

[SQUEAKING] [RUSTLING] [CLICKING]

**MARKUS**

Welcome to 8701. My name is Markus Klute. I'm going to be your instructor for this class.

**KLUTE:**

This class is taught in an inverted classroom, a flipped classroom environment. So this is the very first of a large number of small, short videos, which [INAUDIBLE] is the contents of slides I've prepared. For this first slide, it's not necessary that you even watch the video, because they should explain themselves. And I will not give you too much additional information.

As we go deeper into the content, that's not quite the case. And that might be useful for you to watch the videos, learn, stop, record a number of questions, so if some of the problems which I pose on the slides, and so on. So this is the very first one. And the idea of this sort of slide is to just give you a quick overview of what to expect for this class.

The first thing we look at is the calendar for the fall semester. The summer ended much more quickly than we were all hoping for. The weather is still very nice out there, but fall is coming.

So Tuesday, September 1st, we'll meet and greet in the first session. That session is really just meant for an overview of the course organization, and so on. So this kind of information as I give in this video will be very briefly covered on that Tuesday, as well.

As you can see from the calendar, we meet Tuesday and Thursday. The meeting or the visitation starts at 1:30 PM. I aim for one hour in each of those meetings, but we can stay a little longer, even half an hour longer, if there's open questions or need for discussion.

This semester will give us a few holidays along the way. There's Columbus Day, where Tuesday is a student holiday. I will not have a recitation on Election Day. I want you to focus on the election, and I will focus on it myself. And then there is the week of Thanksgiving where we will not have any meeting, any class during that week.

You can also see that there is a number of PSets in the second week. We'll post a PSet, and I'll give you about two weeks to respond to that PSet. More on how we evaluate in this class in a different recording-- just to say here already that there's going to be two oral exams towards the middle of the semester and towards the end, very short, little test, 15 minutes per student. We will set up individual meetings to go over this.

And then there is Friday as an office hour. I haven't specified the time for this yet. I sent you a Doodle poll. And we'll find the time which works for most of you on a Friday afternoon or Friday morning. This class doesn't have a final, so it basically ends with the last day of class, which is oral exams in the 15th week of this class.

Looking a little bit into the content, the first week is really an introduction and some historic remarks. We'll talk about relativistic kinematics. And then we'll go along the outline as given in one of our textbooks. Again, textbooks are being discussed yet in a different short presentation. But I really follow along this textbook, but not stick too much to only the content of that textbook. And I will supplement the information using other textbooks, as well, specifically when it comes to some of the problems and discussions which come along.

You can see that we'll start with particle physics, talk about quarks, leptons, and interactions, talk about how this fits in a theoretical way with invariance principle and conservation laws. And we'll look at scattering, and then QCD before we go into weak interaction. And from there on, we build the standard model with the electroweak interaction, the Higgs mechanisms.

For week eight, then, or the end of week eight will give us a break, where we then start talking about nuclear physics. This order of talking about particle physics and then nuclear physics makes a lot of sense to me. It doesn't make sense in historic context, because nuclear physics have developed before the standard model, for example, was developed. But in order to fully appreciate nuclear physics, it's useful to have introduced basic interactions. And therefore, this is the reason for this order.

And then we'll try to bring in experimental methods with accelerators, colliding beams, and experimental methods on how particles interact with matter and detectors. Again, in this schedule, the Thanksgiving week is off. And we'll use the last remaining week to discuss physics beyond the standard model and the connection to cosmology.

I said here the title the schedule will be tuned. I very much expect that we have a little bit slippage in this, but there is some room at the end to make sure that we don't overrun, and that I don't give you too much to learn, to read, to watch movies, or do PSets as we go week by week. This is it for this first recording. As always, you can reach out and ask any sort of question, either during the recitation, office hours, or separate.