Intuitive Quantum Physics (IQP)

Indicates a research-demonstrated benefit

Overview

A set of tutorials for a course introducing non-science majors to the basic ideas of quantum mechanics using minimal mathematics. Moving from wave physics through energy and probability to a graphical interpretation of the Schrödinger equation, allowing students to solve finite square problems and apply ideas of quantization to spectroscopy, building simple molecules, and tunneling.

Level	**Designed for:** Intro College Conceptual **Can be adapted for:** Advanced Undergraduate, Graduate
Setting	**Designed for:** Lecture - Large (30+ students) , Lab **Can be adapted for:** Lecture - Small (<30 students), Studio
Coverage	Few topics with great depth
Topics	Modern / Quantum
Instructor Effort	High
Resource Needs	Teaching Assistants / Learning Assistants, Lab equipment for student use - professional, Tables arranged for group work
Skills	**Designed for:** Conceptual understanding of physics content , Coherent framework for physics , Understanding how physics relates to the real world , Think like a scientist , Reflecting on one's own learning, Enjoyment of physics **Can be adapted for:** Self-confidence around physics, Representing knowledge in multiple ways, Creativity, Autonomy
Research Validation	**Based on research into:** how students learn , student ideas about specific topics **Demonstrated to improve:** scores on written conceptual tests , beliefs about physics **Studied using:** conceptual pre/post exams , beliefs pre/post exams , student interviews , classroom observations , video of students

Compatible Methods	Peer Instruction, PhET, JiTT, CGPS, Physlets, SCALE-UP, OSP, Thinking Problems, LA Program, CAE TPS, Tutorials, Clickers
Similar Method	None
Developer(s)	Jeffrey T. Morgan, Michael C. Wittmann, Eleanor C. Sayre, Katrina E. Black
Website	http://perlnet.umaine.edu/iqp/