Syllabus – Spring 2021

Excluding materials for purchase, syllabus information may be subject to change. The most up-to-date syllabus is located within the course in HuskyCT.

Course and Instructor Information

Course Title: MCB 2410 Genetics
Credits: 3
Format: Remote
Prerequisites: BIOL 1107. Not open for credit to students who have passed MCB 2400. May not be taken out of sequence after passing MCB 3220, 3400, 3410, 3412, 3413, 3843W, or 4416.

Professor/Instructor/Facilitator: Dr. Mark Longo, Ph.D.
Pronouns: him, her, his
Email: mark.longo@uconn.edu
Telephone: N/A
Office Hours/Availability: I am available through e-mail and through WebEx video meetings. I am happy to meet with you by appointment on WebEx. Teaching Assistants will have scheduled availability for extra help as well (Times will be announced on HuskyCT).

Teaching Assistants:

Matthew Kearney	matthew.kearney@uconn.edu
Rishabh Kejriwal	rishabh.kejriwal@uconn.edu
Kaylah Samuelson	kaylah.samuelson@uconn.edu
Nidhi Vijayan	nidhi.vijayan@uconn.edu

Course Materials

Textbook:

REQUIRED- **Sapling Learning** online component of the text **Genetics: A Conceptual Approach. Seventh Edition**, Benjamin A. Pierce, W.H. Freeman and Company

- The online access can be purchased directly through the publisher's website as well (UConn gets a slight discount so it may be less expensive through the UConn bookstore). With this access a digital version of the text is accessible (it is not downloadable).

LINK TO SAPLING LEARNING:
https://www.saplinglearning.com/ibiscms/course/view.php?id=168542

Optional Physical textbook:
- Genetics: A Conceptual Approach. Seventh Edition, Benjamin A. Pierce.
Copyright: W.H. Freeman and Company (strongly recommended)
ISBN: 9781319380267 ($128.00)
Texts are available for purchase through the UConn Bookstore (or use the Purchase Textbooks tool in HuskyCT). Textbooks can be shipped (fees apply).

Sapling Access without physical textbook:
ISBN: 9781319308278 ($106.65)

***** IMPORTANT ***** **The Sapling Learning platform** works best with the latest version of Chrome for a web browser. Please be sure to use this when doing any assignments on Sapling. Also note, for each answer (whether the first time you answered or if you change an answer) you must select '**SAVE ANSWER**".

Course Description

Foundational principles of classical genetics and modern genomics with a focus on eukaryotic model genetic organisms. Emphasis on molecular mechanisms underlying heredity. Intended for majors in MCB and related disciplines.

Conceptually the course is divided into three parts: Mendelian genetics, molecular genetics, and applied genetics. Students are urged to listen carefully to the lectures and read the appropriate portions of the text to assist in mastery of material. There will be an emphasis on solving genetic problems. Strategies applying knowledge from lectures to solve problems will be taught in discussion sections each week. An online companion to the text called "**Sapling Learning**" is **required**.

How to Succeed in this Course

The material covered in the lectures and Discussion sections should guide your reading of the textbook chapters. You will be responsible for only this material (and natural extensions of this material). The textbook has enough material for two semesters, so you are not responsible for the sections that are not covered in lectures and discussion.

Course Outline

Module 1: Mendelian Genetics
Chapters 1-3,6-8 (sex determination from Chapter 4 is covered with chapter 8).
Module 2: Molecular Genetics
Chapters 10, 12-15, 17-18, 25 (the *Lac Operon* from chapter 16 is covered with chapter 17).
Module 3: Applied Genetics
Chapters 19-20, 23-24 & 26

Class Meeting Schedule

A detailed course schedule can be found at the end of this syllabus and on HustyCT.

- The course will be timed with two recorded lectures per week posted to HuskyCT on Mondays and Wednesdays (as indicated on the schedule). Corresponding PowerPoint slides will also be posted.

- Discussion sections will be live and held virtually as scheduled in Peoplesoft (Thursdays and Fridays) using Collaborate Ultra on HuskyCT.

Course Requirements and Grading

Summary of Course Grading:

Sections 1-10 (Nonhonors)

Course Components	Weight
Quizzes	25%
Exam 1-3	Lowest 10% Highest 2 @ 20% each
Cumulative Final	25%

Sections 11-12 (Honors)

Course Components	Weight
Quizzes	20%
Exam 1-3	Lowest 10% Highest 2 @ 20% each
Cumulative Final	20%
Honor's activities	10%

Note: for quizzes and exams, they are available all day on the day they are due, but they are timed. You can pick what time works best for you to take them. Once you begin them, the timer starts, and you need to complete them in the designated time.

Quizzes: **will be administered on HuskyCT**. These will be short assessments (approximately 10 multiple choice question) and can be used as an example of the sort of problems to expect on the exams. They will cover any material covered in the designated week. Your lowest 2 quiz score will be dropped. You will have 30-minutes to complete these quizzes. **Note:** this is more time than will be given on the exams so please plan appropriately. You will be expected to have more experience and mastery of the material for the exams. Quizzes submitted late will be subject to -5% for each day they are late. Quizzes will be due on each **Friday** and will cover the previous week's material. These quizzes will be available from **8 a.m. until 11:59 p.m.** on the scheduled day.

Practice quizzes: **on Sapling**. These quizzes will also be due on each Friday. They are completely optional. If you complete them, I will average these practice quizzes and use this averaged grade to replace a lower HuskyCT quiz grade (after the two lowest dropped scores). This grade will not hurt you if all your HuskyCT quiz scores are higher. It can only help.

Exams 1-3: will be administered on HuskyCT. These will be similar to the type of questions found on the quizzes but can cover any material covered in lectures (not just what was found on the quizzes). These exams will also be available from **8 a.m. until 11:59 p.m.** on the scheduled day. You will have one hour to complete each exam. Exams submitted late will be subject to -10% for each day they are late. These exams will have 30-35 multiple choice questions. The lowest grade of exams 1-3 will count for 10% of your final grade. Each of the other exams will count as 20% each.

Final Exam – The Final Exam will be cumulative and will be administered on HuskyCT. Typically, the registrar schedules when Final exams are administered. When they schedule a day (and/or time), the exam will be available on that day from **8 a.m. until 11:59 p.m.** You will have two hours to complete the exam. The final will have 60-65 multiple choice questions. **Note:** Final exams can only be rescheduled with permission from the Dean of Students office.

Extra Credit - on Sapling. These activities are due the day before each exam. For each of these activities, you need to get 75% or better to receive full credit for that activity. If you do all of the extra credit activities (and score ≥75%) you will get **5 points added to your final quiz average**. You will receive extra credit points proportional to the number of activities you successfully complete. (e.g. Complete them all, you receive +5 points. Complete half and receive +2.5 points.)

Discussion Section Polling questions – During your scheduled live discussion section each week there will be polling questions. Participation in these polling questions can earn you an additional **3 extra credit points added to your final quiz average**. (You will receive extra credit proportional to the number of polling questions you participate in).

Honor's Sections 11-12:
The honors portion of your grade is based on Honors assignments on the Sapling Learning platform, Participation in two Discussion Board discussions, and completing 3 short quizzes after viewing 3 different documentaries.

Sapling: There are five online assignments on Sapling that require you to read an article from the journal *Nature*. You then need to complete the accompanying assessment. These scores will count as they are scored on Sapling and will be averaged with the other honors assignment scores (see next section).

Supplemental Videos: Links to the videos can be found in HuskyCT uner "Honors Resources"

Discussion Board: You will be required to participate in two Discussion Board discussions, on HuskyCT for your specific section.

For each topic there will be associated videos or reading for you to use to prompt your ideas. For each topic, you will need to write an original post (no quotes and be sure to use your own words). This post should be **at least 250 words in length** and will be **due by the end of the day on the Friday indicated on the schedule**. The following week, you will need to **respond to at least 3 other students**. These response posts need to be a minimum of 125 words each. These responses are due by the end of day on the Friday of the scheduled week.

- **During Week 1**, you must post a brief introduction of yourself in the Introduction thread. Post only what you are willing to share with your classmates. What's your major? What year are you? Where are you headed? Do you have a pet turtle? Favorite hobbies, etc. This is only to familiarize you with discussion board itself as well as the other people in the class. This post will receive 5 points for participation.
- **You will participate in the HuskyCT Discussion Board for your particular section.** (Note: you should see two MCB2410's in your HuskyCT. One is for lecture (…SEC001-1213), one is for your discussion section (….SEC011D-1213 or …SEC012D-1213)).
- **Please remember your Student Code of Conduct. No inflammatory or otherwise inappropriate posts will be tolerated. Please be respectful and supportive of your classmates.**

Posts will be graded on a 20-point scale using the following general guidelines for point assignment. The points will be given as a score for the whole discussion thread (your initial post as well as your 3 responses):

Contributions	Description	Points Assigned
Provocative	Response goes beyond simply answering the prompt; attempts to stimulate further thought & discussion.	20
Substantial	Response provides most of the content required by the prompt, but does not require further analysis of the subject	15
Superficial	Response provides obvious information without further analysis of the concept; lacks depth of knowledge or reasoning	10
Incorrect	Response does not accurately address the prompt; rambling and/or without consistency.	5
None	No response provided to the prompt within the associated timeframe.	0

- You will receive a 'Discussion Board score' that will be averaged with the Sapling assessments and HuskyCT quizzes (above) to calculate your final Honors portion of your grade. This means there are 45 possible points (5 for initial post and 20 for each other post).

Grading Scale:

Grade	Letter Grade	GPA
93-100	A	4.0
90-92	A-	3.7
87-89	B+	3.3
83-86	B	3.0
80-82	B-	2.7
77-79	C+	2.3
73-76	C	2.0
70-72	C-	1.7
67-69	D+	1.3
63-66	D	1.0
60-62	D-	0.7
<60	F	0.0

Due Dates and Late Policy

All course due dates are identified in the Course Schedule on HuskyCT. Deadlines are based on Eastern Time; if you are in a different time zone, please adjust your submittal times accordingly. *The instructor reserves the right to change dates accordingly as the semester progresses. All changes will be communicated in an appropriate manner.*

Late submissions: Quizzes and exams can be turned late for a penalty of -5% per day for quizzes and -10% for exams. Discussion Boards must be completed on time (no sense having a discussion if everyone has left the room). Late Honors Assignments will be subject to a -5% penalty per day.

Weekly Time Commitment

You should expect to dedicate approximately 10.5 hours a week to this course. This expectation is based on the various course activities, assignments, and assessments and the University of Connecticut's policy regarding credit hours. More information related to hours per week per credit can be accessed at the Online Student website.

Student Authentication and Verification

The University of Connecticut is required to verify the identity of students who participate in online courses and to establish that students who register in an online course are the same students who participate in and complete the course activities and assessments and receive academic credit. Verification and authentication of student identity in this course will include:

1. Secure access to the learning management system using your unique UConn NetID and password.
2. **You will need to show your ID during your discussion section at the beginning of the semester (and at the request of myself or a TA).**

Students with Disabilities

The University of Connecticut is committed to protecting the rights of individuals with disabilities and assuring that the learning environment is accessible. If you anticipate or experience physical or academic barriers based on disability or pregnancy, please let me know immediately so that we can discuss options. Students who require accommodations should contact the Center for Students with Disabilities, Wilbur Cross Building Room 204, (860) 486-2020 or http://csd.uconn.edu/.

Blackboard measures and evaluates accessibility using two sets of standards: the WCAG 2.0 standards issued by the World Wide Web Consortium (W3C) and Section 508 of the Rehabilitation Act issued in the United States federal government." (Retrieved March 24, 2013 from Blackboard's website)

Student Responsibilities and Resources

As a member of the University of Connecticut student community, you are held to certain standards and academic policies. In addition, there are numerous resources available to help you succeed in your academic work. Review these important standards, policies and resources, which include:

- The Student Code
  - Academic Integrity
  - Resources on Avoiding Cheating and Plagiarism
- Copyrighted Materials
- Credit Hours and Workload
- Netiquette and Communication
- Adding or Dropping a Course
- Academic Calendar
- Policy Against Discrimination, Harassment and Inappropriate Romantic Relationships
- Sexual Assault Reporting Policy

Software/Technical Requirements (with Accessibility and Privacy Information)

The software/technical requirements for this course include:

- HuskyCT/Blackboard (HuskyCT/ Blackboard Accessibility Statement, HuskyCT/ Blackboard Privacy Policy)
- Adobe Acrobat Reader (Adobe Reader Accessibility Statement, Adobe Reader Privacy Policy)
- Dedicated access to high-speed internet with a minimum speed of 1.5 Mbps (4 Mbps or higher is recommended).
- WebCam
- **Sapling Learning**

For information on managing your privacy at the University of Connecticut, visit the University's Privacy page.

NOTE: This course has NOT been designed for use with mobile devices.

Help

Technical and Academic Help provides a guide to technical and academic assistance.

This course is facilitated online using both the learning management platform, HuskyCT, and the online companion to your text **Sapling Learning**. If you have difficulty accessing HuskyCT, you have access to the in person/live person support options available during regular business hours through the Help Center. You also have 24x7 Course Support including access to live chat, phone, and support documents. If you have issues with Sapling Learning, please contact the MacMillan Learning tech support available through the Sapling Learning website.

Minimum Technical Skills

To be successful in this course, you will need the following technical skills:

- Use electronic mail with attachments.
- Save files in commonly used word processing program formats.
- Copy and paste text, graphics or hyperlinks.
- Work within two or more browser windows simultaneously.
- Open and access PDF files.

University students are expected to demonstrate competency in Computer Technology. Explore the Computer Technology Competencies page for more information..

Evaluation of Course Experience

Students will be given an opportunity to provide feedback on their course experience and instruction using the University's standard procedures, which are administered by the Office of Institutional Research and Effectiveness (OIRE).

The University of Connecticut is dedicated to supporting and enhancing teaching effectiveness and student learning using a variety of methods. The Student Evaluation of Teaching (SET) is just one tool used to help faculty enhance their teaching. The SET is used for both formative (self-improvement) and summative (evaluation) purposes.

Additional informal formative surveys and other feedback instruments may be administered within the course.

MCB2410		Genetics		Spring 2021		
Week	**Class**	**Day**	**Date**	**Chapter**	**Course Topic**	**Honors Assignments**
	Module 1 - Mendelian Genetics					
1	1	Monday	1/18/21	-----	*** No Class - classes start 1/19/21 ***	
	2	Wednesday	1/20/21	Ch. 1	**Lecture: P**olicies / syllabus / Introduction to Genetics	
		Discussion	1/21-1/22		**Discussion Topic:** Mitosis, Meiosis and the cell cycle.	**HONORS: Discussion Board** Intro Post - (1/22)
					Friday Quiz: no graded quiz	
2	-	Monday	1/25/21	Ch. 2 & 8	**Lecture:** Chromosomes and Cellular Reproduction	
	3	Wednesday	1/27/21	Ch. 8	**Lecture:** Chromosome variation.	
		Discussion	1/28-1/29		**Discussion Topic:** Chromosome variation and nondisjunction.	**HONORS: Sapling Nature** Article 1 "Learning to dive in to Primary Research" (1/29)
					Friday Quiz 1: Week 1 material. (1/29)	
3	4	Monday	2/1/21	Ch. 3	**Lecture:** Basic principles of heredity.	
	5	Wednesday	2/3/21	Ch. 5	**Lecture:** Extensions and modifications of basic principles.	
		Discussion	2/4-2/5		**Discussion Topic:** Mendelian genetics and extensions of mendel.	**HONORS: Disc. Board** Initial Post: At Home Genetic testing. (2/5)
					Friday Quiz 2: Week 2 material. (2/5)	
4	6	Monday	2/8/21	Ch. 6	**Lecture:** Pedigree analysis, applications and genetic testing.	
	7	Wednesday	2/10/21	Ch. 7	**Lecture:** Linkage, recombination and eukaryotic gene mapping.	
		Discussion	2/11-2/12		**Discussion Topic:** Pedigree and Linkage.	**HONORS: Disc. Board** Response Post: At Home Genetic testing. (2/12)
					Friday Quiz 3: Week 3 material. (2/12)	
5	**Module 2 - Molecular Genetics**					
	8	Monday	2/15/21	Ch. 25	**Lecture:** Population genetics	
	9	Wednesday	2/17/21	-	***TBA***	
		Discussion	2/18-2/19		**Discussion Topic:** Population genetics.	**HONORS: Movie** "Genetic discoveries.." with **HuskyCT quiz**. (2/19)
					Friday Quiz 4: Week 4 material. (2/19)	
6	10	Monday	2/22/21	-	***** Exam 1 - Module 1 *** (Chapters 1-3, 5-8)**	
	11	Wednesday	2/24/21	Ch. 10 & 12	**Lecture:** DNA structure and replication	
		Discussion	2/25-2/26		**Discussion Topic:** DNA structure and replication	**HONORS: Sapling Nature** Article 2 "DNA Polymerases and Cancer" (2/26)
					Friday Quiz 5: Week 5 material. (2/26)	
7	12	Monday	3/1/21	Ch. 13	**Lecture:** Transcription.	
	13	Wednesday	3/3/21	Ch. 14	**Lecture:** RNA molecules and RNA processing.	
		Discussion	3/4-3/5		**Discussion Topic:** Transcription and RNA processing.	**HONORS: Sapling Nature** Article 3 "Let-7 miRNA family" - 3/13
					Friday Quiz 6: Week 6 material. (3/5)	
8	14	Monday	3/8/21	Ch. 15	**Lecture:** The genetic code and Translation.	
	15	Wednesday	3/10/21	Ch. 16.2; Ch. 17	**Lecture:** Control of gene expression.	
		Discussion	3/11-3/12		**Discussion Topic: T**ranslation and control of gene expression.	**HONORS: Movie** "Genetics and Genomics: Today and Tomorrow" with **Quiz** (3/12)
					Friday Quiz 7: Week 7 material. (3/12)	
9	**Module 3 - Applied Genetics**					
	16	Monday	3/15/21	Ch. 18	**Lecture:** Gene mutations and DNA repair.	
	17	Wednesday	3/17/21	-	***TBA***	
		Discussion	3/18-3/19		**Discussion Topic:** Mutation and repair	**HONORS: Disc. Board** Initial Post: CRISPR-Cas9 gene editing. (3/19)
					Friday Quiz 8: Week 8 material. (3/19)	
10	18	Monday	3/22/21		***** Exam 2 - Module 2 *** (Chapters 10, 12-15,16.2, 17 and 25)**	
	19	Wednesday	3/24/21	Ch. 19	**Lecture:** Molecular genetic techniques and technologies I.	
		Discussion	3/25-3/26		**Discussion Topic:** Molecular genetics techniques.	**HONORS: Disc. Board** Response Post: CRISPR-Cas9 gene editing. (3/26)
					Friday Quiz 9: Week 9 material. (3/26)	
11	20	Monday	3/29/21	Ch. 19	**Lecture:** Molecular genetic techniques and technologies II.	
	21	Wednesday	3/31/21	Ch. 20	**Lecture:** Genomics I.	
		Discussion	4/1-4/2		**Discussion Topic:** Molecular genetics techniques.	**HONORS: Sapling Nature** Article 4 "From GloFish to human disease models" (4/2)
					Friday Quiz 10: Week 10 material. **(4/2)**	
12	22	Monday	4/5/21	Ch. 20	**Lecture:** Genomics II.	
	23	Wednesday	4/7/21	Ch. 23	**Lecture:** Cancer genetics.	
		Discussion	4/8-4/9		**Discussion Topic:** Genomics	**HONORS: Sapling Nature** Article 5 **"**Mouse models of human cancer" (4/9)
					Friday Quiz 11: Week 11 material. (4/9)	
13		Monday	4/12/21		***** Spring Recess *****	
		Wednesday	4/14/21			
		Discussion	4/15-4/16			
14	24	Monday	4/19/21	Ch. 24	**Lecture:** Quantitative genetics.	
	25	Wednesday	4/21/21	Ch. 26	**Lecture:** Evolutionary genetics.	
		Discussion	4/22-4/23		**Discussion Topic:** Evolutionary and Quantitative genetics.	**HONORS:** Movie "What Darwin Never Knew" with **HuskyCT quiz.** (4/23)
					Friday Quiz 12: Week 12 material. (4/23)	
15	26	Monday	4/26/21	-	***TBA***	
	27	Wednesday	4/28/21	-	***** Exam 3 - Module 3 *** (Chapters 18-20, 23-24 and 26)**	
	Reading Days		4/29-5/2		**Reading Days**	
16	-	Monday	5/3/21	-	**Final times will be announced on the Registrar's**	***** Final's week *****
		Wednesday	5/5/21		**website:**	
		Friday	5/7/21		**http://registrar.uconn.edu/exams/**	