



Course Name: Genetics

Course Number: BI 311

Credits: 4 Credits

COURSE DESCRIPTION:

Genetics involves the study of heredity, the molecular nature of genetic material, and the way in which genes control life functions. In this course, we will focus on the subdisciplines of molecular genetics, transmission genetics, and quantitative genetics. Topics will include the following: the molecular structure of DNA and its replication in prokaryotes and eukaryotes, the function of genes and the control of gene expression, recombinant DNA technology and functional genomics, the mode whereby genes and single-loci genetic traits are transmitted between generations, and the heredity of complex traits that are determined by many genes simultaneously.

Three to four lectures will be posted each week with assigned readings. Additionally, students will be asked to complete weekly homework assignments and to participate in a weekly discussion. For the discussion forum, students will post a summary paragraph on a given topic at the beginning of the week and comment on each other's postings before the end of the week. This course will include one midterm and a final exam.

PREREQUISITES FOR THE COURSE:

BI211-BI213; or BI204; or BI205; or BI206

COMMUNICATION

Please post all course-related questions in the General Discussion Forum so that the whole class may benefit from the conversation. Please email your instructor for matters of a personal nature. The instructor will reply to course-related questions within 24-48 hours and will strive to return your graded course activities within 5 days of the due date.

COURSE CREDITS

This course combines approximately 120 hours of instruction, online activities, and assignments.

TECHNICAL ASSISTANCE

If you experience computer difficulties, need help downloading a browser or plug-in, assistance logging into the course, or if you experience any errors or problems while in your online course, contact the OSU Help Desk for assistance. You can call 541-737-3474, email osuhelpdesk@oregonstate.edu, or visit the [OSU Computer helpdesk](#).

LEARNING RESOURCES

Required text: (also available as an eText via the MyLab and Mastering platform)

Klug WS, Cummings MR, Spencer CA, Palladino MA. 2016. Essentials of genetics. 9th ed. Upper Saddle River (NJ): Pearson Education.

Additional reading:

Russel PJ. 2010. iGenetics: a molecular approach. 3rd ed. Upper Saddle River (NJ): Pearson Education. (pdf)

Note to prospective students: Please check with the [OSU Bookstore](#) for up-to-date information for the term in which you are enrolled (or call 800-595-0357). If you purchase course materials from other sources, be careful to obtain the correct ISBN. You will also have to purchase an access code to the MyLab and Mastering platform to be able to complete weekly homework assignments.

CANVAS

This course will be delivered via Canvas, where you will interact with your classmates and with your instructor. Within the course Canvas site you will be able to access all of the required learning materials, such as the syllabus, class discussions, assignments, video lectures, and exams. To preview how an online course works, visit the [Ecampus Course Demo](#). For technical assistance, please visit [Ecampus Technical Help](#).

STUDENT LEARNING OUTCOMES:

After taking this course, students will have a good understanding of molecular genetics, transmission genetics, and quantitative genetics. To this end, students should be able to:

1. Describe the molecular architecture and functional role of DNA, genes, chromosomes, and genomes
2. Explain how an organism's genome is passed down through generations
3. Explain how linkage affects the assortment of alleles during meiosis and, thereby, patterns of inheritance
4. Deduce information about genes, alleles, and gene function from analysis of genetic crosses and pedigrees
5. Describe the flow of genetic information from DNA to proteins
6. Classify effects of mutation on genes and chromosomes, describing the resulting effects on mRNAs, proteins, and phenotypes
7. Explain how gene activity can be regulated in the absence of DNA changes
8. Compare the basics involved in genetic mapping, contrasting genetic vs. physical maps
9. Identify the basic tools and experimental approaches used by scientists to understand gene structure, gene expression, gene function, and genetic variants

EVALUATION OF STUDENT PERFORMANCE:

Students will complete weekly homework assignments, a midterm exam, and a comprehensive final exam. The course grade will also depend on participation in a weekly discussion forum.

Discussion Board	= 80 points	(10 pts extra credit for 100% participation)
Assignments	= 120 points	
Midterm Exam	= 80 points	
<u>Comprehensive Final Exam</u>	<u>= 100 points</u>	
Total	= 380 points	

i. Discussion group participation

Participation in online discussions is mandatory. While there is great flexibility in online courses, this is **not** a self-paced course. You will need to participate in our discussions on at least two different days each week, with your first post (an original, substantive comment) due by Thursday evening, and your second post (a substantive reply to two students' postings) due by Monday afternoon of the following week. As you can imagine, your classmates cannot write replies if you do not turn in an original post. **Thus, to encourage the writing of original posts, students that post all 10 original comments on the discussion board in a timely manner will receive 10-points extra credit at the end of the quarter.** Comments should be thoughtful and relevant to the topic being discussed.

Moreover, because this is a discussion forum, you are highly encouraged to moderate the discussion thread that you create. On some weeks, points will be specifically assigned to the moderation of your thread (as indicated in the grading rubric). Even when moderation is not part of the grading rubric, **extra credit points may be awarded at the discretion of the instructor.**

The instructor will monitor the discussion board every week. Debates are encouraged, but disrespectful comments will not be tolerated.

ii. Assignments

You will be asked to complete weekly homework assignments that reflect material covered during that week. Assignments will be available through Pearson's MasteringGenetics platform and are intended to provide students with opportunities to gain practice with new concepts. Assignments will be due on Monday afternoon following the

week during which they were assigned. **Expect to spend 3-5 hours on the completion of homework assignments each week.**

iii. Exams

There will be one midterm exam and one comprehensive final exam administered online via the Canvas site. Both exams are closed book with no study materials allowed except for the following: **scratch paper, a calculator, and one piece of paper (8.5 in x 11 in; double-sided) on which you may include anything that you wish.** However, make sure that the possibility of bringing notes in to exams does NOT lull you into a false sense of security. For example, knowing what a formula looks like is not enough; you also need to know how to use it!

Exams will cover material from lectures, assigned readings, discussion topics, and weekly homework assignments, and will include a mix of question formats (e.g., multiple choice, short answer, short essay, fill-in-the-blank, matching, and true/false). You will be given a 64 h time window to take each exam. There will be a time limit to complete the exam once you start (80 min for the midterm; 110 min for the final). The midterm exam should be completed between 8:00am PT Thursday and 11:55pm PT Saturday during Week 6. The Final Exam should be completed between 8:00am PT Wednesday and 11:55pm PT Friday during Week 11.

Exams must be proctored, and you will be responsible for arranging a proctor to administer your exam. Space is often limited, so arrange for a proctor well before the day of the exam. See the Extended Campus website for instructions on finding an acceptable proctor:

http://ecampus.oregonstate.edu/services/proctoring/finding_proctor.htm

A note about time limits on quizzes/exams: Because this is a distance education course, we have to keep a strict time limit for exams to ensure fairness. Students are responsible for monitoring their time to make sure they finish within the allotted limit. When the specific time limit on an exam is reached, completed answers will be saved and automatically submitted.

Exams must be proctored and may involve an additional fee. Information for proctoring can be found at <http://ecampus.oregonstate.edu/services/proctoring/>. Please note that it is best to sign up for proctoring as soon as possible (especially for on-campus proctoring sessions).

iv. Grading scale

Grades will be based on a straight % of the total possible score. The following scale will be used: A 92-100; A- 90-91; B+ 88-89; B 82-87; B- 80-81; C+ 78-79; C 72-77; C- 70-71; D+ 68-69; D 62-67; D- 60-61; F < 60

GENERAL RULES/GUIDELINES OF THE COURSE

1. Make-ups for the midterm and final exams are not normally given, but may be granted if the student has an *exceptional* reason. Excused absences will not be given for airline reservations, routine illness (colds, stomach aches), or other common ailments.
2. Incomplete (I) grades will be granted only in emergency cases (usually only for a death in the family, major illness or injury, or the birth of your child), and if the student has turned in 68% of the points possible (in other words, everything but the assignments from Week 10 and the final exam). If you are having any difficulties that might prevent you from completing the coursework, please don't wait until the end of the term; let your instructor know right away.
3. Oregon State University strives to respect all religious practices. If you have religious holidays that are in conflict with any of the requirements of this class, please contact the instructor immediately so that alternate arrangements can be made.
4. Your ability to communicate effectively and professionally is very important in the science profession, so when communicating with course personnel via email remember to present yourself in a professional manner. This includes: using an appropriate salutation (e.g., Dear Dr. Landys), checking your spelling and punctuation, not using slang or text-isms, and signing correspondence with your full name. Also, please write "BI 311" in the email subject line, so the recipient of your email knows that you are a student in Genetics.

5. Students are expected to conduct themselves in the course (e.g., on discussion boards, email) in compliance with the university's regulations regarding civility. Civility is an essential ingredient for academic discourse. All communications for this course should be conducted constructively, professionally, and respectfully. Differences in beliefs, opinions, and approaches are to be expected. Please bring any communications you believe to be in violation of this class policy to the attention of your instructor.

Active interaction with peers and your instructor is essential to success in this online course, paying particular attention to the following:

- Please complete the readings and view the instructional materials for each week in a timely manner, so that you can meaningfully participate in the discussion forum
- Proofread your discussion posts carefully before submitting them
- Be respectful of others and their opinions, valuing diversity in backgrounds, abilities, and experiences
- Challenging the ideas held by others is an integral aspect of critical thinking and the academic process
- Please word your responses to classmates' discussion posts carefully, and recognize that others are expected to challenge your ideas: a positive atmosphere of healthy debate is encouraged

UNIVERSITY AND DEPARTMENTAL POLICIES:

Statement Regarding Students with Disabilities:

Accommodations for students with disabilities are determined and approved by Disability Access Services (DAS). If you, as a student, believe you are eligible for accommodations but have not obtained approval please contact DAS immediately at 541-737-4098 or at <http://ds.oregonstate.edu>. DAS notifies students and faculty members of approved academic accommodations and coordinates implementation of those accommodations. While not required, students and faculty members are encouraged to discuss details of the implementation of individual accommodations.

Accessibility of Course Materials

All materials used in this course are accessible. If you require accommodations please contact [DAS](#).

Expectations for Student Conduct

Student conduct is governed by the university's policies, as explained in the Student Conduct Code found on the [Student Conduct and Community Standards \(SCCS\)](#) website.

Academic Integrity

Students are expected to comply with all regulations pertaining to academic honesty. For further information, visit [Academic Integrity for Students](#), or contact the [Office of SCCS](#) at 541-737-3658.

a) Academic or Scholarly Dishonesty is defined as an act of deception in which a student seeks to claim credit for the work or effort of another person, or uses unauthorized materials or fabricated information in any academic work or research, either through the student's own efforts or the efforts of another.

b) Academic or Scholarly Dishonesty includes:

(i) CHEATING - use or attempted use of unauthorized materials, information or study aids, or an act of deceit by which a student attempts to misrepresent mastery of academic effort or information. This includes but is not limited to unauthorized copying or collaboration on a test or assignment, using prohibited materials and texts, any misuse of an electronic device, or using any deceptive means to gain academic credit.

(ii) FABRICATION - falsification or invention of any information including but not limited to falsifying research, inventing or exaggerating data, or listing incorrect or fictitious references.

(iii) ASSISTING - helping another commit an act of academic dishonesty. This includes but is not limited to paying or bribing someone to acquire a test or assignment, changing someone's grades or academic records, taking a test/doing an assignment for someone else by any means, including misuse of an electronic device. It is a violation of Oregon state law to create and offer to sell part or all of an educational assignment to another person (ORS 165.114).

(iv) TAMPERING - altering or interfering with evaluation instruments or documents.

(v) PLAGIARISM - representing the words or ideas of another person or presenting someone else's words, ideas, artistry or data as one's own, or using one's own previously submitted work. Plagiarism includes but is not limited to copying another person's work (including unpublished material) without appropriate referencing, presenting someone else's opinions and theories as one's own, or working jointly on a project and then submitting it as one's own.

c) Academic Dishonesty cases are handled initially by the academic units, following the process outlined in the University's Academic Dishonesty Report Form, and will also be referred to SCCS for action under these rules.

Conduct in this Online Classroom

Students are expected to conduct themselves in the course (e.g., on discussion boards, email postings) in compliance with the University's policy regarding [civility](#).

Tutoring

[NetTutor](#) is a leading provider of online tutoring and learner support services fully staffed by experienced, trained and monitored tutors. Students connect to live tutors from any computer that has Internet access. NetTutor provides a virtual whiteboard that allows tutors and students to work on problems in a real time environment. They also have an online writing lab where tutors critique and return essays within 24 to 48 hours. Access NetTutor from within your Canvas class by clicking on 'NetTutor' on the left-hand side of your screen in your course website.

OSU Student Evaluation of Teaching

Course evaluations are extremely important and are used to help instructors improve this course and the learning experience of future students. Results from the evaluations are tabulated anonymously and go directly to instructors and department heads. Student comments on the open-ended questions are compiled and confidentially forwarded to each instructor, per OSU procedures. The online Student Evaluation of Teaching form will be available toward the end of each term, and you will be sent instructions via ONID by the [Office of Academic Programs, Assessment, and Accreditation](#). You will log in to "Student Online Services" to respond to the online questionnaire. The results on the form are anonymous and are not tabulated until after grades are posted.