Genetics

BIOL - 2030 001

Course Description

Prereq: BIOL 1610 w/C grade or better AND CHEM 1210 w/C grade or better. Coreq: BIOL 2035. For biology/science majors. An introduction to the principles of genetics. Topics include: transmission (Mendelian), molecular, and population genetics. Three hours of lecture per week with additional lab component (BIOL 2035) required.

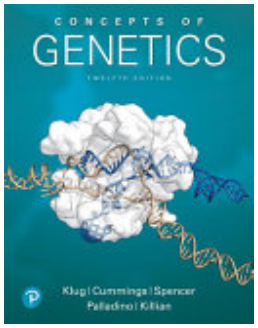
Semester: Fall & Spring

Course Prerequisites

Pre-Requisite(s): BIOL 1610; CHEM 1210. These classes must have been successfully completed (with a grade of C or better).

Co-Requisite(s): BIOL 2035

Required Textbook or Materials



Title: Concepts of Genetics
ISBN: 9780134604718
Authors: William S. Klug, Michael R. Cummings, Charlotte A. Spencer, Michael Angelo Palladino, Darrell Killian
Publication Date: 2019-01-01
Edition: 12th (The international edition or other editions of this book can be used as a substitute)

For more information on textbook accessibility, contact Accessibility & Disability Services at ads@slcc.edu.

Course Presentation

We will devote time in class to summarize chapter information (using Powerpoint presentations) and for group problem solving activities. We will learn and practice logical thinking skills to solve story problems. Students will have opportunities to explain experiments and concepts to fellow students. Students are expected to come to class prepared to ask and answer questions.

College Wide Student Learning Outcomes

SLCC has identified nine essential capacities all students should strengthen, regardless of academic major or career plans, that will serve students in all aspects of life.

- Acquire substantive knowledge in the intended major and throughout General Education
- Communicate effectively
- Develop quantitative literacies necessary for the chosen field of study
- Think critically
- Express themselves creatively
- Develop civic literacy and the capacity to be community-engaged learners who act in mutually beneficial ways with community partners
- Develop the knowledge and skills to work with others in a professional and constructive manner
- Develop information literacy
- Develop computer literacy

Engagement Plan

- I will respond to email within 2 business days. I will offer feedback on major assignments within1 week. The best way to contact me is via the Canvas Inbox, as I will prioritize this email over other modes of communication.
- In this course I will occasionally post announcements. This mode of communication will be used whenever I wish to contact everyone in the class
- Please bring your questions to class so that we can discuss them together. Your questions are more important than my lectures.

Course Student Learning Outcomes

- An introduction to the principles of genetics. Topics include: transmission (Mendelian), molecular, and population genetics.

Course Learning Environment

My hope is that all of us together will create a learning environment that supports a diversity of thoughts, perspectives and experiences, and honors your identities (including race, gender, class, sexuality, religion, ability, etc.) To help accomplish this:

- No discrimination is tolerated based on anyone's race, gender, sexuality, religion, abilities, English language proficiency or socio-economic circumstances. Please always choose kindness and patience in our class communications, there is space for all of us here.

- If you have a name and/or set of pronouns that differ from those that appear in your Canvas handle, please let me know so I can address everyone in a way that makes them feel comfortable and safe.

- I (like many people) am still in the process of learning about diverse perspectives and identities. If something was said in any of the class materials and discussions (by anyone) that made you feel uncomfortable, please talk to me about it. You can email me directly or send feedback via the anonymous open survey on our Canvas

site.

- If you feel like your performance in the class is being impacted by your experiences outside of class, please don't hesitate to let me know and request extra time on your course work. I want to be a resource for you and help you learn these materials without adding to anyone's level of stress and I promise to treat everyone with compassion.

General Course Policies

Attendance:

Attendance is a requirement in this class. Credit will be awarded during 26 class periods for In-class group work. Six of these class sessions can be missed before attendance will impact one's grade.

Academic Integrity:

Generative artificial intelligence (AI) software is a rapidly emerging tool that students may be interested in using. If doing so, SLCC students are expected to adhere to the same standards as the Code of Student Rights and Responsibilities statement on plagiarism. Presenting generative AI software content as your own is a violation of academic integrity. If you use generative AI in your work, you must indicate that you have done so.

Due Dates and Late Work Policy: Due dates are important to help students keep up with class materials. The following late penalties will apply:

In-class assignments: no make-up or late work possible. 6 lowest scores will not count toward grade.

Pre-lab assignments, post-lab assignments and lab quizzes: 90% of points possible if handed in less than 1 week late.

Section assignments: loss of 10% of points every week for a maximum of 3 weeks.

Group project: must be prepared to present on Wednesday, December 10 at 8:30 am.

Tests: students are expected to take each test on the scheduled date. A make-up date for 1 test can be arranged only with a legitimate excuse. The student will take that test at the testing center. Please contact me as soon as possible if you need to arrange a make-up test. Please contact me at the beginning of the semester if this policy will cause hardship.

Drop, Withdraw or Incomplete Grade: Last day to drop from class with refund is Sep 16, withdraw without refund is October 28. Students should verify that this is correct on the SLCC Webpage. A grade of "I" (Incomplete) is at the instructor's discretion and can be given if a student is facing extenuating circumstances preventing them from finishing the semester. In order to receive an incomplete, most of the course work must be completed (e.g. ~75%) with a passing grade.

SLCC Academic Policies: SLCC academic policies may be found in the SLCC 2023-2024 Catalog, and the Code of Student Rights and Responsibilities.

Keys to Success

1. Genetics is a challenging course and will require regular study time outside of class. Please plan to spend at least 7 hours each week outside of class time.

2. Get to know other class members and study together

3. It is important to keep up - it will be hard to catch up if you fall behind

4. Please come prepared to ask questions during class

5. Practice working on story problem questions and using mathematical tools to analyze data

6. Try to get beyond memorizing information by learning concepts that you can link together in logical fashion

Free STEM Tutoring

STEM Learning provides free tutoring services and textbook checkout to students enrolled in various courses offered by the School or Science, Math, and Engineering.

Tutoring is provided as a drop-in service only, except in certain circumstances.

Please visit https://www.slcc.edu/stem/tutoring/index.aspx for more information!

Academic Integrity

Students may work with others when completing assignments. Please be aware that these assignments contribute to preparing for the section test; therefore, it is important that you understand how to answer the questions without help from others or from notes.

It is expected that students complete quizzes and exams on their own. Quizzes can be completed with the help of notes. Tests will be completed without notes.

How to Navigate to Canvas

Description of Assignments/Exams

You will receive one grade for the combination of BIOL 2030 and BIOL 2035. 80% of the points will come from BIOL 2030 and 20% from BIOL 2035. Total points = 600.

For BIOL 2030: 4 sectional exams (14% each):	56%
8 take home assignments (1.75% each):	14%
20 in-class assignments (0.5% each*):	10%
For BIOL 2035: 10 pre-lab assignments ^:	3%
10 post-lab assignments ^:	10%
10 lab quizzes ^:	7%

*26 total in-class assignments (students can miss 6 without penalty)

^ students can miss one lab during the semester without penalty. Alternatively, the lowest pre-Lab, the lowest post-Lab, and the lowest quiz score will be dropped. Students may complete the quiz and the pre-Lab assignment even if they miss the lab.

Students will work together to complete a group project which they are expected to present to the class or in a college setting (such as the UPRC). This will be one third of the exam 3 score.

Grading Scale

Total points = 600

A: >93% > 558	A-: 90 - 93% 540 - 557	B+: 87 - 90% 522 - 539
B: 83 - 87% 498 - 521	B-: 80 - 83% 480 - 497	C+: 77 - 80% 462 - 479
C: 73 - 77% 438 - 461	C-: 70 - 73% 420 - 437	D+: 65 - 70% 390 - 419
D: 60 - 65% 360 - 389	E: <60% < 359	

Course Schedule

COURSE SCHEDULE

Date	Chapter(s) covered	lab activity
Week 1 (Aug 27)	Syllabus and Chapter 2: Cell Division	
Week 2 (Sep 1)	Labor Day Holiday	
(Sep 3)	Chapters 2 and 3: Meiosis and Genetics	
Week 3 (Sep 8)	Chapter 3: Mendelian Genetics	1) Fruit Fly Crosses
(Sep 10)	Chapter 4: Extensions of Mendel	
Week 4 (Sep 15)	Chapter 4: Extensions of Mendel	2) Probability/Chi Square

(Sep 17) Chapter 7: Sex Determination/Chromosomes

Week 5 (Sep 22) Chapter 8: Chromosomal Mutations 3) Chromosomal Mutations

(Sep 24) Chapter 9: Extranuclear Inheritance/Test Review

Week 6 (Sep 29) Chapter 10: DNA Structure Test 1: Ch 2, 3, 4, 7, 8, 9

(Oct 1) Chapter 11: DNA Replication

Week 7 (Oct 6) Chapter 12: DNA/Chromosome Organization 4) DNA Isolation/PCR

(Oct 8) Chapter 13: Transcription

Week 8 (Oct 13) Chapters 17 & 18: Transcriptional Regulation 5) Bioinformatics

(Oct 15) Chapter 13: Genetic Code

Week 9 (Oct 20) Chapter 14: Translation 6) DNA Quantitation

(Oct 22) Group Projects

Week 10 (Oct 27) Chapter 20: Recombinant DNA Technology Test 2: Ch 10-14, 17, 18

(Oct 29) Chapter 20: Recombinant DNA Technology

Week 11 (Nov 3) Chapter 20/21: DNA Sequencing 7) Mystery Plasmid

(Nov 5) Chapters 21: Genomic Analysis

Week 12 (Nov 10) Chapter 22/Spec Topics: Applications 8) Restriction Mapping

(Nov 12) CRISPR/Chapter 24: Cancer

Week 13 (Nov 17) Test 3: Ch 20 - 24, Spec Topics Group Projects

(Nov 19) Ch 15: Mutations and DNA Repair

Week 14 (Nov 24)	Ch 25: Quantitative Genetics	Group Projects
(Nov 26)	Thanksgiving Holiday	
Week 15 (Dec 1)	Ch 26: Population Genetics	9) Population Genetics
(Dec 3)	Ch 26: Population Genetics	
Week 16 (Dec 8)	Ch 5: Genetic Linkage	10) Genetic Mapping
(Dec 10)	Group Project Presentations	
Finals Week (Monday, Dec 15)		Test 4 at 9:00 am Ch 5, 15, 25, 26

Institutional Policies

As members of our academic community, we would like to invite you to review the Institutional Syllabus which covers important policies and procedures. This document contains important links for students on the code of student rights and responsibilities, academic integrity, and grading policies, Title IX and other important acknowledgements. By familiarizing yourself with this information, you can help us create a safe and respectful environment for everyone.

For more information, navigate to the Institutional Policies tab on the Institutional Syllabus page.

Learning Support and Tutoring Services

We are pleased to offer a range of tutoring and learning support services to help you achieve your academic goals. Whether you need assistance with a specific subject or want to improve your study skills, you have many options for tutoring or other support.

To learn more about the services we offer and how to access them, visit the Institutional Syllabus page under the Tutoring and Learning Support tab. We encourage you to take advantage of these resources to help you succeed in your studies. If you have any questions or would like to schedule a tutoring session, please don't hesitate to reach out to us. We are here to support you in any way we can.

Student Academic Calendar

As students you should be aware of all important dates in the semester, such as the day that courses begin and end, as well as the drop date and the last day to withdraw. To learn more about those dates, navigate to the Student Academic Calendar below:

SLCC Student Academic Calendar

Advising and Counseling Support Services

At our institution, we are committed to supporting your academic and personal growth. That's why we offer a range of advising and counseling services to help you navigate the challenges of college life. To learn more about the resources available to you and how to access them, visit the Institutional Syllabus page under the Advising and Counseling Support Services tab. Our advising team and the support centers across campus are here to support you in achieving your goals and overcoming any obstacles you may face.

Assignment Schedule

Due Date	Assignment Name	Assignment Type	Points
	Ch 10 - 12, labs 5 & 6 Discussion Board	Discussion	0
	Ch 13 - 18, Lab 7 Discussion Board	Discussion	0
	Ch 2 & 3 and Lab 1, 2 and 3 Discussion	Discussion	0

Due Date	Assignment Name	Assignment Type	Points
	Ch 20 and Labs 7 and 8 Discussion	Discussion	0
	Ch 4, 7, 8, 9 discussion	Discussion	0
	Chapters 21, 22 & 24, Lab 9 Discussion	Discussion	0
	Chapters 5, 15 and lab 11 Discussion	Discussion	0
	Introduce Yourself	Discussion	0
	Introduce Yourself	Discussion	0
	Population Genetics and Polygenic inheritance Discussion	Discussion	0
8/27/25	Aug 27 assignment	Assignment	2
9/3/25	Sep 3 Assignment	Assignment	2
9/8/25	Fruit Fly Crosses preLab Assignment	Assignment	2
9/8/25	Sep 8 Assignment	Assignment	2
9/10/25	Sep 10 Assignment	Assignment	2
9/15/25	Ch 2, 3 & 4 Assignment	Assignment	10
9/15/25	Probability and Chi-Square prelab assignment	Assignment	2
9/15/25	Fruit Fly Crosses Lab Quiz	Quiz	4
9/15/25	Sep 15 Assignment	Assignment	2

Due Date	Assignment Name	Assignment Type	Points
9/17/25	Sep 17 Assignment	Assignment	2
9/22/25	Probability and Chi-Square Lab Quiz	Quiz	4
9/22/25	Probability and Chi-Square Postlab assignment	Assignment	6
9/22/25	Meiosis and Chromosomal Mutations preLab Assignment	Assignment	2
9/22/25	Sep 22 Assignment	Assignment	2
9/24/25	Sep 24	Assignment	2
9/29/25	Test 1 at 10 am September 29	Quiz	90
9/29/25	Ch 7, 8, & 9 Assignment	Assignment	10
9/29/25	Fruit Fly Crosses postlab assignment	Assignment	6
9/29/25	Meiosis and Chromosomal Mutations Lab Quiz	Quiz	4
9/29/25	Meiosis and Chromosomal Mutations postlab assignment	Assignment	6
9/29/25	Sep 29	Assignment	2
10/1/25	Oct 1	Assignment	2

Due Date	Assignment Name	Assignment Type	Points
10/6/25	DNA isolation and PCR prelab assignment	Assignment	2
10/6/25	Oct 6	Assignment	2
10/8/25	Oct 8	Assignment	2
10/13/25	Ch 10 - 12 Assignment	Assignment	10
10/13/25	Bioinformatics preLab Assignment	Assignment	2
10/13/25	DNA isolation and PCR Assignment	Assignment	6
10/13/25	DNA isolation and PCR Lab Quiz	Quiz	4
10/13/25	Oct 13	Assignment	2
10/15/25	Oct 15	Assignment	2
10/20/25	Bioinformatics Lab Assignment	Assignment	6
10/20/25	Bioinformatics Lab Quiz	Quiz	4
10/20/25	DNA Quantitation preLab Assignment	Assignment	2
10/20/25	Oct 20	Assignment	2
10/22/25	ExCr Intro	Assignment	0
10/22/25	Oct 22	Assignment	2
10/27/25	Test 2 at 8:30 am October 27	Quiz	90

Due Date	Assignment Name	Assignment Type	Points
10/27/25	chapter 13, 14, 17, 18 Assignment	Assignment	10
10/27/25	DNA Quantitation Assignment	Assignment	6
10/27/25	DNA Quantitation Lab quiz	Quiz	4
10/27/25	Oct 27	Assignment	2
10/29/25	Oct 29	Assignment	2
11/3/25	Mystery Plasmid preLab Assignment	Assignment	2
11/3/25	Nov 3	Assignment	2
11/5/25	Nov 5	Assignment	2
11/10/25	Chapter 20 assignment	Assignment	10
11/10/25	Mystery Plasmid Quiz	Quiz	4
11/10/25	Mystery Plasmid Assignment	Assignment	6
11/10/25	Nov 10	Assignment	2
11/10/25	Restriction Mapping preLab Assignment	Assignment	2
11/12/25	Nov 12	Assignment	2
11/17/25	Test 3 on Nov 17 at 8:30 am	Quiz	60
11/17/25	Chapters 21, 22 & Sp Tpc Assignment	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
11/17/25	Restriction Mapping Assignment	Assignment	6
11/17/25	Restriction Mapping Quiz	Quiz	4
11/17/25	Nov 17	Assignment	2
11/19/25	Nov 19	Assignment	2
11/24/25	Nov 24	Assignment	2
12/1/25	Dec 1	Assignment	2
12/1/25	Population Genetics preLab assignment	Assignment	2
12/3/25	Dec 3	Assignment	2
12/8/25	Chapters 15 & 25 Assignment	Assignment	10
12/8/25	Genetic Mapping preLab Assignment	Assignment	2
12/8/25	Population Genetics Assignment	Assignment	6
12/8/25	Population Genetics Quiz	Quiz	4
12/8/25	Dec 8	Assignment	2
12/10/25	Test 3 - special project presentation	Quiz	30
12/15/25	Test 4 Chapters 5, 15, 25, 26	Quiz	90
12/15/25	Chapters 5 & 26 Assignment	Assignment	10

Due Date	Assignment Name	Assignment Type	Points
12/15/25	Genetic Mapping_ Assignment	Assignment	6
12/15/25	Genetic Mapping_ Quiz	Quiz	4
12/17/25	course evaluation	Assignment	0