



## CPU Computer Simulators

Indicates a research-demonstrated benefit

### Overview

A suite of computer simulations for teaching physics and physical science through exploring phenomena and conducting simulated experiments.



Type of Method

Computer simulations



Level

**Designed for:** Teacher Prep Course , Teacher Professional Development , High School , Intro College Calculus-based, Intro College Algebra-based, Intro College Conceptual



Setting

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



Coverage

Few topics with great depth, Many topics with less depth



Topics

Mechanics, Electricity / Magnetism, Waves / Optics, Thermal / Statistical



Instructor Effort

Low



Resource Needs

Projector, Computers for students



Skills

**Designed for:** Conceptual understanding , Using multiple representations  
**Can be adapted for:** Making real-world connections, Model building



Research Validation

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

**Demonstrated to improve:** conceptual understanding , beliefs and attitudes

**Studied using:** classroom observations



Compatible Methods

[Peer Instruction](#), [PhET](#), [UW Tutorials](#), [JiTT](#), [Ranking Tasks](#), [ILDs](#), [CGPS](#), [Physlets](#), [Context-Rich Problems](#), [RealTime Physics](#), [Workshop Physics](#), [TIPERs](#), [ABP Tutorials](#), [SCALE-UP](#), [Modeling](#), [OSP](#), [SDI Labs](#), [OST Tutorials](#), [ISLE](#), [Thinking Problems](#), [Workbook for Introductory Physics](#), [LA Program](#), [PET](#), [PSET](#), [LEPS](#), [CAE TPS](#), [Lecture-Tutorials](#), [Astro Ranking Tasks](#), [MBL](#), [SCL](#), [TEFA](#), [CU Modern](#), [Energy Project](#), [SGSI](#), [Paradigms](#), [PUM](#), [EiP](#), [Tools for Scientific Thinking](#), [M&I](#), [Tutorials](#),

[Clickers](#), [PRISMS PLUS](#), [Responsive Teaching](#)

 **Similar Methods**

[PhET](#), [Physlets](#), [OSP](#),

 **Developer(s)**

Fred Goldberg and many others

 **Website**

<http://cpucips.sdsu.edu/simulators.html>