



PER User's Guide

Physics Education Research

Evidence-based resources for teaching physics



Physics Union Mathematics

 Indicates a research-demonstrated benefit

Overview

A physics/physical science curriculum that builds on intrinsic mathematical reasoning to develop and strengthen mathematics and physics concepts.



Type of Method

Full curriculum, Curriculum supplement




Level

Designed for: High School , Middle School

Can be adapted for: Teacher Prep Course, Teacher Professional Development, Intro College Calculus-based, Intro College Algebra-based, Intro College Conceptual



Setting

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



Coverage

Few topics with great depth



Topics

Mechanics, Electricity / Magnetism



Instructor Effort

High



Resource Needs

Projector, Computers for students, Advanced lab equipment, Tables for group work





Skills

Designed for: Conceptual understanding, Problem-solving skills, Lab skills, Using multiple representations, Designing experiments, Metacognition


Can be adapted for: Making real-world connections



Research Validation

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

Demonstrated to improve: conceptual understanding , lab skills 

Studied using: classroom observations 



Compatible Methods

[JiTT](#), [Physlets](#), [SCALE-UP](#), [Modeling](#), [OSP](#), [ISLE](#), [CPU](#)






Similar Methods

[ISLE](#)



Developer(s)

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 Website	http://pum.rutgers.edu
 Intro Article	10390
 Intro Article	<u>Searching for Evidence of Student Understanding</u>