

# STUDY STRATEGIES FOR BIOLOGY 2960

This course will offer you opportunities to learn a lot, in a variety of ways. You will probably find this course difficult at times. Growth is never easy, but you can successfully navigate the difficult topics if you embrace the challenges as opportunities to learn and use effective study strategies.

## Effective Strategy 1: Study Consistently

- Learning researchers say that: studying consistently and incrementally (1 hour a day, everyday) will help you retain your knowledge longer than if you study in large chunks (multi-hour sessions right before the Exam).

- Advice from previous Bio 2960 students:

*When asked to give advice to future students, last year over 200 people said managing time well.*

*"stay on track!!!! I was confused about how to attack this class in the beginning and I have felt perpetually behind. Getting ahead is so key to success in this class, and I wish I had understood that in the beginning."*

*"...The most important skill I inevitably learned is that spending an hour a day on Bio is better than spending 3 days cramming for a Bio Exam."*

- Course materials to help: To help you stay on track, we will have online weekly quizzes. To prepare, we suggest that you do the Practice Quizzes, do the Study Guides, and review corresponding lectures.

## Effective Strategy 2: Study Actively

- Learning researchers say that: you will learn more effectively if you give yourself plenty of practice by actively *doing* things, rather than just passively reviewing materials.

✓ *Example active strategies:* create outlines, complete problems, make flashcards, teach a friend, generate a table that compares or contrasts two processes, summarize a concept by drawing a diagram.

✗ *Example passive strategies:* re-read the textbook, re-watch lecture videos, re-read notes

- Evidence specific to Bio 2960: Students who studied using predominantly active strategies performed significantly better on their 2960 exams than students who studied using only passive approaches. One student said this:

*"I would advise students to utilize help sessions and to use mnemonics to help memorize and understand processes. I would suggest that they consistently attempt to connect new ideas to older ones. They should extensively use the resources that given by the course."*

- Course materials to help: The Practice Quizzes provide you with example questions. We suggest that you *do* the questions rather than just reading over the key. Optional BTL sessions can also give you practice.

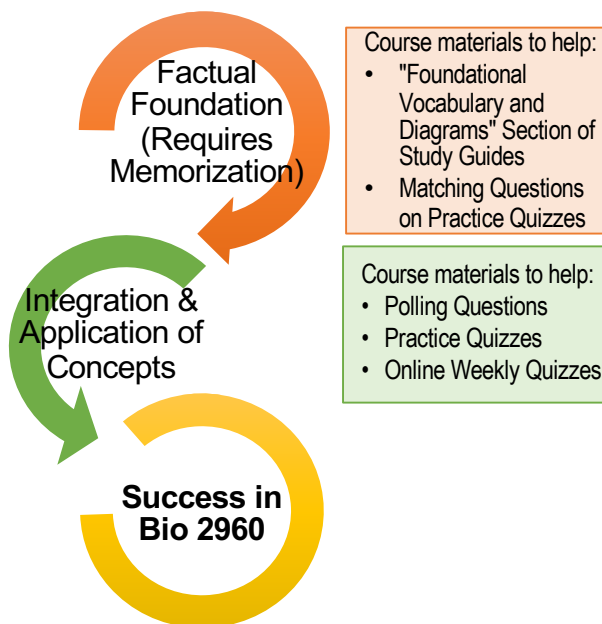


Figure: Suggested workflow for studying for Biology 2960. The successful Biology 2960 student will master BOTH the background knowledge AND can apply that knowledge to new situations or problems. Given the open-note exam format, most questions emphasize application, rather than recall.

## Effective Strategy 3: Get feedback

- Learning researchers say that: you need feedback to modify in your understanding. View mistakes as opportunities
- Due to its size, one of your biggest challenges in Bio 2960 will be getting enough feedback. You will get feedback during class using Poll Everywhere and Class Activities.
- But, it's also wise to learn how to self-administer feedback:
  - ✓ Go back to any quiz questions that you got wrong and figure out how you would answer differently next time.
  - ✓ Trade work with your peers and "grade" each other.
  - ✓ Look at the key *after* you try to answer it. Pay attention to expected *level of detail*.

*"Try to compare your written responses to the key whenever possible, because the only time you are graded on your writing is during the exams so you need to learn what types of responses are expected."*

- Course materials to help: (1) Office hours to ask questions, (2) BTL Sessions to share approaches, (2) Practice Quiz, Quiz, and Old Exam Keys to check your work, (3) Poll question answers

### Specific Study Strategies for Bio 2960 and When To Use Them

Based on educational research and conversations with previous students, the following strategies can be effective for learning information in this course:

Study Strategy	Use this strategy for:	An Example: (note that this column contained files on Canvas that students could open to view examples)
Generate a compare and contrast table, using given criteria or choosing those criteria that you think are most important.	1. Prompts in the study guide! 2. Molecules/processes are related but seem: -completely overlapping in your mind (Emphasize the contrast) -completely separate in your mind (Emphasize the linkages, overlap, or similarities)	Comparison Table Example
Draw a diagram that summarizes a process	Concepts that you know are related but you aren't quite sure how	Diagram Example
Make a partially filled in diagram for yourself that gets more challenging over time, until you can draw it from scratch	If you know which details you are expected to know but you are struggling to recall them. Examples: -a chemical structure -the steps of a process	Drawing Glucose Example
Dissect the figures that we spend a lot of time on in lecture and identify parts that you do not understand.	Guiding the time you spend using outside resources to learn about that part and redraw the figure in a way that reflects your new understanding. (if you are easily distracted on the internet, try to use your book instead)	Dissect Slide Example
<b>Teach</b> concepts to others in a small study group.	If you feel very confident on everything, test yourself by trying to teach the concept to others. (Teaching, or preparing to, helps you organize your thoughts)	The discussions in your Problem Solving Groups will incorporate this study method.
Write out answers to the problem sets, then "grade yourself" with the answers.	Use if the problem set answers make sense, but you couldn't generate them yourself.	Self-Grading Example

**For any of these strategies, as a general rule you will retain the information longer if you study incrementally rather than cramming.**