

**BOARD OF HIGHER EDUCATION**  
**REQUEST FOR COMMITTEE AND BOARD ACTION**

**COMMITTEE:** Academic Affairs

**NO:** AAC 13-33

**COMMITTEE DATE:** June 11, 2013

**BOARD DATE:** June 18, 2013

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**APPLICATION OF MIDDLESEX COMMUNITY COLLEGE TO AWARD THE  
ASSOCIATE IN SCIENCE IN MEDICAL LABORATORY TECHNICIAN**

**MOVED:** The Board of Higher Education hereby approves the application of **Middlesex Community College** to award the **Associate in Science in Medical Laboratory Technician**.

Upon graduating the first class for this program, the College shall submit to the Board a status report addressing its success in reaching program goals as stated in the application and in the areas of enrollment, curriculum, faculty resources, and program effectiveness.

**Authority:** Massachusetts General Laws Chapter 15A, Section 9(b)

**Contact:** Aundrea Kelley, Deputy Commissioner for P-16 Policy and Collaborative Initiatives

**BOARD OF HIGHER EDUCATION**  
**June 2013**  
**Middlesex Community College**  
**Associate in Science in Medical Laboratory Technician**

**INTENT AND MISSION**

Middlesex Community College (MCC) has filed an expedited application for the approval of a proposed Associate in Science in Medical Laboratory Technician (MLT). The development and implementation of the proposed program aligns with the college's mission to meet the workforce needs of the community. The proposed MLT program fits with a key strategic direction: to build partnerships that stimulate innovation and address the educational, social, economic, and workforce development needs of local communities. The MLT program proposal was collaboratively developed with industry partners, with input from regional workforce investment boards and Massachusetts one stop career centers. The proposed degree is designed to prepare students to meet regional and state workforce needs, as well as to prepare students for transfer into baccalaureate degree programs.

**NEED AND DEMAND**

*National and State Labor Market Outlook*

The proposed MLT program is designed to address current and anticipated labor shortages of qualified laboratory personnel. Research and data collected from several sources documented the need for MLT program graduates. The Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook, 2012-13 Edition*, Medical and Clinical Laboratory Technologists and Technicians states "Employment of medical laboratory technicians is expected to grow by 15 percent between 2010 and 2020." The U.S. Department of Health and Human Services reports that 138,000 lab professionals will be needed, but projects that fewer than 50,000 will be trained.

The Wage and Vacancy Report compiled by the American Society for Clinical Pathology (ASCP) in March 2012, reports that half of all clinical laboratories nationwide are struggling to hire personnel, with vacancy rates of 10.4% for medical technologists and a vacancy rate of 8.8% for laboratory assistants. A 6.4% vacancy rate for MLT's is highest in outpatient clinics, reference labs and high-volume testing labs. According to the ASCP Wage and Vacancy Survey, laboratory managers expect to lose up to 30% of their staff to retirement over the next 10 years. Employment projections for 2006-2016 indicate Medical Technologists and Medical Laboratory Technicians currently in the field number 319,000. The projected need by 2016 is estimated to be 362,000- a net increase of 4300 per year needed. The projected loss due to retirees is estimated at 95,700. To meet the projected needs, 14,000 new Medical Technicians and Medical Laboratory Technicians should be added to the workforce each year. Nationally according to the Bureau of Labor Statistics, Massachusetts has the fourth highest concentration of Clinical Laboratory Science related positions, with the Boston, Cambridge and Quincy areas cited as possessing the highest number of positions in the field.

Collaborative work with local hospitals and labs, regional employment boards and career centers shows a local and regional need in the clinical lab workforce. Current job postings found

on the Massachusetts Career Information System in March 2013 indicate over 223 openings for Medical Laboratory Technicians within 25 miles of the college. The need for well-trained Clinical Laboratory Science personnel in Central Massachusetts has been identified by the healthcare community to fill needs and shortages in the Merrimack Valley and other regions. Employment of Clinical Laboratory workers is expected to grow faster than average through the year 2016

#### *Student Demand*

The student market for the proposed program includes prospective students from surrounding communities. Students have shown an interest through informal recruitment efforts with a list of 26 who would like to begin the program in Fall 2013. The list was compiled from monthly health information sessions, referrals from local hospitals and referrals from the program coordinator. About half of the 26 students are or have been enrolled in a certificate programs in the MCC Academy of Health Professions (AHP), which provides entry level training opportunities for students interested in pursuing a health career as Nursing Assistants, Medical Receptionists, Phlebotomists or Medical Secretaries.

#### *Duplication*

The proposed Middlesex Community College MLT program will draw students from Merrimack Valley and Southern New Hampshire. Other Massachusetts colleges that have MLT programs include Bristol Community College, Bunker Hill Community College, Northern Essex Community College, Springfield Technical Community College and Quincy College. Program enrollments are reported to be between 10-15 students in several of the programs.

The geographically closest programs to the Lowell campus where the MCC program would be offered are Northern Essex in Lawrence and Haverhill and Bunker Hill in Charlestown. The program at Bunker Hill draws students from the greater Boston area, while the program at Northern Essex is designed as a hybrid model, providing a combination of on-line and classroom based courses for students.

### **ACADEMIC AND RELATED MATTERS**

#### *Admission*

Applicants to the proposed MLT program will be required to follow the same admission process that has been established at MCC for other selective health programs. Students will apply directly to the program and the GPA and required prerequisite coursework from previous high school or college transcripts will be reviewed. Applicants to the proposed MLT program will be required to have a cumulative GPA of 2.0, and to have completed a General Biology course within the last 5 years with a grade of C or higher.

Classes are planned to begin in the fall of each academic year. Applicants will be admitted within a rolling admissions cycle according to when the applicant meets the admission requirements. The Admissions cycle will be the period of time it takes to recruit, admit, and enroll all 15 students. Class size is limited to 15 students per admission cycle, with 12 students for year one. If more than 15 applicants are qualified for a particular semester, the additional students will be admitted for the next available semester that the program is offered. Non-Massachusetts residents will be admitted on a space available basis only.

Articulation agreement planning with the University of Massachusetts Lowell has been discussed during the program's development and the intention is to formally articulate once the program is approved. Articulation planning with the University of Massachusetts Dartmouth is scheduled to begin after July 1, 2013, following the appointment of a newly elected Chairperson of the Medical Laboratory Science Department.

*Projected Enrollment*

	<b># of Students Year 1</b>	<b># of Students Year 2</b>	<b># of Students Year 3</b>	<b># of Students Year 4*</b>
New Full Time	12	15	15	15
Continuing Full Time	0	12	15	15
New Part Time	0	0	0	0
Continuing Part Time	0	0	0	0
<b>Totals</b>	<b>12</b>	<b>27</b>	<b>30</b>	<b>30</b>

*Program Goals*

<b>Goal</b>	<b>Measurable Objective</b>	<b>Strategy for Achievement</b>	<b>Timetable</b>
Educate competent entry level Medical Laboratory Technicians who will be successful on the Board of Certification exam for Medical Laboratory Technician offered by the American Society of Clinical Pathology (ASCP)	<ul style="list-style-type: none"> <li>75% of the programs' graduates will earn ASCP certification within a year of graduation</li> <li>90% of graduates and employers of the program's graduates will respond that graduates are prepared for entry level practice</li> </ul>	<ul style="list-style-type: none"> <li>Develop and provide a curriculum that reflects current practice aligned with accreditation and assessed by competency based evaluation</li> <li>Competency based evaluation tools developed and assessment plan finalized</li> <li>Develop and implement</li> </ul>	<ul style="list-style-type: none"> <li><b>AY 12-13</b></li> <li><b>Spring/summer 2013</b></li> </ul>

	<ul style="list-style-type: none"> <li>Graduate at least 80% of students within 3 years of program start date</li> </ul>	<ul style="list-style-type: none"> <li>tutoring supports, advising and mentoring through the MLT program and the Health and STEM Pathways center</li> <li>Develop and implement open lab sessions to allow students additional opportunities to develop program competencies</li> </ul>	<ul style="list-style-type: none"> <li><b>2013</b></li> <li><b>2013 and ongoing</b></li> </ul>
Maintain a nationally accredited program through the National Accrediting Agency for Clinical Laboratory Science	<ul style="list-style-type: none"> <li>Attain accreditation under National Accrediting Agency for Clinical Laboratory Science by May 2015</li> </ul>	<ul style="list-style-type: none"> <li>Submit initial application request</li> <li>Conduct a self-study</li> <li>Conduct program reviews on a regular basis</li> </ul>	<ul style="list-style-type: none"> <li>May 2013</li> <li>Fall 2013</li> <li>AY 16-17</li> </ul>
Meet the local and regional needs for competent MLTs by providing an MLT program that through collaborative partnerships with industry reflects current practice.	<ul style="list-style-type: none"> <li>90% of graduates will be employed within one year of graduation</li> <li>Maintain an advisory board made up of industry and educational partners which meets twice annually</li> </ul>	<ul style="list-style-type: none"> <li>Externships developed and contracts finalized</li> <li>Hire competent adjunct faculty</li> <li>Ensure appropriate membership on board</li> <li>Hold meetings of board</li> </ul>	<ul style="list-style-type: none"> <li><b>2013</b></li> <li><b>AY 2013-14</b></li> <li><b>2013</b></li> <li><b>April 2013, summer 13, Fall 13</b></li> </ul>
Provide and promote educational career pathways in clinical laboratory science for students who reflect the diversity of the communities we serve	<ul style="list-style-type: none"> <li>Develop and maintain articulation agreements that facilitate the progression of graduates to the baccalaureate degree</li> <li>Provide a curriculum that is articulated with the MCC Clinical lab</li> </ul>	<ul style="list-style-type: none"> <li>Finalize articulation agreement with UMass Lowell</li> <li>Develop an articulation agreement with UMass Dartmouth</li> <li>Develop and attain approval for curriculum</li> </ul>	<ul style="list-style-type: none"> <li>2013</li> <li>2013</li> <li>2013</li> </ul>

	assistant certificate. <ul style="list-style-type: none"> <li>• Admit and retain students who reflect the diversity of our community</li> </ul>	<ul style="list-style-type: none"> <li>• Implement marketing plan and admit 12 students</li> </ul>	<ul style="list-style-type: none"> <li>• Spring 2013</li> </ul>
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*Curriculum (see Attachment A)*

Students in the proposed Associate in Science in Medical Laboratory Technician curriculum will be required to complete 72 credits. The curriculum is designed to include courses in basic sciences, mathematics, social sciences, and the humanities, as well as core courses in clinical science. These core courses include didactic, lab and clinical courses in the areas of urinalysis, hematology, clinical chemistry, microbiology, immune-hematology, immunology, and serology. It is planned that the first year will provide foundational courses and coursework introducing clinical lab theory and practices.

As a result of successfully completing the proposed program, it is expected that students will be able to perform routine laboratory procedures encompassing all major areas of the clinical laboratory, procure laboratory test samples in an efficient and timely manner, recognize unexpected results and instrument malfunctions, produce accurate laboratory test results within acceptable limits of quality control, correlate laboratory findings to common disease processes, demonstrate effective interpersonal skills with patients, coworkers, and physicians, comply with safety procedures and ethical standards of practice, and demonstrate understanding of the importance of continuing education and life-long learning.

*Clinical Placements*

Practicum placements are integrated throughout the coursework to allow for application of learned concepts and to support skill development. The curriculum includes five practicum placements which focus on application of principles to broaden and refine clinical skills to meet or exceed entry level competency. The program coordinator will visit each hospital a minimum of once during a student's clinical rotation. The hospitals affiliated with the program are Emerson Hospital, Merrimack Valley Hospital, St. Joseph Hospital, Lowell General Hospital, Melrose-Wakefield Hospital, Brigham and Women's Hospital, Lahey Clinic, and Holy Family Hospital.

**RESOURCES**

*Budget (Attachment B)*

Provisions for required instructional materials, such as perishable lab supplies, chemicals, disposable lab supplies, waste removal and equipment maintenance, are budgeted in the Laboratory Science Program and Health Programs annual budget lines in the college budget. Additionally, the Massachusetts Community Colleges and Workforce Development Transformation Agenda (MCCWDTA) grant will partially cover annual supplies through April 2014. After this time, MCC will assume the funding of perishable supplies and implement a computerized supply ordering and inventory system to improve efficiency.

### *Faculty and Administration (Attachment C)*

MCC Health Programs hired a new full-time faculty member to help develop the proposed program during the summer of 2012. It is planned that the administrative work of the program will be done by the existing staff members of the Health and STEM Divisions. One full-time faculty member has been hired to coordinate the proposed Medical Laboratory Technician program. Once program approval is received, MCC will hire additional appropriately credentialed faculty to assist in teaching courses. Additional MLT faculty will be required to possess, at minimum, a bachelor's degree in Clinical Lab Science (masters preferred) and have successfully completed the National Board of certification examination given by the American Society of Clinical Pathology.

Courses outside of the MLT area will be offered through the other academic divisions in the college. These will be scheduled in concert with the MLT program coordinator to ensure students have an appropriate semester schedule. The proposed program will be supported by several existing administrative staff, including a shared administrative assistant located in the same building as the program coordinator. In addition, the dean's administrative assistant will be able to provide supplementary support as needed. Faculty and clinical contracts, academic schedules and faculty evaluation are overseen by the assistant dean and dean and are administratively supported by their assistants. A full time lab coordinator and a part time lab assistant are also located in the building where the proposed program and service labs will be located.

### *Facilities, Library, Technology*

As part of the college's Department of Labor grant, MCC recently renovated two labs into state-of-the-art teaching and preparatory spaces. These labs were completed in September 2012 and will serve as the primary teaching laboratory for the proposed MLT program. This resource is intended to allow students to work in a well equipped undergraduate teaching laboratory.

The MLT classroom/laboratory, located at our Lowell campus is a smart room equipped with a teaching computer, projector and digital camera system microscopy and varied state of the art equipment and diagnostic tools. Classrooms at the college are equipped with projection systems, and white boards. Each course is supported /supplemented with a Blackboard shell to enable faculty to provide online resources for students. Blackboard training is available for faculty.

MCC has a library on its Lowell campus where the MLT program will be located. The library will house MLT books, periodicals, and magazines. Reference materials as well as copies of the textbooks will be available to all Clinical Lab Science students. MCC belongs to the North of Boston Library Exchange (NOBLE), a consortium comprised of nine college libraries, seventeen public libraries and one private high school library. MCC students and faculty have access to the holdings of these libraries as well as several other consortia in Massachusetts. Further access is provided by the library's participation in Online Collaborative Library Cooperative (OCLC), an international resource sharing system. Online databases available through the MCC Library home page include EBSCO, MEDLINE, Health Source Nursing/Academic, Nursing and Allied Health Literature , Academic Source Premier, Biomedical Reference Collection, Health Reference Center Academic, Academic OneFile, General OneFile, eLibrary and others.

### *Affiliations and Partnerships*

MCC formed an advisory board with representatives from regional industry and four-year schools in order to facilitate curriculum development and assure that the proposed MLT program graduates meet entry level competency requirements. The role of the advisory board is to help provide overall vision and direction, inform strategic planning and guide implementation of the proposed program in order that graduates can meet the industry need for qualified medical laboratory professionals. As the proposed program develops, the board will advise and assist the program, donate materials, equipment or services, provide opportunities for clinical placements, and help evaluate the quality of the program. MCC anticipates that the curriculum will evolve over time to keep current with the demand of employers and up to date with emerging lab techniques.

### **EXTERNAL REVIEW AND INSTITUTIONAL RESPONSE**

The external reviewers for this program were Maddie Josephs, MS, CLS, MT (ASCP), Associate Professor and Allied Health Department Director, Clinical Laboratory Technology & Histotechnology Program, Community College of Rhode Island, and Elizabeth Hart, MA, CLS, MT (ASCP), Full-time lecturer, Department of Medical Laboratory Science, University of Massachusetts-Dartmouth, and Senior Clinical Laboratory Scientist, Department of Transfusion Medicine, Brigham & Women's Faulkner Hospital.

The reviewers found that the program proposal was an extensive and well written document. They noted that a tremendous amount of work had been completed and would provide a strong foundation to develop a comprehensive and rigorous MLT program. The reviewers found it particularly significant that the program design would articulate with the baccalaureate degree program at UML, providing MCC MLT graduates the opportunity to articulate easily and further their careers as Medical Technologists.

The reviewers recommended modification to the sequence of courses in order to afford students the opportunity to begin developing basic laboratory skills and techniques during their first two semesters. They recommended that courses and clinical practicum should be included in the second year of the curriculum, so that students would be better able to master the necessary skills and techniques prior to entering the profession. It was also found that another full time faculty member would be needed once the program enrollment increases to about 27 students. The reviewers commended the proposal and strongly recommended that this program move forward.

### *Institutional Response*

MCC adjusted the sequence of courses as suggested by the reviewers and has agreed with the recommendation that an additional full time faculty member should be added once the enrollment increases enough to support the additional position.

## **STAFF ANALYSIS AND RECOMMENDATION**

Staff thoroughly reviewed all documentation submitted by **Middlesex Community College** and the external reviewers. Staff recommendation is for approval of the **Associate in Science in Medical Laboratory Technician**.

Upon graduating the first class for these programs, the College shall submit to the Board a status report addressing its success in reaching program goals as stated in the application and in the areas of enrollment, curriculum, faculty resources, and program effectiveness.

Curriculum Outline (Attachment A)

**Medical Laboratory Technician Associate Degree**

<b>Required (Core) Courses in the Major (Total # courses required = 14)</b>		
<i>Course Number</i>	Course Title	Credit Hours
CLS 101	Introduction to Clinical Laboratory Science	3
CLS 102	Basic Laboratory Theory/Techniques Lab	4
MLT 101	Urinalysis and Body Fluids	1
MLT 102	Urinalysis and Body Fluids Practicum	1
MLT 201	Hematology Theory/Lab	4
MLT 202	Clinical Chemistry/Lab	4
MLT 203	Medical Microbiology/Lab	4
MLT 204	Immunology and Serology	4
MLT 205	Clinical Chemistry Practicum	2
MLT 251	Immunochemistry/Lab	4
MLT 252	Hematology Practicum	2
MLT 253	Microbiology Practicum	2
MLT 254	MLT Seminar	1
MLT 255	Immunochemistry Practicum	2
	<b>Subtotal required (core) credits</b>	<b>38</b>

<b>Other Required Courses (Total # courses required = 10)</b>		
ENG 101	English Composition I	3
ENG 102	English Composition II	3
MAT 177	Statistics	3
BIO 231	Anatomy and Physiology I / Lab	4
BIO 232	Anatomy and Physiology II/ Lab	4
CHE 131	College Chemistry I/ Lab	4
CHE 132	College Chemistry II/Lab	4
SOC 101	Introduction to Sociology	3
PSY 101	Introduction to Psychology	3
ETH 105	Introduction to Bioethics	3
	<b>Subtotal other required credits</b>	<b>34</b>
<b>Distribution of General Education Requirements Included in above required courses</b>		<b># of Gen Ed Credits</b>
Arts and Humanities, including Literature and Foreign Languages ENG 101, English Composition I (3 credits); ENG 102, English Composition II (3 credits), ETH 105, Introduction to Bioethics (3 credits)		9
Mathematics and the Natural and Physical Sciences MAT 177, Statistics (3 credits); BIO 231, Anatomy and Physiology I / Lab (4 credits); BIO 232, Anatomy and Physiology II/ Lab (4 credits); CHE 131, College Chemistry I/ Lab (4 credits); CHE 132, College Chemistry II/Lab (4credits)		19
Social Sciences SOC 101, Introduction to Sociology (3credits); PSY 101, Introduction to Psychology (3 credits)		6
<b>Sub Total General Education Credits</b>		<b>34</b>
<b>Curriculum Summary</b>		
Total number of courses required for the degree		24
Total credit hours required for degree		72
<b>Prerequisite:</b> BIO 131- General Biology I		

Program Budget (Attachment B)

<b>One Time/ Start Up Costs</b>	<b>Cost Categories</b>	<b>Annual Expenses</b>			
		<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
	Full Time Faculty (salary and Fringe)	69,607.40	71,695.62	73,846.02	73,846.02
	Part Time/Adjunct Faculty	29,284.00	40,470.76	41,682.53	42,932.01
	Staff	11,960.00	12,318.80	12,688.36	13,069.01
	General Administrative Costs				
43,935.00	Instructional Materials, Library Acquisitions	18,617.00	3,000.00	3,000.00	3,000.00
78,362.00	Facilities/Space/Equipment	5,000.00	5,000.00	5,000.00	5,000.00
	Field & Clinical Resources	1,500.00	1,500.00	1,500.00	1,500.00
	Marketing	1,000.00	1,000.00	1,000.00	1,000.00
	Other (Specify)				
	<b>TOTALS</b>	136,968.40	134,985.18	138,716.91	140,347.04

<b>One Time/Start-Up Support</b>	<b>Revenue Sources</b>	<b>Annual Income</b>			
		<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
144,912.00	Grants	88,224.40	21,508.69	-	-
	Tuition*	2,592.00	11,520.00	13,320.00	13,320.00
	Fees*	20,016.00	92,496.00	102,360.00	102,360.00
	Departmental	11,960.00	12,318.80	12,688.36	13,069.01
	Reallocated Funds	-			
	Other (specify) Portion of tuition and fees from courses outside the discipline	23,040.00	36,288.00	82,368.00	95,760.00
	<b>TOTALS</b>	145,832.40	174,131.49	210,736.36	224,509.01

\* tuition and fee figures reflect revenue for program specific courses only (MLT and CLS)

Faculty Form (Attachment C)

Summary of Faculty Who Will Teach in Proposed Program							
Name of faculty member (Name, Degree and Field, Title)	Check if Tenured	Courses Taught Put (C) to indicate core course. Put (OL) next to any course currently taught online.	Number of sections	Division of College of Employment	Full- or Part- time in Program	Full- or part-time in other department or program (Please specify)	Sites where individual will teach program courses
Suzanne McHale, MT Laboratory Science Assistant Professor	<input type="checkbox"/>	• CLS101, MLT101, MLT102, CLS102, MLT201, MLT202, MLT203, MLT204, MLT205, MLT251, MLT252, MLT253, MLT254, MLT255	1	Health and STEM, DAYS	Full-Time	No	• Lowell
Lochelt, Patrick, MA English Assistant Professor	<input type="checkbox"/>	• ENG101, ENG102	1	Humanities and Social Sciences, DAYS	Part-Time	Yes Humanities	• Lowell
Marcoux, Gary Ph.D. Science Assistant Professor	<input type="checkbox"/>	• CHE131, CHE132	1	Health and STEM, DAYS	Part-Time	Yes STEM	• Lowell
Hubbard, Stacey M.H.S. Science Professor	<input checked="" type="checkbox"/>	• BIO231	1	Health and STEM, DAYS	Full-Time	Yes STEM	• Lowell/Bedford