



# Medical Laboratory Science

## Programs

- Medical Laboratory Science, B.S. ((3 + 1 Option)) *major*
- Medical Laboratory Science, B.S. ((4 + 1 Option)) *major*

## Medical Laboratory Science, B.S. *major* (3 + 1 Option)

In this option, the student completes the required Medical Laboratory Science and Liberal Education courses at Bemidji State University, and then applies for admission to the clinical year program through the University of North Dakota or other affiliated institution (a 2.80 GPA overall and in science courses is one requirement for entrance into the clinical year program).

The Medical Laboratory Science student must consult with the Medical Laboratory Science advisor at the start of the academic program and regularly throughout the course of study. The student must complete the Bemidji State University Liberal Education requirements before the year of clinical study.

Required Credits: 84  
Required GPA: 2.25

### I REQUIRED COURSES

#### COMPLETE THE FOLLOWING COURSES:

- BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)
- BIOL 2110 Human Anatomy and Physiology (5 credits)
- BIOL 3300 Introduction to Hematology (4 credits)
- BIOL 3380 Molecular Genetics: Theory and Practice (4 credits)
- BIOL 3580 Immunology (4 credits)
- BIOL 3710 Microbiology (4 credits)
- BIOL 4210 Parasitology (4 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)
- CHEM 3311 Organic Chemistry I (3 credits)
- CHEM 3371 Organic Chemistry Laboratory I (1 credit)
- CHEM 4411 Biochemistry I (3 credits)
- CHEM 4471 Biochemistry Laboratory I (1 credit)

#### SELECT 1 OF THE FOLLOWING COURSES:

- MATH 1170 College Algebra (4 credits)
- MATH 1470 Precalculus (5 credits)

### II REQUIRED CLINICAL STUDIES

Clinical year courses, taken during the senior year beginning with summer term, are taken through entrance into the clinical year program at the University of North Dakota or at affiliated hospitals.

NOTE: A clinical year position is not guaranteed. Students must apply for a clinical year position in October of the junior year. Please see advisor regarding the clinical year of study.

## SUGGESTED SEMESTER SCHEDULE FOR MEDICAL LABORATORY SCIENCE MAJOR, B.S.

The following is a list of Medical Laboratory Science courses arranged by year. This suggested schedule is intended to help students plan their courses without course conflicts. Courses that are asterisked(\*) are recommended but not required.

### Freshman

- BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)
- BIOL 2110 Human Anatomy and Physiology (5 credits)
- CHEM 2211 Principles of Chemistry I (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)
- ENGL 1151 Composition (3 credits)
- ENGL 2152 Argument and Exposition (3 credits)
- MATH 1170 College Algebra (4 credits)  
or MATH 1470 Precalculus (5 credits)

### Sophomore

- BIOL 2360 Genetics (4 credits)
- BIOL 3380 Molecular Genetics: Theory and Practice (4 credits)
- BIOL 3710 Microbiology (4 credits)
- BIOL 3755 Medical Microbiology (3 credits)
- CHEM 3311 Organic Chemistry I (3 credits)
- \*CHEM 3312 Organic Chemistry II (3 credits)
- CHEM 3371 Organic Chemistry Laboratory I (1 credit)
- \*CHEM 3372 Organic Chemistry Laboratory II (1 credit)

### Junior

- \*BIOL 3300 Introduction to Hematology (4 credits)
- BIOL 3580 Immunology (4 credits)
- BIOL 4210 Parasitology (4 credits)
- CHEM 4411 Biochemistry I (3 credits)
- CHEM 4471 Biochemistry Laboratory I (1 credit)
- STAT 2610 Applied Statistics (4 credits)  
or PSY 3401 Basic Statistics for Research (4 credits)

### Senior

- Clinical year courses

## Medical Laboratory Science, B.S. *major* (4 + 1 Option)

Required Credits: 108  
Required GPA: 2.25

### REQUIRED CLINICAL STUDIES 4 + 1 OPTION

NOTE: After completing the clinical year courses, students will receive a double

major: Biology, B.S. and Medical Laboratory Science, B.S. In this option, the student completes a Biology, B.S., major at Bemidji State University, and then applies for admission to the clinical year program through the University of North Dakota or other affiliated institution (a 2.80 GPA overall and in science courses is one requirement for entrance into the clinical year program). This option may be of interest to students considering a pre-professional program such as pre-medicine, pre-veterinary medicine, or other pre-professional area. Students who fail to gain admission to the professional school of their choice will have the option of pursuing a health-related career in Medical Laboratory Science.

## I REQUIRED BIOLOGY COURSES

- BIOL 1211 Introductory Biology I (4 credits)
- BIOL 1212 Introductory Biology II (4 credits)
- BIOL 2110 Human Anatomy and Physiology (5 credits)
- BIOL 2360 Genetics (4 credits)
- BIOL 2610 General Ecology (3 credits)
- BIOL 3300 Introduction to Hematology (4 credits)
- BIOL 3380 Molecular Genetics: Theory and Practice (4 credits)
- BIOL 3580 Immunology (4 credits)
- BIOL 3710 Microbiology (4 credits)
- BIOL 4210 Parasitology (4 credits)

## II CAPSTONE PROJECT

**II CAPSTONE PROJECT** The Biology capstone project, completed in the senior year, provides a culminating experience that integrates the knowledge and skills learned in previous courses and applies them to a scholarly activity. Examples of capstone projects may include original research projects, internships with state or federal agencies, shadowing experiences with professionals, or successfully passing professional/ graduate school entrance exams. The capstone project must be designed or chosen by the student in consultation with a faculty mentor or advisor, who must approve the project before work begins. Students should consult with their faculty mentor or advisor before their senior year commences. All capstone projects will include a written and oral component (except for professional/graduate school entrance exams).

The capstone project may be completed in one of the following ways (0-4 credits):

1. Students using a professional or graduate entrance exam as their capstone project must register for this course. Students must place in at least the 60th percentile on their exam to successfully complete this course.
  - BIOL 4800 Advanced Project Certification (0 credit)
2. Complete BIOL 4894 OR BIOL 4895 (2 credits):
  - BIOL 4894 Advanced Research Project I (2 credits)
  - BIOL 4895 Advanced Research Project II (2 credits)
3. Complete BIOL 4894 and BIOL 4895 (2 credits each):
  - BIOL 4894 Advanced Research Project I (2 credits)
  - BIOL 4895 Advanced Research Project II (2 credits)

## III REQUIRED COURSES IN RELATED FIELDS

COMPLETE THE FOLLOWING COURSES:

- CHEM 2211 Principles of Chemistry I (4 credits)
- CHEM 2212 Principles of Chemistry II (4 credits)
- CHEM 3311 Organic Chemistry I (3 credits)
- CHEM 3312 Organic Chemistry II (3 credits)
- CHEM 3371 Organic Chemistry Laboratory I (1 credit)
- CHEM 3372 Organic Chemistry Laboratory II (1 credit)
- CHEM 4411 Biochemistry I (3 credits)
- CHEM 4471 Biochemistry Laboratory I (1 credit)
- PHYS 1101 General Physics I (4 credits)  
or PHYS 2101 Physics I (5 credits)
- PHYS 1102 General Physics II (4 credits)  
or PHYS 2102 Physics II (5 credits)
- STAT 2610 Applied Statistics (4 credits)  
or PSY 3401 Basic Statistics for Research (4 credits)

## IV REQUIRED CLINICAL STUDIES

Clinical year courses, taken after the senior year beginning with summer term, are taken through entrance into the clinical year program at the University of North Dakota or at affiliated hospitals. NOTE: A clinical year position is not guaranteed. Students must apply for a clinical year position in October of the junior year. Please see advisor regarding the clinical year of study.

## Courses

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### All-University Courses

The course numbers listed below, not always included in the semester class schedule, may be registered for by consent of the advisor, instructor, or department chair, or may be assigned by the department when warranted. Individual registration requires previous arrangement by the student and the completion of any required form or planning outline as well as any prerequisites.

1910, 2910, 3910, 4910 DIRECTED INDEPENDENT STUDY  
 1920, 2920, 3920, 4920 DIRECTED GROUP STUDY  
 1930, 2930, 3930, 4930 EXPERIMENTAL COURSE  
 1940, 2940, 3940, 4940 IN-SERVICE COURSE  
 1950, 2950, 3950, 4950 WORKSHOP, INSTITUTE, TOUR  
 1960, 2960, 3960, 4960 SPECIAL PURPOSE INSTRUCTION  
 1970, 2970, 3970, 4970 INTERNSHIP  
 1980, 2980, 3980, 4980 RESEARCH  
 1990, 2990, 3990, 4990 THESIS