



2011 Curriculum Catalog

Integrated Physics and Chemistry

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Integrated Physics and Chemistry

UNIT 1: EXPLORATIONS IN PHYSICAL SCIENCE

Assignment Titles

- | | |
|------------------------------------|-------------------------------------|
| 1. Course Overview | 10. Mass and Density |
| 2. What is Science? | 11. Experiment: Determining Density |
| 3. The Scientific Method | 12. Experiment: Density Column |
| 4. Experiment: Making Observations | 13. Quiz 2: Measuring Matter |
| 5. Quiz 1: Nature of Science | 14. Special Project |
| 6. The Metric System | 15. Review |
| 7. Scales | 16. Test |
| 8. Volume | 17. Alternate Test |
| 9. Experiment: Determining Volume | 18. Glossary and Credits |

UNIT 2: THE STRUCTURE OF MATTER

Assignment Titles

- | | |
|---------------------------------------|--------------------------------------|
| 1. The History of Atomic Theory | 11. Mixtures |
| 2. Experiment: Atomic Structure | 12. Separating Mixtures |
| 3. The Atomic Model | 13. Experiment: Separating a Mixture |
| 4. Quiz 1: Atomic Structure | 14. Quiz 3: Mixtures |
| 5. Elements and Their Properties | 15. Special Project |
| 6. The Periodic Table | 16. Review |
| 7. Trends on the Periodic Table | 17. Test |
| 8. Experiment: Identifying an Unknown | 18. Alternate Test |
| 9. Compounds | 19. Glossary and Credits |
| 10. Quiz 2: Pure Substances | |

UNIT 3: MATTER AND CHANGE

Assignment Titles

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|---|------------------------------|
| 1. States of Matter | 13. Quiz 2: Chemical Changes |
| 2. Changes of State | 14. Radioactivity |
| 3. Experiment: Graphing Changes of State | 15. Nuclear Reactions |
| 4. Solutions—The Dissolving Process | 16. Experiment: Half-Life |
| 5. Acids and Bases | 17. Nuclear Energy |
| 6. Experiment: The Cabbage Indicator | 18. Quiz 3: Nuclear Changes |
| 7. Quiz 1: Physical Changes | 19. Special Project |
| 8. Chemical Bonding | 20. Review |
| 9. Atomic Structure and Bonding | 21. Test |
| 10. Experiment: Chemical Changes | 22. Alternate Test |
| 11. Chemical Reactions and Conservation of Mass | 23. Glossary and Credits |
| 12. Types of Chemical Reactions | |

UNIT 4: STATES OF MATTER

Assignment Titles

- | | |
|---|---|
| 1. Properties of Solids | 11. Quiz 2: Liquids |
| 2. Experiment: Comparing Hardness and Density of Solids | 12. General Characteristics of Gases |
| 3. Elasticity and Strength in Solids | 13. Pressure and Volume in Gases |
| 4. Electrical Conductivity in Solids | 14. Experiment: Pressure in Gases |
| 5. Quiz 1: Solids | 15. Temperature and Volume Changes in Gases |
| 6. Characteristics of Liquids | 16. Quiz 3: Gases |
| 7. Experiment: Viscosity | 17. Special Project |
| 8. Pressure in Liquids | 18. Review |
| 9. Archimedes' Principle and Flotation | 19. Test |
| 10. Liquids and Capillary Action | 20. Alternate Test |
| | 21. Glossary and Credits |

UNIT 5: MOTION AND FORCES

Assignment Titles

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|------------------------------|----------------------------|
| 1. Distance and Displacement | 10. Newton's Laws |
| 2. Speed and Velocity | 11. Experiment: Propulsion |
| 3. Acceleration | 12. Centripetal Force |
| 4. Motion Graphs | 13. Quiz 2: Forces |
| 5. Experiment: Motion Graphs | 14. Special Project |
| 6. Momentum | 15. Review |
| 7. Quiz 1: Motion | 16. Test |
| 8. Forces | 17. Alternate Test |
| 9. Friction | 18. Glossary and Credits |

Integrated Physics and Chemistry (cont.)

UNIT 6: SEMESTER REVIEW AND EXAM

Assignment Titles

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|-----------|--------------------------|
| 1. Review | 3. Alternate Exam—Form A |
| 2. Exam | 4. Alternate Exam—Form B |

UNIT 7: WORK AND ENERGY

Assignment Titles

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|--|---|
| 1. Forms of Energy | 10. Pulleys; Wheels and Axles |
| 2. Work | 11. Inclined Planes, Wedges, and Screws |
| 3. Mechanical Energy | 12. Experiment: Inclined Planes |
| 4. Conservation of Energy | 13. Quiz 2: Simple Machines |
| 5. Experiment: Conservation of Energy | 14. Special Project |
| 6. Power | 15. Review |
| 7. Quiz 1: Work, Energy, and Power | 16. Test |
| 8. Simple Machines; Levers | 17. Alternate Test |
| 9. Mechanical Advantage and Efficiency | 18. Glossary and Credits |

UNIT 8: HEAT FLOW

Assignment Titles

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|-----------------------------------|--------------------------------------|
| 1. Thermodynamics and Entropy | 9. Heat Engines |
| 2. Specific Heat Capacity | 10. Quiz 2: Heat Flow and Technology |
| 3. Heat Flow | 11. Special Project |
| 4. Experiment: Insulators | 12. Review |
| 5. Quiz 1: Energy Transfer | 13. Test |
| 6. Heating Systems | 14. Alternate Test |
| 7. Experiment: Heat and Expansion | 15. Glossary and Credits |
| 8. Cooling and Refrigeration | |

UNIT 9: ELECTRICITY AND MAGNETISM

Assignment Titles

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|---|--|
| 1. Electric Charges | 10. Experiment: Diverting a Magnetic Field |
| 2. Static Electricity | 11. Magnetic Fields in Space |
| 3. Experiment: Electrostatic Investigations | 12. Quiz 2: Magnetism |
| 4. Electric Current | 13. Special Project |
| 5. Circuits | 14. Review |
| 6. Electrical Energy and Power | 15. Test |
| 7. Quiz 1: Electricity | 16. Alternate Test |
| 8. Magnetism | 17. Glossary and Credits |
| 9. Magnetism and Electricity | |

UNIT 10: WAVES

Assignment Titles

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|--|--|
| 1. Waves and Energy Transfer | 13. Light and the Electromagnetic Spectrum |
| 2. Types of Waves | 14. Properties of Light |
| 3. Properties of Waves | 15. Reflection and Mirrors |
| 4. Experiment: Changing the Speed of a Wave | 16. Experiment: Law of Reflection |
| 5. The Behavior of Waves | 17. Lenses |
| 6. Quiz 1: Wave Characteristics and Properties | 18. Quiz 3: Light |
| 7. Sound Vibrations | 19. Special Project |
| 8. Detecting Sound | 20. Review |
| 9. Experiment: Using Vibrations to Produce Sound | 21. Test |
| 10. Doppler Effect | 22. Alternate Test |
| 11. Beats, Resonance, and Harmonics | 23. Glossary and Credits |
| 12. Quiz 2: Sound | |

Integrated Physics and Chemistry (cont.)

UNIT 11: CHEMISTRY AND PHYSICS IN OUR WORLD

Assignment Titles

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|--|------------------------------------|
| 1. Carbon Dioxide and Global Warming | 9. Experiment: Kepler's Second Law |
| 2. Experiment: Carbon Dioxide and Water Acidity | 10. Quiz 2: Space Physics |
| 3. Fossil Fuels' Effect on the Environment | 11. Special Project |
| 4. Experiment: Water Acidity and the Environment | 12. Review |
| 5. Quiz 1: Environmental Chemistry | 13. Test |
| 6. Atomic Spectra and Moving Stars | 14. Alternate Test |
| 7. The Temperature of Stars | 15. Glossary and Credits |
| 8. Kepler and the Motion of the Spheres | |

UNIT 12: SEMESTER REVIEW AND EXAM

Assignment Titles

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|-----------|--------------------------|
| 1. Review | 3. Alternate Exam—Form A |
| 2. Exam | 4. Alternate Exam—Form B |

UNIT 13: FINAL EXAM

Assignment Titles

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|--------------------------------|--------------------------------|
| 1. Final Exam | 3. Alternate Final Exam—Form B |
| 2. Alternate Final Exam—Form A | |