Program Review
Marshall University
March 2003

Date: December, 2003

Program: Associate of Applied Science in Medical Laboratory Technology

Degree and Title

Date of Last Review: 1998

Recommendation

Marshall University is obligated to recommend continuance or discontinuance of a program and to provide a brief rationale for the recommendation.

1. Continuation of the program at the current level of activity;

2. Continuation of the program with corrective action (for example, reducing the range of optional tracks or merging programs);

3. Identification of the program for further development (for example, providing additional college/institutional commitment);

4. Continuation of the program at the current level of activity, with the designation as a program of excellence (See section E); or

5. Discontinuation of the program (Procedures outlined in HEPC Administrative Bulletin 23).

Rationale for Recommendation: (Deans, please submit the rationale as a separate document. Beyond the College level, any office that disagrees with the previous recommendation must submit a separate rationale and append it to this document with appropriate signature.)

Signature of person preparing the report: __________________________ Date: 12-11-03

Signature of Program Chair: __________________________ Date: 12-11-03

Signature of Academic Dean: __________________________ Date: 1-3-04

Signature of Chair, Academic Planning Committee/Chair, Graduate Council: __________________________ Date: 

Signature of the Provost and Senior Vice President for Academic Affairs: __________________________ Date: 

Signature of the President: __________________________ Date: 

Signature of Chair, Board of Governors: __________________________ Date: 

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Date Created: March 2002; Revised: 12/11/2003
Office of Program Review and Assessment, Marshall University, Huntington, WV 25755-2003
TO:    Dr. Sarah Denman  
       Vice President and Provost  
       Academic Affairs

FROM:  Dr. Lynne Welch  
       Dean, College of Nursing and Health Professions

DATE:  January 16, 2004

SUBJECT: Medical Laboratory Technology

The Medical Laboratory Technology Program is a well established nationally accredited program. It provides graduates for a well documented health profession shortage area. The program is developing a plan for recruitment of additional students. I recommend continuation of this program at the current level.

LW/gmb
MARSHALL UNIVERSITY
PROGRAM REVIEW

1. PROGRAM DESCRIPTION FOR ASSOCIATE DEGREE IN MEDICAL LABORATORY TECHNOLOGY

Date of last review 1998

The Associate Degree in Medical Laboratory Technology (MLT)/Clinical Laboratory Technician (CLT) and the Bachelor's Degree in Medical Technology (MT)/Clinical Laboratory Scientist (CLS) are an integrated ladder curriculum following a 2+2 model. Student may choose to earn the associate degree only or to continue on and earn a bachelor's degree.

Certified medical laboratory technicians are prepared to perform approximately 90% of the routine diagnostic work in a clinical laboratory. They typically work under the supervision of a medical technologist. They collect blood samples and do a wide variety of blood and urine tests using microscopes, spectrophotometer, electron counters and other laboratory instruments. They also perform crossmatches for blood transfusion, culture pathogenic bacteria, and perform blood clotting tests. Besides working in hospital laboratories, medical laboratory technicians work in doctors offices, clinics, and in industry. Certified clinical laboratory technicians are in great demand.

The clinical laboratory consists of six general areas: hematology and hemostasis, clinical chemistry, clinical microbiology, blood banking, clinical immunology, and body fluids. Results generated in these areas provide physicians 80% of the objective information needed to evaluate a patient's health. Currently there are over 1000 different analyses that can be performed on blood and body fluids. Although, most of the areas are automated, the medical laboratory technician needs to be able to determine that the information obtained by the instrument and correlate individual test results with the results of other related diagnostic tests.

Students take an initial course in each area. The Clinical Immunohematology course includes Clinical Immunology while the Clinical Chemistry course also includes body fluids. Each of these courses includes both lecture and laboratory components. CLS 255 Clinical Laboratory Problems discusses all of the areas and correlates what might be occurring in certain diseases that might affect the tests in another discipline. Case studies are used to illustrate a total disease process. There are also student presentations on current problems and/or issues in the clinical laboratory.

Upon completion of the university didactic portion, the MLT student spends 15 weeks in a clinical facility utilizing all previous information learned from the university CLS courses. During the clinical practicum, students learn how to use the instruments found in each clinical area. This experience is a one on one learning environment with clinical faculty employed by the clinical site.

To standardize the factual knowledge that is required for each area, the university faculty has prepared a pool of questions for each area using WebCT. The student takes an examination in each area. Since there is a bank of questions, no two students have the same examination.
II. ACCREDITATION INFORMATION

The MLT program is accredited by the National Accrediting Agency for clinical Laboratory Sciences (NCACLS) PO Box 75634 Chicago, Illinois 60675-5634. The program is accredited through April 2006.

In April 1999, The MLT program at Marshall University was granted regular full seven-year accreditation. There were no deficiencies noted in the MLT self study report and in the site visit. The MLT Program is the only Associate degree program in the western part of West Virginia and currently only one of four in the entire state. The other three accredited MLT programs are at Fairmont State College, Southwestern West Virginia Community College and Bluefield Regional Medical Center. The total number of students that the Marshall University MLT program is accredited for is 12. The number of students is limited by the facilities at both the university and clinical sites.

II. PROGRAM STATEMENT

A. Adequacy

1. Curriculum

The MLT degree curriculum includes 6 hours of English, 10 hours of chemistry, 12 hours of biology, 3-5 hours of College Algebra, 3 hours of Psychology, 3 hours of speech and communication and 32 hours of clinical laboratory science courses. The total number of hours required for the associate degree is 71-73 depending on which college algebra course was taken. The curriculum is intensive in College of Science courses. This provides some problems in availability of courses since MLT students are required to take Human Anatomy and Human Physiology, which are required courses for many other College of Nursing and Health Professions curricula. Students are not accepted into the Clinical Laboratory Science program until 24 hours of prerequisite courses have been completed. Once the student is admitted, the professional courses of the curriculum are taken in sequence. All students who complete the didactic portion of the MLT program are guaranteed a clinical rotation facility.

2. Faculty

Currently there are three full time faculty members in the Clinical Laboratory Sciences Department. Prior to January 2000, the department had 2.51 faculty members plus one adjunct faculty member who taught one course. Currently, two of the faculty members are tenured and the third faculty member is on a tenure track.

With three full time faculty members, there is no need to have part time adjunct faculty members teaching the clinical laboratory science courses. All three faculty members are nationally certified clinical laboratory professionals. All faculty members have had positions in clinical facilities working in one or more areas of the clinical laboratory.

All three faculty members have attended state, regional and/or national profession meetings within the past year. Attendance at these professional meetings was funded by grants and personal funds. Some continuing education opportunities have been obtained through reading journals or web continuing education activities. All faculty members are members of national professional organizations.
Two faculty members (Brown and Fike) have participated in accreditation activities by either serving as paper reviewers of other program’s self study reports or as site surveyors. With the uniqueness of Marshall’s program, Marshall faculty members have done reviews and site surveys at both levels. After visiting other clinical laboratory science programs, discussion have occurred regarding possible ideas for curriculum changes. On average, each of these two faculty members does either one review or site survey per year.

Since the MLT curriculum is instructor intensive, the research time is limited. The newest full time faculty member (Chappell) has actively pursued clinical research opportunities. She has published several abstracts and papers since becoming a faculty member in January 2000. Professor Chappell has also given several oral and poster presentations at state, national and international meetings. Professor Fike has co-authored an instructor’s guide, written two short clinical application articles for the American Society for Clinical Laboratory Science’s newsletter. Professor Fike has also given presentations and the local, state and national levels within the past two years. Professor Fike also volunteers to serve on a professional consumer response team that answers questions that individuals have regarding the results of laboratory tests.

3. Students

a. Entrance Standards

Entry to the Medical Laboratory Technician (MLT) program involves completion of academic prerequisites with acceptable grades, application to the Clinical Laboratory Science Department and competitive selection by an admission committee. An applicant for the MLT program should expect to have earned an overall Grade Point Average (GPA) of 2.0 and at least 18 credit hours of courses in the MLT program curriculum with a minimum 2.5 GPA including C or better grades in BSC 227, CHM 211 and 213 and MTH 127 or equivalent courses. Applicants who have the above qualification and who have completed 24 credit hours or more in the MLT curriculum including Introduction to Health Professions course (CLS 100) will receive preference for admission.

Students apply for admission by completing and submitting a transcript review form, two letters of reference and a letter of application to the MLT Program Director between March 1 and May 31 for admission to the fall semester of the current year. Late applications are considered as class size permits. Transcript review forms and letters of application are available at the Clinical Laboratory Sciences Department or on the department’s web site.

Marshall University has a temporary cooperative agreement with Hunan University in China to offer the MLT-MT curriculum to Chinese students who complete three years of a combined prerequisite MLT-MT curriculum. Students from Hunan University have the same application process and requirements as other students applying for admission. Once a Chinese student is admitted, he/she must apply for a student visa.

The MLT program admission committee reviews letters of application, college level coursework and letters of reference. Qualified applicants are selected primarily by Grade Point Average on courses in the CLS curriculum. Applicants who expect to complete admission requirements before fall classes begin may be admitted conditionally. The
committee selects students to fill available class spaces, and then develops a ranked waiting list if applicable. Letters are mailed to all applicants by June 30 notifying them of the admission committee decision. Accepted students who are not properly registered or who are absent during the first week of regular classes without prior approval of the CLS program directory will lose their space to a wait-listed student.

b. Entrance Abilities

It is sometimes difficult to predict if a student will succeed in the MLT curriculum. Some students with lower GPA’s may do well if he/she is highly motivated and this the career desired. Students who decide that this career is not acceptable may decide to either drop from the program or not study the required time to obtain a “C” or better in a CLS course. After admission to the MLT curriculum the attrition rate can vary 0 to 25 percent. Since the program enrollment is low, if two students in a class of eight either decide that they do the profession is not what is wanted or if financial problems arise, this would result in an attrition rate of 25%. Generally the attrition rate is due to other factors besides academic ability. Students who have met the pre-requisite course standards have the ability to succeed in the MLT curriculum. Once the student has passed the didactic portion of the curriculum, greater than 90 per cent complete the program.

c. Exit Abilities

Once an MLT student has graduated from the program, the success rate is very high. Of the students who have taken the national certification examination, only one student has not passed. Certification is not required to practice as a clinical laboratory professional in most states. Regionally, West Virginia is the only state that requires a laboratory professional to be certified. Some graduates do not take the MLT examination because they are continuing for the Bachelor’s degree.

Employers are happy with the graduates from Marshall’s MLT program. Most graduates find jobs in the tri-state area or in West Virginia. Most of the graduates who want to be employed full time find a position within a month following graduation. Nationally there is a 12% shortage of clinical laboratory personnel.

4. Resources

a. Financial

The departmental budget is totally obtained through university allocations and student fees. It is difficult to determine the percent of the funds that are used in the MLT program since 100% of the funds are used for the MLT and MT programs combined. The department has not seen an increase in university funds since the programs became university based. The faculty has used some creative methods to make sure that the MLT Program remains at a high quality. Another factor that this allocation is adequate is that the number of students has decreased.

If this program was eliminated and the MT program was kept, there would not be any financial savings. The introductory courses would still have to be taught. If both programs were eliminated, the savings would be on one to three faculty positions plus and operating budget of approximately $13,000. The CLS Department does not have a departmental secretary.
unknown to most people, some students who might want to become laboratory professionals may never obtain information about this field. Since the majority of students who attend Marshall hope to stay in the Tri-State region, not having this program would be detrimental to the future health care needs of this area.

With the current shortage of Clinical Laboratory Professionals the elimination of this program could jeopardize the health of people in the Tri-State Region and the State of West Virginia. Currently, the MLT program at Marshall is one of only four MLT programs in the state and one of two Bachelor's degree programs in West Virginia. The number of these programs has declined considerably nationally in the past five years and the state of West Virginia has lost one MLT program in the past year. (Northern West Virginia Community College) With the aging of the general population and the poor health of West Virginia residents, health care professionals are critical to the health and well being of West Virginia residents. Within the past two months, someone from Charleston Area Medical Center called to find out how many students we had currently enrolled in our programs. New techniques and components are being discovered all the time. Currently, there are over 1,000 different analyses that can be performed on blood or body fluids.

b. Facilities

The student laboratory is adequate for 10 to 12 students. The department has obtained several instruments, which hampers having more students since these instruments occupy bench space that was formerly used by students. There are two laboratory preparation rooms off of the main laboratory, which are adequate for the storage and preparation of laboratory exercises. The Clinical Laboratory Science Department has two free standing faculty offices and one office that was converted from a research laboratory to contain a faculty office and small area for office supplies and a copier.

5. Assessment

a. Summary of Assessment Activities

The principle elements of the departmental assessment plan are review of the certification examination results to determine the adequacy of didactic instruction for each of the component areas found in a clinical laboratory: blood bank, clinical chemistry, hematology, clinical microbiology, body fluids and clinical immunology. These results are examined at the time that they are received and at the clinical faculty meeting. The clinical faculty advisory committee meets once each academic year. These meetings are working meetings with a review of content area and certification examination data done at each.

Another element of assessment is the review of the Examination Content for each area updated and supplied by the American Society for Clinical Pathology which is the certification examination taken by the majority of the graduates of the MLT Program. Another review is done of the Body of Knowledge for newly graduated professionals that are done by the American Society for Clinical Laboratory Sciences. These updated content components are updated periodically with the Body of Knowledge currently being updated since it was previously done five years ago. A subcommittee composed of the university faculty member who teaches the content area at Marshall and clinical faculty members who work and teach the MLT students in that particular area reviews
each specific content area. Depending on specific practice in the Tri-State region, some changes in the curriculum may be made.

Other elements of assessment are the satisfaction of the clinical faculty with the student preparation prior to the clinical practicum, satisfaction of the graduates of the program and satisfaction of employers with the graduate’s performance. These may either be formally done by a survey or informally by a Marshall University faculty member asking when visiting the facility to obtain samples for laboratory exercises, calls to the educational coordinators regarding student problems.

B. See attached chart

C. Assessment Data

The assessment data has been extremely positive for this program. The students generally perform above the national average in all areas of the curriculum. The program is consistently at least one standard deviation above the mean for students passing the examination. Of all of the students taking the MLT examination who have graduated in the last five years, only one student has not passed the certification examination on the first try.

Students are well prepared for the clinical rotations. Only one student who has started the clinical practicum failed a clinical rotation. There is a repeat option that the students may choose to do to successfully complete the course. This student decided not to take advantage of this option. After this student failure occurred, the course content was examined and found to be adequate. The grading scale was also examined and found no changes were necessary. Other students in the same class and in subsequent classes have performed well in that clinical rotation. In another instance, one facility decided to become a clinical affiliate for our program due to one of the students being employed as a phlebotomist. This facility was a clinical site for another MLT program in Ohio and did not think that they could have students from both programs and teach effectively. After the student/employee had worked for a short period of time, the practitioners at the facility decided that they might like to have this student do the clinical rotations at the facility. This student was so successful that an additional student is currently doing the clinical rotations at the facility. In conversations with five laboratory employees at the facility, they think that our students are much better prepared than those from the other MLT Program.

The examination content updates were examined and the MLT course content was found to be in compliance with the expectations of the certifying examination board. This is an ongoing process and specific minor course changes have been made. One specific instance where no course change was made was when a consensus committee of educators and clinical laboratory practitioners recommended that manual red and white blood cell counts be eliminated from the curriculum. The clinical faculty and university faculty for that area decided to keep that technique since the manual cell count procedure is still used for fluid cell counts which was still required as a skill. It is difficult to obtain enough fluid (spinal fluid) for student use while blood samples are easier to obtain. The change in the curriculum was to eliminate the need for proficiency for manual red and white blood cell counts and to use the student laboratory time that would have been necessary to obtain proficiency to master the red and white blood cell morphology. The
fluid manual cell counts can be done in the clinical facilities with a minimal amount of
time since the student has been prepared to use the specific equipment. The students are
also better prepared for cell morphology that is necessary for them to master before
completing the clinical component of the curriculum.

There have only been minor revisions to the MLT Program. This program has been very
successful. The only period of time that there was a problem was during the previous
review when faculty members were either on sabbatical or maternity leave. Part-time
faculty had to be used in the introductory courses. This resulted in students not being
prepared for the clinical rotations. Since the current faculty has had clinical experience
and reacts proactively to what is being done in the clinical facilities, many times course
content changes are included before the certification examination is testing that
information.

D. Graduate and Employer Satisfaction.

Since the last program review, no formal assessment activities have been completed. The
next formal questionnaire for both the graduates and employers is scheduled to be done
during the summer/fall of 2004. This is in preparation for our next accreditation review.

Informal surveys of both employers and graduates have been done. Employers at four
different facilities who have employed MLT graduates from the past five years have been
questioned at various times. These facilities are Charleston Area Medical Center,
Thomas Memorial Hospital, the Huntington VA Medical Center and Putnam Hospital.
All supervisors have been very satisfied with the performance of the MLT graduates.
The only complaint was that the graduates still needed more work on cell morphology,
but that Marshall program graduates were performing at the same level consistent as
other MLT Programs.

Surveys of graduate satisfaction have also been done when visiting some of the clinical
facilities, campus visits by students or by emails received to “keep in touch”. Although
the MLT graduate may “job hop” due to better hours, pay or moving, the nine students
surveyed were all very happy with the education that was received at Marshall and were
very pleased with their career choice. There had been some concern about not being able
to complete the curriculum in two years due to not being able to get some of the required
courses.

6. Previous Reviews

The previous program review recommended that the AAS in Medical Laboratory
Technology to continue the program at its current level. There were no deficiencies or
recommendations from the committee besides the routine follow-up report.

7. Strengths and Weaknesses

Strengths (Self Study page 138)

a. The clinical facilities are excellent. The staff at all clinical facilities are very
willing to have students and the student comments regarding the clinical
experience is very favorable. The staffs have come to the clinical faculty
meetings and make a valuable contribution to the program. When there have been problems, the staff tries to help in devising a solution.

b. The faculty is stable and experienced in teaching at the MLT level. All university faculty have had experience in clinical practice and are teaching courses in which they have had some clinical experience. This provides the department with knowledgeable instructors who know the field and can make curriculum changes as needed to respond to changes in the field.

c. The teaching and office facilities in the Science building are very good. The student lecture/laboratory room provides adequate space for the number of student that can be accommodated by the clinical facilities. There are accommodations for a student in a wheel chair. There is also a permanent safety shower and eyewash station in the lecture/laboratory. This room is also equipped with a computer and Internet connection.

d. A criteria-based admission policy that allows for less attrition and better success on the certification examination.

Weaknesses

a. The clinical facilities cannot accommodate as many students has they have been able to in the past. This has reduced the number of students who can be admitted to the program. Since the University evaluates programs for the number of graduates each year, that could be a problem in the future.

The department lost an additional clinical site that was a major clinical facility. The University faculty have visited other clinical facilities in the area and invited them to become clinical facilities. Some of these facilities have decided to take some students. The number of clinical spots available varies each year due to some facilities not being able to take students at a particular time. So far all students who have been admitted have been able to do their clinical rotations. This past year, there were 13 students in the MLT didactic potion. Eleven of the students were eligible for clinical rotations and all eleven students were placed at a clinical site. We had some possibilities for a couple of more clinical spots.

b. Cost containment and newer instruments have inhibited practical experience the student receives in the clinical rotation. Tests that students could perform after the tech had completed them are no longer being done. In some cases, the student can only observe the instrument process. This is not unique to this program, but different educational strategies will have to be used in the future so students will be able to receive appropriate instruction.

This is still an ongoing problem although the results of the certification examination and employer satisfaction have remained high. With addition of the third full time faculty, it is hoped that the CLS department can implement a simulated lab on campus using the instrumentation that the department currently has. One of the faculty members is trying to find a funding source for paying for the reagents that would be needed. The department now has all of equipment necessary to provide optimal instrument exposure. When a
simulated laboratory is implemented, the clinical rotation time will be reduced by one-half. This potentially would allow the MLT program to increase the number of students accepted.

B. Viability

1. Off-Campus/Distance Learning

Currently, there are no off-campus/distance delivery classes. The only distance delivery that is done is that WebCT is used for the examinations for the clinical practicum examinations. Each university faculty member is responsible for generating an examination question pool. The student takes a final written examination from this pool of questions. Each examination has a certain number of questions in each subsection of a clinical area. Having the examination format this way allows for students who are doing the clinical rotations away from the Huntington area can access the examination at the clinical site. Since each examination is slightly different, there is less chance of students obtaining the questions ahead of time.

2. Service Courses

The only course that may be taken by non-CLS majors at the MLT level is the CLS 100 Introduction to Health Professions. In the past two years, some Nursing and Communications Disorders students have taken this course. The majority of the students enrolled in this course are pre-MLT or Cytotechnology students.

3. Articulation Agreements

There is an articulation agreement with Ashland Community and Technical College that the Pre-Clinical required courses will be accepted at Marshall University. There are no articulation agreements for the MLT specific courses.

4. Program Course Enrollment

As indicated in Appendix V, there is variability in the course enrollment. Generally all students who applied for admission to the program were admitted if the requirements were met. The 2002-2003 academic had a sharp increase in student enrollment. For the past five years, there have been an average of 6 MLT students completing the program each year. The number of students in CLS 100 has decreased. Many undecided majors used to enroll in this course. It is thought that the implementation UNI 101 has caused undecided students not to enroll in CLS 100.

5. Program Enrollment

The number of students enrolled in the MLT Program is dramatically reduced this academic year. Seven students from Hunan University had been admitted to the program and all seven tried to get visas. None of the Chinese students were successful in obtaining a visa. One student even went back and was denied a visa the second time. The Chinese student applications were very competitive with the other students that had applied. This loss of enrollment of these students was a great disappointment for both the US faculty and the Chinese students since they had already committed three years to completing the pre-requisite courses.
Graduates of the MLT Program

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As can be seen from Appendix V, the majority of the students who are accepted in the MLT Program graduate with a degree. There was another student who was eligible to do the clinical rotations in the fall, 2002, but she could not get financial aid.

6. Enrollment Projections

The enrollment projects are variable at this time. The Chinese students have been accepted and there is another class who will be completing the pre-clinical courses and possibly applying for admission for next fall. The faculty members of the department have advised several students regarding the MLT Program. Faculty members are also actively recruiting at the high school level and have done presentations at the Showcases. At this time, it appears that the number of students who will be applying for admission to the program has increased. The CLS faculty members are committed to try to increase the enrollment of the MLT Program since there is the 12% shortage nationally. The faculty will be recruiting so that there will be between 10-12 qualified individuals in the MLT program per year. It is important to have sufficient MLT students so that the number of MT (bachelor degree) students does not decrease.

C. Necessity

1. Advisory Committee

The advisory committee for the MLT Program composed of the University Faculty members and the clinical faculty members from all of the clinical sites. Currently, there are five clinical facilities that are used for the clinical education in the MLT Program. There are one to 10 clinical faculty members at any given facility. The committee meets once an academic year. This is a daytime meeting and there can be from 15 to 25 clinical faculty members in attendance. The clinical faculty members have a direct impact on the program. Problems with the clinical rotations including examinations and student inattention are discussed and procedures may be developed on what should be done. In addition, the preparation of the students is discussed at each meeting. If there are any curriculum changes, the clinical faculty have input as to what should be done at the clinical facility. The content subcommittees discuss any changes that were received regarding the examination content and the body of knowledge and any changes that are necessary are arrived at by consensus.

2. Graduates

The number of graduates that are employed at the MLT level varies since at least 50% of the students want to continue their education for the bachelor’s degree. In the class that
graduated in 1998-1999, six students who completed the program were employed. The graduates were employed at Putnam Hospital, Thomas Memorial Hospital, Cabell Huntington Hospital and Southern Ohio Medical Center. Of the 1999-2000 MLT program graduates, three did not continue with their education and were employed at St. Mary’s Medical Center, Putnam Hospital and a hospital in the Norfolk, VA area. There were only 4 graduates in 2000-2001, but 2 did not continue for the Bachelor’s degree. Both of these students are employed at Thomas Memorial Hospital. Of the 2001-2002 graduates only two students did not continue their education for the Bachelor’s degree. One student was employed by Huntington Internal Medicine Group and the other student moved to Morgantown and did not seek employment in the laboratory field. The 2002-2003 MLT Program graduates had three students who are employed at the MLT level, two at Putnam general hospital and one at Charleston Area Medical Center-Women and Children Division. Some of the students have since left their first position and gone to another facility.

Some students obtained employment at the MLT level while completing their education. Charleston Area Medical Center has hired several of the MLT graduates to work part-time while continuing their education.

The starting salaries vary greatly depending on the facility where the graduate is employed and the shift that the graduate works. Most graduates begin on the evening or night shifts and obtain a shift differential. Because of the personnel shortage, there are also opportunities for the graduates to earn more money. The average starting salary is between $25,000 and $30,000 per year.

a. Job Placement

There is a high rate of employment for the MLT Program graduate in West Virginia and the Tri-state region. Of those graduates who do not want to continue their education, there have been positions available in Charleston, Huntington and Putnam County. There have been requests from other facilities in West Virginia and Kentucky regarding the availability of Marshall University MLT graduates to fill vacant positions. There have also been requests from the Columbus area and other portions of West Virginia.

3. Consistency with Mission

Part of the mission of Marshall University is to educate health personnel for the state of West Virginia and the Tri-State Region. The MLT Program is providing health care providers. As previously mentioned, the majority of the MLT graduates practice in the Tri-State region. Since the majority of the graduates received the clinical component of their education at St. Mary’s Medical Center and Cabell-Huntington Hospital, this area has not had the 12% shortage of personnel that has been experienced in other areas of the country. The few vacancies that have occurred have been filled by the Marshall University graduates. This has allowed the medical facilities in the area to be able to add new technologies, which also helps in the education of Marshall University students.

The Clinical Laboratory Sciences Department MLT Program does not have any unique relationships with other departments at Marshall. There are some shared courses that are taken with the nursing, dietetics, and communication disorder students including the prerequisites of human anatomy, human physiology, microbiology and general chemistry. The courses in the College of Nursing and Health Professions are specific to their
disciplines. With the advent of bioterrorism, there is cross discipline work being done for some healthcare providers. The first responders for some bioterrorist acts would be the healthcare providers. There would be interaction between nursing students and clinical laboratory students in this aspect. With microbes being released into the air, water or food sources, the Medical Laboratory Technician would be a “first responder” in helping to identify the agent and what antibiotics may help. Currently, some of the Clinical Laboratory Sciences faculty members are involved in a project with the West Virginia State Hygienic Laboratory with planning for the response to a bioterrorist agent. All of the other areas of the laboratory would also help in the diagnosing and disease progression in other types of bioterrorism acts such as chemical or radiation.

III. PROGRAM OF EXCELLENCE

The MLT program does not qualify as a program of excellence although the success rate is high. All the faculty members do not have a doctoral degree. The terminal degree in the Clinical Laboratory field is a Master’s degree plus certification.
May 10, 1999

J. Wade Gilley, PhD
President
Marshall University
400 Hal Greer Boulevard
Huntington, WV 25755

Dear President Gilley,

Enclosed is the NAACLS Board of Directors official accreditation award for your Clinical Laboratory Technicians/Medical Laboratory Technicians – Associate Degree program from the April 8-9, 1999 meeting.

The Board of Directors award is based on the Continuing accreditation review process that included a site visit of your program on November 5-6, 1998.

Accreditation for your program will continue until April 30, 2006. As a result, your program will commence renewal of accreditation with submission of the Self-Study Report on June 15, 2005 and the scheduling of a site visit during October 2005. We provide this information to assist you in your program’s administrative and financial planning.

This letter and the accompanying award represent formal accreditation by NAACLS. The NAACLS Certificate of Accreditation will be forwarded to the Program Director.

Sincerely,

[Signature]

Joeline D. Davidson, MBA, CLS(NCA), MT(ASCP)
President, NAACLS Board of Directors

cc: Bruce J. Brown, EdD, MS, MT(ASCP), Program Director
    Alan C. Harris, MD, Medical Advisor/Medical Director
    Thomas A. Storch, PhD, Dean, College of Science

Enclosures: · NAACLS Board of Directors Accreditation Award
NAACLS BOARD OF DIRECTORS' ACCREDITATION AWARD

The Clinical Laboratory Technicians/Medical Laboratory Technicians – Associate Degree Program of Marshall University in Huntington, West Virginia, is awarded Continuing Accreditation for seven (7) years.

Bruce J. Brown, EdD, MS, MT(ASCP), and Alan C. Harris, MD, are recognized as Program Director and Medical Advisor/Medical Director respectively.

The following institutions are recognized as clinical affiliates of the program:

St. Mary's Hospital, Huntington, WV
Cabell Huntington Hospital, Huntington, WV
Thomas Memorial Hospital, South Charleston, WV
River Valley Health Systems Hospital, Ironton, OH

Joeline D. Davidson, MBA, CLS(NCA), MT(ASCP)
President

Olive M. Kimball, EdD
Executive Director

May 10, 1999
### Appendix I
#### Required/Elective Course Work in the Program

**Degree Program:** AAS in Medical Laboratory Technology  
**Person responsible for the report:** Dorothy J. Fike MS MT(ASCP)SBB

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**See Attached Sheet for Freshman and Sophomore Years for Curriculum Design**

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<th>Courses Required in Major (By Course Number and Title)</th>
<th>Total Required Hours</th>
<th>Elective Credit Required by the Major (By Course Number and Title)</th>
<th>Elective Hours</th>
<th>Related Fields Courses Required</th>
<th>Total Related Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS 100 Intro to Health Sci</td>
<td>1</td>
<td>Marshall Plan Courses</td>
<td>6</td>
<td>College Algebra (MTH 127 or 130)</td>
<td>3-5</td>
</tr>
<tr>
<td>CLS 110 Clin Hem</td>
<td>4</td>
<td>English (ENG 101 and 102)</td>
<td>3</td>
<td>Principles of Chemistry (CHM 211, 212, 217, 218)</td>
<td>10</td>
</tr>
<tr>
<td>CLS 200 Clin Biochemistry</td>
<td>4</td>
<td>Speech and Communication (CMM 103)</td>
<td>3</td>
<td>Human Anatomy (BSC 227)</td>
<td>4</td>
</tr>
<tr>
<td>CLS 210 Clin Immunohematology</td>
<td>4</td>
<td>Introduction to Psychology (PSY 201)</td>
<td>3</td>
<td>Human Physiology (BSC 228)</td>
<td>4</td>
</tr>
<tr>
<td>CLS 220 Clin Microbiology</td>
<td>4</td>
<td>Elective</td>
<td>3</td>
<td>Intro to Microbiology (BSC 250)</td>
<td>4</td>
</tr>
<tr>
<td>CLS 255 Lab Problems</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLS 270 Clin Pract. Hem</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLS 272 Clin Pract Blood Bank</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CLS 273 Clin Pract Microbiology</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32 Hours</td>
<td></td>
<td>12 Hours</td>
<td></td>
<td>25-27 Hours</td>
</tr>
</tbody>
</table>

---

**Professional society that may have influenced the program offering and/or requirements:**

- American Society for Clinical Pathology
- American Society for Clinical Laboratory Sciences
- National Accrediting Agency for Clinical Laboratory Sciences

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Date Created: March 6, 2002; Revised 12/9/2003

Office of Program Review and Assessment, Academic Affairs, Marshall University, Huntington, WV 25755-2003
Marshall University
Clinical Laboratory Sciences Department

MLT and MT Programs: Transcript Review

Name:                          Student Number:

Address

Telephone:                        Email:

The Associate Degree in Medical Laboratory Technology Requires:

<table>
<thead>
<tr>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENG 101 Composition I</td>
<td>3</td>
<td></td>
<td>ENG 102 Composition II</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>BSC 227 Human Biol. I</td>
<td>4</td>
<td></td>
<td>BSC 228 Human Biol. II</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CHM 211 Princ. Chem. I</td>
<td>3</td>
<td></td>
<td>CHM 212 Prin. Chem. II</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>CHM 217 Qual. Lab.</td>
<td>2</td>
<td></td>
<td>CHM 218 Quant. Lab.</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CLS 100 Introduction to Health Professions</td>
<td>1</td>
<td></td>
<td>CMM 103 Speech Comm.</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>MTH 127 (or 130) Algebra</td>
<td>3</td>
<td></td>
<td>Elective BSC 250 Suggested</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>PSY 201 Intro. Psychology</td>
<td>3</td>
<td></td>
<td>Elective</td>
<td>3-4</td>
<td></td>
</tr>
</tbody>
</table>

Pre-clinical CLS Sequence: Program admission or permission required.

<table>
<thead>
<tr>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS 110 Clinical Hematology</td>
<td>4</td>
<td></td>
<td>CLS 210 Clinical Immunohematology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CLS 200 Clin. Biochemistry</td>
<td>4</td>
<td></td>
<td>CLS 220 Clinical Microbiology</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>CLS 255 Lab. Problems</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

Hospital based Clinical Practicum Sequence: Summer & fall semesters:

<table>
<thead>
<tr>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
</tr>
</thead>
</table>

The Bachelor Of Science Degree In Medical Technology requires all the above, plus the courses listed below.

<table>
<thead>
<tr>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHY 201 Physics I</td>
<td>3</td>
<td></td>
<td>PHY 203 Physics II</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>PHY 202 Phy. Lab. I</td>
<td>1</td>
<td></td>
<td>PHY 204 Phy. Lab. II</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CHM 327 Intro. Organic</td>
<td>5</td>
<td></td>
<td>MTH 225 Statistics</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Elective International</td>
<td>6</td>
<td></td>
<td>CLS 310 Clinical Immunology</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and Molecular diagnostics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ECN 200 Survey of Economics</td>
<td>3</td>
<td></td>
<td>CHM 365 Biochem or CHM 345</td>
<td>3-4</td>
<td></td>
</tr>
<tr>
<td>BSC 424 Parasitology</td>
<td>4</td>
<td></td>
<td>Elective Multicultural</td>
<td>3</td>
<td></td>
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</tbody>
</table>

(Based upper level BSC course)

<table>
<thead>
<tr>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
<th>Course</th>
<th>CH</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS 410 Advanced Hematology and Transfusion Medicine</td>
<td>4</td>
<td></td>
<td>CLS 466 Diagnostic. Physiology</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>CLS 421 Advanced Clinical Chemistry and Microbiology</td>
<td>4</td>
<td></td>
<td>CLS 468 Research</td>
<td>2</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>CLS 499 Seminar: Readings in Laboratory Medicine</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

MT Preclinical Sequence: Fall Term Only, Program Admission Required.

MT Hospital Based Clinical Practicum: Spring Term Only

NOTE: This curriculum reflects changes in the senior year curriculum effective for MT students beginning in fall, 2003.
Appendix III
Off-Campus Classes

(Note: List courses offered at locations other than the Huntington Campus, or the South Charleston Campus.) Please include the courses offered in the past 2 years. No classes were offered off campus

<table>
<thead>
<tr>
<th>Year</th>
<th>Location</th>
<th>Courses Offered</th>
<th>Enrollment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

Distance Delivery Classes

(Note: List E courses. Please include the courses offered in the past 2 years.) No E courses were given.

<table>
<thead>
<tr>
<th>Year</th>
<th>Courses Offered</th>
<th>E- Number</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Appendix IV
### Service Courses

No services courses are offered in this program.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Su</td>
<td>Fa</td>
<td>Sp</td>
<td>Su</td>
<td>Fa</td>
</tr>
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<td></td>
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<td></td>
</tr>
</tbody>
</table>
## Appendix V

### Program Course Enrollment

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>CLS 100</td>
<td>Intro to Health Sci</td>
<td>Req</td>
<td>30</td>
<td>25</td>
<td>25</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>CLS 110</td>
<td>Clinical Hematology</td>
<td>Req</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>CLS200</td>
<td>Clinical Biochemistry</td>
<td>Req</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>CLS 210</td>
<td>Clinical Immunohema</td>
<td>Req</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>CLS 220</td>
<td>Clinical Microbiology</td>
<td>Req</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>CLS 255</td>
<td>Laboratory Problems</td>
<td>Req</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>CLS 270</td>
<td>Clin Pract Hem</td>
<td>Req</td>
<td>6 5</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4 1</td>
</tr>
<tr>
<td>CLS 271</td>
<td>Clin Pract. Chem</td>
<td>Req</td>
<td>6 5</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4 1</td>
</tr>
<tr>
<td>CLS 272</td>
<td>Clin Pract Blood Bank</td>
<td>Req</td>
<td>6 5</td>
<td>6</td>
<td>5</td>
<td>6</td>
<td>4 1</td>
</tr>
<tr>
<td>CLS 272</td>
<td>Clin Pract Micro</td>
<td>Req</td>
<td>6 5</td>
<td>6</td>
<td>4</td>
<td>6</td>
<td>4 1</td>
</tr>
</tbody>
</table>

(Note: If you listed courses in Appendix IV, do not list them again in this appendix.)

* Indicate all courses other than the service courses here. Please include all special topics courses offered as well as independent studies. When listing Independent studies, please list the number of independent study students enrolled, but DO NOT include individual names or the titles of the independent studies.

**Date Created:** March 6, 2002; **Revised:** 1/24/2004
Program Review Appendix V template Revised 2003
Office of Program Review and Assessment, Academic Affairs, Marshall University, Huntington, WV 25755
### Appendix VI
Program Enrollment

<table>
<thead>
<tr>
<th>Students</th>
<th>Year 1 1998</th>
<th>Year 2 1999</th>
<th>Year 3 2000</th>
<th>Year 4 2001</th>
<th>Year 5 2002</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Students Admitted</td>
<td>7</td>
<td>8</td>
<td>6</td>
<td>13</td>
<td></td>
</tr>
<tr>
<td>Principal Majors Enrolled</td>
<td>7</td>
<td>8</td>
<td>8</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>9003—Med Lab Tech, AS</td>
<td></td>
<td>(1)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NM10, AS Medical Lab Tech</td>
<td>(13)</td>
<td>(12)</td>
<td>(5)</td>
<td>(3)</td>
<td></td>
</tr>
<tr>
<td>Second Majors Enrolled*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other Areas of Emphasis (i.e., education specialization majors)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minors**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grand Total of Students Enrolled</td>
<td>7</td>
<td>8 (14)</td>
<td>8 (12)</td>
<td>5 (6)</td>
<td>3 (13)</td>
</tr>
</tbody>
</table>

| Graduates of the program       | 11          | 6           | 6           | 4           | 5           |

*If known. This information is not completely accurate at this time, as students often do not declare a second major until the junior evaluation or the student has her/his primary major in another college.

**If known. This information is not completely accurate at this time, as students often do not declare minors until the junior evaluation or senior application for graduation.
Chart I Assessment Summary
Marshall University
Assessment of Student Outcomes: Component/Course/Program Level
5 year summary

Component Area/Program/Discipline:  **Associate of Applied Science in Medical Laboratory Technology**

<table>
<thead>
<tr>
<th>Component / Course / Program Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Outcome</td>
</tr>
</tbody>
</table>

Date Created: January 7, 2002
File: Program Review Assessment Summary Chart 1
Office of Program Review and Assessment, Academic Affairs, Marshall University, Huntington, WV 25755-2003
| 1. Students pass the national certification examination | Chair and faculty of CLS Department | Results of the national certification examination | The MU MLT graduates pass the national certification examination at a rate above the national mean | The national pass rate on the MLT certification examination varies between 65 and 75%. MU MLT graduates who have taken the exam for the first time have been above this passing rate for the past 5 years. Not all students take the examination especially if they are continuing on for the Bachelor's degree. The pass rate for the MLT graduates has been higher than the national average for the past five years. | None needed |
| 2. Students are academically prepared to attend the MLT clinical rotations | Chair of the CLS Department | Informal discussions with the clinical faculty at the clinical sites | 100 per cent of students entering the clinical practicum portion of the MLT curriculum are able to complete the clinical practicum | Only one student in the last five years has failed to complete the clinical practicum for the MLT curriculum. This student had passed all of the pre-clinical courses, but was slow in the laboratory portion. The student had been accepted in a physician's assistant program and motivation may have been a problem. | The faculty reviewed the situation. The student had been offered a repeat of the course option, but decided not to repeat the course. The faculty will monitored student success rates after the non graduation of the student. Since that time all students have been able to complete the clinical rotations |
| Course content in all CLS courses is relevant to the specific practice areas at the MLT level | Chair of the CLS Department and CLS Faculty and Advisory Committee | A. Informal discussions with Clinical Faculty  
B. Analysis of each specific area of the certification examination | A. 90 per cent of Clinical Faculty are satisfied that the course content is relevant for the specific practice area.  
B. The majority of students receive between 400 and 450 on each component area of the certification examination | A. Approximately 90% of the Clinical Faculty are satisfied that the course content is relevant for the specific practice area.  
B. The majority of students do receive between 400 and 450 on each component area of the certification examination | A. None needed  
B. None needed |
<table>
<thead>
<tr>
<th>4. MU MLT Graduates are employed in West Virginia or the Tri-State Region</th>
<th>Chair of the CLS Department</th>
<th>Informal discussions with MLT graduates</th>
<th>80 per cent of MU MLT graduates are employed in West Virginia or the Tri-State Region</th>
<th>The majority of the graduates are employed between Charleston and Huntington. About 60-75% of the MLT graduates continue in the MT program.</th>
<th>None needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>5. Employers of MU MLT graduates are satisfied</td>
<td>Chair of the CLS Department</td>
<td>Informal discussions with employers of MLT graduates</td>
<td>80 per cent of employers are satisfied with MU MLT graduates</td>
<td>In informal discussions, the employers are satisfied with the MU MLT graduates. Even though some of the clinical sites would like to hire the graduate, they do not have any vacancies.</td>
<td>None needed</td>
</tr>
</tbody>
</table>