

Mason Online Astronomy 111 Course Preview Transcript

Professor Rebecca Ericson

Hello, I'm Dr. Rebecca Ericson. I'd like to welcome you to Astronomy 111, Solar System Astronomy. I'll be your instructor as we study the immediate neighbors of our Sun and of our Earth.

We're going to join together on a journey through the Solar System looking at planets, asteroids, comets, and other bodies out orbiting our star. We'll study a little bit about stars as well, especially the constellations that our sun moves through throughout the course of a year.

We have some goals for you for General Education, Natural Science. One of the things that we want to do is help engage students in scientific exploration. So, you will be looking at not just a lot of facts, but how you go about exploring our Solar System scientifically.

We would like you to be curious. I hope that we don't dampen your curiosity about astronomy, but rather, excite it. We would like to enhance your enthusiasm for science as well. Science is a deeply embedded part of the world today and it's important that you understand it. Also, it's much more enjoyable when you are enthusiastic about reading it and finding out what's happening in the new worlds, which science is unfurling in front of us.

We'd like you to be able to apply scientific knowledge and reasoning to personal, professional, and public decision making. The way that scientists think and behave are not that different from the way ordinary people do. But, the rigor with which scientists approach a question can be useful to you in all aspects of your life. So, I hope you will be able to learn something about that and be able to apply it.

Some of the goals for lecture are that we want you to understand how scientific inquiry is based on investigation of evidence from the natural world. Think of it in terms of CSI perhaps. We are looking for evidence that supports theories and ideas that we have about how the world might work. We want you to recognize something about the scope and limits of science. Science is a powerful tool, but it's not the only tool. There are many other ways we can approach understanding and enjoying the world.

So what are the limitations of science and what are some of its powerful applications? We would like to be able to recognize and articulate the relationship between the natural sciences and society. As I said, science is an important part of daily life and understanding how sciences work is going to be important to you throughout your life. Being able to evaluate scientific information is also vital. Sometimes you'll make decisions based on the science you have read or things that you know. You need to evaluate whether your science is coming from a trusted source, whether it was done well, or inadequately, and make the decision about whether or not to trust what you've read and understood.

So, those are some of our lecture goals. There are also goals for the laboratory. I know not all of you may be taking a lab. But, if you are, these are some of the additional things we would hope for you to get from the lab. Participate in scientific inquiry and communicate the elements of the process, including making careful and systematic observations, developing and testing a hypothesis, analyzing evidence, and interpreting results. And we are certainly not going to skip that in the lecture part.

We will be talking about that but you won't have as much of an opportunity to do very involved investigations. You'll do more of that within the lab portion of the class. So, some of the things that we'll be doing – we want you to get to know the night sky, understand the motion of the planets, the Sun, the Moon, and the reasons we have seasons. These are the kinds of things that ancient people knew well. We've lost contact a little bit with the natural world.

And, I'd like you to be able to observe, to look at some of the things we see, and ask the questions why. Curiosity enters here too. Why does the moon go through its phases? And, how can we understand that better? We're going to learn about processes on the planets and think about how the Solar System itself came to be. One of the major questions we will be asking is how did it all happen? How did things turn out the way they did? Why did they turn out that way? Is it a given that they always will? Are all solar systems like ours? Interesting questions.

We'll learn something about some of the fun things that students usually enjoy thinking about and may have seen – comets, asteroids, and shooting stars. What is a shooting star? Why do they call it that? And, what are they really? We'll think about planetary systems orbiting other stars and the possibility of life on other planets. This is a very important topic, and we'll have, of course, some preparation, now that we will be doing nothing but studying other solar systems. But, for now, we are going to look at our home solar system and our home planet.

Best of all in this course, is that as you look out and start to study other things beyond the earth, you will begin to appreciate, in new ways, the world that is our home. It's a unique place, the only place we know in the entire universe that has life, and you are a part of it. It's a very exciting time in astronomy, and a very exciting subject to study.

So, I hope you will enjoy it, I hope you will really get involved in it, and do the work necessary. It doesn't come easily. As all science that you've probably had contact with, it does require you to invest mental energy and invest some of your own time and effort. But, it's not difficult. Ask the right questions, ask me when you are stuck, and we should do fine.