Proposal for a Master of Science in Laboratory Administration

Submitted by the Boler School of Business through
James Martin, Associate Dean for Programs and Curriculum

April 8, 2013

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1. ***Narrative***
    a. ***Context for Addition of New Program***

Background

Over the last several years, faculty and administrators from John Carroll University have engaged with Cleveland Clinic (CCF) administrators to identify potential opportunities to collaborate on educational programming. One theme that arose from these discussions was the shortcomings of existing graduate degree options typically pursued by rising lab administrators (MS in Education, MS in a Science, a general MBA, or graduate degrees in other fields). Two half day meetings involving Boler faculty and administrators and CCF lab administrators resulted in a curricular outline for a graduate program that more directly met the specific advanced education needs of future laboratory administrators, the MS in Laboratory Administration. Subsequent meetings with Boler faculty and CCF administrators produced detailed course outlines along with an implementation plan.

Faculty members involved in the planning process have included Ann Lee, Marc Lynn, Beth Martin, Rosanna Miguel, Ed Tomlinson, Charlie Watts, and Jerry Weinstein. Administrators involved in the planning process have included Jim Martin, Mark Storz, and Karen Schuele.

Justification for program & prevalence of program at other institutions

In Northeast Ohio, there are many laboratories (clinical and research) at the Cleveland Clinic, University Hospitals and Metro Health Medical Center as well as many private laboratories (clinical, research, pharmaceutical). Many of these labs are large, employing over one hundred laboratory technologists each, while others employ only a few. These labs are considered independent revenue generators by their parent organizations and are expected to be managed somewhat as standalone businesses. Most, however, operate within an overarching healthcare organization and are therefore subject to all the regulatory, ethical, technological and financial parameters specific to that environment. Experienced laboratory technologists are the preferred candidates for laboratory administration positions.

Currently, lab technologists typically begin their careers after earning a B.S. degree in one of the sciences (usually biology or chemistry) and then become certified as Clinical Laboratory Scientists (CLS) or earn an equivalent certification through a 1 year, practitioner-based science program in which they learn how to develop and interpret tests, handle material, etc. In Northeast Ohio there are well over 1,000 people working in labs, a large portion of who are CLS-certified technologists. Across the state and the country there are hundreds of labs with thousands of employees who are certified as lab personnel.

Once laboratory technologists are CLS certified and gain experience in the lab, they can become supervisors and then managers of a lab. Most organizations require (or strongly encourage) a graduate degree for promotion to lab supervision/administration as these positions require an expanded skill set and knowledge base relative to the future administrator's previous education. Unfortunately, no specific degree program exists in the U.S. that is designed to provide the specific skill set necessary for lab administration.

Purpose of program

This is a new graduate program designed to prepare laboratory personnel to manage and grow a lab as a business. The program will be very focused on issues surrounding laboratory management and will include a series of in-depth cases built around real issues and challenges in clinical laboratory settings. This program will explore all areas of the business side of running a lab including:

- Accounting and budgeting processes for laboratories,
- Written and oral communication techniques for laboratory management,
- Human resources issues related to staffing, training, managing and evaluating laboratory employees,
- Leadership, group dynamics and conflict resolution in laboratory settings,
- Lab operations issues related to process flows, instrumentation, scheduling, supply chain and quality,
- Laboratory information system and database issues, and
- Strategic planning for growing laboratory revenue in a competitive environment.

Ways program strengthens academic mission

Healthcare is an increasingly important component of Northeast Ohio's economy as well as the economy of the U.S. This program will provide students with the knowledge they need to effectively lead others in the healthcare field. Because this program is unique in its purpose, this will give JCU an additional leadership role in the healthcare community. In addition, the program has the potential to be offered entirely online to expand potential student recruitment nationally.

b. Curricular Requirements - Course of study to complete program

Rationale and justification for courses

The identification of courses for this program began with discussions between members of the Boler faculty and CCF lab administrators. With the overall learning goal of the program for students to learn how to manage a lab as a business, the following topics, as applied in a laboratory setting, emerged as critical for the program:

- **Ethics:** Diversity, Bioethics, CITI, HPPA, IRB, Conflicts of Interest
- **Legal/Regulatory:** Diversity, EEOC, Health System Dynamics
- **Accounting:** Budgets, Financial Statements, Costing, Test Costing, Profit vs Not For Profit, Billing, Coding, Compliance, Government Specifications
- **Strategy:** Integrative Thinking, Resource Allocation, Problem Solving, Health Systems Dynamics
- **Communication:** Mentoring, Diversity, Scientific Writing, Verbal Skills, Working with Ombudsman
- **Human Resources:** EEOC, Personnel Management, Performance Evaluation, Interviewing, Labor Relations, Diversity, Training, Working with Ombudsman
- **Operations/Project Management:** System development, Time Management, Organization Management, Budget Management, Team Management, Quality Management, Process Flow, Supply Chain Management

- **Information Management:** Information design, Application of Data, Database Management, Design Support Systems, Basic Statistics, Process Flow
- **Organization Behavior/Leadership:** Stress, Emotional Dynamics, Change Management, Negotiation, Conflict Resolution, Team Building, Group Dynamics
- **Application of concepts:** This will be achieved through 4 in-depth 1 credit case study courses.

Prerequisites and sequencing of courses

Students accepted into this program will be laboratory personnel who have completed a B.S. in Science (typically biology or chemistry) and have also earned the CLS (or equivalent) certification. To be admitted, students must also submit an application form, a letter of recommendation and have a minimum score of 500 on the GMAT. There are no course pre-requisites for this program beyond the science degree and the CLS certification. Courses are sequenced to build upon each other. Credit hours for each course and sequencing of courses have been worked out by the faculty during a year-long series of meetings based on the topics described previously. This sequence of courses has been reviewed by CCF laboratory managers as a means of external validation.

This part-time program is 30 credit hours, to be completed over two academic years plus one summer. Credit hours will be earned through the following sequence of courses:

Courses	**Credits**	**Term**
Organization Behavior 1	2	Summer 1
Communications for Laboratory Managers 1	2	Summer 1
Accounting in Laboratory Settings	3	Fall 1
Human Resource Management in Laboratory Settings 1	2	Fall 1
Case Study 1	1	Fall 1
Information Management in Laboratories 1	2	Spring 1
Laboratory Operations & Project Management 1	3	Spring 1
Case Study 2	1	Summer 2
Laboratory Operations & Project Management 2	3	Fall 2
Information Management in Laboratories2	2	Fall 2
Organization Behavior 2	2	Spring 2
Human Resource Management in Laboratory Settings 2	2	Spring 2
Strategy Dynamics in Health Care	1	Spring 2
Case Study 3	1	Spring 2
Strategy & Planning for Laboratory Settings	1	Summer 3
Communications for Laboratory Managers 2	1	Summer 3
Case Study 4	1	Summer 3
TOTAL CREDITS	**30**	

Courses to be developed with timetable and mechanism for their development

All courses will need to be developed. At this point there are rough syllabi or outlines for each of the courses, developed by the individuals teaching the courses. See **Appendix A** for a summary of each

course. Courses will be further developed by the faculty teaching them with assistance from CCF administrators. Course development stipends will be provided to the faculty members developing the courses and the development of the courses will be done during the year/semester prior to initial course offering.

Mechanism for approving new course for program

Course outlines have been approved by the faculty group planning the program, by the BSOB Dean's office and reviewed by CCF laboratory administrators. New course approvals will follow a similar process.

c. Organization and administration of program

Job description for director

This program will be administered by the Assistant Dean for Graduate Business Programs and with the assistance of the BSOB Associate Dean for Programs and Curriculum and the BSOB Associate Dean for Faculty and Students. In addition, there will a coordinator identified at the CCF who will act as advisor and liaison with the CCF.

Recommended line of reporting

Administration of this program will report directly to the Dean of the Boler School of Business.

Structure of governance

In addition to the Dean, there will be an advisory board comprised of the faculty members teaching in the program along with laboratory administrators. Initially, the laboratory administrators will be two or three individuals from the Cleveland Clinic. As the program expands to other hospital systems, we will add individuals from those systems.

d. Implementation timetable

Assessment plan – learning outcomes, anticipated method for assessment

Learning outcomes for this program include the following:

Students will be knowledgeable of the following laboratory administration principles and practices:

- Accounting and budgeting processes for laboratories,
- Written and oral communication techniques for laboratory management,
- HR issues regarding staffing, training, managing and evaluating laboratory employees,
- Leadership, group dynamics and conflict resolution in laboratory settings,
- Lab operations issues regarding process flows, instrumentation, scheduling, supply chain and quality,
- Laboratory information system and database issues, and
- Strategic planning for growing laboratory revenue in a competitive environment.

A learning assessment program that will measure achievement of these learning goals will be developed with the assistance of the Director for Planning and Assessment (currently Kathleen Lis-Dean) and following the guidelines established by AACSB. Based on the identified learning goals, the first step in

this process will to develop assessment rubrics for each of the learning goals. The next step will be to identify in-class measurement instruments to be used for assessment. The third step will be to identify the specific courses in which assessment will occur and the timing of the assessment.

Program evaluation plan – program outcomes, indicators of program success (enrollment, course evaluations)

The program will be evaluated based on student enrollment, BSOB course evaluations, reasons for student attrition, exit satisfaction surveys at graduation and tracking of graduates over time to assess progression in their careers.

Budget

This program is a cohort program that is completed in 2 academic years plus one summer. We have conducted 2 surveys with CCF laboratory technologists (potential applicants) and based on the survey results we are estimating between 10-20 CCF students per cohort. We anticipate doubling that over time as we begin marketing to other hospital systems and private laboratories in Northeast Ohio.

See Appendix B for a breakdown of estimated program revenue and expense for the first 4 years of the program. This budget is developed with a conservative assumption that we will have 10 students in the first cohort and 15 in the second, and each cohort will start as the previous is finishing up (the last summer of cohort 1 will overlap with the first summer of cohort 2). We assume a graduate tuition rate equal to the current tuition rate for graduate business programs ($855 per credit hour). Faculty will teach off-load in this program and will be paid $2,000 per credit hour (assumed fringe rate of 15% is consistent with rates for summer compensation). Certain CCF personnel will assist with classroom delivery and some will require a stipend. We allow for a support faculty stipend of $500 for each of the case classes and $200 for each of the traditional classes (for example, in year 1, one case class and 6 traditional classes will be taught). Course development grants will be provided to faculty at a rate of $1,500 per course credit hour (for example, a faculty member developing a 2 credit course would receive $3,000).

Marketing and communication plan

The Boler Marketing Associate in conjunction with the Integrated Marketing Communication office will develop print materials and a communication plan for program roll out and ongoing future student recruitment. The CCF will promote the program internally to its lab technologists (currently CCF employs over 400 lab personnel at the main campus plus 100-200 other lab personnel at satellite locations). The CCF coordinator will assist in identifying appropriate professional organizations through which to promote the program.

2. Administrative support – Chairs, Deans, AAVP planning & assessment, AAVP programs

Letters of support from the Chair of the Department of Accountancy, the Chair of the Department of Management, Marketing & Logistics, the Dean of the Boler School of Business, and the Director of Assessment are included in Appendix C.

Appendix A – Course Descriptions

Human Resource Management in Laboratory Settings I (2 credits)

Upon completion of this course, students should gain a basic understanding of the critical employment and labor laws and regulations impacting human resource and labor management in health care.

- Employment and Labor Laws and Regulations
    - Title VII, Civil Rights Act & discrimination
    - Disparate impact and treatment in hiring, compensation, etc.
    - American's with Disabilities Act
    - Age Discrimination in Employment Act
    - Sexual harassment (quid pro quo, hostile environment)
    - EEOC Guidelines
    - Labor, Collective Bargaining
    - Policies and Procedures – When do you need one
    - Equal Pay Act
    - OSHA
    - Clinical Ethics (HIPAA, IRB, CITI)

Human Resource Management in Laboratory Settings II (2 credits)

Upon completion of this course, students should gain an ability to select and implement legally defensible human resource and labor management practices and principles through the use of data-oriented tools and applications.

- Major HR functions: Tools & Application
    - Staffing (recruitment, selection, promotion, transfer, layoff, retirement, dismissal)
        - Interviewing
        - Social networking
    - Training & development (onboarding, instructional design, transfer of training, program evaluation, continuing education, learning styles)
    - Managing diversity (generational, ethnicity and race, gender, etc.)
    - Employee development (career development & planning)
        - Mentoring
    - Performance management & performance evaluation
    - Labor relations & collective bargaining
    - Compensation & benefits
        - Equity
        - Fairness

Organizational Behavior I (2 credits)

Upon completion of this course, students should gain an overview of leadership, management, and organizational behavior principles and practices in health care. Topics include:

- Work/life balance
- Stress management
- Leadership styles
- Leadership philosophy
- Personal values
- Team building
- Group dynamics
- Emotional intelligence

Organizational Behavior II (2 credits)

Upon completion of this course, students should gain an overview of change management principles, conflict management, employee attitudes and organizational development in health care. Topics include:

- Leading change (effects of change/uncertainty on management practices)
- Conflict and dispute resolution; negotiation tactics
- Ethical issues including bioethics and potential conflicts of interest
- Motivation, Employee involvement and empowerment
- Job satisfaction, employee engagement and commitment
- OD in healthcare (enhancing organizational effectiveness through diagnostics, interventions, metrics)
- Organizational structure/models & strategy; restructuring

Laboratory Operations Management and Project Management I - Understanding Process Flow (3 credits)

This course will help students understand the issues of process flow related to the lab testing process. Students should be able to determine to the flow rate and cost of each type of test and to have an understanding of the impact of instrument location on cost and throughput time. Specific topics include:

- Process Flow Charting
    - Capacity analysis and bottleneck analysis
    - Determining flow rate, throughput time, and work in process
    - Analysis of lab capacities
    - Workload statistics
- Issues with Instrumentation
    - Flow of tests in the lab
    - Layout planning and design
    - Costing of the process
    - Utilization of the process

Laboratory Operations Management and Project Management II – Scheduling and Quality (3 credits)

This course will help students understand scheduling issues related to day to day operations as well as longer term project Management. Students will be able to create work schedules, manage materials purchases and deliveries, and understand how to manage quality assurance. Specific topics include:

- Scheduling
    - Short term and work force scheduling
        - Gantt Charts
        - Optimization techniques
    - Project scheduling
        - Network models
        - Planning and implementation issues

- Supply Chain Issues
    - Inventory – What, when and how much
    - Purchasing – How to manage directs materials and MRO

- Quality Analysis
    - Quality improvement techniques (7 tools)
    - Statistical process control

Accounting for Laboratory Managers (3 credit hours)

This course will provide the student with an overview of financial and managerial accounting topics with an emphasis on items relevant to clinical lab administration. Coverage of financial (external) accounting topics will be secondary to managerial (internal) accounting topics. The course will take a user's orientation, as opposed to that of a preparer. Topics include:

- Financial accounting overview (including terminology, an understanding of the basic financial statements, and differences between for-profit and not-for profit entities)
- Internal controls
- Cost accounting terminology and concepts
- Billing/coding, Medicare/Medicaid issues and compliance
- Costing techniques (job, process, test)
- Cost-Volume-Profit (breakeven) analysis
- Standard Costing and Balanced Scorecard
- Operations Budgeting
- Capital Budgeting – discounted cash flow

Communications for Laboratory Managers I (2 credit hours)

This course is an overview of communication in a laboratory environment including diagnosing oral and written communication processes, communication problems, and scientific writing needed to record and archive lab data. Laboratory notes with other preservable forms of documentation such as equipment, printouts, photos and special artifacts for verifiability; organization of data in a formal lab report and documentation of scientific sources will be discussed. Fundamentals of interpersonal communication in a laboratory setting that improve the effectiveness and efficiency of laboratory performance will round out this course.

Communications for Laboratory Managers II (1 credit hour)

This course is a skill-builder forcommunicating in a laboratory setting. Focus will be on developing informative and persuasive verbal and written communications targeted to lab techs, to physicians, and to higher level administrators. By the end of the course, students should expect to be able to

- identify and analyze the target audience needs,
- demonstrate writing skills appropriate to the workplace, paying attention to multiple readerships, message purpose and writing style,
- order information logically so that verbal and written communications are easy to understand, and
- correctly use standard internal document formats

Information Management in a Laboratory Setting I (2 credits)

Students will be introduced to healthcare information technology. In this class, students will learn to identify the information needs of a laboratory as a stand-alone unit and as part of a larger network. Types of information systems used in healthcare organizations, how they are developed, their functionality and the information flows they control will be explored. In addition, future trends in healthcare information technology will be highlighted. Specific applications to laboratory information needs will be addressed.

Information Management in a Laboratory Setting II (2 credits)

In this class, students will learn to use complex information systems to help make management decisions regarding operational processes and business activities in the lab. Information as a tool for decision making will be emphasized through the introduction of cases highlighting laboratory business problems. Students will also learn how to evaluate IT resources, software and vendors. Finally, ethical and legal issues involved in information management in a laboratory will be addressed.

Strategy Dynamics in Health Care (1 credit)

Strategy is the confluence of market scanning, developing and managing resources, innovative idea generation, developing competitive advantage and charting a course for the future that will continue the profitability of the organization. This class will use a combination of readings and laboratory case studies to paint the healthcare market landscape as it exists currently and what it is likely to look like in the future. Emphasis in this class will be on understanding the regulatory, social and ethical aspects of the healthcare market in a way that facilitates innovative thinking and strategic idea generation.

Strategy and Planning for Laboratory Settings (1 credit)

Building on the first strategy class, in this course students will learn to think strategically about their labs and to plan for the future success of the lab. Specific topics include:

- How to use mission, vision and voice of the customer to identify and develop competitive advantages for the future
- How to combine market information, existing resource information and competitive advantage to decide on the direction of a lab over the next 5 years
- How to plan the management of resources and advantages to be sure the organization follows its strategic path

Case Studies 1-4 (1 credit each)

The case studies will present students with a current or recent in-depth problem, challenge or opportunity in a laboratory. The issue presented will require the use of topics taught in the previous courses.

- Case Study 1 will focus on organizational behavior and human resource management.
- Case Study 2 will focus on accounting, information management and operations.
- Case Study 3 will focus on broader challenges involving human resource management, operations and information systems.
- Case Study 4 will focus on strategic planning for a laboratory and will serve as a capstone experience for the program. Case Study 4 will result in a presentation to CCF administrators.

Appendix B – Budget

	Year 1	Year 2	Year 3	Year 4
Tuition Revenue				
Number credit hours	12	12	3	
Tuition per credit hour	$ 855	$ 855	$ 855	
Revenue per student	$ 10,260	$ 10,260	$ 2,565	
# students in cohort 1	12	12	12	
Tuition revenue cohort 1	*$ 123,120*	*$ 123,120*	*$ 30,780*	
Number credit hours			12	12
Tuition per credit hour			$ 855	$ 855
Revenue per student			$ 10,260	$ 10,260
# students in cohort 2			15	15
Tuition revenue cohort 2			*$ 153,900*	*$ 153,900*
Total Tuition Revenue	**$ 123,120**	**$ 123,120**	**$ 184,680**	**$ 153,900**
Expenses				
Faculty compensation	$ 24,000	$ 24,000	$ 30,000	$ 24,000
Fringe (15%)	3,600	3,600	4,500	3,600
Stipends for support faculty	1,700	1,800	2,600	1,800
Operating expenses (detail below)	10,000	10,000	10,000	10,000
Course development grants	18,000	18,000	4,500	
Fringe (15%)	2,700	2,700		
Total Expenses	**$ 60,000**	**$ 60,100**	**$ 51,600**	**$ 39,400**
Net Income from program	***$ 63,120***	***$ 63,020***	***$ 133,080***	***$ 114,500***
Operating Expenses:				
Marketing	$ 5,000			
Travel (conference, meetings)	3,000			
Supplies	2,000			
	$ 10,000			

Appendix C – Letters of Support