

**Syllabus for Biology 240 – General Genetics**  
**4 credits (3 credits Lecture plus 1 credit Discussion section)**  
**The University of Tennessee, Fall 2017**

**Lecture:** Monday/Wednesday/Friday 1:25-2:15 pm, Science & Engineering 307

**Lecture Instructor:** **Dr. Joe Williams**, Email: [joewill@utk.edu](mailto:joewill@utk.edu)  
Office Hours Mon/Wed 2:15-3:15 pm (341 Hesler building):

**Discussion section:** 1 hour per week in Strong Hall, room 237  
20% of your course grade  
Discussion sections start the week of August 28<sup>th</sup> (see your schedule for times)

**Discussion Instructors:** Sections 1-3, Jessica Beck; Email: [jbeck10@vols.utk.edu](mailto:jbeck10@vols.utk.edu)  
Sections 4-6, Jenn Summers; Email: [jsumme24@vols.utk.edu](mailto:jsumme24@vols.utk.edu)

**Course Description:** Classical and modern principles of heredity. Topics include meiosis and transmission genetics; molecular genetics and gene expression; population and evolutionary genetics. Discussion sections will emphasize problem-solving skills. Emphasis is on development of analytical skills.

**General Genetics Learning Objectives** – After taking this class, you will understand: 1) how hereditary material is transmitted from generation to generation; 2) what genes are and how they work (i.e. replicate themselves and produce phenotypes); and 3) how genes and genomes evolve over time and produce patterns of diversity.

**Biology Degree Learning Objectives** – This course will increase your understanding of the *five big ideas* in biology as they relate to topics you have learned throughout your degree program

1. **Evolution:** Populations of organisms and their cellular components have changed over time through both selective and non-selective evolutionary processes.
2. **Structure and Function:** All living systems (organisms, ecosystems, etc.) are made of structural components whose arrangement determines the function of the systems.
3. **Information Flow and Storage:** Information (DNA, for example) and signals are used and exchanged within and among organisms to direct their functioning.
4. **Transformations of Energy and Matter:** All living things acquire, use, and release and cycle matter and energy for cellular / organismal functioning.
5. **Systems:** Living systems are interconnected, and they interact and influence each other on multiple levels.

You should also be proficient in the following **scientific practices**:

- Formulate empirically-testable hypotheses
- Interpret visual representations (figures and diagrams)
- Evaluate data and come to a conclusion (with evidence) (formulate an argument)

**How you will learn the material** - The biggest key to your success is to learn how to take good notes. Please read the handout on *Canvas*, under Week 1.

**Syllabus for Biology 240 – General Genetics**  
**Fall 2017 Lecture schedule**

<b>Week</b>	<b>Lec</b>	<b>Day</b>	<b>Proposed topics</b>	<b>Chapter</b>
Aug. 23	1	W	Introduction to genetics	1
Aug. 25	2	F	Cellular basis of heredity – <b>notetaking skills</b>	2
Aug. 28	3	M	Mitosis, meiosis and chromosomal basis of inheritance	2
Aug. 30	4	W	Mendelian genetics – basis of equal segregation	3.1-3.2
Sept. 1	5	F	Mendelian genetics – monohybrid cross – <b>Quiz 1</b>	3.1-3.2
Sept. 4		M	Labor day	
Sept. 6	6	W	Mendelian genetics – independent assortment	3.3-3.9
Sept. 8	7	F	Testing Mendelian hypotheses and inheritance patterns	3.8, 4.1-4.6
Sept. 11	8	M	Pedigrees and inheritance patterns	4.1-4.6
Sept. 13	9	W	Pedigrees and inheritance patterns – <b>Quiz 2</b>	4.7-4.9, ch. 9
Sept. 15	10	F	*Pedigrees and inheritance patterns	4.7-4.9, ch. 9
Sept. 18	11	M	Linkage and recombination	5
Sept. 20	12	W	Recombination and mapping	5
Sept. 22	13	F	Genetic mapping	5
Sept. 25		M	Study session (not planned!)	
<b>Sept. 27</b>	<b>14</b>	<b>W</b>	<b>EXAM 1 (105 pts)</b>	
Sept. 29	15	F	Quantitative genetics and polygenic traits	23
Oct. 2	16	M	Quantitative genetics and polygenic traits	23
Oct. 4	17	W	Evolution and natural selection	
Oct. 6		<b>F</b>	<b>FALL BREAK</b>	
Oct. 9	18	M	Population genetics I – Hardy-Weinberg – <b>Quiz 3</b>	25
Oct. 11	19	W	Population genetics II	25
Oct. 13	20	F	Population genetics III	25
Oct. 16	21	M	Population genetics III and phylogeny – <b>Quiz 4</b>	25
Oct. 18	22	W	Phylogeny	25
Oct. 20	23	F	Phylogeny and chromosomal mutations	8, 25
Oct. 23	24	M	Chromosomal mutations and evolution	8
<b>Oct. 25</b>		<b>W</b>	<b>EXAM 2 (105 pts)</b>	
Oct. 27	25	F	Bacterial and viral genetics	6
Oct. 30	26	M	Bacterial and viral genetics	6
Nov. 1	27	W	DNA structure	10
Nov. 3	28	F	DNA structure and replication – <b>Quiz 5</b>	11
Nov. 6	29	M	DNA structure and replication	11
Nov. 8	30	W	DNA replication and organization	12
Nov. 10	31	F	DNA replication and organization	12
Nov. 13	32	M	Genetic code and DNA transcription – <b>Quiz 6</b>	13
Nov. 15	33	W	Translation and proteins	14
Nov. 17	34	F	Translation and proteins	14
Nov. 20	35	M	Translation/Proteins and Gene regulation – prokaryotes	14, 16
Nov. 22	36	W	Gene regulation – prokaryotes – <b>Quiz 7</b>	16

Nov. 24		<b>F</b>	<b>Thanksgiving vacation</b>	
Nov. 27	37	M	Gene regulation – prokaryotes	16
Nov. 29	38	W	Gene regulation – eukaryotes	17
Dec. 1	39	F	Mutation	15
Dec. 4	40	M	Last class – <b>Quiz 8</b>	

September 1 - Last day to drop without a “W”; November 14 - Last Day to Drop with a “W” (WP/WF);

**\*\*This schedule is tentative and subject to change!\*\***

**Technology:** While in class, *keep all electronic devices* (especially smartphones) out of sight. In this class, the use of laptops/tablets during class is not allowed. To be discussed the first week of class. **During exams and quizzes, any electronic device seen on your desk or within sight will result in a grade of zero.**

### Support for learning

**REQUIRED Texts and Materials:** Concepts of Genetics, 11<sup>th</sup> ed., by Klug et al. 2014

**Course website:** Go to <https://oit.utk.edu/teachingtools/online/> to login to *Canvas*. You will have a single *Canvas* for the course, that includes files and grades from your Discussion section and the overall course (Lecture). The *Canvas* site will be used regularly for communication and posting updated syllabi, extra readings, assignments, course grades, etc.

### **Communications:**

- You will need to regularly check your *UTK email account* for announcements related to this course. If you are not receiving those e-mails, there is something wrong with your account!
- If you need to meet and can't make office hours, please use your UTK e-mail (spam filters may exclude other addresses) to schedule a meeting.
- I am happy to answer your e-mail questions, but allow up to 24 hours for a response. Also, once I leave the office I may not check my e-mail until the following workday, or the first day back after a weekend.

### **Study Rooms:**

417 Hesler is a quiet study room for majors in Biology. It can also be reserved for group study. There is also a student study room in Neyland Biology Annex, room 103.

### Assessment of your learning

**I. Grading system.** I and your TAs will post grades to *Canvas*, so please use it to monitor your progress. The web site is: <https://cas.tennessee.edu/cas/login>

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### **Lecture = 360 points**

Exams I and II (105 points each) = 210 points

Quizzes 1-4 (10 points each, best 3 of 4) = 30 points

Quizzes 5-8 (40 points each, best 3 of 4) = 120 points

### **Lab = 90 points**

Your TA will let you know what to expect

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### **Total = 450 points**

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Final letter grades will be determined by the total percentage of 480 points accumulated as follows:

A	93 – 100%	C	73 – 76%
A-	90 – 92%	C-	70 – 72%
B+	87 – 89%	D+	67 – 69%
B	83 – 86%	D	63 – 66%
B-	80 – 82%	D-	60 – 62%
C+	77 – 79%	F	<60%

## II. Class policies

**A. Attendance.** I place a heavy emphasis on class attendance. Note-taking is a *skill* that is important to learn and that will help you greatly in the future. I *do not* post powerpoints before lecture. Nor do I allow laptops or other electronic devices to be used during class. I do post my powerpoints after lecture as a study aide. It is your money that pays for you to have access to these lectures, so challenge yourself to you to take advantage of them!

**B. Lecture material** generally parallels the assigned readings in textbook. Extra material is occasionally discussed or assigned and **you are responsible for all material presented in class and for portions of the text assigned but not covered in class.** You should be able to answer questions that cover the assigned textbook pages, whether or not they were discussed in class.

### C. Exams

**1. Each exam will cover the material for that section of the course.**

**2. Make-up exams will be given when a student has a valid excuse** recognized by the University.

Such excuses are:

- A death in the family
- A medical illness of a severity that prevents a student from attending class (includes accidents)
- A University-sponsored activity or event that requires that a student miss class (requires letter)
- In order to take a make-up exam, a student must notify the Instructor as soon as possible and provide written documentation of one of the legitimate excuses listed above where possible. Students missing an exam due to a University-sponsored event should provide the Instructor with documentation of the event prior to the scheduled exam so that a make-up can be scheduled. All make-up exams will differ from the regularly scheduled exam. **If you fail to come to a scheduled appointment for a makeup exam and have not contacted the instructor, you will lose the opportunity to take the test.**

**3. Keep your copies of answer sheets and exams.** Grading errors are occasionally made.

### D. Quizzes:

- Generally, quizzes will be given at the end of class.
- There will be no makeups for quizzes.*
- But...only the best three of four quizzes will count for each of the two types of quizzes (ie. you may miss one of each type of quiz without penalty).

**E. Communication:** Generally, I will make announcements about class matters only during lecture. It is your responsibility to attend class and check *Canvas* regularly!

**F. Citizenship:** Talking in class, arriving late or leaving early, disturbs the class, and is rude. If persistent, it may result in penalties. Class attendance is required. You may leave class if you become ill or need to use the restroom, but please be considerate of others.

### III. Discussion sections:

- A. Your discussion leader (Teaching Assistant) will be responsible for all aspects of the lab and your grade for lab.
- B. Attendance is required and 10% of your lab grade will be on participation. Note: Absences from more than 2 labs will receive an “F” for the lab portion of the course. There are NO make-ups for a lab once each week has ended. Students missing labs for legitimate reasons must see their lab instructor as soon as possible and arrange to attend another lab section in that same week. There are no make-ups for lab quizzes except for medical or other excusable reasons as listed above.
- C. If you cannot attend your assigned lab on a specific week, you must talk with your lab instructor in order to arrange attending another regular scheduled lab session during that same week.
- D. Citizenship: You are expected to arrive in lab on time and to participate. Excessive talking about non-lab subjects while lab is in progress will accrue penalties.

### Academic integrity:

Academic dishonesty of any sort will not be tolerated. Plagiarism includes the copying of phrases, portions of sentences or the main ideas from ANYONE (including a classmate) on ANY work submitted for a grade (exams, assignments, quizzes, etc). Academic dishonesty includes assisting other students on quizzes or exams.

You are expected to abide by The University of Tennessee honor statement in Biology and in all of your university activities as pledged in the honor code:

*“An essential feature of the University of Tennessee, Knoxville, is a commitment to maintaining an atmosphere of intellectual integrity and academic honesty. As a student of the University, I pledge that I will neither knowingly give nor receive any inappropriate assistance in academic work, thus affirming my own personal commitment to honor and integrity.” (2017-2018 Undergraduate Catalog)*

Depending on the offence, penalties for academic dishonesty range from a minimum of a zero for the assignment, to an F for the course, to the filing of formal academic dishonesty charges seeking dismissal from The University of Tennessee. These choices are at the discretion of the instructor, and can occur in either the lecture or the lab portion of the class.

You should be familiar with the requisites of academic honesty and what constitutes academic dishonesty as outlined in the UT Undergraduate Catalog (<http://catalog.utk.edu/>).

### Other information

**Disability Services:** If you need course adaptations or accommodations because of a documented disability, please contact me privately to discuss your needs. If you have questions or concerns about disabilities or emergency information to share, please contact Disability Services: 2227 Dunford Hall; 974-6807; Email: [ods@utk.edu](mailto:ods@utk.edu); Website: <http://ods.utk.edu/>.

### Academic Assistance:

**Tutoring:** The Division of Biology does not offer tutoring services. Contact the Student Success Center and the Academic Support Unit of The Office of Minority Student Affairs for information about tutoring opportunities.

- **Student Success Center:** The comprehensive source for information, services, and resources to assist your success at UT: <http://studentsuccess.utk.edu>
  - 812 Volunteer Boulevard, Greve Hall, room 324
  - 865 974-6641, Email: [studentsuccess@utk.edu](mailto:studentsuccess@utk.edu)

**Technical Assistance:**

*Canvas*, or general information technology assistance:

- Help Desk: 865 974 9900 (M – F, 8:00 – 5:00)
- OIT Walk-In Help Desk: Commons, 2<sup>nd</sup> floor Hodges Library
- Turning Technologies (clickers): 866 746 3015

**Counseling Center:** <http://counselingcenter.utk.edu/>

1800 Volunteer Boulevard

865 974-2196, Email: [counselingcenter@utk.edu](mailto:counselingcenter@utk.edu)

**OTHER RESOURCES FOR STUDENTS:**

- One Stop: <http://onestop.utk.edu> (start here for any question you have)
- Undergraduate Catalogs: <http://catalog.utk.edu> (Listing of academic programs, courses, and policies)
- Hilltopics: <http://dos.utk.edu/hilltopics> (Campus and academic policies, procedures and standards of conduct)
- Course Timetable: [https://bannersb.utk.edu/kbanpr/bwckschd.p\\_disp\\_dyn\\_sched](https://bannersb.utk.edu/kbanpr/bwckschd.p_disp_dyn_sched) (Schedule of classes)
- Academic Planning: <http://www.utk.edu/advising> (Advising resources, course requirements, and major guides)
- Library: <http://www.lib.utk.edu> (Access to library resources, databases, course reserves, and services)
- Career Services: <http://career.utk.edu> (Career counseling and resources; HIRE-A-VOL job search system)