1. Course Basics

Course name: Advanced Genetics
Course details: BIO452, Section 1, CRN 38037, Fall semester 2026
Meeting times: Class meeting days, times, building and room are posted on Canvas

2. Instructor Information

Instructor Name: Dr. Rob Denton
Contact Information: Please consult Canvas for a detailed description of the best ways to contact me.
Student/Drop-in hours: Please see Canvas for the most up-to-date times during which I'm available to students in this course.

3. Course Information

Course Description

An advanced course in bacterial and eukaryote genetics with emphasis on recent developments in molecular genetics. Topics include: alternative structures of DNA, mechanisms of DNA replication, mutagenesis, DNA rearrangements, regulation of gene expression, RNA processing, molecular and mutagenic analysis of the cell cycle.

Prerequisites

Prerequisite: BIO 214 grade of "C" or higher, BIO 215, CHEM 230; or permission of the instructor.
Prerequisite Recommended: BIO 314 or BIO 315

Course Objectives

Specific Learning Outcomes for each unit are detailed in Canvas and in class. Broadly, these learning outcomes map to one of the following content course objectives:

- Describe the origin and maintenance of genetic diversity in populations (mutations and inheritance)
- Predict how different forces in population genetics (selection, drift, gene flow) influence resulting allele frequencies
- Characterize how changes in DNA and gene expression work together to influence phenotypes
- Contextualize modes of genetic inheritance

Additionally, the work in this class will promote the development of the following skills:

- Understanding of course material (see above)
- Demonstrate knowledge of the scientific method

- Improve problem solving skills and ability to analyze data
- Build skills to work in collaboration
- Build scientific communication skills
- Cultivate awareness of career opportunities and goals

Course Modality/Structure

This course is fully in-person, meeting twice a week for 75 minutes. Time in class will be a mix of lectures, activities, and active discussions. My course materials (slide decks/readings/extra practice problems) are provided in our Canvas course.

It is expected that students will spend approximately 2 hours of study time outside of class for every one hour in class. Since this is a 3 credit class, you should expect to study an average of 6 hours outside of class each week.

4. Course Materials

You will not need to purchase a book. We will be completing readings from the following texts, all of which will be provided to you via Canvas:

- LibreTexts Online Open Genetics (Nicle and Narrette-Ng)
- An Owner's Guide to the Human Genome (Jonathan Pritchard)
- Population and Quantitative Genetics (Graham Coop)
- She Has Her Mother's Laugh (Carl Zimmer)

5. Course Assignments and Assessments

Course Assignments

I work hard to structure my course so that there are multiple ways students can practice content/skills and receive feedback on their progress. Collectively, these assessments will help you identify areas that require more attention or new study strategies. I am confident that all students can develop their knowledge and skills, work toward greater academic potential, and improve over the course of the semester. Below is a breakdown of each type of assessment used in this course, and my rational for using them.

<u>In-class assignments (~20% of grade):</u>
WHAT: Short assessments
DUE: Either at the end of class (time permitted) or the beginning of the next session
POINT VALUE: varies; ~15% of your course grade
GRADING POLICY: graded for completion, answer keys provided
LATE POLICY: 1 day @ a 20% deduction.

Discussions (~20% of final grade):

WHAT: We will dedicate some lecture days to discussing papers within the scientific literature. The goal for these discussions is to reinforce concepts learned in the lecture portion of the course and allow students to interact with recent scientific discoveries in genetics. Students are expected to read the paper(s) before class and attend with good notes prepared. Discussions are collaborative, with each group being assigned a section of the paper and required to summarize that section for the rest of the class on the whiteboard.

DUE: during scheduled discussion days

POINT VALUE: ~20% of your course grade

GRADING POLICY: graded for completion

LATE POLICY: As these activities take place in class, they are difficult to make up in the case of excused absences. Given appropriate documentation (see above), students can be assigned an alternative assignment.

Quizzes (~50% of final grade):

WHAT: Many students in this course wish to pursue a professional degree or go into a career that requires entrance exams or continuous professional certification. To prepare you for that future, quizzes are one important aspect of this course. Remember though, they are not the sole determiner of grades but just one of the tools used to evaluate your learning. Aside from the final quiz (during our final exam period), each quiz is based on only the previous concepts since the quiz prior. These are not meant to be wholly cumulative assessments, just limited to the concepts of the current module (see course schedule).

POINT VALUE: vary, but generally between 50-70 pts each

GRADING POLICY: standard grading, no corrections

LATE POLICY: no late policy; documentation must be provided if a quiz is missed. To ensure you stay on task in the course and do not fall behind, students are expected to schedule the make-up quiz the same week as the original quiz date unless health circumstances and doctor's orders state otherwise.

FORMAT: All quizzes will be taken @ the beginning of class, and will be administered on paper.

- It is important that you arrive on quiz day prepared and ready to be successful.
- Students with accommodations should speak to with me well before the first quiz, so we can plan together how to best meet the accommodation.
- Although I understand life can occur, I provide quiz dates well in advance so please plan accordingly. Missing the quiz for work, medical/dental appointments or similar events will NOT be excused.
- If you are attending a funeral, athletic event, BSU sanctioned event, are ill, or have an unforeseen extenuating circumstance please contact me BEFORE the quiz starts with appropriate documentation. We will work to schedule a time that I may proctor your exam in person in a quiet testing room. I do not allow exams to be

taken online at home, in dorm rooms, etc.
- To ensure you stay on task in the course and do not fall behind, students are expected to schedule the make-up quiz the same week as the original exam date unless health circumstances and doctor's orders state otherwise

Research Project (10% of grade):
WHAT: Over the course of the semester, I am going to ask each student to take on a "choose your own adventure" research project tailored to their interests and focused on a contemporary topic in modern genomics. The project will be scaffolded, with 3 sections due at various points during the semester and chances for feedback. Each section will be explained in an assignment on Canvas, and include a rubric that outlines expectations.
POINT VALUE: varies; 10% of your course grade
DUE: each of 3 sections have their own due dates
GRADING POLICY: each section graded using a set rubric
LATE POLICY: 5 days @ a 20% deduction per day

Course Grading Scale

For your final letter grade, this course will use a slightly modified version of the standard Canvas grading scale below. "+" and "-" additions to these letter grades are added based on a combination of: where the score falls within this range, a student's record of improvement over the semester, consistent attendance, and participation. All assessments during the semester (everything but your final grade) will be reported as a percentage of the total points available for that assignment.

Letter Grade	Range
A	93% or higher
B	82-88%
C	72-78%
D	60-68%
F	59% or less

Incomplete grades:
Incompletes are only given when course work cannot be finished at the end of the semester, such as the final exam, for a documentable reason. All previous grades in the course are retained and a final course grade is given once the work is made-up. This grade is NOT a way to retake the class.

Grade Appeals:
I encourage students to review the university policy on Grade appeals, and the suggestions for reducing grade disagreements on the "Student" tab.

6. University Policies and Statements

University Statement

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse.

Disability Statement

If you need course adaptations or accommodations because of a disability, please contact the instructor of record as soon as possible. Ball State's Disability Services Office coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

Freedom of Expression

In this course, we are committed to fostering a learning environment that values intellectual diversity, encourages free expression, and promotes open inquiry. As members of the Ball State Community, we treat each person in the Ball State community with civility, courtesy, compassion, and dignity and respect and learn from differences in people, ideas, and opinions. Please review Ball State University's Statement on Freedom of Expression, the resources on Ball State's Freedom of Expression webpage, and Ball State's Beneficence Pledge.

Attendance

Please attend class regularly and be engaged when you are here. Being present & engaged means you can fully participate in your learning—you can ask questions, learn from your peers, and learn something not in the textbook! The course will be more meaningful and exciting if we all work together to learn the more challenging concepts of genetics. I will be keeping track of attendance. If I notice you've been missing frequently, I will reach out to see if I can help or direct you to needed resources.

What if I am absent?

- If you are out due to illness, you will be responsible for checking our Canvas site for what was covered, obtaining lecture notes from a fellow student and reaching out to me with any questions or concerns regarding content.
- If you are unable to attend lectures due to BSU-sanctioned travel, being a student athlete, you should notify me ahead of time. In these situations, I will work with you to make up any missed points and address questions on missed content
- If you miss class because you didn't feel like attending that day, scheduled work or something along those lines, that is a choice that you made as an adult.

A complete list of excused absences based on BSU policy:

- Funeral and bereavement leave
- Jury duty
- Late course addition
- Military absences
- Observance of religious holidays
- Pregnancy leave
- Student-athletes in approved university/department activities
- University advisories

Caregiving: I recognize that many of my students may have caregiving responsibilities, be it children, younger siblings, or older relatives. I further understand these may at times interfere with academics or academics may complicate these responsibilities. Please contact me as soon as possible if you find yourself in this situation as there may be some flexibility or resources we can offer to support your learning.

School/Life Balance: Students may encounter barriers to their education due to family or work obligations, or other personal difficulties. If you are experiencing obstacles that are impacting your academic potential, please contact me as soon as possible so we can work together to generate a plan for your success.

Title IX

Ball State University is committed to providing a safe and inclusive learning environment for all students. If you or someone you know has experienced sexual harassment—including sexual assault, dating violence, domestic violence, or stalking, please know that you are not alone. The University offers support services and resources. For more information or to report an incident, please visit bsu.edu/titleix or contact the Title IX Coordinator at 765-285-1545 or at titleix@bsu.edu

As your instructor, I am a mandatory reporter under the Title IX policy and required to report any information I receive about possible sexual harassment. This includes information shared in class discussions, assignments, or private conversations.

What happens after I report? The Title IX Coordinator will email the person who experienced sexual harassment (complainant) and invite them to schedule a meeting. If the complainant **chooses** to meet with the Title IX Coordinator,

- Title IX Coordinator will offer supportive measures (e.g., counseling, extensions on deadlines, course-related adjustments, changes to work or class schedules, and/or referrals to campus offices), review the policy, and discuss options to move forward.

- If a complaint is filed by the complainant or the University, an investigation will begin following University policy.

University Grade Appeal Policy

If you believe you received a final course grade that does not reflect your performance due to fairness or a procedural issue, you have the right to file an appeal within 5 school days after final grades are posted by the Office of the Registrar. Review the University Grade Appeal Policy and Process.

Student Academic Ethics Policy

Honesty, trust, and personal responsibility are fundamental attributes of the university community. Academic dishonesty and other forms of academic misconduct threaten the foundation of an institution dedicated to the pursuit of knowledge and will not be tolerated. To maintain its credibility and reputation, and to equitably assign evaluations of scholastic and creative performance, Ball State University is committed to maintaining a climate that upholds and values the highest standards of academic integrity. Visit the VPAA's academic integrity website (Students tab) for resources on understanding academic integrity, citing sources properly, and avoiding inadvertent academic dishonesty. To learn about BSU's academic integrity expectations and students' rights, please read the University Student Academic Ethics Policy.

Academic integrity violations include giving or receiving an unfair academic advantage (cheating), presenting someone else's ideas or work as your own (plagiarism), and falsifying academic records. Unless otherwise indicated, you must work independently by yourself. Check with me if you are unsure whether something constitutes academic dishonesty. Examples of academic integrity violations include but are not limited to:

- *Using resources not authorized by the faculty member (including devices, AI tools, hidden notes, and open books)*
- *Using a generative AI system or a person to complete academic assignments such as response papers, discussion posts, essays, or any other assignment when such use is not explicitly permitted by the assignment instructions or the instructor.*
- *Utilizing another person or a generative AI system to take a quiz, examination, or similar evaluation in place of oneself.*
- *Using a generative AI system for research, creative work, theses/dissertations, grant proposals, IRB-regulated work, or publication-bound work in violation of university AI policies, funder/publisher rules, IRB requirements, or discipline-specific standards.*
- *Presenting as one's own work the ideas, representations or words of another person or of a GenAI system without customary and proper acknowledgment of sources or of the AI tool(s) used.*
- *Using generative AI systems to analyze data, conduct research, or generate content that is included in an assignment (images, graphs, charts, tables, etc.) without proper documentation, citation, and attribution of this AI use.*

- *Using commercial study websites to find answers to graded assignments (Chegg, Course Hero, StudyPool, OneClass, etc.).*
- *Without the instructor's written permission, giving away, buying, or selling graded assignments class notes, exams, study guides, or other course materials to other students or to third-party vendors (Course Hero, Chegg, 24HourAnswers, etc.).*
- *Working with another person on any assignment other than authorized group projects.*
- *Sharing or allowing others to access your files, whether done with permission or not.*
- *Reusing your own work from another semester, course, or section.*
- *Sharing answers with others during exams (passing notes, texting, whispering, gesturing)*
- *Discussing exam questions and answers with students who have not taken the exam.*
- *Soliciting others to complete work for you.*

Generative AI Statement

For this course, I value the development of your critical thinking skills and ability to apply learned content to novel situations. Artificial Intelligence (AI) tools (ChatGPT, CoPilot, Gemini, etc.) can support your development of these skills, but with limitations.

Permitted Uses:

- Having a concept explained in a simpler or alternative way
- Development of practice questions, with the caveat they may contain inaccuracies or hallucinations.
- Increasing your own motivation for a topic by using AI tools as information aggregators, e.g. "Why is it important that a Veterinarian understands inheritance patterns?"

Prohibited Uses:

- Having AI solve any homework or in-class activities.
- Using generative AI to create text related to your research projects.
- Uploading any of my course materials (slides, in class handout problems, extra practice problems) to AI tools
- Uploading other students' work to AI tools

Instructor use of AI tools in this course:

- To refine research project rubrics so they are clearer to students about what I will be evaluating
- Help me brainstorm ideas for new and interesting in-class activities or relevant topics

How I will NOT use AI in this course:

- All student material will be evaluated by me, without the use of AI tools. I will not use AI to grade quizzes or any other assessment.

- All quiz questions are generated by me, not AI tools. While they might help me think of novel or interesting genetic examples I may not be aware of, the questions themselves are crafted solely by myself and/or other instructors.

7. Student Support Services

The Learning Center

The Learning Center offers free Tutoring and Academic Coaching for many courses at Ball State. Students can make appointments for online (Zoom) or in-person (NQ 350) appointments. To make an appointment, visit myballstate.bsu.edu and click on "Navigate" in the Academic Tools section, or just go directly to bsu.navigate.eab.com.

Testing accommodations for students with disabilities are available for students who have received the appropriate documentation from Disability Services. Tests may be administered in the Learning Center. Supplemental Instruction is available in select courses. If you have an SI leader for your course, that person will provide students with information the first week of school regarding weekly study sessions. For more information about Learning Center programming, visit bsu.edu/learningcenter or call 765-285-1006. Follow us on Instagram: BallStateLC.

The Writing Center

All writers improve with practice and feedback, so as a student in this course, you are encouraged to use the Writing Center (in Robert Bell 295 during weekdays, Bracken Library First Floor West in the evenings, or online during any of our regularly scheduled hours) to get additional feedback on your writing.

The Writing Center offers free planning, feedback, and accountability sessions (in person and online) to all students composing essays, reports, reflections, research projects, web content, lesson plans, slideshows, poster presentations, resumes, and other digital or print texts. To schedule a free appointment to discuss your writing, go to bsu.edu/writingcenter. Online and in-person appointments are available; however, plan ahead because appointments book quickly!

The Basic Needs Hub

If you are having difficulty affording enough food, do not have a safe and reliable place to sleep, and/or experiencing an emergency or crisis, help is available through the Basic Needs Hub. The Basic Needs Hub has information, resources, and provides individualized support to students. To talk with a supportive staff member about your experience, receive one on one assistance, or learn more about resources, you can submit a Basic Needs Assistance Form.

The Counseling Center

The Ball State University Counseling Center offers free and confidential services to all students. The Counseling Center is located in Lucina Hall, Room 320. To schedule an appointment, you can contact us at 765-285-1736. Ball State also offers a 24/7 Crisis Line, which can be reached at 765-285-HOPE (4673). The Crisis Line is a mental health resource for those who are struggling with any mental health concerns, including thoughts of self-harm and/or suicide.

At the Ball State Counseling Center, we see students for a variety of reasons, some of which include homesickness, relationship concerns, anxiety, and depression. At your first appointment, you will work with a therapist to create a plan that will connect you with resources that best fit your needs. We assist students with getting connected to therapy at our Center as well as connecting students to self-help resources, other on-campus resources, and community-based resources. All Ball State students also have access to several on-demand, self-help resources through a variety of different platforms. All of these resources, including a direct link to our website, can be found here.

The Speaking Center

The Speaking Center is a free resource available to all members of the BSU community wanting to improve their public speaking abilities. We offer personalized coaching designed to help you become a more confident and effective speaker. Our trained coaches provide constructive feedback and support throughout the entire speech preparation process, whether you are in the early stages of brainstorming ideas and organizing your thoughts, or you need to practice your delivery and refine your message.

The Center is in the David Letterman Communication and Media Building, room 302. To schedule an appointment, please access us through your Navigate app or use this direct link to sign up for a time. Appointments are available both in person and on Zoom. Appointments are available in person, on Zoom, and in virtual reality (VR) for those interested in practicing in an immersive speaking environment.

8. Canvas and Student Privacy

Canvas Accessibility

Canvas provides a user experience that is easy, simple, and intuitive. Special attention has been paid to making Canvas screen-readable. The Rich Content Editor encourages users to create accessible content pages (i.e. text formatting is accomplished using styles). Canvas is designed to allow limited customization of colors and schemes to be accessible for all users. The National Federation of the Blind granted Canvas the Gold Level Web Certification in 2010.

Find more information by visiting the Canvas Voluntary Product Accessibility Template (VPAT).

FERPA and Privacy

As a student, your educational records are considered confidential. Under FERPA (Family Educational Rights and Privacy Act), your records are confidential and protected. Under most circumstances, your records will not be released without your written and signed consent. However, some directory information may be released to third parties without your prior consent unless a written request to restrict this is on file. You can learn more about student rights to privacy by reading Ball State's FERPA and Privacy and Protection.

Plagiarism Detection

The campus subscribes to Turnitin, a plagiarism prevention service, through Canvas. You may need to submit written assignments to Turnitin. Student work will be used for plagiarism detection and for no other purpose. The student may indicate in writing to the instructor that he/she refuses to participate in the plagiarism detection process, in which case the instructor can use other electronic means to verify the originality of their work.

9. Course Expectations and Policies

Course Participation Expectations

- This course is designed with weekly activities, discussion, and other forms of regular collaboration and communication.
- It is recommended that you log into your Canvas frequently (daily suggested) and check your official Ball State email account daily to view announcements and prepare for class.
- Complete all assignments, quizzes, and any other activities by the stated due dates.

Feedback Policy

- I will respond to email from your official Ball State email address within 24 hours during weekdays (Monday-Friday) and within 48 hours on the weekend. If you don't get a reply from me within these time frames, please send a follow up email! I appreciate gentle reminders, as my inbox fills up rapidly. Using your official BSU email guarantees that your message will not accidently get sorted into my spam folder.
- When my feedback is part of an assessment, I will grade your quizzes and assignments promptly so I can have ample time to consider my feedback for your quiz preparation.

- Contact me directly if you have questions or concerns about your performance in class.

Late Assignment Policy

Everything in this course has a specific due date. While I try to build in some flexibility to accommodate differing schedules, these deadlines help everyone, including me, stay on task and making progress toward our goals. Many assignments are meant to help you assess your learning and figure out what roadblocks you need to remove prior to a quiz or exam. Thus, submitting them late makes them significantly less helpful.

Sometimes life does happen though and for some circumstances, I can see giving flexibility. Assignments within Codon Learning each have their own late policy, so please review the description of those assignments above. Exams and extra credit are not eligible for the late policy. Be aware that submitting work late does come with consequences; late submissions will not be able to receive the same attention and quality of feedback as those submitted on time, plus you must still keep up with any current work that is due—essentially doubling your workload until you are caught up.

Assignment Submission Policy

- All assignments should be submitted in the indicated document format (.doc/.docx, .ppt, .pdf, etc).
- Assignments, unless otherwise indicated, should be submitted using the assignment link in the Canvas module.
- Please take the time to read the submission comments and feedback left on assignments. These can be found in Canvas Grades and you can set your notifications to get alerted whenever I leave comments on your submissions. We will use rubrics for many assignments. To view your graded rubric, lick on the gray “view rubric” button.

Grading Policy

- It is my policy that appropriate evaluation of your academic performance is an integral part of your learning experience.
- In the absence of mistakes, fraud, bad faith or incompetence, I will be the key decision-maker on the assignment of grades.

Engagement Expectations

To support a respectful and engaging academic community that encourages the free exchange of ideas and civil discourse, we will follow these ground rules:

- **Respect different perspectives.** Share your ideas and let others share theirs.
- **Challenge ideas, not people.** Disagree respectfully. No personal attacks or put-downs. Focus on exploring ideas critically and constructively.

- **Listen to understand.** Stay curious, ask questions to understand, and give others space to speak.
- **Assume good intentions.** Approach discussions with curiosity and compassion.
- **Keep it private.** What is shared in class stays in class. Do not share others' words or work without permission.
- **Be respectful.** Avoid hurtful language, stereotypes, or content that may demean others. Keep feedback constructive.

10. Course Schedule

To support a learning experience that is responsive to the needs, interests, and pace of our class community, the course schedule may shift over the semester. The most current version of the schedule will always be available on Canvas. I encourage you to check Canvas regularly for updates and contact me if you have any questions.

11. Subject to Change Statement

Information contained in this syllabus may be subject to change with notice at the instructor's discretion. You will be notified of such changes in class, by email, and on Canvas.