Mayville State University

BIOL 315L – Genetics Lab

Fall 2025
1 Credit Hours

Course and Instructor Information

Instructor Name: Dr. Joseph Mehus

Contact Information:

Office: SB 134

Email: joseph.mehus@mayvillestate.edu

Work phone:701.788.4802

Hours of Availability:

Monday, Wednesday and Friday: 11am

Tuesday: 10am-2pm by appointment

Instructional Mode: Online Asynchronous

Course Dates: August 25 – December 19, 2025

Time Zone: All times indicated throughout this syllabus reflect Central Time (CT).

Course Materials and Technologies

Required

MSU Technology Requirements
Computer that meets the Technology requirements above
If a student chooses to use a MAC then they will need a computer with a USB port or a dongle
24/7 internet access
MS Office
Webcam with microphone
Printer (students will be required to print/complete some items)
Camera/cell phone to take clear images
Lab kit from MSU Bookstore

Recommended

VERY beneficial to have Textbook: Genetics: Analysis & Principles, Brooker 2024
as a resource.
Notebook and pencil are the best ways to take notes while watching the lecture videos. Students need to have course materials by the start of the semester. Not having course materials is not an acceptable reason for not completing assignments and no credit will be awarded for missed assignments.

Use of Artificial Intelligence in this Course

AI will not be used during this course and is not a suitable way for students to answer questions. Use of AI will result in a score of zero for the assignment, and possibly for the course.

Course Description

The lab course is designed to help students grasp the fundamentals of genetics from a hands-on approach enhanced with laborat experiments. The lab content encompasses basic laboratory procedures in basic genetics, DNA analysis, and cytogenetics. Two h per week. Prerequisites: BIOL 151.

Pre-/Co-requisites: Pre-requisite: BIOL BIOL 151/L. Co-requisite: BIOL 315 – Genetics Lecture.

Course Objectives

To successfully complete this course, the learner will be expected to meet the following objectives, as aligned to Composite Science Education Program Approval Standards through North Dakota's Education Standards and Practices Board (ND ESPB):

- Compare and contrast the stages of mitosis and meiosis
- Create an experiment or set of experiments that leads them through the process of DNA recovery through sequencing
- Assess the stages of DNA extraction and explain stages of the process
- Analyze karyotypes
- Provide explanations for transcription and translational processes
- Interpret gel electrophoresis patterns
- Use free online Bioedit program to look at DNA sequences
- Generate positive identifications of DNA sequences through Pubmed
- Categorize and calculate genotype, allele, & phenotype frequencies
- Model groups of organisms for both population and evolutionary genetic analysis

Standards Alignment (Composite Science Education Program Approval Standards-ND ESPB):

- 13047.1 Composite Science Major/General Science The composite/general science program requires that environmental science be incorporated within other courses or as a separate course. The composite/general science program requires:1. Coursework in biology, chemistry, physics, and earth science, including: a. Minimum of twenty four semester hours in one area, b. Minimum of twelve semester hours in two other areas, c. Minimum of four semester hours in the fourth area, d. Courses must be from those that the institution allows toward graduation in the science major. 2. Study of mathematics through the pre-calculus level (college algebra and above) and statistics

Course Expectations

Instructor/Student Communication

Students are accountable for all academic communications sent to their Mayville State University email address. Email is the primary and preferred method of contact. My email address is provided at the top of the syllabus. I check my email regularly during the work week and will likely respond within 24-48 hours. Email is not checked after work hours or on weekends, so please plan accordingly and do not

think I am ignoring you. Emailing the day something is due and expecting immediate feedback is likely not in the best interest of the student.

If you choose to call my office (number at the top of this document) please leave a detailed message including which class, which item in the content area, and student name, and I will respond via email as it is the preferred method of contact and we also have a paper trail of our conversation. Phone messages are not checked during the evenings nor on weekends.

Students are REQUIRED to use their Mayville State University email address for correspondence. If you email from an outside network email address, faculty are not responsible for missed messages as they may be filtered out of the inbox. As an instructor I will only email you from my MSU email address or from other university platforms (ConnectND or Blackboard). You need to check your MSU email account daily as well as check announcements in the course daily as that is our main method of communication.

Assignments and Assessments

As a student of BIOL 315L, I expect that you:

- Fully review/read the course syllabus and go to it if you have questions before asking the instructor;
- Fully complete the activities/quizzes/reviews for each chapter…this includes reading the chapters and watching video postings, watching lecture videos, and completing exams all by the due dates.
- Check your university email as well as check for announcements within the course shell every single day.

As the instructor of BIOL 315L, you should expect of me that I:

- Clearly provide you a syllabus and disclose course activity due dates for each section of content
- Create a classroom environment that supports your understanding of content;
- Fairly grade assignments and exams

Labs will be distributed via the instructor or via Blackboard! Labs need to be completed and submitted before the due date given by the instructor. A computer will be required for lab. Labs will vary upon topics being covered. Late work is not accepted unless a request is made prior to absence and with documentation of a university excused absence.

Some labs will require students to provide materials that cannot be shipped either due to federal regulations, cost, or viability of materials. If any labs that have crossword puzzles (CWPs) REQUIRE you to print the document, fill it out, then photograph the completed assignment and upload it into the dropbox

Evaluation and Grading

Grading Policies

Grades for labs and lab practicals can be anticipated within 2 weeks of the due date. Turning in an assignment early does not mean that the assignment will be graded before the due date. At times, a set of assignments may take longer to grade, especially if the lab is long, requires multiple photos and labels, or is text heavy. These activities may take additional time. Late submissions may be put into the dropbox, however, that does not mean it will earn points. Only items submitted by the due date will earn points.

Being busy, over sleeping, taking an extra shift, moving, or other general issues are not considered university excused absences. Determination of a university excused absence based upon being sick and having gone to a medical professional who can provide documentation, university sporting event in which you are actively participating in, a death in the immediate family (grandparent, parent, sibling, child, aunt/uncle) for which you can provide documentation, military deployment or legal situations (such as a court date).

Attendance/Participation Policies

Students are expected to attend all lecture days, for online students, this means watching all lecture videos, completing all labs, and other activities. There are no points simply for coming to class.

Grading Scale

Course grades will be calculated out of total course points.

You will earn a letter grade based on your total points earned out of the possible total points (percentage). Total point percentages will be carried out to the tenths place value and rounded to the nearest whole number for the final grade (≥0.5 is rounded up). Your percentage will determine your final grade.

90-100% = A
80-89% = B
70-79% = C
60-69% = D
0-59% = F

Breakdown of Grades

Lab Practicals	100 points	(2 worth 50 points)
Lab Activities	200 points	(10 worth 20 points)
Lab Project	100 points	(1 worth 100 points)
Total	**400 points**	

Enrollment Verification

Online Course Statement

The U.S. Department of Education requires instructors of online courses to provide an activity which will validate student enrollment in this course. The only way to verify that a student has been in this course is if he, she, or they perform an action in the LMS, such as completing an assignment(s) or taking a quiz. Logging into the LMS is **NOT** considered active course participation. Please complete the designated enrollment verification activities by the date indicated. If it is not complete your enrollment in this course will be at risk.

Proctor Notification

No proctor is needed for this lab course.

Important Student Information

In the Announcements section of the Blackboard Institution Page, you can view and download the Important Student Information document for the current academic year. It includes information about:

- ✓ Land Acknowledgement Statement
- ✓ Academic Grievance Concerns and Instructor English Proficiency
- ✓ NetTutor - Online Tutoring Program
- ✓ Starfish - Student Success System
- ✓ Students with Documented Disabilities
- ✓ Student Learning Outcomes / Essential Learning Outcomes
- ✓ Academic Honesty
- ✓ Emergency Notification
- ✓ Continuity of Academic Instruction for a Pandemic or Emergency
- ✓ Family Educational Rights and Privacy Act of 1974 (FERPA)
- ✓ Diversity Statement (Title IX)

Course Timeline/Schedule

This schedule is tentative and may be changed by the instructor at any time during the course. In full transparency, these due dates will not hold true for the semester as some sections may take longer or shorter due to student participation. On campus students must attend lab to earn points and know due dates. All due dates end at 5pm CST on the dates listed below. Enrollment verifications must be completed before any coursework folders open. Online students are allowed to work ahead of deadlines. Once work for a chapter is completed, the next section will open. If something does not open, please let the instructor know immediately.

Topic	Due Date	Items to be completed
Lab 1 - Enrollment Verification (requires lab kit)	9/2/25	All enrollment verifications

Lab 2 – Lab Safety/At-Home DNA Extraction	9/9/25	Form/Waiver Lab Activity
Lab 3 – Cell Cycle Mitosis	9/16/25	Lab Project
Lab 4 – Cell Cycle Meiosis	9/23/25	Lab Project
Lab 5 - Sex Determination in Vertebrates and Invertebrates	9/30/25	Lab Project
Lab 6 – Mendelian Genetics/Learn about your Frogs!	10/7/25	Lab Activity
Lab Practical 1	10/14/25	Lab Practical
Lab 7 - Gene Transcription and Modification	10/21/25	Lab Activity
Lab 8 – Translation of mRNA	10/28/25	Lab Activity
Lab 9 – Gene Regulation	11/4/25	Lab Activity
Lab Project Work Week	11/11/25	Lab Project
Lab 10 - Population and Evolutionary Genetics Bring on the frogs!	11/18/25 11/25/25	Lab Activity
Lab Project Due	12/2/25	Lab Project Due
Lab Practical 2	12/15/25	Lab Practical