

# The Structure of the Atom



## 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	4.1 Early Theories of Matter
0.5	4.2 Subatomic Particles and the Nuclear Atom
1	4.3 How Atoms Differ
0.5	4.4 Unstable Nuclei and Radioactive Decay
0.5	Review and Assessment

# Early Theories of Matter pages 87–91

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

**National Science Content Standards:** UCP.1, UCP.2; A.1; B.1, B.2, B.4; G.2, G.3

**Georgia QCC:** 1, 1.2, 2, 2.1

## Objectives

- Compare and contrast the atomic models of Democritus and Dalton.
- Define an atom.

## Lesson Resources

- \_\_\_\_\_ Section Focus Transparency 13 and Master
- \_\_\_\_\_ Study Guide for Content Mastery, p. 19 TCR

## Optional Resources

- \_\_\_\_\_ Solving Problems: A Chemistry Handbook, Section 4.1 TCR
- \_\_\_\_\_ Spanish Resources 4.1 TCR

## Multimedia Resources

- \_\_\_\_\_ Chemistry Interactive CD-ROM, Section 4.1 Video
- \_\_\_\_\_ MindJogger Videoquizzes, Ch. 4
- \_\_\_\_\_ Guided Reading Audio Program, Section 4.1
- \_\_\_\_\_ Using the Internet in the Science Classroom, TCR
- \_\_\_\_\_ Chemistry Web site: [ga.science.glencoe.com](http://ga.science.glencoe.com)

## Lesson Plan

Activity	Resources	Suggested Time
<b>Classroom Management</b> <ul style="list-style-type: none"> <li>• Display the Section Focus Transparency and have students answer the questions.</li> <li>• Distribute the corrected Chapter 3 tests.</li> </ul>	Section Focus Transparency 13 and Master	5 minutes
<b>Core Lesson</b> <ul style="list-style-type: none"> <li>• Introduce Chapter 4 with the Discovery Lab.</li> <li>• Teach the main concepts of Section 4.1.</li> </ul>	SE, p. 87 TWE, pp. 87–91	25 minutes
<b>In-Class Check</b> <ul style="list-style-type: none"> <li>• Reinforce Section 4.1 concepts using the Skill Assessment.</li> <li>• Complete the Reteach strategy.</li> </ul>	TWE, p. 89 TWE, p. 91	10 minutes
<b>Homework</b> <ul style="list-style-type: none"> <li>• Have students complete Section 4.1 Assessment.</li> <li>• Assign relevant questions from Chapter 4 Assessment.</li> <li>• Have students complete the Check for Understanding strategy.</li> </ul>	SE, p. 91 SE, pp. 112–115 TWE, p. 91	5 minutes

[total = 45 minutes]

# Subatomic Particles and the Nuclear Atom *pages 92–97*

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**National Science Content Standards:** UCP.1, UCP.2; A.2; B.1, B.4; G.1, G.2, G.3

**Georgia QCC:** 1, 1.2, 2, 5

## Objectives

- **Distinguish** between the subatomic particles in terms of relative charge and mass.
- **Describe** the structure of the nuclear atom, including the locations of the subatomic particles.

## Lesson Resources

- \_\_\_\_\_ Section Focus Transparency 14 and Master
- \_\_\_\_\_ Teaching Transparencies 11–12 and Masters
- \_\_\_\_\_ *ChemLab and MiniLab Worksheets*, pp. 14–16 TCR
- \_\_\_\_\_ *Study Guide for Content Mastery*, p. 20 TCR

- \_\_\_\_\_ **Guided Reading Audio Program**, Section 4.2
- \_\_\_\_\_ **Cosmic Chemistry Videodisc**, Disc 1, Side 1
- \_\_\_\_\_ *Using the Internet in the Science Classroom*, TCR
- \_\_\_\_\_ Chemistry Web site: [ga.science.glencoe.com](http://ga.science.glencoe.com)

## Multimedia Resources

- \_\_\_\_\_ **Chemistry Interactive CD-ROM**, Section 4.2 Experiment, Demonstration, and Animation
- \_\_\_\_\_ **MindJogger Videoquizzes**, Ch. 4

## Optional Resources

- \_\_\_\_\_ *Laboratory Manual*, pp. 25–28 TCR
- \_\_\_\_\_ *Solving Problems: A Chemistry Handbook*, Section 4.2 TCR
- \_\_\_\_\_ *Spanish Resources 4.2 TCR*

## Lesson Plan

Activity	Resources	Suggested Time
<b>Classroom Management</b> <ul style="list-style-type: none"> <li>• Display the Section Focus Transparency and have students answer the questions.</li> <li>• Have students check homework answers.</li> </ul>	Section Focus Transparency 14 and Master TWE, pp. 91, 112–115	5 minutes
<b>Discussion</b> <ul style="list-style-type: none"> <li>• Answer any questions about homework.</li> </ul>	TWE, pp. 91, 112–115	5 minutes
<b>Core Lesson</b> <ul style="list-style-type: none"> <li>• Teach the main concepts of Section 4.2.</li> <li>• 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.)</li> </ul>	TWE, pp. 92–97 SE, pp. 108–109	15–20 minutes
<b>In-Class Check</b> <ul style="list-style-type: none"> <li>• Reinforce Section 4.2 concepts using the Teaching Transparencies.</li> <li>• Complete the Portfolio Assessment.</li> <li>• Complete the Check for Understanding strategy.</li> </ul>	Teaching Transparencies 11–12 and Masters TWE, p. 95 TWE, p. 97	10–15 minutes
<b>Homework</b> <ul style="list-style-type: none"> <li>• Have students complete Section 4.2 Assessment.</li> <li>• Assign relevant questions from Chapter 4 Assessment.</li> <li>• Have students complete the Skill Assessment.</li> </ul>	SE, p. 97 SE, pp. 112–115 TWE, p. 97	5 minutes

[total = 45 minutes]

# How Atoms Differ pages 98–104

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

**Georgia QCC:** 1, 1.2, 2, 5, 5.1

## Objectives

- **Explain** the role of atomic number in determining the identity of an atom.
- **Define** an isotope and **explain** why atomic masses are not whole numbers.
- **Calculate** the number of electrons, protons, and neutrons in an atom given its mass number and atomic number.

## Lesson Resources

- \_\_\_\_\_ Section Focus Transparency 15 and Master
- \_\_\_\_\_ Math Skills Transparency 4 and Master
- \_\_\_\_\_ Teaching Transparency 13 and Master
- \_\_\_\_\_ *ChemLab and MiniLab Worksheets*, p. 13 TCR
- \_\_\_\_\_ *Study Guide for Content Mastery*, pp. 21–23 TCR

- \_\_\_\_\_ *Using the Internet in the Science Classroom*, TCR
- \_\_\_\_\_ Chemistry Web site: [ga.science.glencoe.com](http://ga.science.glencoe.com)

## Optional Resources

- \_\_\_\_\_ *Challenge Problems*, p. 4 TCR
- \_\_\_\_\_ *Solving Problems: A Chemistry Handbook*, Section 4.3 TCR
- \_\_\_\_\_ *Spanish Resources 4.3 TCR*

## Multimedia Resources

- \_\_\_\_\_ **MindJogger Videoquizzes**, Ch. 4
- \_\_\_\_\_ **Guided Reading Audio Program**, Section 4.3

## Lesson Plan

Activity	Resources	Suggested Time
<b>Classroom Management</b> <ul style="list-style-type: none"> <li>• Display the Section Focus Transparency and have students answer the questions.</li> <li>• Have students check homework answers.</li> </ul>	Section Focus Transparency 15 and Master TWE, pp. 97, 112–115	5 minutes
<b>Discussion</b> <ul style="list-style-type: none"> <li>• Answer any questions about homework.</li> </ul>	TWE, pp. 97, 112–115	5 minutes
<b>Core Lesson</b> <ul style="list-style-type: none"> <li>• Teach the main concepts of Section 4.3.</li> <li>• Have students perform the MiniLab.</li> </ul>	TWE, pp. 98–104 SE, p. 102	40 minutes
<b>In-Class Check</b> <ul style="list-style-type: none"> <li>• Reinforce Section 4.3 concepts using the Teaching Transparency.</li> <li>• Have students work through the Math Skills Transparency.</li> <li>• Complete the Reteach strategy.</li> <li>• Have students complete the Skill Assessment.</li> </ul>	Teaching Transparency 13 and Master Math Skills Transparency 4 and Master TWE, p. 104 TWE, p. 104	35 minutes
<b>Homework</b> <ul style="list-style-type: none"> <li>• Have students complete Section 4.3 Assessment.</li> <li>• Ask students to complete the Performance Assessment.</li> <li>• Assign relevant questions from Chapter 4 Assessment.</li> </ul>	SE, p. 104 TWE, p. 101 SE, pp. 112–115	5 minutes

[total = 90 minutes]

# Unstable Nuclei and Radioactive Decay

*pages 105–107*

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**National Science Content Standards:** UCP.1, UCP.2; A.1; B.1, B.2, B.4, B.6; E.1, E.2; F.5, F.6; G.3

**Georgia QCC:** 1, 1.2, 2, 2.1, 3.1, 4, 5, 5.1, 7.1, 9.6, 16

## Objectives

- **Explain** the relationship between unstable nuclei and radioactive decay.
- **Characterize** alpha, beta, and gamma radiation in terms of mass and charge.

## Lesson Resources

- \_\_\_\_\_ Section Focus Transparency 16 and Master
- \_\_\_\_\_ Teaching Transparency 14 and Master
- \_\_\_\_\_ *Study Guide for Content Mastery*, p. 24 TCR

- \_\_\_\_\_ *Using the Internet in the Science Classroom*, TCR
- \_\_\_\_\_ Chemistry Web site: [ga.science.glencoe.com](http://ga.science.glencoe.com)

## Multimedia Resources

- \_\_\_\_\_ **Chemistry Interactive CD-ROM**, Section 4.4 Demonstration
- \_\_\_\_\_ **MindJogger Videoquizzes**, Ch. 4
- \_\_\_\_\_ **Guided Reading Audio Program**, Section 4.4

## Optional Resources

- \_\_\_\_\_ *Laboratory Manual*, pp. 29–32 TCR
- \_\_\_\_\_ *Solving Problems: A Chemistry Handbook*, Section 4.4 TCR
- \_\_\_\_\_ *Spanish Resources 4.4 TCR*
- \_\_\_\_\_ *Supplemental Problems*, pp. 5–6 TCR

## Lesson Plan

Activity	Resources	Suggested Time
<b>Classroom Management</b> <ul style="list-style-type: none"> <li>• Display the Section Focus Transparency and have students answer the questions.</li> <li>• Have students check homework answers.</li> </ul>	Section Focus Transparency 16 and Master TWE, pp. 101, 104, 112–115	5 minutes
<b>Discussion</b> <ul style="list-style-type: none"> <li>• Answer any questions about homework.</li> </ul>	TWE, pp. 101, 104, 112–115	0–5 minutes
<b>Core Lesson</b> <ul style="list-style-type: none"> <li>• Introduce Section 4.4 with the Quick Demo.</li> <li>• Teach the main concepts of Section 4.4.</li> </ul>	TWE, p. 106 TWE, pp. 105–107	20–25 minutes
<b>In-Class Check</b> <ul style="list-style-type: none"> <li>• Complete the Check for Understanding and Reteach strategies.</li> <li>• Answer questions on Chapter 4 in preparation for the test.</li> </ul>	TWE, p. 107 TWE, pp. 86–115	10 minutes
<b>Homework</b> <ul style="list-style-type: none"> <li>• Have students complete Section 4.4 Assessment.</li> <li>• Assign relevant questions from Chapter 4 Assessment.</li> <li>• Assign supplemental problems to prepare students for the test.</li> </ul>	SE, p. 107 SE, pp. 112–115 <i>Supplemental Problems</i> , pp. 5–6 TCR	5 minutes

[total = 45 minutes]

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## Assessment Resources

- \_\_\_\_\_ Chapter Assessment, Ch. 4 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. 4
- \_\_\_\_\_ TestCheck Software, Ch. 4
- \_\_\_\_\_ Chemistry Interactive CD-ROM, Ch. 4 quiz
- \_\_\_\_\_ Vocabulary PuzzleMaker Software, Ch. 4

Activity	Resources	Suggested Time
<b>Classroom Management</b> <ul style="list-style-type: none"> <li>• Have students check homework answers.</li> </ul>	TWE, pp. 107, 112–115 Supplemental Problems, pp. 5–6 TCR	5 minutes
<b>Reviewing the Chapter</b> <ul style="list-style-type: none"> <li>• Answer any questions about homework.</li> <li>• Answer any final questions about Chapter 4.</li> </ul>	Supplemental Problems, pp. 5–6 TCR TWE, pp. 86–115	5 minutes
<b>Assessment</b> <ul style="list-style-type: none"> <li>• Distribute the test and allow students to work quietly.</li> </ul>	Chapter Assessment, pp. 19–24 TCR	30–35 minutes
<b>Closing</b> <ul style="list-style-type: none"> <li>• As students complete the test, have them read the Chapter 5 Opener.</li> <li>• If students have time, let them explore the Chemistry Online for Chapter 5.</li> </ul>	SE, p. 116  <a href="http://ga.science.glencoe.com">ga.science.glencoe.com</a>	0–5 minutes

[total = 45 minutes]