Doing Well in Calculus

* **Don't fall behind.** Pre-read textbook sections before lectures. Follow examples closely, step-by-step, to understand the chain of reasoning. Write down any questions about examples or explanations in the textbook. Be prepared to ask these questions should they arise during the lecture. Pre-reading allows you to focus more on the explanations in the lecture and the reasoning behind them. Attend and participate in lectures and sections. Begin homework after lectures; don't wait a couple of days or until the weekend.

* Spend at least **two to three hours** on each homework assignment. This affords you extra time to work on challenging homework problems and helps you organize your thoughts, questions, and ideas. The more time you spend on homework, the more likely you are to articulate clear, concise questions to your classmates and teachers. The more time you spend on homework, the less time you will spend on frantic, last-minute preparation for exams.

* Find at least **one or two other students** from your calculus class with whom you can regularly do homework and prepare for exams. Your classmates are perhaps the least used and arguably your best resource. An efficient and effective study group will streamline homework and study time, reduce the need for attendance at office hours, and greatly improve your written and spoken communication.

  - The best time to use your classmates as study/homework partners is after you have made an **honest effort** on your own to solve the problems using your own wits, knowledge, and experience. When you encounter an unsolvable problem, don't give up too soon on it. Being stumped is an opportunity for mathematical growth and insight, even if you never solve the problem on your own. If you seek help prematurely, you will never know if you could have solved a tough problem without outside assistance. After solving a problem, stop and think about your solution. What solution method (or methods) did you employ? Why did they work? What kind of a problem was this? This will help you when you are asked to solve a similar problem on a test or exam.

* Begin preparing/outlining for exams at least **five class days** before the exam. Outlining the topics, definitions, theorems, equations, etc. that you need to know for the exam will help you focus on those areas where you are least prepared. Preparing early for the exam will build your self-confidence and reduce anxiety on the day of the exam. It's also an insurance policy against time lost to illness, unexpected family visits, and last-minute assignments in other classes. Generally speaking, pulling all-nighters and doing last-minute cramming for exams is a recipe for eventual academic disaster.

* Prepare for exams by working on **new problems**. Good sources for these problems are unassigned problems from your textbook, review exercises and practice exams at the end of each chapter, old hour exams, or old final exams. Studying exclusively from those problems that you have already been assigned and worked on may not be effective exam preparation. Problems for each topic are generally in the same section of the book, so knowing how to do a problem because you know what section of the book it is in could give you a false sense of security. Working on new randomly mixed problems more closely simulates an exam situation, and requires that you both categorize the problem and then solve it.

* Use **all** resources of assistance and information that are available to you. These include class notes, homework solutions, office hours with your professor or teaching assistants, problem sessions with your classmates, Calculus Lab in APM B402A, and OASIS. Do not rely exclusively on just one or two of these resources. Using all of them will help you develop a broader, more natural base of knowledge and understanding.