



Paradigms in Physics

 Indicates a research-demonstrated benefit

Overview

Activities for upper-level physics that can be incorporated into a standard course or used as part of a restructuring of the undergraduate curriculum.



Type of Method

Instructional strategy, Full curriculum, Curriculum supplement, Computer simulations



Level

Designed for: Intermediate, Upper-level Undergraduate



Setting

Designed for: Lecture - Small (<30 students), Recitation/Discussion Session, Lab, Homework

Can be adapted for: Lecture - Large (30+ students), Studio



Coverage

Many topics with less depth



Topics

Mechanics, Electricity / Magnetism, Waves / Optics, Thermal / Statistical, Modern / Quantum, Mathematical



Instructor Effort

High





Skills

Designed for: Conceptual understanding, Problem-solving skills, Lab skills, Making real-world connections, Using multiple representations




Can be adapted for: Metacognition



Research Validation

Based on research into: theories of how students learn , student ideas about specific topics 

Demonstrated to improve: retention of students 

Studied using: student interviews , classroom observations , analysis of written work 



Compatible Methods

[Peer Instruction](#), [PhET](#), [JiTT](#), [CGPS](#), [Physlets](#), [SCALE-UP](#), [OSP](#), [LA Program](#), [CAE TPS](#), [CPU](#), [TEFA](#), [CU Modern](#), [CU E&M](#), [CU QM](#), [QuILTs](#), [Thermal Tutorials](#), [Mechanics Tutorials](#), [PI QM](#), [Tutorials](#), [Clickers](#), [Responsive Teaching](#)



Similar Methods

[CU E&M](#), [CU QM](#)



Developer(s)

Oregon State University Physics Department



Website

<http://physics.oregonstate.edu/paradigms>

Teaching materials

You can download activities and activity sequences from the Paradigms wiki page:

<http://physics.oregonstate.edu/portfolioswiki>