# Biology 4640/8646 Molecular Microbiology
Fall, 2026

**Instuctor Infomation**

Instructor: Donald Rowen, PhD
Office: Allwine Hall 114J
Office Hours: Tuesday and Wednesday at 10-11 AM or by appointment. Can meet via Zoom
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**Textbook and other recommended or required material**

*Microbiology: An Evolving Science,* 6th Edition by Slonczewki and Foster. The textbook will be available as an ebook through UNO's First Day access program through Canvas. You will be charged through your UNO account, but you can opt out until 10/7/26.

**Content And Objectives:**

This course will focus on the diversity in structures, genetics, metabolism and regulation observed in bacteria and compare them to other microorganisms. By the end of this course, I expect a student should be able:

1. To describe the function and importance of structures found in bacterial cells
2. To predict the properties of a bacterium based on an analysis its genome
3. To describe some of diversity in energy generating metabolic pathways found in bacteria
4. To describe ways that bacteria regulate their processes and adapt to their environment

**Assessments and Grades**

**Exams.** There will be four lecture exams and a final comprehensive exam. The fourth exam and the final exam will be given during finals week. The final comprehensive exam is optional but that score can be used to replace one of the first 3 lecture exams. **If you miss a lecture exam for a valid reason** (as judged by the instructor) and **notify the instructor in advance or shortly after the exam**, you may make-up the exam.

**Homework Assignments.** Assignments are due by 11:59 PM on the posted due date. Homework can be turned in ***late*** (after the due date), but your score will be marked down 3% per day late up to 50% off.

Final grades will be determined based on the points you have accumulated throughout the semester.

| Assessments | Points | Percentage |
|---|---|---|
| Score from Four of five exams (4 x 100 pts)<br>4 lecture unit exams and optional comprehensive Final exam | 400 pts | ~73% |
| Homework assignments including Microbe Presentation | ~ 150 pts | ~27% |
| Total | ~550 pts | 100% |

**Usual Grading Scale**

A+: 96-100%
A: 92-95.9%
A-: 89-91.9%
B+: 86-88.9%
B : 82-85.9%
B- : 79-81.9%
C+: 76-78.9%
C : 69-75.9%
D : 60-68.9%

**Academic Integrity:**

Students are expected to avoid all forms of academic dishonesty such as cheating, fabrication, falsification, plagiarism, and misrepresentation to avoid academic work. Students caught in academic dishonesty will be given a zero on the first offense and failing grade on the second offense. The University policy on Academic Integrity is posted on Canvas page for this course.

Reasonable accommodations are provided for students who are registered with Accessibility Services Center (ASC) and make their requests sufficiently in advance. For more information, contact ASC (Location: 104 H&K, Phone: 402.554.2872, Email: unoaccessibility@unomaha.edu)

**BIOL 4640: PREDICTED SCHEDULE OF TOPICS AND EXAM DATES (FALL 2026)**

| Unit | Topic | Chapter(s) | Assessment / Notes |
|---|---|---|---|
| 1 | Methods for Studying Microorganisms | Notes | |
| 1 | Methods for Culturing and Counting Microbial Cells | 4.3–4.4 | |
| 1 | Methods for Observing Microbial Cells | 2.1–2.6 | |
| 2 | Features of Microbial Genomes and Chromosomes | 7.1–7.6, 6.3 | |
| 2 | Genomic Sequencing and Annotation | A3.6, 9.5 | |
| 2 | Genome Evolution | 9 | |
| 2 | Microbial Phylogeny and Taxonomy | 17.3, 17.5, 18.1 | Exam 1 – Oct. 5 |
| 3 | Bacterial External Structures | 3.6 | |
| 3 | Bacterial Envelope and Cell Wall | 3.3 | |
| 3 | Cell Membrane and Transport | 3.2 | |
| 3 | Bacterial Internal Structures | — | |
| 3 | Bacterial Cell Division | 3.4–3.5 | |
| 3 | Viruses | 6 | No lecture Oct. 26, Exam 2 – Oct. 28 |
| 4 | Energetics and Catabolism | 13 | |
| 4 | Aerobic/Anaerobic Respiration, Lithotrophy and Phototrophy | 14 | |
| 4 | Biosynthesis and CO2 Fixation | 15.1–15.2 | Exam 3 – Nov. 23 |
| 5 | Transcription and Translation | 8.1–8.5 | |
| 5 | Molecular Regulation | 10, 12.1 | |
| 5 | Biofilms and Cell Differentiation | 4.5, 12.2 | |
| 5 | Adaptations to Environmental Influences | 4.6, 5.1–5.6 | Exam 4: Dec 16 10-11:59 AM, Optional Final Exam Dec. 16-18 |