

Mayville State University

BIOL 315 - Genetics

Fall 2025
3 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

Textbook: Genetics: Analysis & Principles, Brooker, 2024

24/7 internet access

MS Office

Webcam with microphone

Free Bioedit software (no access code or account needed)

Pubmed

Stand alone Calculator (not one on your computer or on your phone)

Printer (students will be required to print/complete some items)

Camera/cell phone to take clear images

Recommended

Notebook and pencil are the best ways to take notes while watching the lecture videos.

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.

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Course Description

An introduction to the principles of genetics including topics from classical Mendelian concepts to contemporary biotechnology and molecular technologies. Additionally, population and evolutionary genetics will also be covered.

Pre-/Co-requisites: Pre-requisite: BIOL 151/L – General Biology II and Lab. Co-requisite: BIOL 315L – Genetics Lab.

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.

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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 315, 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 315, 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

Vocabulary Assignments *required for each chapter*

A list of all vocabulary words is provided for each chapter. It is advised that students write down definitions for these terms as they will be used within the course. Vocabulary reviews using randomly selected terms for each chapter will be provided in Blackboard. Once the due date for the reviews has passed, no submissions will be accepted for credit. Each review is worth 10 points.

Chapter Questions or Quizzes *required for each chapter*

Questions/Quizzes will be given for each chapter in Blackboard. These quizzes will contain 5-10 questions from the chapter and/or lecture for the chapter. After the due date for the quiz no submissions will be accepted for credit. Quizzes will each be worth 10 points.

Activities *required for each chapter*

Activities will vary in content delivery method, the primary one being student flow charts that help organize one or more topics found within a chapter. These activities help promote a deeper thinking level on the content topic and help students organize their thoughts. The activities cannot cover every topic in the chapter, so it is important that students read and take notes on the chapter contents to help in other areas. Chapter activities are worth 10 points each.

Exams

There will be a total of 5 exams for the course. There will be 4 unit exams and 1 cumulative final exam during the semester. Exams will be taken on paper in the classroom. Online students will be required to utilize Yuja for exam recordings. You will be expected to complete these exams individually and if it is discovered that students have provided information to one another, posted the questions (or any course content) online, or in some other manner of distributing content (social media, text/cell phone) a zero will immediately be given for the exam. The

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only thing students are allowed to use during the exam is their pencil, a stand alone calculator, and their knowledge. No exam submissions will be accepted after the due date. Each exam is worth 100 points.

Animations and Video Clips

Postings of a variety of animations and video clips may be provided for different content areas. These are for your viewing pleasure and may help you in fully achieving the topic-specific learning outcomes. These are found within Yuja.

Evaluation and Grading

Grading Policies

All deadlines for the course are 5pm CST on the due date provided in syllabus schedule by the instructor. If a student does not attend a lecture or does not keep track of the deadlines it will result in missed activities/quizzes/exams. Late materials are not accepted. Students can expect a 2-week turn around period for activities submitted.

There are no bonus points in this course. Students earn their points throughout the semester and cannot “go back” to redo old/missed assignments.

Attendance/Participation Policies

Students are expected to attend all lecture days, for online students, this means watching all lecture videos. 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

Chapter Questions/Quizzes (12)	120 points
Vocabulary activities (12)	120 points
Chapter Activities (12)	140 points
Exams (5)	500 points
Total Points	880 points

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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

This course will use an asynchronous proctoring solution called YuJa.

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. 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. Quizzes may also be referenced as chapter questions.

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Topic	Due Date	Required Item Checklist
Enrollment Verification	9/2/25	Enrollment Verifications
Chromosome Transmission during Cell Division and Sexual Reproduction	9/9/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Mendelian Inheritance	9/16/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Non-Mendelian Inheritance	9/23/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Exam 1	9/25/25	<ul style="list-style-type: none"> ○ Exam
The Molecular Structure of DNA and RNA	9/30/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
DNA Replication	10/7/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Gene Transcription and RNA Modification	10/14/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Exam 2	10/16/25	<ul style="list-style-type: none"> ○ Exam
Translation of mRNA	10/21/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Gene Regulation in Eukaryotes Part 1	10/28/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity

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Gene Regulation in Eukaryotes Part 2	11/4/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Exam 3	11/6/25	<ul style="list-style-type: none"> ○ Exam
Molecular Technologies	11/11/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Biotechnology	11/18/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Population Genetics	11/25/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Exam 4	11/27/25	<ul style="list-style-type: none"> ○ Exam
Evolutionary Genetics	12/2/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
The Evolution of Genes and Genomes	12/9/25	<ul style="list-style-type: none"> ○ Review ○ Quiz ○ Activity
Final Exam (Exam 5)	12/16/24	<ul style="list-style-type: none"> ○ Exam