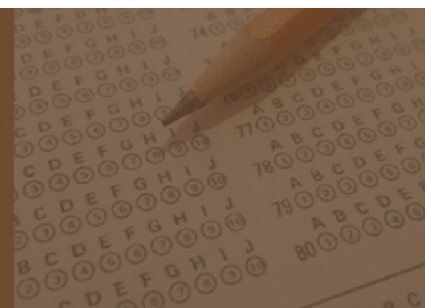


# Study Tips for STEM Courses

## *Or Any Course that is Exam-Based*



Set yourself up for success by following these important steps in the learning cycle: preview, attend class, study, and self-assess.

### *Step One: Preview*

Before going to class make sure to preview any reading material. Previewing reading material gives you a road map to prepare for lecture content. Usually, when you listen to a lecture on new material it can feel a bit overwhelming because it's all new – new terminology, new formulas, new concepts. Having a general sense about what the lecture topic will be about will reduce that overwhelming feeling, or what we call "cognitive load". Cognitive load refers to the amount of information you can hold in your working memory<sup>1</sup>. If everything you are being exposed to is new and complicated, it can be very difficult to learn because you are trying to juggle too much information. By previewing the material, you can free up space in your working memory to make more room to take in new information. In other words, previewing reduces your cognitive load.

How do you preview? The best way to preview a reading assignment is to look at the title, section headings, any diagrams, charts or pictures, any summary points or questions at the end and learning objectives if presented at the beginning. If it's a scientific article, you could read the abstract.

### *Step Two: Go to Class and Take Notes*

Previewing the reading before class is important but so is going to class. It's just a fact that students who attend class perform better.<sup>2,3</sup> Just being in class is important, but it's also important to think about what you do there. Avoid sitting near people who are doing other things (e.g., on their phone). Even though you might be focusing, other people doing other things can have a big impact on your learning. Try to sit up front to reduce distractions. Take notes and write down questions. Also, ask questions in class if you feel up to it.

## *After Class: Read and Review*

You've done your previewing and you attended class. Now it's time to dig in deeper. Read through your notes and make sure you understand everything. Understanding is the first step in the memory process. If there is something you don't understand, ask. You can ask your instructor, your TA, your peers, or Google.

Read the textbook or other reading material more thoroughly now. Take notes on this reading just like you do during lecture. It's great to take notes in question format so you have material to quiz yourself with as you prepare for exams. Attend office hours. Many students ask *why should I attend office hours if I don't have any questions?* You do not need to have a question to attend office hours. Listening to other students ask questions or participating in conversations about the material during office hours is a great way to learn. As a side benefit, it's a great way for you to get to know your professor and for them to get to know you.

The last step in this cycle is to engage in retrieval practice or self-assessment. That is, to accurately gauge your learning, you need to find ways to test yourself. To learn more about how to do this check out our handouts on *Tips for Exams* and *Spaced Retrieval Practice*.

*If you need help with any of the above – previewing, taking notes in class, reading, retrieval practice – make an appointment with one of our Academic Success Coaches. We are here to help you!*

- <sup>1</sup> Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. *Cognitive Science*, **12**, 257 – 285.
- <sup>2</sup> Moore, R., Jensen, M., Hatch, J., Duranczyk, I., Staats, S., & Koch, L. (2003). Showing up: The importance of class attendance for academic success in introductory science courses. *The American Biology Teacher*, **65**(5), 325-329.
- <sup>3</sup> Lukkarinen, A., Koivukangas, P., & Seppälä, T. (2016). Relationship between class attendance and student performance. *Procedia-Social and Behavioral Sciences*, **228**, 341-347.