

**UMD – Pharmacy – Biology Transfer Pathway – A.S. Degree.**

Campus: Itasca

**First Year**

<b>FALL SEMESTER 2025 – 15 credits</b>	<b>Credits</b>	<b>Hr Lc/Lb</b>
BIOL 1561 – Gen Biol of Cells (MnTC Goal 3)	4	(3/1)
MATH 1220 – College Algebra (MnTC Goal 4)	3	(3)
MATH 1225 – Trigonometry (MnTC Goal 4)*	2	(2)
ENGL 1231 – College Comp 1 (MnTC Goal 1)	4	(4)
ALHE 1610 – Medical Terminology*	1	(1)
ALHE 1xxx – Seminar 1	1	(1)

<b>SPRING SEMESTER 2026 – 15 credits</b>	<b>Credits</b>	<b>Hr Lc/Lb</b>
BIOL 1562 – Gen Biol of Organisms (MnTC Goal 3 & 10)	4	(3/1)
CHEM 1521 – Gen Chem 1 (MnTC Goal 3)	4	(3/1)
ENGL 1231 – College Comp 2 (MnTC Goal 1)	3	(3)
PSYC 1220 – Lifespan Dev (MnTC Goal 5 & 7)*	3	(3)
ALHE 1xxx – Seminar 2	1	(1)

**First Year – Summer - \*Recommended**

<b>SUMMER SEMESTER 2026 – 3 credits</b>	<b>Credits</b>	<b>Hr Lc/Lb</b>
PHIL 1230 – Ethics (MnTC Goal 6 & 9)	3	(3)

**Second Year**

<b>FALL SEMESTER 2026 – 16 credits</b>	<b>Credits</b>	<b>Hr Lc/Lb</b>
COMM 1210 – Introduction to Communication (MnTC Goal 1) OR COMM 1215 – Public Speaking (MnTC Goal 1) OR COMM 1220 – Interpersonal Communication (MnTC Goal 1)	3	(3)
BIOL 2371 – A & P 1 (MnTC Goal 3)*	4	(3/1)
BIOL 2320 – Microbiology (MnTC Goal 3)	4	(3/1)
CHEM 1522 – Gen Chem 2 (MnTC Goal 3)	4	(3/1)
ALHE 2xxx – Seminar 3	1	(1)

<b>SPRING SEMESTER 2027 – 17 credits</b>	<b>Credits</b>	<b>Hr Lc/Lb</b>
BIOL 2372 – A & P 2 (MnTC Goal 3)*	4	(3/1)
BIOL 2330 – Genetics (MnTC Goal 3)	4	(3/1)
MATH 1311 – Calculus 1 (MnTC Goal 4)*	5	(5)
ECON 1200 – Intro to Econ (MnTC Goal 5 & 8)*	3	(3)
ALHE 2xxx – Seminar 4	1	(1)

**Second Year – Summer - \*Recommended**

<b>SUMMER SEMESTER 2027 – 3 credits</b>	<b>Credits</b>	<b>Hr Lc/Lb</b>
MATH 1215 – Statistics (MnTC Goal 4)	4	(4)

*\*Courses required for the University of Minnesota – Duluth Graduate Pharmacy Program but not the A.S.*

**Required Courses for the University of Minnesota – Duluth Graduate Pharmacy Program**

<b>COURSES (all four courses are required)</b>	<b>Credits</b>	<b>Hr Lc/Lb</b>
BIOL 1561 – Gen Biol of Cells (MnTC Goal 3)	4	(3/1)
BIOL 2320 – Microbiology (MnTC Goal 4)	4	(3/1)
BIOL 2371 – A & P 1 (MnTC Goal 3)	4	(3/1)
BIOL 2372 – A & P 2 (MnTC Goal 3)	4	(3/1)
CHEM 1521 – Gen Chem 1 (MnTC Goal 3)	4	(3/1)
CHEM 1522 – Gen Chem 2 (MnTC Goal 3)	4	(3/1)
ENGL 1231 – College Comp 1 (MnTC Goal 1)	4	(4)
MATH 1311 – Calculus 1 (MnTC Goal 3)	5	(5)
MATH 1215 – Statistics (MnTC Goal 4)	4	(4)
PSYC 1220 – Lifespan Dev (MnTC Goal 5 & 7)	3	(3)
ECON 1200 – Intro to Econ (MnTC Goal 5 & 8)	3	(3)

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Organic Chem 1 (To be taken at UMD)	5	(4/1)
Organic Chem 2 (To be taken at UMD)	5	(4/1)

Note:

### Program Description

The Biology Transfer Pathway AS 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 College of St. Scholastica, University of Minnesota – Duluth, and Minnesota State universities. The curriculum has been specifically designed so that students completing this pathway degree are on track for completing a bachelor's degree in biology and entering the graduate pharmacy program at the University of Minnesota-Duluth. Most courses in the transfer pathway associate degree will transfer and apply to the designated bachelor's degree programs in a related field.

### Occupational Description

A pharmacist is a healthcare professional who specializes in the preparation, dispensing, and appropriate use of medications. Pharmacists play a crucial role in ensuring the safe and effective use of pharmaceuticals to improve patient outcomes. Their responsibilities include:

1. Medication Dispensing: Pharmacists fill prescriptions from physicians, ensuring that the correct dosage, form, and quantity of medication are provided to the patient.
2. Patient Counseling: They counsel patients on how to take their medications correctly, including the timing, method of administration, potential side effects, and interactions with other drugs or foods.
3. Medication Management: Pharmacists review patients' medication regimens to optimize therapy, minimize side effects, and prevent harmful drug interactions. They may collaborate with physicians to adjust dosages or recommend alternative treatments.
4. Health Monitoring: They often monitor patients' responses to medications, particularly in chronic conditions like diabetes, hypertension, and asthma, to ensure the treatment's effectiveness and safety.
5. Clinical Services: In many settings, pharmacists provide clinical services such as administering vaccines, conducting health and wellness screenings, and managing chronic diseases.
6. Compounding: Some pharmacists specialize in compounding, where they create customized medications tailored to specific patient needs, such as altering the form of a drug or combining multiple medications.
7. Education and Training: Pharmacists educate patients, healthcare providers, and the community about medications, including new drugs, over-the-counter products, and proper drug use.
8. Regulatory and Ethical Compliance: They ensure that all pharmacy operations comply with laws and regulations, including the secure storage and handling of controlled substances.

Pharmacists work in a variety of settings, including community pharmacies, hospitals, clinics, long-term care facilities, and research institutions. They require a Doctor of Pharmacy (Pharm.D.) degree, followed by passing national and state licensing exams to practice. Pharmacists are highly knowledgeable in pharmacology, drug interactions, and patient care, making them essential members of the healthcare team.

### Program Learning Outcomes

Students of this program will:

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1. **SCIENTIFIC METHOD:** Propose testable hypotheses and carry out experiments using standardized international measurement systems.
2. **MICROSCOPY:** Use the light microscope effectively.
3. **DATA INTERPRETATION & STATISTICAL ANALYSIS:** Analyze simple data sets using appropriate descriptive and inferential statistics.
4. **SCIENTIFIC COMMUNICATION:** Communicate data and analysis in oral and written format.
5. **COLLABORATION:** Communicate and work productively with others in designing, conducting, and evaluating projects and experiments.
6. **SCIENTIFIC LITERATURE:** Use public literature databases to find appropriate published material and read, understand, and evaluate the validity and importance of the scientific literature.
7. **SCIENCE & SOCIETY:** Analyze scientific studies considering their ecological, social, economic, ethical, and cultural implications.
8. **INTERDISCIPLINARY NATURE OF SCIENCE:** Students utilize other disciplines as sources of context and skills to inform their learning and work.

### **Transfer and Articulation Agreements**

The program maintains articulation agreements with the College of St. Scholastica, the University of Minnesota, Duluth, and Minnesota State University, Mankato. These agreements facilitate the transfer of credits and allow ample time to complete an additional minor.

### **Program Faculty Contact**

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