

College of Health and Human Sciences
Allied Health and Communicative Disorders
Medical Laboratory Sciences
2015-2016 Assessment Plan and Status Report
Submitted by:
Jeanne M. Isabel, MLS Program Coordinator

I. General Information: B.S. in Medical Laboratory Sciences

The Medical Laboratory Sciences Program is a limited admissions program divided into pre-professional and professional phases. The pre-professional phase is normally completed by students in 2 years by taking coursework which fulfills core and distributive general education university requirements as well as preparatory tool courses in biology, chemistry, and mathematics. Students meeting the admission requirements apply for the professional phase of the program and are selected on a competitive basis to fill available positions. The MLS professional program consists of first year and second year students. The first year of the professional phase consists of campus-based coursework including student laboratory courses in all disciplines of the field. The second (last) year of the professional phase consists of a clinical internship three days each week in a hospital laboratory of affiliate organizations. Additional campus-based coursework, both online and face to face, expands upon the knowledge base from the first year courses covering all disciplines of the field. Upon successful completion of the program, graduates are eligible to take a national certification examination.

II. Learning Outcomes

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating:

1. Specific knowledge of theory underlying laboratory testing and disease correlation using analytical, interpretative, and critical thinking skills consistent with entry-level medical laboratory science practice.
2. Appropriate techniques for laboratory procedures from simple to complex including pre-analytical, analytical and post-analytical interpretation including appropriate operation and maintenance of sophisticated biomedical instrumentation
3. Compliance with all laboratory regulations, confidentiality and quality assurance practices using professional and ethical behaviors when working as a member of a diverse health care team.
4. Effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.
5. Basic knowledge and application of laboratory management skills.
6. Basic knowledge and application of research skills

III. Explanation of Assessment Methods

Method	Description/Target	Timeline	Person Responsible	Objectives Addressed
Clinical rotation reflection summary	Students complete a reflection of their experience in each of the hospital lab departments related to development of knowledge and practice in the discipline and determination of their personal growth in managing time and priorities. A rubric is used to grade the reflection summaries. Target: 80% of the students will identify examples of learning experiences.	Each semester of clinical internship	Faculty	1,2,3,4

<p>Post rotation exams: For each practicum course; AHLS 481,482,483,484,485 the post practicum exam is comprehensive to include learning from the clinical experience</p>	<p>During the clinical practicum, students take a pre exam at the beginning of a department rotation and a post exam at the end Number of weeks varies from 5-9 weeks. Target: 80% of the students will score at least 70% on the post exam</p>	<p>Each semester of clinical internship</p>	<p>Faculty</p>	<p>1,2,3,4</p>
<p>Lab Management discussions/ assignments</p>	<p>Students will discuss issues related to lab management and complete written assignments related to cost analysis, job descriptions and quality management in lab practice. Target: 75% of students will communicate understanding of laboratory management and practice through discussions and written assignments</p>	<p>Spring semester online course</p>	<p>Faculty of course</p>	<p>1,3,4,5</p>
<p>Pre and post Lab quizzes AHLS 300, 308, 311, 312,313,337,345</p>	<p>Each course with laboratory exercises include a pre quiz for every lab session to determine if the student has prepared for the lab procedure and a post quiz which is different to assess understanding of the procedure concepts. Target:the range of difference in scores will be less in the post quiz and the number of students scoring worse in the post quiz will be less than 70%</p>	<p>Each semester</p>	<p>Faculty of course</p>	<p>1,2,3</p>
<p>Practical Lab exams AHLS 311, 312,313,337,345</p>	<p>Each laboratory course includes a practical exam to determine if the student has mastered lab procedures introduced in the course. Target:80% of students will demonstrate good laboratory practice and score 70% or better</p>	<p>Each semester</p>	<p>Faculty of course</p>	<p>1,2,3</p>
<p>Case studies</p>	<p>Students use problem solving skills either individually or in groups to interpret lab data and apply theory to answer questions related to patient scenarios Target:80% of students will score at least 70% on case study problems</p>	<p>Each semester</p>	<p>Faculty of course</p>	<p>1,2,4</p>

Research design and final project	Students are introduced to research methods and design and are asked to write a research proposal. Target: 80% of students will score at least 80% on the final written proposal	Fall semester	Faculty of course	1,2,3,4,6
Comparison of student performance on comprehensive exams to passing of the ASCP certification exam	This is an investigation of a correlation between student performance on the comprehensive exams given at the end of the clinical practicum year with passing the national certification exam. Target: 90% pass rate on national exam	Spring semester	J. Isabel	1,2,3,4

IV. Outcomes by Method Matrix

program outcome strongly supports (S), moderately supports (M)

Program Outcomes	Reflection summary	Post rotation exams	Management discussion/ assignments	Lab pre and post quizzes which are different questions	Lab practical exam	Case studies	Research design/ proposal	Comps and BOC exam comparison
1-Specific knowledge of theory & practice	S	M		S	S	S	M	S
2-Appropriate techniques for laboratory procedures	M	S		S	S	S		S
3-Commitment to all laboratory regulations, confidentiality and QA	M	M	S	S	S			S
4-Effective communication	M		S			S	S	M
5-Application of Lab management			S					
6- Application of basic research skills							S	

Curriculum Alignment Matrix: MLS

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating the following outcomes in these AHLS or AHCD courses:

I = Introduced, P = Practiced, D = Demonstrated	2 1 1	3 0 0	3 0 1	3 0 2	3 0 3	3 0 8	3 1 1	3 1 2	3 1 3	3 1 6	3 3 7	3 4 4	3 4 5	4 4 0	4 4 6	4 4 8	4 7 1	4 7 5	4 8 1	4 8 2	4 8 3	4 8 4	4 8 5
---	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------	-------------

Specific knowledge of theory of laboratory testing and disease correlation using analytical, interpretative, and critical thinking skills consistent with entry-level MLS practice.	I	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D				P D	P D	P D	P D	P D	P D	P D
Appropriate techniques for laboratory procedures from simple to complex; pre-analytical, analytical and post-analytical interpretation; appropriate operation and maintenance of sophisticated biomedical instrumentation	I	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D				P D	P D	P D	P D	P D	P D	P D
Compliance with all lab regulations, confidentiality and QA practices using professional and ethical behaviors when working as a member of a diverse health care team.	I	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D	P D			P D	P D	P D	P D	P D	P D	P D
Effective written and oral communication in a variety of styles to varying audiences	I	P D	P D	P D				P D		P D		P D		P D	P D	P D	P D	P D	P D	P D	P D	P D	P D
Basic knowledge and application of laboratory management skills.														I, P D			P D						
Basic knowledge and application of research skills														I P D			P D						

Status Report

VI. Evidence/Available data

Learning outcome 1

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating specific knowledge of theory underlying laboratory testing using analytical, interpretative, and critical thinking skills consistent with entry-level medical laboratory science practice.

- First year students have an opportunity to practice lab techniques in student labs. Use of short pre and post quizzes guide faculty in student preparedness before the lab and understanding of the lab sessions after completion. Previously the pre and post quiz was identical. This spring the post quiz was changed to be a different set of questions. Thus this year we will be looking at the range of scores from the pre quiz and the range of scores from the post quiz to see if the range is smaller for the post. We will also look at the number of students who scored worse on the post quiz. Pre and post lab scores for 4 courses were assessed.(AHLS 300,308,345,337) The range between the pre and post did not change significantly. However for some lab post score there was as much as a 50% decrease in score for the post.
- First and second year students are given the opportunity to apply and interpret lab data given a case study . 80 % of students will score 70% or better. Students in all courses reported met this goal; AHLS 300:81.5%, 308:100%, 303:100%, 336:100% N= 27-29

- Faculty investigated the correlation of student exam scores on comprehensive exams given at NIU to passing of the national certification exam (ASCP BOC). Although the cohort of students taking the national exam in June 2014 did not meet our target of a 90% pass rate, this group did score a higher percent pass compared to the national average.

Report of 2014 Graduates

N= 32		
COMPREHENSIVE EXAM	SCORED 70% OR BETTER	NIU grad PASSED ASCP BOC
Heme-coag	86 %	87.5 %
UA-BF-LO	91 %	-----
CHEM	75%	National average for this group taking the same exam = 83%
IMMUNOLOGY	91%	
BLOOD BANK	44 %	
MICROBIOLOGY	84%	
Average of all exams	76%	
Of the five people with an average of < 70% on comps, 3 failed the board exam. There were 2 people who got an average of 71% and 75% who failed the national exam. One student waited a year to take it and that is not recommended.		

Taken together these methods show evidence of student preparation of learning outcome 1

Learning outcome 2

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating appropriate techniques for laboratory procedures from simple to complex including pre-analytical, analytical and post-analytical interpretation including appropriate operation and maintenance of sophisticated biomedical instrumentation

- Second year students will reflect on their clinical experience by writing a reflective summary. The student reflection is worth 5% of the total grade for the course and the rubric was revised to address 5 topics; knowledge and skills, teamwork, competency, critical thinking, and self-awareness. A total of 20 points can be earned. The practicum course number have been changed for 2015-2016. Of the 135 submitted summaries, 5% were below 18 (90% of 20) thus 95% of the summaries earned more than 90% to meet the target. N =27
- Second year students will show in depth understanding of laboratory testing and theory by successfully completing a post rotation exam with an average of 70%. An average of scores for post exams for five practicum course for the last year was tallied. Of the five courses, 3 met this goal and 2 did not. N =27

Learning outcome 3

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating commitment to all laboratory regulations, confidentiality and quality assurance practices using professional and ethical behaviors when working as a member of a diverse health care team.

- The students reflection of the clinical experience includes a summary of what the student has learned about working in health care and being part of team. Evidence is being collected this academic year.
- Post exams for each clinical rotation include questions related to theory and laboratory practice for the department. Taken as one cohort of students that take the course either in the fall or the spring, our target was met in only one course for this outcome.

Post Exams for four practicums; one cohort of students is fall and spring

Course(pts)	Number of students taking post exam	Number of students scoring 70% or better	Percent scoring 70% or better	Met the target
AHLS 470A(65)	27	17	63%	no
AHLS 470B(75)	27	27	100%	yes
AHLS 470C (65)	26	11	42%	no
AHLS 470E(60)	28	23	82%	yes

- A measure of first year student readiness for the clinical year is the ability to earn at least 70% on lab practical exams. Individual students who do not meet the goal of 70% on a lab practical exam will get remedial assistance from the student lab manager..Of the lab courses being reported here are the percent of students scoring over 70% on the lab practical. AHLS 300= 100%, 312=89%, 313=96%, 337 has two practical exams. Exam 1=96% and Exam 2=69%, 345=_____ N=27-28

Taken together these methods show evidence of student preparation of learning outcome 3

Learning outcome 4

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.

- Students demonstrate by writing skills in their reflective summary. Students also write lab procedures following standard formatting for AHLS 312, 300 and 308. 80% of students score 80% or better on these procedures.
- They are also asked to give oral presentations in AHLS 302 and 336. 90% of students score 80% or better on these presentations.

Taken together these methods show evidence of student preparation of learning outcome 4

Learning outcome 5

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating basic knowledge and application of laboratory management skills.

- Second year students who have had one semester of clinical experience will demonstrate understanding of issues related to many aspects of lab management. 82% of students demonstrated success on the discussions which met the target. N =22

- Students write job descriptions and personnel evaluations, prepare lab test menus and cost analysis to name a few of the topics. 95.5% of students demonstrated understanding of management issues with written assignments which met the target. N =22

Taken together these methods show evidence of student preparation of learning outcome 5

Learning outcome 6

Graduates of the MLS program will be prepared for successful careers in the Medical Laboratory or related areas of further study by demonstrating basic knowledge and application of research skills

- Students in AHLS 448 are introduced to research methods and design. In order for students to understand aspects of research design and methods in medical laboratory science, they need to develop skills for writing research proposals and documents needed to carry out their research projects if funded. Several assignments are submitted and feedback given to assist with writing and understanding of the research proposal development process. This is a writing intensive course. The target for this course is that 80% of the class earned 80% or better on their final research proposal. In 2014, 95% of the class reached this target. N=20

VII. Use of results

The rubric for the clinical experience reflection was revised to better reflect what the student should consider when writing the summary. The new rubric has a range of points from 10-20 in five categories. Students have been following the guideline as they write their reflections.

Performance of laboratory procedures are essential to student preparation for the clinical experience. Having an expectations for students to perform at least 70% or better on practical exams of all lab courses still seems somewhat low to faculty but will not be changed at this time. Any student who does not meet this goal will be asked to arrange to work with our student lab manager to improve areas of weakness.

MLS students are asked to submit a portfolio summary at the end of the program that includes highlights of their assignments, resume and self assessments. Many students report the use of case studies were one of the best teaching tool to encourage critical thinking. MLS faculty will continue to use cases studies in all courses. Discussion of graded cases with students will be encouraged.

All of the methods identified are useful for understanding the learning taking place by students in the program. The self reflection during each rotation of the clinical internship is an important part of the experience. Since faculty are not able to visit sites during the internship, dependence on clinical instructors and student reporting of activities is important. In order to assess student readiness prior to going to the clinical experience, observance of students working during laboratory activities and their performance on the lab practical is an important measure of the student's ability to perform adequately.

Faculty will continue to encourage students to take the national certification exam shortly after they have completed the comprehensive exams.

VIII. Resources needed: none at this time

IX. Assessment tools

Employer Survey

A survey is being prepared to give out to advisory committee members at our face to face meeting in May.