



**Switched-On**  
SCHOOLHOUSE® 2011 EDITION

# Curriculum Catalog

Physics

## Welcome to Switched-On Schoolhouse!

We are excited that you are including Switched-On Schoolhouse as part of your program of instruction, and we look forward to serving you and your students.

Switched-On Schoolhouse comes complete with a full, multimedia-rich curriculum for grades 3-12 in five core subjects and electives.

Thanks for choosing us!

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## Physics

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Don't forget to review the Science Lab Materials List for Physics!

| <b>UNIT 1: KINEMATICS</b>                                |  |
|--|--|
| Assignment Titles  |  |
| 1. Introduction to the Language of Physics               | 10. Acceleration and Acceleration Due to Gravity         |
| 2. Experiment: Making a Soda Straw Balance               | 11. Experiment: Determining Reaction Time                |
| 3. Experiment: Making a Simple Model of the Solar System | 12. Quiz 4: Acceleration and Acceleration Due to Gravity |
| 4. Quiz 1: Measurements                                  | 13. Vectors  |
| 5. Scalars and Vectors                                   | 14. Projectiles  |
| 6. Experiment: Oleic Acid                                | 15. Quiz 5: Review                                       |
| 7. Quiz 2: Scalars and Vectors                           | 16. Special Project                                      |
| 8. Speed and Velocity                                    | 17. Review Game  |
| 9. Quiz 3: Speed and Velocity                            | 18. Test   |
|  | 19. Alternate Test                                       |

| <b>UNIT 2: DYNAMICS</b>                            |                                       |
|--|---------------------------------------|
| Assignment Titles                                  |                                       |
| 1. Newton's First and Second Laws                  | 11. Quiz 4                            |
| 2. Report: Isaac Newton                            | 12. Kepler's Laws of Planetary Motion |
| 3. Quiz 1  | 13. Report: Solar System              |
| 4. Gravity   | 14. Experiment: Kepler's Law          |
| 5. Quiz 2  | 15. Quiz 5                            |
| 6. Uniform Circular Motion                         | 16. Special Project                   |
| 7. Experiment: Circular Motion                     | 17. Review Game                       |
| 8. Quiz 3  | 18. Test                              |
| 9. Newton's Third Law and Conservation of Momentum | 19. Alternate Test                    |
| 10. Experiment: Explosion                          |                                       |

| <b>UNIT 3: WORK AND ENERGY</b>         |                             |
|--|-----------------------------|
| Assignment Titles                      |                             |
| 1. Work, Kinetic, and Potential Energy | 9. Latent Heat              |
| 2. Report: Nuclear Energy              | 10. Experiment: Latent Heat |
| 3. Quiz 1                              | 11. Laws of Thermodynamics  |
| 4. Conservation of Energy              | 12. Quiz 3                  |
| 5. Power of Efficiency                 | 13. Special Project         |
| 6. Experiment: Simple Machines         | 14. Review Game             |
| 7. Quiz 2                              | 15. Test                    |
| 8. Heat Energy                         | 16. Alternate Test          |

| <b>UNIT 4: INTRODUCTION TO WAVES</b> |                                |
|--------------------------------------|--------------------------------|
| Assignment Titles                    |                                |
| 1. Characteristics of Waves          | 9. Sound Waves                 |
| 2. Experiment: Wave Speeds           | 10. Experiment: Doppler Effect |
| 3. Experiment: Pulses                | 11. Quiz 3                     |
| 4. Quiz 1                            | 12. Special Project            |
| 5. Wave Phenomena                    | 13. Review Game                |
| 6. Experiment: Waves                 | 14. Test                       |
| 7. Experiment: Bending Waves         | 15. Alternate Test             |
| 8. Quiz 2                            |                                |

| <b>UNIT 5: LIGHT</b>                       |   |
|--|---|
| Assignment Titles                          |   |
| 1. Speed of Light: Historical Calculations | 9. Quiz 2                               |
| 2. Properties of Light                     | 10. Light Phenomena and Models of Light |
| 3. Experiment: Light Angles                | 11. Experiment: Light Observations      |
| 4. Experiment: Water Refraction            | 12. Quiz 3                              |
| 5. Quiz 1                                  | 13. Special Project                     |
| 6. Mirrors                                 | 14. Review Game                         |
| 7. Experiment: Convergence                 | 15. Test                                |
| 8. Lenses                                  | 16. Alternate Test                      |

## Physics (cont.)

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### UNIT 6: STATIC ELECTRICITY

#### Assignment Titles

- |                                   |                         |
|-----------------------------------|-------------------------|
| 1. Electric Charges               | 8. Electric Potential   |
| 2. Coulomb's Law                  | 9. Potential and Energy |
| 3. Experiment: Static Electricity | 10. Quiz 3              |
| 4. The Transfer of Charges        | 11. Special Project     |
| 5. Quiz 1                         | 12. Review Game         |
| 6. Electric Fields                | 13. Test                |
| 7. Quiz 2                         | 14. Alternate Test      |

### UNIT 7: ELECTRIC CURRENTS

#### Assignment Titles

- |                                 |                     |
|---------------------------------|---------------------|
| 1. Sources of EMF               | 8. Circuits         |
| 2. Project: Research and Report | 9. Quiz 3           |
| 3. Fluid Flow                   | 10. Special Project |
| 4. Quiz 1                       | 11. Review Game     |
| 5. Resistance                   | 12. Test            |
| 6. Quiz 2                       | 13. Alternate Test  |
| 7. Ohm's Law                    |                     |

### UNIT 8: MAGNETISM

#### Assignment Titles

- |                                |                     |
|--------------------------------|---------------------|
| 1. Fields and Forces           | 8. Quiz 2           |
| 2. Experiment: Magnetic Fields | 9. Electron Beams   |
| 3. Forces                      | 10. Quiz 3          |
| 4. Quiz 1                      | 11. Special Project |
| 5. Electromagnetism            | 12. Review Game     |
| 6. Experiment: Magnetic Fields | 13. Test            |
| 7. Electromagnetic Induction   | 14. Alternate Test  |

### UNIT 9: ATOMIC AND NUCLEAR PHYSICS

#### Assignment Titles

- |  |   |
|--|---|
| 1. Quantum Theory                                      | 9. Nuclear Reactions                          |
| 2. X-Rays, Matter Waves, and the Uncertainty Principle | 10. Fusion and Applications of Nuclear Energy |
| 3. Quiz 1  | 11. Quiz 3                                    |
| 4. Early Atomic Models                                 | 12. Special Project                           |
| 5. Report: Early Atomic Physics                        | 13. Review Game                               |
| 6. Bohr Model  | 14. Test                                      |
| 7. Nuclear Theory                                      | 15. Alternate Test                            |
| 8. Quiz 2  |   |

### UNIT 10: REVIEW

#### Assignment Titles

- |                              |                     |
|------------------------------|---------------------|
| 1. Mechanics                 | 11. Quiz 3          |
| 2. Dynamics                  | 12. Modern Physics  |
| 3. Energy                    | 13. The Bohr Atom   |
| 4. Quiz 1                    | 14. Duality         |
| 5. Wave Motion               | 15. Nuclear Energy  |
| 6. Light and Sound           | 16. Quiz 4          |
| 7. Quiz 2                    | 17. Special Project |
| 8. Electricity and Magnetism | 18. Review Game     |
| 9. Fields and Forces         | 19. Test            |
| 10. Circuits                 | 20. Alternate Test  |