CSU PHYSICS COLLOQUIUM

Title: Reforming Introductory Physics Instruction at a Research University: The Illinois Experience

Colorado State University
4:00PM, Monday; April 13th, 2015
Location: 120 Engineering (Hammond Auditorium)
Refreshments at 3:45PM

Speaker: Professor Gary Gladding Emeritus
Affiliation: Physics Department
University of Illinois at Urbana-Champaign

Abstract

Almost twenty years ago the Department of Physics at the University of Illinois embarked on a program to systematically reform all of its introductory courses. I will describe the evolution of this program to the present day. I will begin by discussing the key aspects of our initial reform which provide a context for our most recent developments. In particular, I will discuss how this reform was initiated and how we have been able to sustain this change over the years.

The bulk of my talk will concern our most recent efforts in these courses. First, I will describe how we have transformed our lectures, moving the focus from delivery of content to helping students synthesize the content into knowledge. The students can now access the basic content from web-based multimedia pre-lectures which, when used in conjunction with web-based just-in-time teaching assessments, allow the bulk of the lecture time to be spent in peer instruction activities designed to assess and facilitate student understanding. Finally, I will present our current work in which we have developed and tested prototype online homework exercises targeted for specific learning objectives that are then arranged in sequential clusters and delivered in a “mastery mode”.

Professor Gary Gladding Emeritus
Physics Dept., University of Illinois at Urbana-Champaign, Urbana, IL 61801
Web: http://physics.illinois.edu/people/profile.asp?geg
APS Fellow 1999, APS Excellence in Education Award 2013