

Introduction to Biological Science I

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COURSE DESCRIPTION:

Semester course; 3 lecture hours. 3 credits.

Introduction to core biological concepts including cell structure, cellular metabolism, cell division, DNA replication, gene expression and genetics. Designed for biology majors.

COURSE OVERVIEW

This course is typically taken in conjunction with the lab (BIOZ 151), and it serves as a pre-requisite to BIOL 152 in the biology major core requirements. The course content is organized in four modules, each followed by a test. To prepare for module tests, students will complete pre-lecture assignments (readings, questions) to prepare for lecture, participate in in-class lectures with review and problem solving questions and group activities, and complete weekly review assessments online. To foster connection of concepts learned in class with outside world questions, events and applications, a weekly online discussion forum will be utilized. Our goals are to help you establish a foundational understanding of biology, and to learn to learn for understanding, retention, and connection. The course practices outlined here are designed to foster growth toward these goals.

Pre-requisites:

[MATH 141](#), [MATH 151](#), [MATH 200](#), [MATH 201](#) or a satisfactory score on the math placement exam; and [CHEM 100](#) with a minimum grade of B or a satisfactory score on the chemistry placement exam. Pre- or corequisite: [CHEM 101](#). Please see these departments' websites for information on placement tests.

COURSE OBJECTIVES:

Students who successfully complete this course will be able to:

- Correlate the structure of organic molecules with their basic functions and their roles in cells
- Describe how energy enters living systems and how it used by different organisms and organelles to keep life going.
- Compare and contrast the formation of new cells with the formation of gametic cells
- Outline the relationships between genes, inheritable traits and gene expression patterns
- Relate key biological themes to examples found in the natural world
- Explain how scientists learn more about the world around them, and the changing nature of scientific information.
- Apply key concepts in biology to information/scenarios outside of the course.

COURSE MATERIALS

1. Top Hat In-Class response system (Subscription required; \$34)



We will use Top Hat system to record attendance and in-class responses for review. In order to participate through Top Hat during the lecture, you will need to bring a laptop, tablet or smart phone (something that can text or access the internet or support the TopHat App) to every single class. If you cannot do this or have some issue related to this, please contact me immediately.

2. Textbook:

an online textbook is available and *must be accessed using your Top Hat subscription* and is included in the price of Top Hat. The version of the text on TopHat is a *customized version for our course* of Clark, M.A., Choi, J. Douglas, M. 2018. *Biology*. 2nd Edition, OpenStax. (<https://cnx.org/contents/8d50a0af-948b-4204-a71d-4826cba765b8>) The textbook through Top Hat is organized by learning modules, which are made available as we cover the current material.

If you'd like a printed version of each learning module, open the learning module on the Top Hat as *Full Screen*, use the "**Print**" feature on your web browser and save it as a PDF file.

3. Packback Weekly Discussion Forum (Subscription required; \$25)



We will use Packback Discussion Forum to instill our scientific curiosity and continue our scientific conversation outside the classroom. You will be required to prepare ONE post in response to the posted

question(s) and respond to TWO students' remarks every week. Please read the Packback discussion guidelines and grading system for more details.

4. VCU email address and Blackboard

will be used for digital communication. Blackboard will be used to post announcements, course materials, study questions, and grades, among other uses strictly for the course. Online etiquette for email is expected, including politeness and respect.

Lecture outlines, Study Guides, and other lecture materials (e.g., diagrams) will be available at **Blackboard** for you to download and bring to each class. These are typically posted the evening before class.

Note: Posted materials to Blackboard and Top Hat are free and posted by your instructor who writes your tests, as well as these materials. Posting notes or materials generated by your instructor for monetary gain is copyright infringement and Honor Code violation, and will be prosecuted to the fullest extent.

COURSE GRADING AND POLICIES

Final grades will be determined using the following grade scale: A=90-100%; B=80-89.99%; C=70-79.99%; D=60-69.99%; F=0-59.99%. Borderline grades will *not* be bumped up to the next letter grade for *any* reason. Your grade will be weighted according to the following assignments.

Category	Weight (%)
a. Pre-lecture Reading Assignments in Top Hat	10
b. In-Class Participation (Top Hat questions and group exercises)	10
c. Weekly Online Review Assessments (on Blackboard)	10
d. Weekly Packback Discussion Forum (1 post + 2 responses)	10
e. Module Tests, 4	40
f. Final Exam (cumulative)	20

Weekly Work-flow will involve grading categories a-d (above) as follows:

- Pre-lecture reading assignments in Top Hat** will include the reading material plus assigned questions to answer before coming to the lecture. These assignments are due by 9am on the days of class.
- In-class participation using Top Hat** will include questions within mini-lectures and group active learning exercises to reinforce the material that you reviewed before class.
- Weekly online review assessments on Blackboard** will be available on Thursdays and due on Sundays by 11:59 PM. These review assessments will give you practice answering questions in test-format (multiple-answer multiple-choice, sequences, and short-answer). You should prepare for them by studying the previous weeks' material.
- Weekly Packback Curiosity posts** will be open on Thursdays and due on Sundays by 11:59 PM. The purpose of these discussions is to apply course material to things you encounter in your lives, read or hear about. Each week's forum will usually be prompted by a question or topic that I will post. Questions asked must be topic-oriented and open-ended with no particular right answer. The Packback program scores your responses and questions automatically. Higher scores (called curiosity points) require that you post responses in the following format: clearly state your questions or response, the basis and support of your question or response (i.e., background information), and citation of reliable sources for the material you are using in your evidence or argument.

Tests and the Final Exam are to be taken in class on the day assigned. You are *required* to bring a pencil with eraser and your VCU ID. *Cell phones must be turned off (or a 10-point deduction) and are prohibited from being at your seat (or a grade of "0" on your test with possible Honor Code violation report; see Test and Final Exam Procedures).* If you arrive after someone has turned in the test, you will receive a "zero" for the test.

Makeup tests will be *essay exams* and will be given *only* in the event of a *validly documented emergency* and with notification *within 24 hours* of the assessment. Valid excuses include unexpected medical or family emergencies that prevent you from showing up to the test or final exam time. Excuses for family trips, medical appointments, interviews, or needing more time to study are not valid excuses.

ADDITIONAL COURSE POLICIES

Attendance:

100% attendance is expected and will be monitored using Top Hat. It is your responsibility to come to class regularly or to get the material you missed in class *from another student rather than from instructors, preceptors, or SI leaders*.

When signing in to Top Hat each day in class, you will need to ensure Top Hat has access to your location so that you can be marked as **present** and participate in **in-class assessments**. When we take Secure Attendance, you will be asked to enter and submit the 4-digit attendance code. You will then see a screen asking you to *allow Top Hat to access your location*.

Click **Allow** in the browser pop-up window that appears and then click **Verify my location** to continue.

You can also set it up so your device allows Top Hat to access and verify your location by

using a laptop browser to access Top Hat:

<https://support.tophat.com/s/article/Student-Secure-Attendance-Browser-Permissions>

using a mobile app. to access Top Hat:

<https://support.tophat.com/s/article/Student-Secure-Attendance-Mobile-Permissions>

According to University's "[Student Attendance Regulations](#)", if the student is in violation of the attendance policy, in which students who never attend/participate or continue to miss classes with a total of *6 unexcused absence before the withdrawal deadline* will be administratively withdrawn.

Inclement Weather:

Lecture will meet unless officially canceled by VCU officials. Call the VCU "inclement weather hotline", 828-OPEN (828-6736), or go to www.vcu.edu/alert/ If the university closes due to weather on the day of a test, the test will be given the day the class meets next. Otherwise, tests and the final exam will be given on scheduled days listed in the Tentative Schedule (below), with the possibility that content covered may be modified if lectures were missed prior to a scheduled test

Important Dates:

Last Day to **ADD/DROP**: *[Removed]*

Last day to **WITHDRAW** from the course for a **W**: *[Removed]*

Last day to provide written notification to observe **religious holidays** or for **special circumstances**: *[Removed]*

Electronic Devices:

Students may use laptops during lecture for class purposes only. Audio recording devices may only be used after talking with the instructor and signing the Lecture Recording Acknowledgement form located in Blackboard under Course Documents. Cell phones, pagers, and tablets must be on silence during lecture and lab class and may not be on your person during exams. Taking pictures or video is not permitted in lecture for any reason. Students caught using electronic devices for any unauthorized activity (e.g., texting, checking email or Facebook, or looking at unrelated websites, etc.) will be asked to leave the classroom and will lose participation points for the day.

Student Code of Conduct can be found at <https://conduct.students.vcu.edu/student-code-of-conduct/>. Questions and class discussions are welcome and are encouraged. However, I have a **zero tolerance policy** for personal conversations!

According to the *Faculty Guide to Student Conduct in Instructional Settings*, "The university is a community of learners. Students, as well as faculty, have a responsibility for creating and maintaining an environment that supports effective instruction. In order for faculty members (including graduate teaching assistants) to provide and students to receive effective instruction in classrooms, laboratories, studios, online courses, and other learning areas, the university expects students to conduct themselves in an orderly and cooperative manner." Among other things, cell phones and electronic devices can be only used solely for class participation purpose. The Student Code of Conduct also prohibits the possession of or carrying of any weapon (For more information, check [VCU Weapon Regulation](#))

Students who exhibit behaviors that are considered to **obstruct or disrupt** the class or learning activities will be considered disruptive behavior under the University Policy. Disruptive behavior includes sleeping, habitual tardiness, interrupting others, talking out of turn, inappropriate language, verbal behavior that is disrespectful to other students or the instructor, or other behaviors that consider disruptive. Students who exhibit disruptive behavior will be given verbal warning and may be temporarily dismissed from the class by the instructor. The instructor will meet with the student to discuss and develop a corrective behavior to prevent future disruptions. If three or more violations are found from the student, the instructor will

prepare a written complaint (charge) directed to the Office of Student Conduct and Academic Integrity (OSCAI). Once the charge has been submitted, the Director of OSCAI or designee will review the charge and appoint a Student Conduct Administrator to complete an investigation. Specific details on policy and procedures are outlined in [Student Code of Conduct](#) on the VCU website.

SI Sessions:

Your Supplemental Instruction (SI) Leader will announce weekly study sessions. Please see the SI schedule and any materials posted under the “SI Sessions” button on the Blackboard page. In addition, tutoring is available by appointment or drop-in through the Campus Learning Center located on the 1st floor of Hibbs Hall, 900 Park Ave., 827-8108 (<http://clc.vcu.edu>).

Tips for doing well:

Please remember that your grade is not *given* to you; it is *earned* by you. My role is to *report* grades, *not rescue* them. You can expect to *study each day* for this class.

1. Use outside time to *read assignments before class; to review/recopy notes and re-read chapter material in more depth after the lecture; and to write down questions that you don't understand so that you have them ready to ask me.*
2. Go to SI Sessions, and review with preceptors. Come to my office hours in groups or alone.
3. If you are having trouble in this class, please come see me early on—do not wait.
4. Form study groups to study on a regular basis. In study groups, take turns reviewing the material out-loud, and test each other by asking questions for the others to answer. Having the support of a study group is extremely valuable.
5. Draw as much as possible, re-write material in a different way, use concept mapping, write test questions and give to one another in your group.
6. Write out the steps of a process in paragraph, like a story; go through steps orally using a diagram.
7. Think connections: relate concepts and material across units and topics.
8. Complete assignments enough ahead of deadlines so that if you have questions, it won't be too late to ask.

TEST AND FINAL EXAM PROCEDURES

All assessments will be given in [Removed] starting on time. Please arrive early. Students who arrive after the first person has turned in their exam will forfeit the opportunity to take the test or exam.

1. When you arrive, please place all of your belongings in the front of the room. At your seat, you will need a pencil and eraser, and VCU id. No notes, bags of any kind, or cell phones are to be at your seat. Cell phones must be turned OFF. Ringing or vibrating cell phones constitutes a 10-point deduction on your exam. Having notes or cell phones at your seat will result in a “0” on the test and possible Honor Code Violation.

2. We will hand out **3** versions of the test, which will be color coded so that students sitting next to each other will not have the same version. You will also receive a scantron with numbered choices instead of lettered choices for questions. The test format will be multiple-answer multiple choice and sequences. The numbered choices allows me to grade your test using partial credit.

3. When you receive your test, you will see the test version number, typed at the top of the first page. Please enter this number on your scantron and bubble this in, along with your name and V#.

4. The test format is **multiple answer**-multiple choice and sequences. After answering a question on the paper test, enter your response on your scantron AND on your test. Hint: Guessing counts against you on multiple answer-multiple choice tests most of the time if you guess wrong. Entering no choices or all five choices is counted all wrong (no credit). Sequences will be one-answer only and will not be graded with partial credit.

5. Short-answer questions are to be recorded on the paper test copy, which will be hand-graded. Neat legible writing is required for this page to be graded.

6. When students have completed the test, they are to fold the test lengthwise, and line up quietly in the front of the room at one of the three or four sign-out stations determined by the first letter of your last name. Instructions for this will be given before the first test. Once you enter the line, you are committed to turning in your test. Each SILENT line of students is not to pass the first step up the aisle. Students must wait to enter the line if the line goes beyond the first step.

7. A proctor will be at each of the sign-out stations. At the appropriate station, students are to show their identification, which will be compared to the printed name on your test.

8. Please then *sign* your name *on your test* as your Honor Pledge: “I have neither given nor received aid on this assessment, and I am in compliance with the VCU Honor Code.”

Test scores will be posted to Blackboard within one week, and students may come to my office by appointment to review their test answers with the answer key within one week of the posted grades. I am happy to review your test with you and to give you pointers if you need them throughout the semester, but there will not be enough time to review all of your tests at one time right before the final exam.

UNIVERSITY POLICIES

The required syllabus statements originally included here are maintained by the Office of the Provost and are regularly updated. To prevent the dissemination of information which may no longer be accurate or complete, the full text of the required syllabus statements have been removed from this document.

Students should visit <http://go.vcu.edu/syllabus> and review all syllabus statement information. The full university syllabus statement includes information on safety, registration, the VCU Honor Code, student conduct, withdrawal and more.

TENTATIVE SCHEDULE: *The syllabus schedule may change as a result of inclement weather or planning considerations. Sufficient notice for any changes will be given on Blackboard in such events.*

Dates	Unit	Module	Topic	
[Removed]	I: Organization and Structure	1	Syllabus, Commonalities of living organisms	
[Removed]		2	Reviewing atoms, bond & water	
[Removed]		3	Carbon & organic molecules	
[Removed]		3	(continued)	
[Removed]		4	Molecules and membranes	
[Removed]		5	Membrane Properties: permeability	
[Removed]	II: Energy for Life	6	Comparing components of cells	
[Removed]		6	(continued)	
[Removed]		1-6	TEST 1	
[Removed]		7	Energy for life: chemical reactions and enzymes	
[Removed]		7	(continued)	
[Removed]		8	Pulling energy from the sun: basics of photosynthesis	
[Removed]		8	(continued)	
[Removed]		9	Getting energy from food: basics of cellular respiration	
[Removed]		9	(continued)	
[Removed]		7-9	TEST 2	
[Removed]		III: DNA and Cell Division	10	From one cell to two: fundamentals of the cell cycle
[Removed]			10	(continued)
[Removed]	11		Copying DNA: DNA structure and replication	
[Removed]	11		(continued)	
[Removed]	12		Meiosis and sexual reproduction	
[Removed]	12		(continued)	
[Removed]			<i>LAST DAY TO WITHDRAW WITH A "W" FOR THE COURSE</i>	
[Removed]	IV: Inheritance and Gene Expression	10-12	TEST 3	
[Removed]		13	Introduction to Mendelian genetics	
[Removed]		13	(continued)	
[Removed]		14	From gene to protein	
[Removed]		14	(continued)	
[Removed]		15	Controlling gene expression	
[Removed]		15	(continued)	
[Removed]		13-15	TEST 4	
[Removed]	CUMULATIVE FINAL EXAM	1-15	CUMULATIVE FINAL EXAM	