

# Principles of Genetics

**Biology 3060**

**Fall 2018**

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**Classes:** MTWR, 12:30 – 1:20, ENGR 108

**Office Hours:** M & R 1:30 – 2:30 and by appointment

**Required Materials:** Pierce, B. A., *Genetics – A Conceptual Approach, 6th ed* (2017) W.H. Freeman  
An iClicker

**Objectives:** Provide content knowledge of major areas of genetics.  
Strengthen problem-solving skills.  
Develop teamwork skills for tackling scientific problems.  
Highlight the link between genetics and society.

**Points:**

Daily online reading quizzes	16%
In-class clicker questions	5%
Peer and personal evaluations	1%
Group problem sets	28%
Three hourly exams*	11% each
Comprehensive final exam	17%

\*There will be four hourly exams, but only the top three scores will count toward your grade.

**Overview of the Course:** This course mixes traditional lecture with a problems-based approach to learning genetics. The aim of problems-based learning is to improve genetics knowledge by working with the material.

Assigned readings and reading quizzes are another important way of learning genetics. These readings will provide you with background information that allow class time to focus on difficult concepts and to facilitate work on genetics problems. Quizzes on the readings will be due every Monday and Wednesday before class. Full instructions for quizzes will be available at the start of the semester.

Class sessions will alternate between lectures on Mondays and Wednesdays and group work on problem sets on Tuesdays and Thursdays. Tuesday classes may see a bit of lecture mixed with the group work if needed to keep on target for topic coverage. Lectures will cover the most important or difficult concepts, but not all the material you need to master. For relatively simple material that focuses on terminology or straightforward ideas, you'll need to rely on the assigned readings.

On Tuesdays and Thursdays when you're solving genetics problems, you'll work in groups on problem sets that will be due every other week. Only one problem set will be submitted for each group, with the same score generally issued to every student in the group. Expect to spend some time outside of class on the problems sets. During problem-solving sessions, the UTFs and I will circulate from group to group to see how you're doing and to answer any questions you have. A requirement of this class is that you attend the problem-solving sessions and actively participate with your teammates in solving the problems.

Clicker questions will be posed during most class periods, including days you work on problems. In most cases, these will first be answered individually followed by discussion of the question with classmates. You'll then have a second opportunity to answer the question. Half of points will be awarded for correct answers to these questions, usually for the second try only, and half for participation. You must be in class with a working, registered iClicker or registered mobile device to receive points for clicker questions. I will not manually add points if you don't have a working polling device with you.

### **Purchasing a Text:**

Given the reliance on assigned readings, you must have a text. There are many options for purchasing one.

**Option 1.** Purchase access to an etext directly from the publisher. This can be done through the following link: <https://store.macmillanlearning.com/us/product/Genetics-A-Conceptual-Approach/p/1319050964?searchText=genetics> For what it's worth, my view is that if you're comfortable reading online, this is the best option. It will provide a 6-month access to the current edition of the text for \$60.

**Option 2.** Purchase a loose-leaf version of the text at the USU Bookstore. This comes with the ability access the etext through the publisher-provide homework platform (Sapling Plus). This option is reasonable if you have a strong preference for a hard copy text over an etext, but it is substantially more expensive than Option 1.

**Option3.** Purchase a card at the USU Bookstore that gives you access to the publisher-provided homework platform, Sapling Plus. This homework system, in turn, gives you access to the etext. Realize that we won't be using the Sapling Plus, so follow option 3 only if you want to get access to the etext through the USU Bookstore purchase. If you pursue this option, you'll need to follow the instructions on the last page of this syllabus to access the etext.

**Option 4.** Do it yourself and obtain the text from any source you like. If you purchase an older edition, go no earlier than the 5<sup>th</sup> edition (the current edition is the 6<sup>th</sup>). Be aware that even with the 5<sup>th</sup> edition, the organization differs in places from the current text and that there is some material in the 6<sup>th</sup> edition not found in the 5<sup>th</sup>. I'm not saying not to use the 5<sup>th</sup> edition, but if you do, you need to be adventurous and bound for success no matter what obstacles get in your way. Decide to use an older edition with eyes wide open.

### **Registering your iClicker or Mobile Device:**

We'll be using a new version of the iClicker software (iClicker Cloud) that requires a different registration method than the standard iClicker. You will be able to use an iClicker polling device or a mobile device. Please carefully follow the instructions below.

Regardless of the polling device you'll be using, you must [create a free iClicker Reef account](#) to ensure that your grades sync to the Canvas gradebook. Do this using the link near the bottom of the Canvas course homepage titled "iClicker Points". Use your A number as your student ID.

You will not need to pay for a Reef subscription if you are using an iClicker remote, and can ignore the “Buy or Extend Subscription” message that will appear in your Reef account.

Once you’ve created a Reef account, you’ll have a two-week free-trial period if you want to test out using a mobile device (cell phone, tablet, or laptop) instead of an iClicker. After two weeks, you will need to purchase a Reef subscription if you want to continue using a mobile device instead of an iClicker. Once again, no purchase is needed if you use a standard iClicker polling device.

Check early and often during the semester to be sure you’re getting the iClicker points you’ve earned.

### **Details of Point-Awarding Activities and Grading:**

**Reading quizzes:** Reading quizzes will be due before class opens on Mondays and Wednesdays. Their purpose is to ensure that you come to class prepared with the background information to understand the more difficult concepts presented in lecture and have the foundational information needed to work on genetics problems.

The required reading for each quiz will be announced on Canvas at least 24 hours before the quiz is due.

To help you anticipate the readings, the chapter sections that were required for the fall 2017 course are listed on the last pages of this syllabus. The reading assignments for the current course will align well with those of last year’s course. Therefore, if you’re wondering what’s likely to be assigned and want to read ahead, you have a guide.

Reading quizzes will be completed in Canvas and will be available no later (and generally much earlier) than 7 pm the day before they are due. Reading quizzes close at 12:15 pm. Late submissions will not be allowed. Quizzes can be completed individually or by working in teams. If you work in a team, be certain that you understand the answer to each question. Remember that these quizzes will help you master the material. You’ll squander this opportunity and pay for it on exams if you simply copy correct answers from a partner. Another important point is that while team work is encouraged, I will consider it a violation of the Student Honor Code—and report the violation—if answers are posted for the class to use. Work in reasonable-sized teams and keep your answers within the team if you chose to work a part of a group.

The number of questions on each quiz will vary. All questions are weighed equally with your overall quiz score calculated based on the percentage of all questions answered correctly. The final reading quiz score constitutes 16% of your overall course score.

**Clicker questions:** Clicker questions will be posed in almost every class. You’ll have two opportunities to answer each question, first working alone and then after working with classmates. Half of clicker points will be for participation and half for getting the correct answer. In almost every case, only your answer to the second posing of a question will count. However, I hold open the option of counting initial responses if needed as a way to ensure that an honest effort is made on the individual work. Clicker questions will contribute 5% of your course score.

**Problem Sets:** You will work in class on Tuesdays and Thursdays in a group of 4 – 6 students to solve genetics problem sets. Problem sets are due every other week. Each problem set will be submitted through Canvas and be due at 6 pm on the dates posted in the syllabus. There will be a 10% point reduction if the problem set is submitted late **but within 24 hours** after the due date. Beyond this time, submissions will **not be accepted**. New problems may be added to a set up to 32 hours (the preceding class) before the due date.

The problem sets allow you to work with peers in improving genetics problem solving and teamwork skills. Some work outside of class almost certainly will be required to complete the problem sets. Only one problem set per group will be submitted. Each team will decide on how to complete and submit problem sets. With two possible exceptions described below, everyone in the group receives the same score. Late submissions count against all group members, so it is imperative to have a clear understanding of who will submit each problem set.

Complete instructions will be provided with each problem set, but an important point to note is that the quality and clarity of writing are carefully evaluated to determine your score. You must work on all aspects of good writing to receive full credit.

One possible exception to the same-score-for-all-group-members rule is the case of a disagreement over the group's answer. If you don't agree with your group's answer, you may submit your own dissenting answer as part of the group's answer set. If you do this, add your name to the alternative answer along with a note stating that you disagree with your group.

Another possible exception to everyone receiving the same score is for students who are absent regularly during group work or who fail to participate fully in group work. You must attend class during problem-solving sessions and participate fully. I will pay close attention to attendance and ask your team about participation. Points will be deducted for students who are not contributing to their team.

Groups will be assigned by the instructor. Because of the expectation that everyone will participate actively in their group, I will occasionally ask questions about group dynamics. If there are issues, I want groups to first attempt to work out problems on their own. If a solution cannot be found this way, I will attempt to help solve the problem, but only after the group has made a good faith effort at resolving the issue.

**Peer and Personal Evaluations:** You will evaluate the performance of your teammates and yourself in group work at least twice during the semester. This will be done with a standard set of questions that focus on each individual's contribution to the team effort. The purpose of these evaluations is to provide assessments of who's pulling their weight and of your own contribution to the team effort. Points will be awarded solely on the basis of a good-faith effort at completing the evaluations, but actions may be taken based on evaluation results.

**Exams:** There will be four hourly exams and one comprehensive final exam. Only the top three hourly exam scores will count toward your course score. Exam questions will focus primarily on the concepts covered during lectures and in the problem sets and will also include some questions from the reading quizzes and clicker questions. All exams will be taken online through Canvas at the USU Logan Campus Testing Center. Exams will be open over a two-day testing period. You are responsible for scheduling each of your exams through the Testing Center. Please do so early as all available slots may fill, particularly for the final exam.

**Grading:** The most stringent possible grading scale is shown at right. Points *may* be added at the instructor's discretion to exams, clicker scores, or the reading quiz score.

<u>Grade</u>	<u>Percentage</u>	<u>Grade</u>	<u>Percentage</u>
A	92-100%	C	72-77%
A-	90-91%	C-	70-71%
B+	88-89%	D+	68-69%
B	82-87%	D	60-67%
B-	80-81%	F	< 60%
C+	78-79%		

**Course Policies:**

- ◆ You must attend problem solving session and actively participate in your group
- ◆ The group stands or falls together – be sure to have a clear line of communication about who is submitting a problem set and the quality of the submission.
- ◆ Deadlines for quizzes and problem set submissions are firm.

- ◆ You must have a working iClicker or registered mobile device in class to obtain clicker question points
- ◆ Use of another student's iClicker is a USU Academic Honesty and Integrity Policy violation and will result in loss of clicker points.
- ◆ Individual extra credit activities are not available.
- ◆ Grading of exam questions or problem sets is open for discussion up to 48 hours after scores are returned to the class, but not beyond this time.
- ◆ If you contest grading of problem sets, first work with the UTF to see if the issue can be resolved, and see me only if the issue cannot be resolved after working with the UTF.

Everyone knows that problems can occur. I'm reasonable and will be happy to discuss unforeseen events with you and possibly make adjustments, but there must be a well-justified reason for making any exceptions to the course policies.

**Canvas:** Daily reading lists, lecture recordings, PowerPoints presented in class, answered iClicker questions, and many other important resources will be available on Canvas. You should check this site frequently.

**Office Hours and Meeting with the Instructor:** Feel free to stop by during regular office hours. I know these times are limited, so if you can't come during regularly scheduled office hours, please send me an e-mail or see me after class to set up an alternative time to meet.

**Lecture Schedule:** I'll attempt to stay as close as possible to the lecture schedule targets listed below. However, if history is a good predictor, it's almost certain that adjustments will be needed as the semester unfolds.

**Critical Deadlines:** Deadlines for adding and dropping the course with various notations on your transcript and for changing to P/D<sup>+</sup>/D/F are all given in the Fall Registration Calendar at: <http://catalog.usu.edu/content.php?catoid=12&navoid=11818>. If you find yourself wondering about any of these options, please check the posted dates carefully.

**Academic Honesty and Integrity Policy:** Policies described in the USU Academic Integrity/Honesty document (<http://catalog.usu.edu/content.php?catoid=12&navoid=3140&hl=Academic+Honesty%2FIntegrity&returnto=search>) will be followed for this course.

**ADA compliance:** Students with physical, sensory, emotional or medical impairments may be eligible for reasonable accommodations in accordance with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973. All accommodations are coordinated through the Disability Resource Center (DRC) in Room 101 of the University Inn, 797-2444 voice, 797-0740 TTY, or toll free at 1-800-259-2966. Please contact the DRC as early in the semester as possible. Alternate format materials (Braille, large print or digital) are available with advance notice.

**Advice:** Realize that you're going to need to spend a lot of time on this course and that you must keep up with readings and problem sets. Be careful to avoid the trap of having your teammates do the problem solving for you. You can easily get a great score on the problem sets, but things won't go well on exams if you lean on others to do your work.


# Principles of Genetics (Biol 3060) Fall 2018

## Target<sup>1</sup> Class Schedule

Meeting			Topic	Chapter <sup>2</sup>	Exams <sup>3</sup>
1	M	8/27	Introduction to Course; Introduction to Genetics	1	
2	T	8/28	Chromosomes & Cellular Reproduction; Meet Your Teammates	2	
3	W	8/29	Chromosomes & Cellular Reproduction	2	
4	H	8/30	Group Work	3	
	M	9/3	<b>Labor Day Holiday!</b>		
5	T	9/4	Basic Principles of Heredity	3	
6	W	9/5	Basic Principles of Heredity	3	
7	H	9/6	Group Work <b>Problem Set 1 Due at 6 pm</b>	4	
8	M	9/10	Sex Determination & Sex-Linked Characteristics	4	
9	T	9/11	Group Work	4	
10	W	9/12	Extensions & Modifications of Basic Principles	5	
11	H	9/13	Group Work	5	
12	M	9/17	Extensions & Modifications of Basic Principles	5	
13	T	9/18	Group Work	5	<b>Exam 1</b>
14	W	9/19	Extensions & Modifications of Basic Principles	5	<b>Exam 1</b>
15	H	9/20	Group Work <b>Problem Set 2 Due at 6 pm</b>	6	
16	M	9/24	Linkage, Recombination, & Eukaryotic Gene Mapping	7	<b>Eval.1</b>
17	T	9/25	Group Work	7	
18	W	9/26	Linkage, Recombination, & Eukaryotic Gene Mapping	7	
19	H	9/27	Group Work	7	
20	M	10/1	Linkage, Recombination, & Eukaryotic Gene Mapping	7	
21	T	10/2	Group Work	8	
22	W	10/3	Chromosome Variation	8	
23	H	10/4	Group Work <b>Problem Set 3 Due at 6 pm</b>	8	
24	M	10/8	Chromosome Variation	8	
25	T	10/9	Group Work	24	<b>Exam 2</b>
26	W	10/10	Quantitative Genetics	24	<b>Exam 2</b>
27	H	10/11	Group Work	24	
28	M	10/15	Quantitative Genetics & Population Genetics	24&25	
29	T	10/16	Group Work	25	
30	W	10/17	Population Genetics	25	
	H	10/18	Group Work <b>Problem Set 4 Due at 6 pm</b>		
31	M	10/22	Population Genetics	25	
32	T	10/23	Group Work	10	
33	W	10/24	DNA: The Chemical Nature of the Gene	11	
34	H	10/25	Group Work	11	
35	M	10/29	Chromosome Structure & Organelle DNA	11	<b>Eval. 2</b>
36	T	10/30	Group Work	12	<b>Exam 3</b>
37	W	10/31	DNA Replication & Recombination	12	<b>Exam 3</b>
38	H	11/1	Group Work <b>Problem Set 5 Due at 6 pm</b>	12	

39	M	11/5	DNA Replication & Recombination Transcription	13	
40	T	11/6	Group Work	13	
41	W	11/7	Transcription	13	
42	H	11/8	Group Work	14	
43	M	11/12	Transcription	13	
44	T	11/13	Group Work	15	
45	W	11/14	RNA Molecules & RNA Processing	14	
46	H	11/15	Group Work <i>Problem Set 6 Due at 6 pm</i>	15	
47	M	11/19	RNA Molecules & RNA Processing	15	
48	T	11/20	The Genetic Code & Translation	15	
			<i>Thanksgiving Break!</i>		
49	M	11/26	The Genetic Code & Translation	15	
50	T	11/27	Group Work	16	<i>Exam 4</i>
51	W	11/28	Control of Gene Expression in Bacteria	16	<i>Exam 4</i>
52	H	11/29	Group Work <i>Problem Set 7 Due at 6 pm</i>	18	
53	M	12/3	Control of Gene Expression in Eukaryotes	17	<i>Eval. 3</i>
54	T	12/4	Gene Mutations & DNA Repair	18	
55	W	12/5	Gene Mutations & DNA Repair	18	
56	H	12/6	Gene Mutations & DNA Repair	18	
	M	12/10			<i>Final</i>
	T	12/11			<i>Final</i>
	W	12/12			<i>Final</i>

1. Don't be surprised if adjustments are needed during the semester. The only things that are locked in place are exam dates and the holidays
2. This is an overview reading list. Details of each reading will be posted on Canvas no later than 5 pm the day before each reading quiz is due. A reading list from the fall 2017 class is provided below. What was done then will be a close match to this semester's reading assignments. Therefore, if you want or need to read ahead, use the previous reading list as a guide.
3. All exams will be administered through Canvas and taken at the USU Logan Testing Center. Be sure to schedule each exam well ahead of the exam dates. Early scheduling is especially important for the final.

Class Date	<h2 style="text-align: center;">Assigned Readings Fall 2017</h2> <div style="text-align: center;">  </div> <p><b>READ THIS:</b> This list from the 2017 course gives you a good idea of the readings that we'll be doing in this year's course. Use it if you're wondering what's likely to be assigned and want to read ahead. This is <b>NOT</b> the list for the current course.</p>
8/30	Chapter 1: Section 1.3; Chapter 2, Section 2.1 (beginning with Eukaryotic Cell Reproduction) through 2.3 (through Meiosis in Animals). Most of this material should be review, but its foundational material that you absolutely need to know.
8/31	Section 3.1 and 3.2 through The Molecular Nature of Alleles (stop at Prediction the Outcome of Genetic Crosses) [The trickiest point in this section is distinguishing between segregation and independent assortment.]
9/5	Section 3.2 starting from Predicting the Outcome of Genetic Crosses to the section end (stop at section 3.3). You can skip the section on the binomial expansion, but you need to know the formula $((n!/s!t!)p^s q^t)$ for calculating the probability of any combination of two events.
9/6	Section 3.3 (we won't cover section 3.4)
9/7	Section 4.1. There's a lot of detail in this section that you're not responsible for. Focus on the idea that there many different sex determination mechanisms. Pay close attention to sex determination in <i>Drosophila</i> (because we'll use this information to fully understand Morgan's work), and the male-determining gene in humans. Don't worry about details of any human sex chromosome syndrome or androgen-insensitivity syndrome.
9/11	Section 4.2, with the exceptions of Nondisjunction and the Chromosome Theory of Inheritance, Evolution of the Y Chromosome, and Characteristics of the Y Chromosome. Of course, if you're interested in reading these non-assigned sections, I encourage you to do so.
9/12	Section 4.3
9/13	Section 5.1
9/14	Section 5.2, <u>except</u> : the Worked Problem that follows the Connecting Concepts box; and The Complex Genetics of Coat Color in Dogs.
9/18	Section 5.3 ( <u>except</u> : Variagation in Four-O'Clocks; Genetic Maternal Effect; and Genomic Imprinting). Sections 5.4 & Section 5.5.
9/19	Reading Quiz Holiday for Exam Preparation
9/20	Reading Quiz Holiday for Exam Preparation
9/21	Sections 6.1 & 6.2; Section 6.4, only subsections Interpreting Genetic Tests, Direct-to-Consumer Genetic Testing, and Genetic Discrimination and Privacy.
9/25	Sections 7.1 & 7.2 through Coupling and Repulsion subsection (Evidence for the Physical Basis of Recombination is not on this reading assignment.)
9/26	Section 7.2, subsections Predicting the Outcome of Crosses with Linked Genes; Gene Mapping with Recombination Frequencies, and Construction a Genetic Map with a Two-Point Test Cross.
9/27	Section 7.3, the following subsections only: Effects of Multiple Crossovers, Mapping with Molecular Markers, and Locating Genes with Genome-Wide Association Studies.
9/28	Section 7.4, only the Physical Chromosome Mapping Through Molecular Analysis subsection, and Section 7.5 (this is a very light reading assignment -:))
10/2	Sections 8.1 & 8.2.
10/3	Reading quiz holiday.
10/4	Section 8.3. Other than Down syndrome (which you already know), don't worry about any of the names of particular human aneuploid conditions.
10/5	Section 8.4.
10/9	Section 24.1, except for Determining Gene Number for a Polygenic Characteristic



10/10	Reading Quiz Holiday for Exam Preparation
10/11	Reading Quiz Holiday for Exam Preparation
10/12	Sections 24.2 and 24.3 up to, but not including, Limitations of Heritability. In section 24.2, I'd like you to get a feel for the various descriptive statistics measures (if you don't already know these), but I don't want or need you to memorize the formulas. In section 24.3 – which is difficult – I'd like you to get a sense of what heritability measures, the types of heritability that are considered, and to get an idea of how heritability is measured.
10/16	Limitations of Heritability subsection of 24.3 (don't worry about material in 23.3 past this subsection) and Section 23.4.
10/17	Sections 25.1 & 25.2.
10/18	Section 25.3.
10/23	Section 25.4
10/24	Reading quiz holiday.
10/25	Sections 10.1, 10.2 (Early Studies of DNA & RNA as Genetic Material subsections <u>only</u> ), 10.3 and 10.4
10/26	Sections 11.1 & 11.2.
10/30	Sections 11.3 & 11.4. Section 11.4 is long and detailed. Don't worry about memorizing traits encoded by mitochondrial DNA, or detailed properties of mitochondrial or chloroplast genomes. I want you to get the idea that these organelles have their own genomes, that they both arose from bacterial genomes, that they evolve rapidly and their genomes vary in size, that many genes once present in the organelle are now in the nuclear genome, and that there's interest in a potential role of mitochondrial damage and aging.
10/31	Reading quiz holiday.
11/1	Reading quiz holiday.
11/2	Sections 12.1 and 12.2, starting from Modes of Replication in section 12.2.
11/6	Section 12.3.
11/7	Section 12.4
11/8	Section 12.5 (Don't worry about the details of enzyme names or every step of the double-strand break model of recombination.)
11/9	Reading quiz holiday.
11/13	Sections 13.1 & 13.2. In section 13.1, don't worry about the details of all classes of RNAs; simply know that there are many different types based on their cellular function. In section 13.2, you don't need to memorize the subunits of the bacterial RNA polymerase or know the functions of particular eukaryotic RNA polymerases, beyond one – know that RNA polymerase II synthesizes pre-mRNAs.
11/14	Sections 13.3 – 13.5. Don't get hung up on details in sections 13.3 and 13.4. For example, understand that there are two consensus sequences in most bacterial promoters, but don't worry about what those sequences are. Similarly, for eukaryotic core promoters, know the difference between a core promoter and regulatory promoter, and that any particular core promoter contains some but not all of these consensus sequences, but don't focus on memorizing any of these sequences.
11/15	Sections 14.1 & 14.2. Begin 14.2 at The Structure of Messenger RNA, and stop at the end of Alternative Splicing Pathways.
11/16	Sections 14.3 & 14.4. Read these for overview to get an idea of how tRNAs and rRNAs are processed, but for an exam, you won't be tested on details such as the specific types of base modifications in tRNA or the sizes of bacterial and eukaryotic rRNAs.
11/20	Sections 14.5 & 14.6. These are important sections. Read these to get a sense of how RNA interference works, the differences and similarities between siRNAs and miRNAs, their mechanisms of action, how the CRISPR/CAS system works (this section of the text is curiously silent on the importance of this system in current biotechnology), and that fact that there are many long, non-coding transcripts of unknown function as well as some that are known regulators.
11/21	Section 15.1, beginning at The Structure and Function of Proteins; Section 15.2
11/27	Section 15.3
11/28	Section 15.4
11/29	Reading quiz holiday.
11/30	Section 16.1.
12/4	Sections 16.2 & 16.4. In section 16.4, don't worry about all the details. The goal here is to learn that there are many other mechanisms of bacterial gene regulation beyond that used for the <i>lac</i> operon.
12/5	Section 18.1.
12/6	Section 18.2. In this section, you can ignore the details and instead focus on the idea that there are many ways that mutations can arise.

12/7	Section 18.4 & 18.5. In 18.4, focus on the general themes and ignore the detailed examples. For instance, you don't need to know details of the Ac and Ds elements of corn, or transposable elements in <i>Drosophila</i> . Much the same goes for section 18.5 where your goal should be to get an overview of the many ways DNA damage can be repaired, not to know every detail of each of the pathways presented.
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**Instructions for accessing the extext through Sapling Plus** (Option 3; These instructions are provided by the publisher):

Go to [www.saplinglearning.com/login](http://www.saplinglearning.com/login) to log in or create an account.

Under “Enroll in a new course”, you should see **Courses at Utah State University**. Click to expand this list and see courses arranged by subject. Click on a subject (**Genetics**) to see the terms that courses are available.

Click on the term to expand the menu further (note that Semester 1 refers to the first course in a sequence and not necessarily the first term of the school year). Once the menus are fully expanded, you'll see a link to a specific course. If this is indeed the course you'd like to register for, click the link.

Review the [system requirements](#) and confirm that Flash is updated and enabled in your browser.

To access your eBook click on the image of the cover on the right sidebar of your course site. Create an account or log in with an existing Macmillan Learning eBook account.

Need Help? Our technical support team can be reached by phone, chat, or by email via the Student Support Community. To contact support please open a service request by filling out the webform: <https://macmillan.force.com/macmillanlearning/s/contactsupport>.

The following link includes more detailed instructions on how to register for your course: <https://macmillan.force.com/macmillanlearning/s/article/Sapling-Learning-Registering-for-courses>.

