



## 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**

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



**Similar Methods**

[ISLE](#)



**Developer(s)**

Eugenia Etkina, Suzanne Brahmia, Chis D'Amato, James Finley, Jim Flakker, Danielle Bugge, Richard Therkorn



**Website**

<http://pum.rutgers.edu>



**Intro Article**

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**Intro Article**

[Searching for Evidence of Student Understanding](#)