

Program Description

Biology is the science of life and living organisms. CLC’s Biology Transfer Pathway Associate of Science (A.S.) Degree is designed for students interested in various fields of biological science, including cell biology, bioengineering, environmental science, fish and wildlife management, forestry, genetics and microbiology. It also is excellent preparation for students interested in a pre-professional transfer program for a medical profession. Students will develop laboratory skills, techniques, and procedures allowing them to gather, organize, and analyze data. The CLC Biology Transfer Pathway A.S. Degree allows students to take the first two years of a biology degree at CLC and then transfer to a Minnesota State university as a junior to complete the degree.

Program Outcomes

By completing this program, students will achieve the following learning outcomes:

- Propose testable hypotheses and carry out experiments to test them, relying on standardized international systems of measurement;
- Analyze simple data sets using appropriate descriptive and inferential statistics;
- Use public literature databases to find appropriate published material, and should be able to read, understand, and evaluate the validity and importance of the scientific literature and to integrate new concepts into their existing knowledge frameworks;
- Communicate their own and others' data and analyses in oral and written formats, using computers where necessary to visualize data or to create clear and compelling papers, posters, or presentations;
- Analyze scientific studies in light of their ecological, social, economic, ethical, and cultural implications;
- Communicate and work productively with others in designing, conducting, and evaluating projects, experiments, and other course related deliverables as an essential skill in science;
- Utilize other disciplines as sources of context and skills to inform the learning and work they are engaged in; and
- Demonstrate skill development in basic light microscopy and exposure to more advanced forms of microscopy and digital imaging.

Program Course Requirements

Required Discipline Courses (28 credits)

BIOL 1431	General Biology I (Goal 3).....	5 cr
BIOL 1432	General Biology II (Goals 3,10)	5 cr
BIOL 2420*	Genetics (Goal 3)	4 cr
CHEM 1424*	Chemical Principles I (Goal 3)	5 cr
CHEM 1425*	Chemical Principles II (Goal 3)	5 cr
Choose one of the following courses based on transfer university destination and desired biology track:		
BIOL 2415	General Ecology (Goals 3,10) OR	
BIOL 2457*	Microbiology (Goal 3)	4 cr

Required MnTC Courses (16 credits)

An associate of science degree requires a minimum of 30 credits selected from at least 6 of the 10 goal areas of the Minnesota Transfer Curriculum (MnTC).

COMM 1420	Interpersonal Communication (Goal 1) OR	
COMM 1422*	Honors Interpersonal Comm (Goal 1) OR	
COMM 1430	Public Speaking (Goals 1,2) OR	
COMM 2420	Intercultural Communication (Goals 1,7) OR	
COMM 2422*	Honors Intercultural Comm (Goals 1,7)	3 cr
ENGL 1410	Composition I (Goal 1) OR	
ENGL 1420*	Honors Composition I (Goal 1)	4 cr
MATH 1470	College Algebra (Goal 4)	3 cr
Goal 5** course	.....	3 cr
Goal 6** course	.....	3 cr

Recommended MnTC Electives (16 credits)

The following courses are suggestions for useful elective courses within the sciences. Course selections should be tailored to specific major track and transfer university.

BIOL 1415	Environmental Biology (Goals 3,10)	4 cr
BIOL 2467*	Anatomy and Physiology I (Goal 3).....	4 cr
BIOL 2468*	Anatomy and Physiology II (Goal 3).....	4 cr
CHEM 1410	Environmental Chemistry (Goals 3,10).....	3 cr
CHEM 2472*	Organic Chemistry I (Goal 3).....	5 cr
CHEM 2473*	Organic Chemistry II (Goal 3).....	5 cr
ESCI 1454	Planet Earth (Goals 3,10) OR	
ESCI 1455	Honors Planet Earth (Goals 3,10)	4 cr
GEOG 1430	Introduction to Geographic Information Systems (Goals 2,5).....	3 cr

Program Course Requirements (continued)

MATH 1460*	Introduction to Statistics (Goal 4)	OR
MATH 1461*	Honors Intro to Statistics (Goals 2,4)	..... 4 cr
MATH 1472*	Precalculus (Goal 4)	..... 5 cr
MATH 1477*	Calculus I (Goal 4)	OR
MATH 1480*	Honors Calculus I (Goal 4)	..... 5 cr
PHYS 1401*	College Physics I (Goal 3)	..... 4 cr
PHYS 1402*	College Physics II (Goal 3)	..... 4 cr

GRADUATION REQUIREMENT - 60 CREDITS

*Denotes Prerequisites

**Many courses from Goals 1 – 6 also meet Goal 7 – 10. Credits count only once. Students are advised to select MnTC courses with multiple goal assignments whenever possible

Semester Course Requirements

This is a sample full-time student pathway.

Semester One (17 credits)

BIOL 1431	General Biology I (Goal 3)	..... 5 cr
CHEM 1424*	Chemical Principles I (Goal 3)	..... 5 cr
ENGL 1410	Composition I (Goal 1)	OR
ENGL 1420*	Honors Composition I (Goal 1)	..... 4 cr
MATH 1470	College Algebra (Goal 4)	..... 3 cr

Semester Two (16 credits)

BIOL 1432	General Biology II (Goals 3,10)	..... 5 cr
CHEM 1425*	Chemical Principles II (Goal 3)	..... 5 cr
COMM 1420	Interpersonal Communication (Goal 1)	OR
COMM 1422*	Honors Interpersonal Comm (Goal 1)	OR
COMM 1430	Public Speaking (Goals 1,2)	OR
COMM 2420	Intercultural Communication (Goals 1,7)	OR
COMM 2422*	Honors Intercultural Comm (Goals 1,7)	..... 3 cr
Electives**	.....	3 cr

Semester Three (14 credits)

BIOL 2420*	Genetics (Goal 3)	..... 4 cr
Goal 5** course	.....	3 cr
Electives**	.....	7 cr

Semester Four (13 credits)

BIOL 2415	General Ecology (Goals 3,10)	OR
BIOL 2457*	Microbiology (Goal 3)	..... 4 cr
Goal 6** course	.....	3 cr
Electives**	.....	6 cr

*Denotes Prerequisites

**Many courses from Goals 1 – 6 also meet Goal 7 – 10. Credits count only once. Students are advised to select MnTC courses with multiple goal assignments whenever possible.

Transfer Opportunities

The Biology Transfer Pathway A.S. Degree offers students a powerful option: the opportunity to complete an Associate of Science degree with course credits that directly transfer to designated Biology bachelor's degree programs at Minnesota State universities. The curriculum has been specifically designed so students completing this pathway degree and transferring to a Minnesota State university may enter with junior-year status. Courses in the Biology Transfer Pathway associates degree will directly transfer and apply to the designated bachelor's degree programs. Students should consult with an advisor for guidance regarding how to best meet the requirements of their intended baccalaureate program. Universities within the Minnesota State system participating in the Biology Transfer Pathway include:

- Bemidji State University – BA, BS
- Metropolitan State University - BA
- Minnesota State University, Mankato – BS
- Minnesota State University, Moorhead – BA
- Southwest Minnesota State University, BA
- St. Cloud State University - BS
- Winona State University - BS

Course Prerequisites

Some courses may require appropriate test scores or completion of basic math, basic English and/or reading courses with a “C” or better. CLC utilizes a multiple measure approach for placement which may include high school MCA, SAT, ACT scores in addition to high school GPAs. For insurance purposes, internships may require that students be 18 years old.

Graduation Requirements

In addition to the program requirements, students must meet the following conditions in order to graduate:

1. College Cumulative GPA Requirement: cumulative grade point average (GPA) of credits attempted and completed at CLC must be at least 2.0;
2. Residency Requirement: students must complete 25% of their credits at Central Lakes College.