we have seven former students who have returned to graduate school to pursue masters in clinical laboratory science, masters in molecular biology, masters in laboratory management, and medical school representing UAA and its diversity.

5. Demonstrate demand for the program.

a. Analyze and respond to the data in the data sheet for your program. Provide clarifications or explanations for any positive or negative trends indicated by the data, and discuss what you are doing to improve. The Demand program review metrics are Ratio of Out-of-Discipline Credit Hours to Total Credit Hours, Number of Program Graduates Who Continue Education,

and Number of Program Graduates Who Return to UAA to Pursue an Additional Program. ***(3500 characters or less)***

The ratio of out-of-discipline credit hours to total credit hours has remained steady at 42-49%. Representing the consistency of courses reserved only for MLT and/or MLS cohorts. However, several courses are taken by other majors, which include MEDT A132, A132L, A302, and MEDT A250 Cultural Diversity which we offer both Fall and Spring semester, increasing the number of seats available in AY 2023 from fifteen to twenty-four to accommodate high levels of student interest.

The number of program graduates who continue education and graduates who return to UAA to pursue an additional program reflects the seamless nature of our programs when students who complete the Phlebotomy OEC and/or AAS MLT continue onto or return to complete the BS MLS degree program. These numbers are relatively consistent with a slight dip in 2022, possibly related to the COVID pandemic and ability for students to continue their education.

6. Demonstrate program productivity and efficiency.

Analyze and respond to the data in the data sheet for your program. Provide clarifications or explanations for any positive or negative trends indicated by the data, and discuss what you are doing to improve. The Productivity and Efficiency program review metrics are Five Year Degree and/or Certificate Awards Trend, Student Credit Hours per Full-Time Equivalent Faculty, and Full-Time Equivalent Student per Full-Time Equivalent Faculty. ***(3500 characters or less)***

The five-year degree and or certificate awards for the AAS MLT degree remains fairly constant from 2019 to 2022 showing that this is an option for students who are either unable to complete a BS MLS degree. Having degree options within the Medical Laboratory Science program provides additional avenues for graduation. During the COVID pandemic, when there was significant disruption in education for students, we had an increase in AAS MLT and Phlebotomy OEC degree completion demonstrating our ability to support students towards graduation even during such a difficult time. The ratios of faculty to student credit hours and full-time equivalent appear to drop from 2019-2023. Having to adjust laboratory medical laboratory professionals, required a higher number of faculty to supervise the Level 2 Biosafety labs. Between 2019 and 2021, the MLS department had a high turnover of faculty, including program directors. This created a gap of leadership, and student advising created a breakdown of communication of the MLS program with first year advising counselors, transfer students, and prospective high school students during those years. Since then we have emerged stronger starting in the Fall 2022 cohort of thirteen students, Fall 2023 cohort eighteen students, with our Fall 2024 cohort now at capacity.

Optional: Discuss the extent to which, if any, extramural funding supports students, equipment, and faculty in the program. ***(3000 characters or less)***

Cost of clinical laboratory reagents and equipment have increased, yet we have been able to reduce our laboratory course fees while providing robust student simulation labs directly due to in-kind financial donations. Clinical affiliates provide ongoing reagent donations for phlebotomy, blood banking, and clinical microbiology courses. Their continued support also has enabled our program to conduct research providing essential equipment for our surveillance studies surrounding the exposure and public health risk from environmental antimicrobial resistant bacteria. In the academic

year 2022-23 over $35,000 of in-kind donations were provided to our program for student labs and research. It is also important to note that clinical sites accept students for semester long clinical rotations without any financial compensation from UAA. Our students are welcome and encouraged to be active participants in their rotations and often employed immediately after clinicals.

7. **Assess program distinctiveness, as well as any duplication resulting from the existence of a similar program or programs elsewhere in the University of Alaska System. Is duplication justified, and, if so, why? How are you coordinating with UAA's community campuses and the other universities in the system?** ***(2500 characters or less)***

We are the only Medical Laboratory Science program in Alaska. Alaska clinics and hospitals require high level training in laboratory medicine due to geography and remoteness. An example of the importance of UAA's MLS program became acutely apparent during the COVID pandemic. To identify COVID outbreaks in isolated areas of Alaska, the Maniilaq Hospital System in Kotzebue was given the responsibility to run molecular sequencing for identification of the SARS COVID 2 virus. Advanced clinical instrumentation was shipped to Kotzebue with an expectation the current laboratory staff were qualified to run this complex, new technology. The clinical laboratory at Maniilaq Medical Center, a 17 bed tribal critical access hospital, was able to process patient samples from throughout the northern region, because our MLS graduates supply rural areas of Alaska with highly trained laboratory professionals. Without our program, this would not be possible. Recent discussion from our Advisory Board indicates a continued need for the UAA MLT and MLS program with several members asking for expansion of cohorts to fill continued demand for UAA MLS and MLT graduates. Our graduating students are not only recruited for positions in Alaska, but due to national recognition of the MLS research program, we have several organizations from the lower 48 seeking out our MLS students including well-respected universities, and major laboratory employers offering employment along with the potential for continued post-graduate education.

8. **Assess the strengths of your program and propose one or two action steps to address areas that need improvement.** ***(4000 characters or less)***

A survey of 201 MLS program directors throughout the United States indicated the majority found a negative effect of the pandemic (2020-2022) on graduation rates, employment and ASCP certification scores. During that same period, our program continued to succeed, maintaining a near 100% employment along with 95% ASCP certification pass rate. The pivot to effective online delivery and providing as much in person laboratory experience as safely possible during the pandemic is one of our greatest successes. It indicates a faculty committed to student success, by providing education and support during difficult periods of personal and health related stress. It indicates a close and supportive connection the UAA MLS program has to its' clinical partners, who still provided safe but effective clinical practicum rotations when their own resources were stretched. Additionally, the continued pursuit of research within the curriculum showcases the alignment of student learning outcomes towards learning in a world class level of scientific study. Students gain not only critical thinking skills, but apply learning to real-life issues in public health and the impact of social inequality can have on healthcare. The recent national recognition of the research performed by MLS students showcases the high quality of study and academic rigor. However, it is not only the quality but rather the removal of barriers for students to participate, providing much needed diversity and equity in research.

To improve the quality of our program is to increase enrollment and interest in medical laboratory science by providing open access to our courses. Collaboration with the Anchorage high schools to allow enrollment of senior students into MEDT A133 Basic Laboratory Techniques, and MEDT A134 Immunology and Serology would provide a strong introduction and hands on labs in a STEM field promoting UAA and interest not only in medical laboratory science as a major, but would also apply to other health related majors such as pre-medicine, or nursing.

After completing the Program Section above, the program review committee chair should enter their name, date, and email this form to the dean, copying the committee members. If the program is fully delivered on a community campus, copy the appropriate community campus director(s).

Committee chair first name last name: Grace Leu-Burke **Date:** 2/29/2024

END OF PROGRAM SECTION

DEAN SECTION (Due on April 1)

If the program is fully delivered on one or more community campus, the dean should consult with the director(s) of the campus. After completing the Dean Section below and entering their name, the dean should email this form to the committee. If the program is delivered on a community campus, copy the appropriate community campus director(s). The program has one week to provide an optional response to the Dean Section using the Program Optional Response Section of this form.

1. **Evaluation of Progress on Previous Recommendations**

   For each recommendation from the last program review, indicate if the recommendation has been met or has not been met and provide commendations and guidance as appropriate. *(2500 characters or less for each recommendation)*

   Recommendation 1: Conduct an analysis of the AAS and whether or not it attracts students and serves as a pipeline for the BS. Recommendation has been met

   The program completed an analysis and evaluation of the AAS as a pipeline and/or alternative to the BS. While limited data is available on the function of the AAS as a pipeline, anecdotal data suggests it is indeed serving in this capacity. More importantly, the AAS offers a viable degree option for students who are unable to complete the BS due to life circumstances. Workforce need for both degrees is high and clinical and community partners support the current degree offerings. Continued monitoring of the pipeline capacity of the AAS is recommended in future program reviews.

   Recommendation 2: Explore the possibilities for enhancing the programs through distance delivery. Recommendation has been met

   Program faculty rigorously investigated the feasibility of an online AAS Medical Laboratory Technology (MLT) program. The inquiry included the program's Advisory Board, existence of established online MLT programs, and surveys to gauge clinical placement options. These queries indicated feasibility of a cohort size of 4 students for a prospective online MLT program. The cost

implications in terms of faculty and program needs does not support consideration of an online MLT program at this time.

Provide your analysis of #2-8 below, based on the data provided and the program's responses above.

2. Centrality of the Program. ***(2000 characters or less)***

The program demonstrates commendable achievement and ongoing efforts to demonstrate alignment with university and college competencies. Personal, professional, and community responsibilities are emphasized with utilization of a public health initiative to enable students to understand the role of laboratory science from a community and public health perspective. Effective communication strategies are emphasized through oral and written presentations throughout coursework. Recognition of intercultural diversity is emphasized through the required first year course MEDT A250, Cultural Diversity in Health Care. Finally, creative and critical thinking is emphasized in a required capstone project.

3. Program Quality and Improvement ***(2000 characters or less).***

Each of the 3 programs currently under review included detailed success in achieving student learning outcomes and program improvement. Each program utilizes a combination of coursework, clinical placement feedback and assessment, national exam pass rate data, as well as advisory board/clinical partner feedback to inform curriculum or program changes. For example, the MLS Advisory Board indicated an increased need for clinical thinking skills related to areas of hematology and clinical chemistry. Subsequent course redesign was implemented to address this concern. The program consistently maintains national accreditation for both degrees and the OEC with consistently high pass rates for each degree and certificate program.

4. Student Success and the Closing of Equity Gaps ***(2000 characters or less).***

The program demonstrates close monitoring of aggregate student data. Course pass rates are strong with a 98% pass rate since 2021. Of note is the flexibility and beneficial sequencing of the 2 degrees to enable students to move seamlessly from the AAS to the BS. Employment data suggest a high employment rate within six months of graduation. Of note, high satisfaction in entry level skills, communication, and organization is reported from employers. Feedback from employers includes: "UAA laboratory graduates are the best! Ready to work, eager to learn, and committed to patient care. Keep up the good work." The program has demonstrated exceptional efforts in implementing and offering opportunities for students to participate in research efforts. This has increased the number of MLS students in graduate degrees as well as the presence of both MLS and MLT student research at national conferences.

5. Demand ***(2000 characters or less).***

The demand for the program and for the degree in the workforce remains high. Graduates from the MLT return to complete the MLS in consistent numbers. The ratio of out of discipline credit hours to

total hours remains consistent and is focused on out of discipline hours which provide foundational information for the Med Lab degrees.

6. Productivity and Efficiency *(2000 characters or less)*

The five-year degree and or certificate awards for the AAS MLT degree remains fairly constant from 2019 to 2022 showing that this is an option for students who are either unable to complete a BS MLS degree. Having degree options within the Medical Laboratory Science program provides additional avenues for graduation. During the COVID pandemic, when there was significant disruption in education for students, we had an increase in AAS MLT and Phlebotomy OEC degree completion demonstrating our ability to support students towards graduation even during such a difficult time. The ratios of faculty to student credit hours and full-time equivalent appear to drop from 2019-2023. Having to adjust laboratory medical laboratory professionals, required a higher number of faculty to supervise the Level 2 Biosafety labs. Between 2019 and 2021, the MLS department had a high turnover of faculty, including program directors. This created a gap of leadership, and student advising created a breakdown of communication of the MLS program with first year advising counselors, transfer students, and prospective high school students during those years. Since then we have emerged stronger starting in the Fall 2022 cohort of thirteen students, Fall 2023 cohort eighteen students, with our Fall 2024 cohort now at capacity.

Optional: Discuss the extent to which, if any, extramural funding supports students, equipment, and faculty in the program. *(3000 characters or less)*

Cost of clinical laboratory reagents and equipment have increased, yet we have been able to reduce our laboratory course fees while providing robust student simulation labs directly due to in-kind financial donations. Clinical affiliates provide ongoing reagent donations for phlebotomy, blood banking, and clinical microbiology courses. Their continued support also has enabled our program to conduct research providing essential equipment for our surveillance studies surrounding the exposure and public health risk from environmental antimicrobial resistant bacteria. In the academic year 2022-23 over $35,000 of in-kind donations were provided to our program for student labs and research. It is also important to note that clinical sites accept students for semester long clinical rotations without any financial compensation from UAA. Our students are welcome and encouraged to be active participants in their rotations and often employed immediately after clinicals.

7. Duplication and Distinctiveness *(2000 characters or less)*

This program is uniquely suited to serve the laboratory medicine needs of the state as the only MLS program in Alaska. The program serves an indispensable role in staffing all areas of the state with qualified laboratory professionals. UAA MLS students are heavily recruited for positions within and outside of Alaska.

8. Strengths and Ideas for Moving Forward *(2000 characters or less).*

The UAA MLS program is commended for the commitment to ongoing program assessment, true engagement with community partners and members of the advisory board, and integration of research into curriculum and program outcomes. The faculty do an excellent job of including students in both their research and the dissemination of the outcomes. Identified areas of improvement include increased enrollment and open access to MLS courses.

Dean's Final Evaluation

I commend the program for: ***(number and list the specific commendations in the narrative box, 2000-character limit)***

1. Consistent and exemplary efforts to incorporate multiple data points and perspectives as drivers of curricular change.
2. Excellent pass rates on the national board exam for MLS, MLT, and the OEC in Phlebotomy.
3. Incorporating multiple avenues and support for students to engage in research efforts.
4. Maintaining high professional standards with designated accrediting bodies.
5. Dissemination of research outcomes to national outlets, serving to increase the visibility of our UAA MLS program across the nation.

I recommend that the program: ***(number and list the specific recommendations in the narrative box, 2000-character limit)***

1. Focus on increasing enrollment and working collaboratively with college and university wide efforts related to advising and integration of high school and dual credit students into MLS courses. Seeking the help of our new COH Recruiter will be key to making our ML programs more widely known.
2. Emphasize the benefits of the MLS and MLT degrees as stepping stones to competitive healthcare degree programs such as nursing and/or clinical graduate degrees.

Dean's overall recommendation to the provost: The Medical Laboratory Science programs continue to be strong degree offerings in the COH. Recommendation includes:

If an Interim Progress Report is proposed, recommended year: N/A

If a Follow-up Program Review is proposed, recommended year: N/A

Proposed next regular Program Review: *AY 2026*

After completing the Dean Section above, the dean should enter their name, date, and email this form to the committee. If the program is fully delivered on a community campus, copy the appropriate community campus director(s). The program has one week to provide an optional response to the Dean Section using the Program Optional Response Section below.

Dean first name last name: Debbie Craig **Date:** 3/13/2024

END OF DEAN SECTION

PROGRAM OPTIONAL RESPONSE SECTION (Due within one week of receiving dean's review)

Programs have the option to submit to the provost a response to the dean's evaluation within one week of receiving the dean's review, using the narrative box below. Please indicate whether or not you will submit an optional response below.

Are you submitting an optional response? If yes, add your response below, enter your name and date, and follow the guidance below for submission. If no, enter your name and date, and follow the guidance below for submission. **Yes**

Optional Response: ***(10,000 characters or less)***

Embedding research directly into the Medical Laboratory Science programs, immerses all students into critical thinking and determination of the impact laboratory medicine has on public health. Laboratory work becomes relevant to the student, as their data is not just generated for a grade but is a necessary part of healthcare surveillance under the One Health Model. Equity and access to conduct research is also vital in undergraduate education. However, when an application or pre-requisite is required to conduct research, it becomes a barrier with first generation and/or non-white individuals who often fail to apply due to the perception of not belonging. Yet, all MLT/MLS students participate in undergraduate research, it is a part of the program, part of their academic and laboratory coursework. By removing the barrier we have essentially invited everyone to the table and subsequently increased the diversity of students in research and seeking post-graduate education.

Along with our robust ongoing research encouraging student success, the Medical Laboratory Science Department provides multiple avenues for degree completion, with an articulated designed curriculum allowing ease of transition between disciplines. A student may initially decide an OEC in phlebotomy is their goal, only to discover interest and academic confidence, in pursuing further education in laboratory medicine completing a MLT or MLS degree. At the same time, when unexpected challenges occur and students find themselves having to scale back their education goals, we are often able to provide them with a degree and not just course credits. During the pandemic, we were able to assist several students towards a degree completion when they experienced disruptions that prevented them from finishing their declared major.

It is our goal to continue to provide high quality education and research towards developing the next generation of laboratory professionals. As the Dean stated, our programs provide a strong stepping stone to post-graduate education in healthcare including master's in public health and doctoral programs in clinical laboratory science, medicine, microbiology and molecular diagnostics. Increasing enrollment is essential not only to provide much needed laboratory professionals for Alaska, but to generate highly qualified researchers working towards discovery of disease and its impact on public health. Continued collaboration with community health partners, UAA and COH student advising is essential to promote laboratory medicine as a STEM career.

After completing this section, the form should be submitted to uaa.oaa@alaska.edu, with a copy to the dean. If the program is fully delivered on a community campus, copy the appropriate community campus director(s) as well.

Committee chair first name last name: Grace Leu Burke **Date:** 3/21/2024

END OF PROGRAM OPTIONAL RESPONSE SECTION

PROVOST SECTION (Due on August 1)

After completing, signing, and dating the Provost Section of this form, email the completed form to the program review committee and dean, with a copy to uaa.oaa@alaska.edu for posting. If the program is delivered on a community campus, copy the appropriate community campus director(s) as well.

Provost's commendations, additional or adjusted recommendations, if any, and other general comments *(3500 characters or less)*:

I agree with the dean's commendations and would like to recognize, in particular, the faculty's high-level of engagement with assessment toward improved student learning and the students' excellent pass rates on the national board exams. I also agree with the dean's recommendations, in particular, a focus on growing enrollment. As part of its recruitment strategy, the program will want to explore alignment and engagement with the Anchorage School District academies.

Finally, I am asking programs to ensure that all students have access to high-quality, highly-engaged learning opportunities, such as internships, practicums, clinicals, study away, and undergraduate research, regardless of modality or location. Programs will be asked to report on progress toward this goal in their next Program Review. These efforts naturally complement and extend our commitment to UAA's core competencies: Effective Communication; Creative and Critical Thinking; Intercultural Fluency; and Personal, Professional, and Community Responsibility. Given its focus on integrating student research into the student experience, the program is well positioned to demonstrate this in its next scheduled Program Review.

Provost's decision: Continuation -- Program is successfully serving its students and meeting its mission and goals. No immediate changes necessary, other than regular, ongoing program improvements.

Interim Progress Report: N/A

Follow-up Program Review: N/A

Next regular Program Review: AY2026

Provost's signature: Denise K. Runge **Date:** 7/31/2024