

**The Mountain School
Physics Questionnaire—Spring 09**

Your student _____ has signed up to take Physics during the fall semester of the Mountain School. Your answers to the following questions will help us to organize a course that will best address the needs of each student.

Title of physics class _____

Text(s) used for class _____

Chapters covered in this text fall semester _____

Prerequisites for class _____

What are the laboratory expectations for the class?

Your Name: _____ Your School: _____

Phone #: _____ e-mail : _____

Please check below those topics that will need to be covered at the Mountain School this fall, and those that will be covered by you in the spring. Any comments on the rigor with which you treat topics would also be helpful.

Fall 08 Spring 09 Not Covered

| | | | |
|-------|-------|-------|------------------------------------------------------------------------------------------|
| _____ | _____ | _____ | SI Units, conversions & dimensional analysis |
| _____ | _____ | _____ | Kinematics in one dimension (velocity, acceleration, falling objects) |
| _____ | _____ | _____ | Kinematics in two dimensions (vectors, projectile motion) |
| _____ | _____ | _____ | Force |
| _____ | _____ | _____ | Newton's first law of motion |
| _____ | _____ | _____ | Newton's second law of motion |
| _____ | _____ | _____ | Newton's third law of motion |
| _____ | _____ | _____ | Free-body diagrams |
| _____ | _____ | _____ | Friction |
| _____ | _____ | _____ | Uniform circular motion (angular measure, speed & velocity, centripetal acceleration) |
| _____ | _____ | _____ | Newton's laws of universal gravitation |
| _____ | _____ | _____ | Kepler's laws |
| _____ | _____ | _____ | Work done by a constant force |
| _____ | _____ | _____ | Work done by a variable force |
| _____ | _____ | _____ | Kinetic energy and the work-energy principle |
| _____ | _____ | _____ | Potential energy |
| _____ | _____ | _____ | Conservation of energy |
| _____ | _____ | _____ | Conservation of momentum - linear |
| _____ | _____ | _____ | Collisions and impulse |
| _____ | _____ | _____ | Elastic collisions |
| _____ | _____ | _____ | Inelastic collisions |
| _____ | _____ | _____ | Collisions in two or three dimensions |
| _____ | _____ | _____ | Center of Mass |

| <u>Fall 08</u> | <u>Spring 09</u> | <u>Not Covered</u> | |
|----------------|------------------|--------------------|-------------------------------------------------------------------------------------|
| _____ | _____ | _____ | Rotational motion |
| _____ | _____ | _____ | Solids - bodies in equilibrium, elasticity |
| _____ | _____ | _____ | Fluids - pressure, buoyancy, surface tension |
| _____ | _____ | _____ | Gas laws and absolute temperature |
| _____ | _____ | _____ | Thermal expansion |
| _____ | _____ | _____ | Kinetic theory of gases |
| _____ | _____ | _____ | First law of Thermodynamics |
| _____ | _____ | _____ | Second law of Thermodynamics |
| _____ | _____ | _____ | Simple harmonic motion |
| _____ | _____ | _____ | Damped harmonic motion |
| _____ | _____ | _____ | Forced vibrations - resonance |
| _____ | _____ | _____ | Wave motion (energy, amplitude, frequency, reflection, refraction, interference) |
| _____ | _____ | _____ | Sound |
| _____ | _____ | _____ | Electric charge, forces and fields |
| _____ | _____ | _____ | Electric potential, energy and capacitance |
| _____ | _____ | _____ | Electric current and resistance |
| _____ | _____ | _____ | Electric circuits - DC |
| _____ | _____ | _____ | Magnetism |
| _____ | _____ | _____ | Electromagnetic induction |
| _____ | _____ | _____ | Electric circuits - AC |
| _____ | _____ | _____ | Geometric optics |
| _____ | _____ | _____ | Mirrors and lenses |
| _____ | _____ | _____ | Optical instruments |
| _____ | _____ | _____ | The wave nature of light |
| _____ | _____ | _____ | Relativity |
| _____ | _____ | _____ | Quantum physics (Planck's Hypothesis, Bohr Theory of the Hydrogen atom) |
| _____ | _____ | _____ | Quantum mechanics |
| _____ | _____ | _____ | Nuclear reactions and elementary particles |
| _____ | _____ | _____ | Nuclear physics and radioactivity |
| _____ | _____ | _____ | Astrophysics and cosmology |
| _____ | _____ | _____ | _____ |

Please include a syllabus if possible and any further information on class expectations or structure that you think will help us design an appropriate program, and return by May 2nd.

Thank you for your help! *Mountain School Admissions*

The Mountain School, 151 Mountain School Road, Vershire, VT 05079
 Phone: 802-685-4520 Fax: 802-685-3317 Email: info@mountainschool.org