

## Waldorf Physics Topics Through the Grades

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### Grade 6

1. **Philosophy of Science:** Observations, Measurements, Data analysis, Accuracy
2. **Acoustics:** Vibration, Pitch, Volume, Tone, Harmonics, Distortion, Speed of sound, Sound in various media
3. **Optics:** Darkness and light, Color, After images, Complimentary colors, Shadows, The eye
4. **Magnetism:** Magnetite, Compass
5. **Electricity:** Static electricity, Friction, Resistance and heat

### Grade 7

1. **Philosophy of Science:** Scientific method
2. **Mechanics:** 6 simple machines, levers, balance, inclined plane, wedge, screw, pulley, force over distance
3. **Acoustics:** Cladni plate, Echoes
4. **Optics:** Shadows, Planes and curves, Illusions, Pin-hole camera
5. **Heat:** Conduction, Expansion and thermometers
6. **Magnetism:** The earth's magnetosphere
7. **Electricity:** Electric current, Sources of electricity, Electromagnets, Electric appliances

### Grade 8

1. **Philosophy of Science:** Scientific thinking and methods, Sources of error
2. **Hydrostatics:** Archimedes' Principal, Hydraulic Scales, Cartesian diver, Buoyancy, Stability, Water pumps, Vortices and resistance
3. **Meteorology:** Climate and weather, Clouds, Wind, Precipitation, Atmosphere, Global mapping
4. **Electricity:** Motors, Dynamos, Generators

### Grade 9: Thermodynamics

1. **Philosophy of Science:** Experimentation, Validity, Repeatability
2. **Thermodynamics:** Heat and energy, Heating metals, States of matter, Steam engine, Sterling engine, Internal combustion engine

### Grade 10: Mechanics

1. **Philosophy of Science:** Scientific thinking and methods, Peer review and publication
2. **Mechanics:** Inertia, Pendulum, Measurement of motion, Mechanical engineering, Bridge building

### Grade 11: Electricity

1. **Philosophy of Science:** Scientific observation, Measurements, Data analysis, Accuracy
2. **Electricity:** Static electricity, Capacitors, Batteries, Ohm's Law, DC and AC current, Alternators, Power generation and transmission, Electromagnetism, Tesla coil, Telegraph, Telephone, Ben Franklin, Nicola Tesla

### Grade 12: Light

1. **Philosophy of Science:** SWOT analysis of science and its alternatives, Future perspectives
2. **Light:** Electromagnetic spectrum, Reflection, Refraction, Diffraction, Absorption, Mirrors, Snell's Law, Wave-particle duality, Speed of light, Bending light, Relation to sound waves, Rainbows, Visible light, Light spectrum, Theory of Relativity, Quantum Mechanics, Albert Einstein