My goal as an mathematics instructor is to not only ensure that my students gain an understanding of the material, but to try to instill an idea of the creative energies that go into the development of mathematical ideas. Over the last seven years, I have taught Applied Calculus, Financial Mathematics, Calculus I and II, Introduction to Mathematical Reasoning, and Elementary Number Theory, and all of these courses have their own flavor and share of remarkable and intriguing concepts. I have observed time and again that students who actively engage with the course material, who question and play with the concepts instead of memorizing rote formalism, are the ones who enjoy the class the most and come away with the best understanding.

However, emphasis of these aspects tends to go to the wayside in introductory courses: the necessity of teaching our students the tools needed in other subjects favors a no-frills approach. This is especially unfortunate as it's uncommon for students to independently engage with the material and find these gems, especially in introductory courses. After all, each student has their own reason for taking the course and their own idea what they expect out of it, and many of them view mathematics as a dry, uncreative, and inherently difficult.

This tension between student motivation and curriculum requirements creates something of a Gordian knot. I believe that both issues can be solved in a stroke by approaching the material with enthusiasm and humor, appealing to a variety of ways of thinking about the material, using problem solving to illustrate creativity and provoke questions, and keeping myself readily available to my students for questions out of the classroom.

Every new lecture is a cold open: the students are arriving with other concepts and concerns cluttering their brain, and they need to be pulled back into the material. The simplest way I have found to do this is by letting my natural excitement and humor make the lecture a positive environment. Even this small act can make a world of difference, and most of the comments I get from my students highlight the impact of this on their ability to digest the lectures. For example,

> *"He has kept the class entertained and involved in lectures to a point where I feel the course is being taught at its maximum potential."*
> (Calculus 1, UVA)

> *"His enthusiasm for this course is unmatched by any other professor I've seen in the Math department, and he also possessed a great knowledge for the subject, able to answer questions on the fly and also teach each subject in a way that was accessible for each student."*
> (Number Theory, Northeastern)

> *"Professor Clark is perhaps one of the more enthusiastic instructors here at Northeastern, which is undoubtedly one of his greatest strengths. His attitude made the lectures more fun and interesting while they were also informative and educational."*
> (Calculus 2, Northeastern)

By establishing a rapport with the class, it is then much more natural to make the lecture more of a dialogue. In particular, many topics can be more readily absorbed by the students if drawn out, à la the Socratic method. This allows the students to frame the topic from their perspective, which provides a nice spectrum of approaches for the whole class. For instance, this semester I am teaching an introduction to mathematical reasoning class, which is meant to give students a rigorous understanding of basic mathematical structures, like sets, and introduce them to various methods of proof. While discussing the basics of Boolean logic, the students became confused by the evaluation of implications: why should the if-then be true if the premise is false? To help them find their way to the answer, I drew an analogy with honesty: under what conditions does my promise "if you give me a dollar, then I'll buy you a soda" become a lie? Students began to offer interpretations (and even other sample sentences), and by examining them, the class began to see the idea behind the definition of the Boolean implication.

Another important means of engaging the students is by working through problems together. It is well known and often observed that problem solving is an important mechanic for learning mathematics, and so it is important to both see worked examples and work examples yourself. The best of both worlds is when I can lead my students on an example and have them volunteer suggestions for how to proceed, and this is the primary way I present examples in class. The variety of the suggestions of the class help to illuminate the organic and creative aspects of problem solving, while having me as a safety net lowers the stress of hitting a roadblock. It also provides a valuable opportunity for "what if" type thinking which can help clarify the concepts involved.

I think it is also important to be available to students outside of the classroom, either by email, in office hours, or by appointment. Whether it is conceptual difficulties with the class or confusion with homework, I always encourage my students to think of me as their first and most important resource when they can't figure something out. I have found this to be a boon for many students, and often these discussions outside the classroom directly translates to substantial improvements in understanding, and to performance on quizzes and exams. Moreover, it can be very helpful to me by giving me an opportunity to diagnose any common misunderstandings, which can then be effectively addressed in lecture.

I strive to be flexible in my teaching strategies and to improve the courses I teach. During the semester, I try to modify my approach based on my interactions with students in class and in office hours. I also encourage students to give me feedback through end-of-semester evaluations, and I adapt my teaching strategies based on the comments I receive. One modification I would like to implement is to increase the role of technology in my classes. Some things, like the online homework systems WebWork and WebAssign, I have used in the past. As an important part of the learning process is trying and failing, the instantaneous feedback in such systems can be very helpful in a computation-oriented class, as it gives students a chance to figure out where they went wrong. On the other hand, for more advanced classes, I have first-hand experience with the power of using programming for problem-solving, and I think it would be interesting to incorporate those technologies (like Sage, Magma, and Mathematica) into upper-level algebra classes.

I am a firm believer in offering research experiences for undergraduates. I was able to take advantage of such opportunities as a student, and they were quite important for developing research skills early. As a graduate student, I was fortunate enough to have the opportunity to co-supervise an undergraduate student Sittipong Thamrongpairoj (who is now a graduate student at UC San Diego) in a research project. We would meet weekly to discuss what he had been doing for the week, whether it was learning the background material, proving some results for the project, or learning LaTeX to write up the results in a paper, which was accepted in a peer-reviewed journal. Over the course of this project, I gained insight on the process of mentoring, and the practicalities of how to guide a student through the various aspects of the research process. In the future, I plan to continue facilitating and encouraging undergraduate research, and I already have a few projects in mind which would be suitable for an undergraduate.