

College of Health and Human Sciences

School of Health Studies

Medical Laboratory Sciences Program

Bachelor of Science

2020-2021

Submitted to the University Assessment Panel by:

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1. Introduction

The Medical Laboratory Sciences Program at Northern Illinois University (NIU) is a university-based program that has operated continuously since 1965. In 1965, NIU received approval from the Illinois Board of Regents to offer a baccalaureate degree in medical technology. The name of this degree was changed in 1992 to the Clinical Laboratory Sciences Program to reflect the national trend and in 2013 changed the name to Medical Laboratory Sciences to match the certification title. The MLS program is administratively placed in the School of Health Studies within the College of Health and Human Sciences. Since its inception, NIU has graduated over one thousand medical technology/clinical laboratory sciences majors.

The program format is best described as a campus-centered 2+2 model, with students completing two years of pre-professional course work in general education and preparatory courses in biology, chemistry, and mathematics. Students who successfully complete the pre-professional curriculum and meet program admission criteria are admitted to the professional phase on a competitive basis. Our program is a limited admissions program. During the first (junior) year of the professional phase, students complete campus-based didactic and laboratory course work in the subspecialties of clinical laboratory science practice, research, and education. During the second (senior) year of the professional phase, students participate in the clinical experience three days per week at one or more of the program's clinical affiliates and usually 1 day per week asynchronously or synchronously online for further didactic activities covering topics across the clinical laboratory sciences field.

The didactic instruction for clinical students is provided primarily by faculty and occasionally practicing clinical specialists recruited from the program's clinical affiliates. The 2+2 format enriches students' education by combining, in the same time period, the clinical and academic environments and resources and allows the most efficient use of clinical affiliate assets. Upon successful completion of university and program requirements, students are awarded a Bachelor of Science degree with a major in medical laboratory sciences from NIU and are eligible to complete MLS national certifying examinations.

In response to a need for baccalaureate degree completion opportunities for certified clinical laboratory technicians (CLT) or medical laboratory technicians (MLT), the program offers a customized bridge curriculum for MLT to MLS allowing qualified laboratory professionals to complete the baccalaureate degree in a timely manner. Certified CLTs/MLTs who complete the pre-professional requirements and meet the program admission criteria are formally admitted into the professional program as an accelerated degree completion (ADC) student. This program is available all online. No clinical practicum is required. Students may receive up to 12 semester hours of credit for lab courses and receives up to 17 semester hours of proficiency credit for MLT/CLT work experience.

Upon successful completion of the university and ADC requirements, CLT/MLT students are awarded a Bachelor of Science degree in medical laboratory sciences from NIU and are eligible to complete MLS national certifying examinations.

There are fewer students applying for this program currently than five years ago. However, the demand for medical laboratory scientists continues to grow. Below is our program mission and goals.

MLS Program Mission

The mission of the Medical Laboratory Sciences Program at Northern Illinois University is to prepare medical laboratory scientists with knowledge, skills and professional attitudes that are required for fulfillment of leadership roles in the health care team. The program faculty is committed to contributing to the knowledge base in medical laboratory sciences by research, publication, and service.

Program Goals

1. Provide MLS students with knowledge and competencies needed to meet entry level requirements for the profession
2. Provide MLS students with opportunities to engage in learning experiences in both an academic and clinical environment
3. Prepare MLS students with information and desire for continuous learning.

2. Student Learning Outcomes (SLOs)

1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.
5. Demonstrate basic knowledge and application of laboratory management principles and processes.
6. Apply general concepts of research and evidence-based practice.

3. Program-by-Baccalaureate Student Learning Outcomes Matrix

Program Student Learning Outcome	Baccalaureate Student Learning Outcomes							
	A. Global inter-connections and inter-dependencies	B. Intercultural competencies	C. Analyze human life and natural world inter-connections	D. Critical, creative, and independent thought	E. Communicate clearly and effectively	F. Collaborate with others	G. Quantitative and qualitative reasoning	H. Apply knowledge/skills creatively
1. Apply 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			S	S		S	S	S
2. Perform 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.			S	S	M	M	S	S
3. Describe and comply 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.	M	S		S	S	S	S	S

Program Student Learning Outcome	Baccalaureate Student Learning Outcomes							
	A. Global inter-connections and inter-dependencies	B. Intercultural competencies	C. Analyze human life and natural world inter-connections	D. Critical, creative, and independent thought	E. Communicate clearly and effectively	F. Collaborate with others	G. Quantitative and qualitative reasoning	H. Apply knowledge/skills creatively
4. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.		S			S	M		
5. Demonstrate basic knowledge and application of laboratory management principles and processes.	M	M	M		S	S	M	M
6. Apply general concepts of research and evidence-based practice.	M	M	S	M	S	S	S	S
Overall	M	S	S	S	S	S	S	S
<i>Note.</i> Gauge whether each program outcome strongly supports (S), moderately supports (M), or does not support (leave blank) each baccalaureate learning outcome								

4. Curriculum Map

Course	Program Student Learning Outcomes						
	1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.	5. Demonstrate basic knowledge and application of laboratory management principles and processes.	6. Apply general concepts of research and evidence-based practice.	
AHLS211	B	B	B	B			
AHLS300	D	D	D	D			
AHLS301	D		D	D			
AHLS302	D		D	D			
AHLS303	D		D	D			
AHLS308	D	D	D	D			
AHLS311	D	D	D				
AHLS312	D	D	D				

Course	Program Student Learning Outcomes						
	1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.	5. Demonstrate basic knowledge and application of laboratory management principles and processes.	6. Apply general concepts of research and evidence-based practice.	
AHLS313	D	D	D				
AHLS335	D	D	D				
AHLS336	D		D	D			
AHLS337	D	D	D				
AHLS344	D		D	D			
AHLS345	D	D	D	D			
AHLS440				D			
AHLS450					B		
HSCI460	P			P		D	
AHLS471	P	P	P	P			
AHLS476	P	P	P	P			

Program Student Learning Outcomes							
Course	1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.	5. Demonstrate basic knowledge and application of laboratory management principles and processes.	6. Apply general concepts of research and evidence-based practice.	
AHLS486	P	P	P	P	D		
AHLS487	P	P	P	P	D		
AHLS488	P	P	P	P	D		
<i>Note.</i> Course supports the outcome at the B=beginning, D=developing, or P=proficient level.							

5. Assessment Methods

Assessment Method	Description	Student-level achievement	Program-level target	When data will be collected	Person Responsible	SLOs covered
Pre-Lab quizzes-1 st year students	Laboratory courses, AHLS 300, 308, 311, 312, 313, 337, 345 include a short quiz prior to each session to determine if the student has prepared for the lab procedure.	Students will earn 70% or better on the pre quiz	80% of the students will score 70% or better showing that they are prepared for laboratory sessions	Each semester	Faculty	1,2,3
Practical Lab exams-1 st year students	Each laboratory course in AHLS 311, 312, 313, 337, 345 includes a practical exam to determine if the student has mastered lab procedures introduced in the course.	Students will score 70% or better on lab practicals	100% of students will score 70% or better on lab practicals	Each semester	Faculty	1,2,3
Case studies-1 st and 2 nd year students	Students use problem solving skills either individually or in groups to interpret lab data and apply theory to answer questions related to patient scenarios	Students will score 70% or better on case study assignments	80% of students will score at least 70% on case study problems	Each semester	Faculty	1,2,4
Research project-1 st year students	Students are introduced to research methods and design and are asked to write a research proposal.	Students will score 80% on the final written proposal	80% of students will score 80% on final written proposal	Semester course is taken	Faculty	1,4,6

Giving oral presentations and completing writing assignments-1 st and 2 nd year students	Students are required to give presentations in various courses; writing assignments may include laboratory procedures using standardized formatting, article summary, research paper.	Students will score 80% or better on assignment	80% of the students will score 80% or better	Each semester	Faculty	1,2,4,5
Clinical performance evaluation (CPE)-2nd year students	Preceptors at clinical sites evaluate the students on cognitive, affective, and psychomotor skills developed during their rotation through each of the hospital lab departments.	Students will score a 2 or better for each competency	90% of students will earn a CPE of 90 or better	The end of each fall and spring semester	Clinical Liaison	1,2,3,4
Clinical Practicum reflection summary-2 nd year students	At the end of each semester of the practicum course, 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.	Students will score 80% or better	80% of students will Identify examples of learning experiences and score 80% or better	The end of each fall and spring semester	Clinical Education Coordinator	1,2,3,4,5
Rotation exams-2nd year students	A rotation exam will be taken at the end of the practicum courses; AHLS 486 and 487 OR AHLS 488 (accelerated degree completion students)	Students will score at least 70% on the exams	80% of students will earn a score of 70% on each of 4 exams.	Each semester	Clinical Education Coordinator /Faculty	1,2,3

Lab Management Assignments-2nd year students	Students will complete assignments related to principles of lab management and practice. Complete written assignments related to cost analysis, job descriptions and quality management in lab practice.	Students will score 80% or better on written assignments	90% of students will earn 80% or better on written assignments	Spring online course	Faculty	1,3,4,5
Student performance on comprehensive and certification exams-2 nd year students	The correlation between student performance on the comprehensive exams given at the end of the program with passing the national certification exam will be assessed	Students score at least 70% on comprehensive exam in preparation for certification	90% pass rate on certification exam	Spring semester	Program Coordinator	1,2,3,5

ASSESSMENT METHODS-BY-OUTCOMES MATRIX

Assessment Method	Program Student Learning Outcome						
	1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.	5. Demonstrate basic knowledge and application of laboratory management principles and processes.	6. Apply general concepts of research and evidence-based practice.	
Pre-Lab quizzes-1 st year students		F, D					
Practical Lab exams-1 st year students		S, D					
Case studies-1 st and 2 nd year students	S, D			S, D			

Assessment Method	Program Student Learning Outcome						
	1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.	5. Demonstrate basic knowledge and application of laboratory management principles and processes.	6. Apply general concepts of research and evidence-based practice.	
Research project-1 st year students						F, S, D	
Giving oral presentations and completing writing assignments-1 st and 2 nd year students	S, D	S, D		S, D			
Clinical performance evaluation (CPE)-2nd year students	S, D	S, D	S, D	S, D			

Assessment Method	Program Student Learning Outcome						
	1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.	5. Demonstrate basic knowledge and application of laboratory management principles and processes.	6. Apply general concepts of research and evidence-based practice.	
Clinical Practicum reflection summary-2 nd year students	S, I	S, I	S, I	S, I	S, I		
Rotation exams-2nd year students	S, D						
Lab Management Assignments-2nd year students					S, D		

	Program Student Learning Outcome						
	Assessment Method	1. Apply 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. Perform 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. Describe and comply 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. Utilize effective written and oral communication in a variety of styles to varying audiences including teaching in health professions.	5. Demonstrate basic knowledge and application of laboratory management principles and processes.	6. Apply general concepts of research and evidence-based practice.
Student performance on comprehensive and certification exams-2 nd year students	S, D						
<i>Note.</i> F=formative assessment, S=summative assessment, D=direct assessment, and I=indirect assessment. See the paragraph above for an explanation of each type of assessment.							