



PER User's Guide

Physics Education Research

Evidence-based resources for teaching physics



Guide

CU upper-division QM curriculum

 Indicates a research-demonstrated benefit

Overview

Supplementary activities for upper-level QM I. All materials are modular and can be mixed and matched with any other teaching strategy or materials.



Type of Method

Full curriculum, Curriculum supplement, Tutorials



Level

Designed for: Upper-level Undergraduate 

Can be adapted for: Intermediate, Graduate School



Setting

Designed for: Lecture - Large (30+ students)  , Lecture - Small (<30 students)

 , Recitation/Discussion Session, Homework

Can be adapted for: Out-of-class tutorials



Coverage

Many topics with less depth, Traditional upper-division Quantum I coverage (e.g. first half of Griffiths text)



Topics

Modern / Quantum



Instructor Effort

Medium




Resource Needs

TAs / LAs, Clickers / polling method, Projector



Skills

Designed for: Conceptual understanding  , Problem-solving skills, Using multiple representations

Can be adapted for: Making real-world connections, Metacognition



Research Validation

Based on research into: theories of how students learn 

Studied using: student interviews  , classroom observations 



Compatible Methods

[Peer Instruction](#), [PhET](#), [JiTT](#), [CGPS](#), [Physlets](#), [SCALE-UP](#), [OSP](#), [LA Program](#), [CAE TPS](#), [TEFA](#), [CU Modern](#), [QuILTs](#), [Paradigms](#), [PI QM](#), [Tutorials](#), [Clickers](#)



Similar Methods

[CU Modern](#), [CU E&M](#), [QuILTs](#), [Paradigms](#), [PI QM](#)

**Developer(s)**

Steven Pollock, Stephen Goldhaber, and many others in the CU PER group and the CU Physics department

**Website**

http://www.colorado.edu/sei/departments/physics_3220.htm

Teaching materials

You can download all course materials, including lecture slides, clicker questions, homework, exams, and solutions from the developer's website (you'll need to ask for a password to access solutions): http://www.colorado.edu/sei/departments/physics_3220.htm

