

Electrons in Atoms



Chapter Pacing Guide

Please note that this pace is based on completing selected sections of the text in 90 classes, approximately 90 minutes each. Refer to the Course Planning Guide on page xvii of this booklet for a complete list of time allotments assigned to each section. Less time can be allocated for each chapter if you plan to teach all 26 chapters.

Period	Content
0.5	5.1 Light and Quantized Energy
1	5.2 Quantum Theory and the Atom
1	5.3 Electron Configurations
0.5	Review and Assessment

Light and Quantized Energy pages 117–126

Key: SE = Student Edition,
TWE = Teacher Wraparound Edition,
TCR = Teacher Classroom Resources

National Science Content Standards: UCP.1, UCP.2; A.1, A.2; B.1, B.6; G.1, G.2, G.3

Georgia QCC: 1, 1.2, 2, 2.1, 3.1, 5, 6.2

Objectives

- **Compare** the wave and particle models of light.
- **Define** a quantum of energy and explain how it is related to an energy change of matter.
- **Contrast** continuous electromagnetic spectra and atomic emission spectra.

Lesson Resources

- _____ Section Focus Transparency 17 and Master
- _____ Math Skills Transparency 5 and Master
- _____ Teaching Transparency 15 and Master
- _____ *ChemLab and MiniLab Worksheets*, pp. 17–20
TCR
- _____ *Study Guide for Content Mastery*, pp. 25–26 TCR

- _____ **Guided Reading Audio Program**, Section 5.1
- _____ **Cosmic Chemistry Videodisc**, Disc 1, Side 1; Disc 3, Side 6; Disc 4, Side 8
- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Multimedia Resources

- _____ **Chemistry Interactive CD-ROM**, Section 5.1
Video
- _____ **MindJogger Videoquizzes**, Ch. 5

Optional Resources

- _____ *Laboratory Manual*, pp. 33–36 TCR
- _____ *Solving Problems: A Chemistry Handbook*, Section 5.1 TCR
- _____ *Spanish Resources 5.1 TCR*

Lesson Plan

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Display the Section Focus Transparency and have students answer the questions. • Distribute the corrected Chapter 4 tests. 	Section Focus Transparency 17 and Master	5 minutes
Core Lesson <ul style="list-style-type: none"> • Teach the main concepts of Section 5.1. • Have students read the ChemLab and begin preparations. (Note: this lab will take one period to complete. Time adjustments may be necessary in subsequent lessons.) 	TWE, pp. 117–126 SE, pp. 142–143	30 minutes
In-Class Check <ul style="list-style-type: none"> • Complete the Check for Understanding strategy. 	TWE, p. 124	5 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 5.1 Assessment. • Have students complete the Knowledge Assessment. • Assign relevant questions from Chapter 5 Assessment. 	SE, p. 126 TWE, p. 126 SE, pp. 146–149	5 minutes

[total = 45 minutes]

Quantum Theory and the Atom *pages 127–134*

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TCR = Teacher Classroom Resources

National Science Content Standards: UCP.1, UCP.2; A.2; B.1, B.6; G.2, G.3

Georgia QCC: 2, 5, 6, 6.1, 6.2

Objectives

- **Compare** the Bohr and quantum mechanical models of the atom.
- **Explain** the impact of de Broglie’s wave-particle duality and the Heisenberg uncertainty principle on the modern view of electrons in atoms.
- **Identify** the relationships among a hydrogen atom’s energy levels, sublevels, and atomic orbitals.

Lesson Resources

- _____ Section Focus Transparency 18 and Master
- _____ Teaching Transparency 16 and Master
- _____ *Study Guide for Content Mastery*, pp. 27–28 TCR

- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Multimedia Resources

- _____ **MindJogger Videoquizzes**, Ch. 5
- _____ **Guided Reading Audio Program**, Section 5.2
- _____ **Cosmic Chemistry Videodisc**, Disc 1, Side 1

Optional Resources

- _____ *Challenge Problems*, p. 5 TCR
- _____ *Laboratory Manual*, pp. 37–40 TCR
- _____ *Solving Problems: A Chemistry Handbook*, Section 5.2 TCR
- _____ *Spanish Resources 5.2 TCR*

Lesson Plan

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Display the Section Focus Transparency and have students answer the questions. • Have students check homework answers. 	Section Focus Transparency 18 and Master <i>TWE</i> , pp. 126, 146–149	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	<i>TWE</i> , pp. 126, 146–149	5 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Section 5.2 with the Quick Demo. • Teach the main concepts of Section 5.2. • Have students perform the Problem-Solving Lab. 	<i>TWE</i> , p. 129 <i>TWE</i> , pp. 127–134 <i>SE</i> , p. 130	60 minutes
In-Class Check <ul style="list-style-type: none"> • Reinforce Section 5.2 concepts using the Quick Demo. • Complete the Check for Understanding and Knowledge Assessment strategies. 	<i>TWE</i> , p. 131 <i>TWE</i> , pp. 133–134	15 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 5.2 Assessment. • Assign the Chemistry Journal. • Assign relevant questions from Chapter 5 Assessment. 	<i>SE</i> , p. 134 <i>TWE</i> , p. 129 <i>SE</i> , pp. 146–149	5 minutes

[total = 90 minutes]

Electron Configurations *pages 135–141*

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National Science Content Standards: UCP.1, UCP.2; A.1, A.2; B.1, B.6; E.2; F.6; G.2, G.3

Georgia QCC: 1, 1.2, 2, 2.1, 3.1, 4, 5, 6, 6.1, 6.1, 6.3, 9.6, 16

Objectives

- **Apply** the Pauli exclusion principle, the aufbau principle, and Hund’s rule to write electron configurations using orbital diagrams and electron configuration notation.
- **Define** valence electrons and draw electron-dot structures representing an atom’s valence electrons.

Lesson Resources

- _____ Section Focus Transparency 19 and Master
- _____ Teaching Transparency 17 and Master
- _____ *Study Guide for Content Mastery*, pp. 29–30 TCR

- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Multimedia Resources

- _____ **Chemistry Interactive CD-ROM**, Section 5.3 Animation and Exploration
- _____ **MindJogger Videoquizzes**, Ch. 5
- _____ **Guided Reading Audio Program**, Section 5.3

Optional Resources

- _____ *Solving Problems: A Chemistry Handbook*, Section 5.3 TCR
- _____ *Spanish Resources 5.3* TCR
- _____ *Supplemental Problems*, pp. 7–8 TCR

Lesson Plan

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Display the Section Focus Transparency and have students answer the questions. • Have students check homework answers. 	Section Focus Transparency 19 and Master <i>TWE</i> , pp. 129, 134, 146–149	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	<i>TWE</i> , pp. 129, 134, 146–149	5 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Section 5.3 with the Demonstration. • Teach the main concepts of Section 5.3. 	<i>TWE</i> , pp. 136–137 <i>TWE</i> , pp. 135–141	50 minutes
In-Class Check <ul style="list-style-type: none"> • Ask students to complete the Portfolio Assessment. • Complete the Check for Understanding and Reteach strategies. • Review Section 5.3 concepts using the Teaching Transparency. • Answer questions on Chapter 5 to prepare students for the test. 	<i>TWE</i> , p. 139 <i>TWE</i> , pp. 140–141 Teaching Transparency 17 and Master <i>TWE</i> , pp. 116–149	25 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 5.3 Assessment. • Assign relevant questions from Chapter 5 Assessment. • Assign supplemental problems to prepare students for the test. 	<i>SE</i> , p. 141 <i>SE</i> , pp. 146–149 <i>Supplemental Problems</i> , pp. 7–8 <i>TCR</i>	5 minutes

[total = 90 minutes]

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Assessment Resources

- _____ *Chapter Assessment*, Ch. 5 TCR
- _____ *Performance Assessment in the Science Classroom*, TCR
- _____ *Alternate Assessment in the Science Classroom*, TCR
- _____ *Reviewing Chemistry: Mastering the Georgia QCC*, TCR

Multimedia Resources

- _____ **MindJogger Videoquizzes**, Ch. 5
- _____ **TestCheck Software**, Ch. 5
- _____ **Chemistry Interactive CD-ROM**, Ch. 5 quiz
- _____ **Vocabulary PuzzleMaker Software**, Ch. 5

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Have students check homework answers. 	TWE, p. 141, 146–149 <i>Supplemental Problems</i> , pp. 7–8 TCR	5 minutes
Reviewing the Chapter <ul style="list-style-type: none"> • Answer any questions about homework. • Answer any final questions about Chapter 5. 	<i>Supplemental Problems</i> , pp. 7–8 TCR TWE, pp. 116–149	5 minutes
Assessment <ul style="list-style-type: none"> • Distribute the test and allow students to work quietly. 	<i>Chapter Assessment</i> , pp. 25–30 TCR	30–35 minutes
Closing <ul style="list-style-type: none"> • As students complete the test, have them read the Chapter 6 Opener. • If students have time, let them explore the Chemistry Online for Chapter 6. 	SE, p. 150 ga.science.glencoe.com	0–5 minutes

[total = 45 minutes]