

Nuclear Chemistry



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	25.1 Nuclear Radiation
0.5	25.2 Radioactive Decay
1	25.3 Transmutation
0.5	25.4 Fission and Fusion of Atomic Nuclei
0.5	25.5 Applications and Effects of Nuclear Reactions
0.5	Review and Assessment

Nuclear Radiation *pages 805–809*

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

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

Georgia QCC: 1, 1.2, 2.1, 3.1, 4, 5, 5.1, 7.1

Objectives

- List the founding scientists in the study of radioactivity and **state** their discoveries.
- Identify alpha, beta, and gamma radiation in terms of composition and key properties.

Lesson Resources

- _____ Section Focus Transparency 96 and Master
- _____ *Study Guide for Content Mastery*, p. 145 TCR

Optional Resources

- _____ *Solving Problems: A Chemistry Handbook*,
Section 25.1 TCR
- _____ *Spanish Resources 25.1 TCR*

Multimedia Resources

- _____ **MindJogger Videoquizzes**, Ch. 25
- _____ **Guided Reading Audio Program**, Section 25.1
- _____ **Cosmic Chemistry Videodisc**, Disc 1, Side 1
- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

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 24 tests. 	Section Focus Transparency 96 and Master	5 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Section 25.1 with the Discovery Lab. • Teach the main concepts of Section 25.1. 	SE, p. 805 TWE, pp. 805–809	25–30 minutes
In-Class Check <ul style="list-style-type: none"> • Complete the Reteach strategy. 	TWE, p. 809	5–10 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 25.1 Assessment. • Assign relevant questions from Chapter 25 Assessment. 	SE, p. 809 SE, pp. 836–839	5 minutes

[total = 45 minutes]

Radioactive Decay pages 810–814

Key: SE = Student Edition,
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National Science Content Standards: UCP.1, UCP.3; B.1, B.4, B.6
Georgia QCC: 5, 5.1, 7.1

Objectives

- Explain why certain nuclei are radioactive.
- Apply your knowledge of radioactive decay to write balanced nuclear equations.

Lesson Resources

- _____ Section Focus Transparency 97 and Master
- _____ Math Skills Transparency 41 and Master
- _____ Study Guide for Content Mastery, p. 146 TCR

Optional Resources

- _____ Laboratory Manual, pp. 193–200 TCR
- _____ Solving Problems: A Chemistry Handbook, Section 25.2 TCR
- _____ Spanish Resources 25.2 TCR

Multimedia Resources

- _____ MindJogger Videoquizzes, Ch. 25
- _____ Guided Reading Audio Program, Section 25.2
- _____ Cosmic Chemistry Videodisc, Disc 1, Side 1
- _____ Using the Internet in the Science Classroom, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

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 97 and Master TWE, pp. 809, 836–839	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	TWE, pp. 809, 836–839	0–5 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Section 25.2 with the Quick Demo. • Teach the main concepts of Section 25.2. 	TWE, p. 811 TWE, pp. 810–814	20–25 minutes
In-Class Check <ul style="list-style-type: none"> • Reinforce Section 25.2 concepts using the Study Guide for Content Mastery. 	Study Guide for Content Mastery, p. 146 TCR	10 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 25.2 Assessment. • Assign the Skill Assessment. • Assign relevant questions from Chapter 25 Assessment. 	SE, p. 814 TWE, p. 812 SE, pp. 836–839	5 minutes

[total = 45 minutes]

Transmutation pages 815–820

Key: SE = Student Edition,
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National Science Content Standards: UCP.1, UCP.3; A.1; B.1, B.6; E.2; F.6; G.1, G.3

Georgia QCC: 1, 1.2, 5.1, 7.1

Objectives

- **Describe** how induced transmutation is used to produce a transuranium element.
- **Solve** problems involving radioactive decay rates.

Lesson Resources

- _____ Section Focus Transparency 98 and Master
- _____ Math Skills Transparency 42 and Master
- _____ Teaching Transparency 76 and Master
- _____ *ChemLab and MiniLab Worksheets*, pp. 97–98
TCR
- _____ *Study Guide for Content Mastery*, p. 147 TCR

- _____ *MindJogger Videoquizzes*, Ch. 25
- _____ **Guided Reading Audio Program**, Section 25.3
- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Optional Resources

- _____ *Solving Problems: A Chemistry Handbook*,
Section 25.3 TCR
- _____ *Spanish Resources 25.3 TCR*

Multimedia Resources

- _____ **Chemistry Interactive CD-ROM**, Section 25.3
Animation, Video, and Experiment

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 98 and Master TWE, pp. 812, 814, 836–839	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	TWE, pp. 812, 814, 836–839	5 minutes
Core Lesson <ul style="list-style-type: none"> • Teach the main concepts of Section 25.3. • Have students work in pairs to complete the MiniLab, and discuss their results. 	TWE, pp. 815–820 SE, p. 819	60–65 minutes
In-Class Check <ul style="list-style-type: none"> • Reinforce Section 25.3 concepts using the <i>Study Guide for Content Mastery</i>. • Complete the Reteach strategy. 	<i>Study Guide for Content Mastery</i> , p. 147 TCR TWE, p. 820	10–15 minutes
Homework <ul style="list-style-type: none"> • Assign the Skill Assessment. • Have students complete Section 25.3 Assessment. • Assign relevant questions from Chapter 25 Assessment. 	TWE, p. 818 SE, p. 820 SE, pp. 836–839	5 minutes

[total = 90 minutes]

Fission and Fusion of Atomic Nuclei

pages 821–826

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

Georgia QCC: 4, 7, 7.2

Objectives

- **Compare** and **contrast** nuclear fission and nuclear fusion.
- **Explain** the process by which nuclear reactors generate electricity.

Lesson Resources

- _____ Section Focus Transparency 99 and Master
- _____ *Study Guide for Content Mastery*, pp. 148–149
TCR

Optional Resources

- _____ *Challenge Problems*, p. 25 TCR
- _____ *Solving Problems: A Chemistry Handbook*,
Section 25.4 TCR
- _____ *Spanish Resources 25.4 TCR*

Multimedia Resources

- _____ **Chemistry Interactive CD-ROM**, Section 25.4
Video
- _____ **MindJogger Videoquizzes**, Ch. 25
- _____ **Guided Reading Audio Program**, Section 25.4
- _____ **Cosmic Chemistry Videodisc**, Disc 1, Side 1
- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

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 99 and Master TWE, pp. 818, 820, 836–839	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	TWE, pp. 818, 820, 836–839	0–5 minutes
Core Lesson <ul style="list-style-type: none"> • Introduce Section 25.4 with the Quick Demo. • Teach the main concepts of Section 25.4. 	TWE, p. 821 TWE, pp. 821–826	20–25 minutes
In-Class Check <ul style="list-style-type: none"> • Complete the Check for Understanding and Reteach strategies. 	TWE, p. 826	10–15 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 25.4 Assessment. • Assign the Performance Assessment. • Assign relevant questions from Chapter 25 Assessment. 	SE, p. 826 TWE, p. 826 SE, pp. 836–839	5 minutes

[total = 45 minutes]

Applications and Effects of Nuclear Reactions *pages 827–831*

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

Georgia QCC: 1, 1.1, 1.2, 2, 2.1, 3.1, 4, 5, 5.1, 7, 7.1, 7.2

Objectives

- **Describe** several methods used to detect and measure radiation.
- **Explain** an application of radiation used in the treatment of disease.
- **Describe** some of the damaging effects of radiation on biological systems.

Lesson Resources

- _____ Section Focus Transparency 100 and Master
- _____ *ChemLab and MiniLab Worksheets*, pp. 99–101
TCR
- _____ *Study Guide for Content Mastery*, p. 150 TCR

- _____ *Cosmic Chemistry Videodisc*, Disc 4, Side 7
- _____ *Using the Internet in the Science Classroom*, TCR
- _____ Chemistry Web site: ga.science.glencoe.com

Multimedia Resources

- _____ **Chemistry Interactive CD-ROM**, Section 25.5
Demonstration and Video
- _____ **MindJogger Videoquizzes**, Ch. 25
- _____ **Guided Reading Audio Program**, Section 25.5

Optional Resources

- _____ *Solving Problems: A Chemistry Handbook*,
Section 25.5 TCR
- _____ *Spanish Resources 25.5* TCR
- _____ *Supplemental Problems*, p. 39 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 100 and Master TWE, pp. 826, 836–839	5 minutes
Discussion <ul style="list-style-type: none"> • Answer any questions about homework. 	TWE, pp. 826, 836–839	0–5 minutes
Core Lesson <ul style="list-style-type: none"> • Teach the main concepts of Section 25.5. • Have students read the ChemLab and begin the Pre-Lab activities. (Note: this lab will take one period to complete. Time adjustments may be necessary in subsequent lessons.) 	TWE, pp. 827–831 SE, pp. 832–833	25–30 minutes
In-Class Check <ul style="list-style-type: none"> • Complete the Check for Understanding and Reteach strategies. • Answer questions on Chapter 25 in preparation for the test. 	TWE, p. 831 TWE, pp. 804–839	5–10 minutes
Homework <ul style="list-style-type: none"> • Have students complete Section 25.5 Assessment. • Assign relevant questions from Chapter 25 Assessment. • Assign supplemental problems to prepare students for the test. 	SE, p. 831 SE, pp. 836–839 <i>Supplemental Problems</i> , p. 39 TCR	5 minutes

[total = 45 minutes]

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Assessment Resources

- _____ Chapter Assessment, Ch. 25 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. 25
- _____ TestCheck Software, Ch. 25
- _____ Chemistry Interactive CD-ROM, Ch. 25 quiz
- _____ Vocabulary PuzzleMaker Software, Ch. 25

Activity	Resources	Suggested Time
Classroom Management <ul style="list-style-type: none"> • Have students check homework answers. 	TWE, pp. 831, 836–839 Supplemental Problems, p. 39 TCR	5 minutes
Reviewing the Chapter <ul style="list-style-type: none"> • Answer any questions about homework. • Answer any final questions about Chapter 25. 	Supplemental Problems, p. 39 TCR TWE, pp. 804–839	5 minutes
Assessment <ul style="list-style-type: none"> • Distribute the test and allow students to work quietly. 	Chapter Assessment, pp. 145–150 TCR	30–35 minutes
Closing <ul style="list-style-type: none"> • As students complete the test, have them read the Chapter 26 Opener. • If students have time, let them explore the Chemistry Online for Chapter 26. 	SE, p. 840 ga.science.glencoe.com	0–5 minutes

[total = 45 minutes]