



Matter and Interactions

* Indicates a research-demonstrated benefit

Overview

A modern calculus-based introductory curriculum with an emphasis on the application of fundamental principles and on the atomic nature of matter.

Type of Method	Full curriculum
📉 Level	Designed for: Intro College Calculus-based 🔹 , Teacher Professional Development
fin Setting	Designed for: Lecture - Large (30+ students), Lecture - Small (<30 students) Can be adapted for: Studio
i Coverage	Many topics with less depth
🗾 Topics	Mechanics, Electricity / Magnetism, Waves / Optics, Thermal / Statistical, Modern / Quantum
Instructor Effort	Medium
Resource Needs	TAs / LAs, Projector, Computers for students, Cost for students
🎦 Skills	Designed for: Conceptual understanding $\$, Model-building, To see clearly that a small number of fundamental principles can explain a very wide range of phenomena, To apply fundamental principles to new problems, To see the place of classical physics in the larger physics framework, Computational skills Can be adapted for: Problem-solving skills
Research 당 Validation	Based on research into: theories of how students learn , student ideas about specific topics specific topics Demonstrated to improve: conceptual understanding , beliefs and attitudes

Compatible 🌮 Methods	Peer Instruction, PhET, JITT, Ranking Tasks, CGPS, Physlets, Context-Rich Problems, TIPERs, SCALE-UP, OSP, Thinking Problems, LA Program, CAE TPS, MBL, CPU, SCL, TEFA, Clickers
Similar Method	None
Developer(s)	Ruth Chabay and Bruce Sherwood
🛞 Website	http://www.matterandinteractions.org/
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