Course Overview

Best Practices for Teaching and Learning

LOURDES ALEMAN: Welcome to the Best Practices for Teaching and Learning course. I am Lourdes Aleman, and I am an educational research scientist and instructor at MIT.

ALISON BRAUNEIS: I'm Alison Brauneis and I'm a postdoctoral associate focusing on biology education research at MIT. And together, we are your instructors for this course.

LOURDES ALEMAN: Before we get started, I'll take a moment to introduce the course, and go over some important course information. This course, Best Practices for Teaching and Learning, is an adaptation of a program offered for graduate students and postdoctoral scholars by MIT's Teaching and Learning Lab. How do we design a course? What are the best methods for promoting critical thinking skills, knowledge retention, and transfer?

How do students learn what are big ideas? How do we design effective assignments and exams? What can actors teach us about delivery and presentation?

During this course, we will answer these questions and more. The goal of this course is to provide an overview of best practices for teaching and learning, and demonstrate how to incorporate these into your own teaching to make your courses more effective. This course is for those who wish to develop and hone their teaching skills. The course is designed for participants with various interests and backgrounds, but will place a strong emphasis on the teaching of science, technology, engineering, and math.

By the time you complete this course, you should be able to-- one, apply research on how students learn to your teaching methods to promote student understanding; two, design effective courses by identifying learning objectives, and aligning assessment activities and instruction with those objectives; three, write assignments, problems, and exams that really foster student learning and tests whether learning objectives have been met; four, plan and present effective lectures; and five, design interactive pedagogies that increase student learning, and promote intended learning objectives.

This course will include five online sessions. All of the content for the sessions will be delivered through videos. You'll get the most out of the course if you really work with course participants. During each session, you will be asked to participate and collaborate to complete interactive activities.

You will also be asked to contribute your answers to class questions and activities in the course's online discussion forum. For each session, Alison and I will be present online to answer your questions. At the end of each session, you will be asked to reflect on what you have learned, post any questions on the online discussion forum, and complete an evaluation of each session. It is really important that you fill in each session survey. This is our way to find out what you thought about each session, and the questions that remain or points that are still unclear. Answers to your questions and clarifications will be posted on the course's website after each session.

The five sessions for this course are-- session one, the science of learning; session two, designing a course and constructing a syllabus; session three, constructing effective assignments, problem sets, and exam questions; session four, planning and presenting a lecture; and session five, interactive teaching and active learning. The session on principles of teaching and learning will provide an introduction to how people learn, and strategies for incorporating learning research findings into your own course. We will also explore techniques for self-reflection that can be used to document what is and is not working in your own courses.

In designing a course and constructing a syllabus, we will focus on how to use backward design when designing your course. Powerful course design begins with identifying your goals and your learning objectives. What are the big ideas of this course? What do I want my students to know and be able to do by the time they finish my course?

We will then illustrate how your course goals and learning objectives can be used to prioritize content, design assignments and exams that align and document whether your learning objectives have been met, and also designing instructional activities that further your learning objectives. In constructing effective assignments, problem sets, and exam questions, we will highlight ways in which homework assignments and exam questions can be designed to best support sort of learning. You will design problems that align and reinforce desired learning objectives.

In planning and presenting a lecture, we will explore how to organize and present a lecture for effective instruction. This session will help you understand how to structure your lecture craft, and deliver information to keep your students' attention. In particular, we will focus on how to modify traditional lectures to maximize instruction.

One of the most important findings in educational research is that students learn best by doing. In interactive teaching and an active learning session, we will discuss the reasons for interactive teaching, and provide examples of questions and techniques that can we used or adapted to really increase student understanding and interest. In preparing for each session, we're going to ask that you complete the relevant readings for that session before each class. We call these pre-session readings.

You will find a list of the readings on the course website. Each session will also have a post-session assignment. The completion dates are indicated on the course website.

ALISON BRAUNEIS: So that's our course introduction. We hope you find this course an effective learning experience.