INTRODUCTION TO PROCESS DYNAMICS AND CONTROL
Professor: Babu Joseph, Ph.D.

Hello. Welcome to the course, Introduction to Process Dynamics and Control. My name is Babu Joseph and I'm a professor here in the Department of Chemical and Biomedical Engineering. And I'll be your instructor for this class. Let me tell you a little bit about my own background in the subject.

I have been teaching this class for the last 20 years. I have been doing a lot of research in the field. In fact, I did my doctoral dissertation on the subject of process control quite some time back. And I have since worked on many aspects of process control.

One of the things that fascinated me in my undergraduate days was using computers for engineering, especially chemical engineering. And that's what really got me interested in the subject of process control because at that time, computers were coming on the scene and computers were being introduced into the area of process control. So I focused a lot of my work on how one could improve control using computers.

In this class, you will learn about the technology that is used for automation. We'll look at the principles behind it. And you will learn how to design, operate, and evaluate the different kinds of automation systems that are used in the industry. This class is a mixture of theory and application with a lot of the emphasis on application. So we would use a lot of the principles that you learned in your previous courses, such as mass and energy balances and unit operations, and we will then apply these techniques in the design and automation systems.

One of the key things that we use in analysis is the use of block diagrams. So we'll introduce that in the beginning of the course. Then we will use some mathematical techniques, primarily derived from your differential equations course focused on Laplace transforms. And we will use that in order to double up dynamic process models for systems.

Then I will introduce you to the use of Simulink, which is a software that is used for simulation and analysis of process control systems. And this is really closely tied to MATLAB to which you have been exposed in your prior courses, but it's a slight extension. It's a graphic user interface. You'll find it very easy to use.

Finally we will be looking at the analysis of control systems using the Laplace transform models that we developed, as well as with the Simulink models that we learn how to work with. I will be available for online help during the hours that are described in the syllabus of the course. So at this time, I will be online using the Blackboard Collaborate, which is part of the Canvas course management system. So you can sign on and I'll be available to answer any questions and help you with any of the problem sets that you're working on at that time.

Finally, I will be organizing discussion boards in Canvas, and you will be expected to participate, contribute, and answer questions that arise in the discussion board. So I'm really excited about

working with you. I think you'll really enjoy this course. I hope I can convey some of my enthusiasm about the subject to you during the course. And I hope you all have a great semester.