

About Your Study Plan

This Study Plan is your syllabus for the American Board program. We encourage you to use the recommended resources to target preparation to your needs and goals. There will be hyperlinks throughout this document. Please make sure that you visit the relevant pages to access all of the resources. Your commitment to great teaching begins here.

Preparing to Pass

American Board is committed to making sure you are the best possible teacher.

We will provide you with study tips to get ready for the exam and the content and resources to review the material.

Think of the Snapshot below as an overview for what you need to know. For more detail in each topic, review the exam [standards](#). The ABCTE exams are based on this blueprint, so consider the syllabus for what you want to study.

Your Materials:

- **Standards:** a list of everything that might be on the test.
- **Study Plan:** your syllabus with links to what you need to study for each section.
- **Study Materials:** an overview course on the topics you will be tested on.
- **Practice Exam/Section Quizzes:** a sample test questions and solutions.

Biology Exam Snapshot

Time Allowed	240 minutes	
Format	Multiple Choice	
# of Questions	125	
On-Screen Exhibits	Scientific Calculator, Formula sheet, Periodic Table & Standard Reduction Potentials	
Passing Score	Proficient: 285/500 Distinguished: 357/500	
Exam Summary	Areas of Study	Percentage of Exam
	General Science Knowledge	4%
	Scientific Investigation	7%
	Atomic Structure, Periodicity, and Matter	26%
	Chemical Naming and Structure	14%
	Reactions and Reactivity	26%
	Gas Laws and Solutions	18%
	Organic Chemistry	5%

About This Exam

The American Board for Certification of Teacher Excellence believes that highly skilled chemistry teachers should possess a comprehensive body of scientific knowledge that is research-based and promotes student achievement. The chemistry exam is a rigorous assessment of a candidate's knowledge and application of general chemistry. The topics assessed are characteristically covered in introductory college-level chemistry courses, although some more advanced questions are included, as teachers must hold a more sophisticated understanding of chemistry content than that presented to their students.

How to use American Board Practice Tests

If you have chosen to use our practice tests, you may have already used the quizzes to get a better idea of where your strengths and weaknesses are. There are two full-length exams that we suggest you use in *testing mode* as a mid-term and final to work on your timing and endurance. You can use them again in *explore mode* to identify distractors.

The Study Plan:

Your study plan includes direction on how to use ABCTE's resources. We also include recommended resources to aid in your mastery. This plan was designed for a 9 month period (4 months for Professional Teaching Knowledge (PTK); 4 months for the subject matter; 2 weeks to take each test) in which most people are able to complete the program. Many have completed the program in a shorter amount of time.

Area of Study	Required Resources	Recommended Resources
<input type="checkbox"/> Domain 1: Scientific Investigation <input type="checkbox"/> Domain 2: General Science Knowledge	Review the specific Chemistry standards HERE The corresponding sessions can be found in your American Board Study Materials Scientific Knowledge <ul style="list-style-type: none"><input type="checkbox"/> Scientific Investigation<input type="checkbox"/> Interpreting and Measuring Data<input type="checkbox"/> General Science I<input type="checkbox"/> General Science II<input type="checkbox"/> Review	Books <ul style="list-style-type: none"><input type="checkbox"/> A Beginner's Guide to Scientific Method<input type="checkbox"/> Scientific Method in Practice

Your Notes:

"The information presented in the courses and the workshops was extremely helpful to me because they provided real examples that I have been able to implement immediately in my classroom."

- Lauren Masino, ABCTE Teacher, FL

Study Tip:

One effective way of using the practice quizzes is to look at the incorrect answer choice before looking at the correct explanation to see if you can understand why those options are wrong. If you can understand how a test maker uses distractors, you will be able to eliminate wrong answer choices faster on test day.

Area of Study	Required Resources	Recommended Resources
<p><input type="checkbox"/> Domain 3: Atomic Structure, Periodicity, and Matter</p> <p><input type="checkbox"/> Topic 1: Atomic Structure and Theory</p> <p><input type="checkbox"/> Topic 2: Periodic Table</p> <p><input type="checkbox"/> Topic 3: Quantum Mechanics</p> <p><input type="checkbox"/> Topic 4: Nuclear Chemistry</p>	<p>Review the specific Chemistry standards HERE</p> <p>The corresponding sessions can be found in your American Board Study Materials</p> <p>Atomic Structure, Periodicity, and Matter</p> <ul style="list-style-type: none"> <input type="checkbox"/> Development of the Atomic Theory <input type="checkbox"/> The Structure of the Atom <input type="checkbox"/> The Periodic Table <input type="checkbox"/> Quantum Mechanics Part I <input type="checkbox"/> Quantum Mechanics Part II <input type="checkbox"/> The Nucleus and Nuclear Reactions <input type="checkbox"/> Review 	<p>Web Resources</p> <ul style="list-style-type: none"> <input type="checkbox"/> Chemguide <input type="checkbox"/> Periodic Table <input type="checkbox"/> WebElements <input type="checkbox"/> ABCTE Chemistry Exam Formulas and Constants <p>Books</p> <ul style="list-style-type: none"> <input type="checkbox"/> Atomic Structure and Periodicity <input type="checkbox"/> Chemistry Exam Periodic Table <input type="checkbox"/> Standard Reduction Potential Charts <p>Other Media:</p> <p>https://www.americanboard.org/certification/exam-preparation/chemistry/</p>

Your Notes:

Testing on the Computer:

This may be your first time taking a test on a computer. On average, people read 20% slower on a screen vs. paper. Because of this and other issues, practice as much as you can on the computer to become comfortable working in that environment. Familiarity with the test and its standards will go a long way towards your ABCTE success. The online practice tests are great practice to get a feel for the testing environment.

Area of Study

- Domain 4: Chemical Naming and Structure**
- Topic 1: Molecular Bonding and Structure
- Topic 2: Chemical Naming and Formulas

Required Resources

- Review the specific Chemistry standards [HERE](#)
- The corresponding sessions can be found in your [American Board Study Materials](#)**
- Chemical Naming and Structure**
- Ionic, Covalent or In-Between?
 - Patterns in Space
 - Lewis Structures
 - VSEPR
 - Hybridization and Molecular Orbital Theory
 - Comparison of Properties
 - Writing Names and Formulas
 - Acids and Oxides
 - Percent Composition and Formulas
 - Review

Recommended Resources**Web Resources**

- [Chemical Formulas Review](#)
- [Stoichiometry and Balancing Chemical Equations](#)

Books

- [Chemistry](#)
- [Chemical Bonds: An Introduction to Atomic and Molecular Structure](#)

Other Media:

<https://www.americanboard.org/certification/exam-preparation/chemistry/>

Your Notes:

We love to highlight ABCTE teachers in local newspapers. Not only does this provide publicity for potential job search, it can also help highlight your school as one that is committed to providing students with the best possible teacher. Visit

<https://www.americanboard.org/?s=share+your+story>

Area of Study

Domain 5: Reactions and Reactivity

- Topic 1: Chemical Reactions and Stoichiometry
- Kinetics
- Electrochemistry
- Thermodynamics and Equilibrium

Required Resources

Review the specific Chemistry standards [HERE](#)

The corresponding sessions can be found in your [American Board Study Materials](#)

Reactions and Reactivity

- Classifying Chemical Reactions and Predicting Products
- Types of Chemical Equations
- The Mole
- Chemical Calculations and Yields
- Kinetics
- Oxidation and Reduction
- Cell Potential, Electric Work, and Free Energy
- Energy, Work, and Heat Flow
- Hess's Law and Gibbs Free Energy
- Le Chatelier's Principle and Equilibrium Constants
- Review

Recommended Resources

Web Resources

- [Electrochemistry](#)
- [MIT OpenCourseWare: Principles of Chemical Science](#)

Books

- [Chemical Kinetics and Reactions Dynamics](#)
- [Chemical Kinetics: The Study of Reaction Rates in Solution](#)

Other Media:

<https://www.americanboard.org/certification/exam-preparation/chemistry/>

Your Notes:

Study Tip:

Websites like Wikipedia and other unverified sources of information are NOT a good source of study. Much information found on the World Wide Web consists of unverified sources. Stick to verified sources with full citations. Many resources selected for study by our experts can be found on ABCTE's resource pages.

Area of Study	Required Resources	Recommended Resources
<p><input type="checkbox"/> Domain 6: Gas Laws and Solutions</p> <p><input type="checkbox"/> Topic 1: Gas Laws</p> <p><input type="checkbox"/> Topic 2: Solution Chemistry</p> <p><input type="checkbox"/> Topic 3: Acid and Bases</p>	<p>Review the specific Chemistry standards HERE</p> <p>The corresponding sessions can be found in your American Board Study Materials</p> <p>Gas Laws and Solutions</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gas Laws <input type="checkbox"/> Solution Formation and Concentrations <input type="checkbox"/> Solution Interactions <input type="checkbox"/> Colligative Properties and Related Laws <input type="checkbox"/> The Development and Theories of Acids and Bases <input type="checkbox"/> Relationships Between Acids, Bases, and Salts <input type="checkbox"/> Review 	<p>Web Resources</p> <ul style="list-style-type: none"> <input type="checkbox"/> Gas Laws <input type="checkbox"/> Solutions <p>Books</p> <ul style="list-style-type: none"> <input type="checkbox"/> Schaum's Outline of General, Organic and Biological Chemistry <input type="checkbox"/> The Complete Idiot's Guide to Chemistry <p>Other Media:</p> <p>https://www.americanboard.org/certification/exam-preparation/chemistry/</p>

Your Notes:



Did you know that ABCTE is on Facebook? Come be an ABCTE fan.
<http://facebook.com/abcte>

Questions and concerns can be directed to the Help Desk at: <http://helpdesk.abcte.org/>
or contact your advisor at: advisor@abcte.org

Area of Study	Required Resources	Recommended Resources
<input type="checkbox"/> Domain 7: Organic Chemistry	<p>Review the specific Chemistry standards HERE</p> <p>The corresponding sessions can be found in your American Board Study Materials</p> <p>Organic Chemistry</p> <ul style="list-style-type: none"><input type="checkbox"/> Introduction<input type="checkbox"/> Naming Organic Molecules<input type="checkbox"/> Organic Molecules Containing Oxygen<input type="checkbox"/> Halogenated Hydrocarbons and Hydrocarbon Reactions<input type="checkbox"/> Aromatics<input type="checkbox"/> Polymers<input type="checkbox"/> Review	<p>Web Resources</p> <ul style="list-style-type: none"><input type="checkbox"/> Organic Chemistry Online <p>Books</p> <ul style="list-style-type: none"><input type="checkbox"/> The Vocabulary and Concepts of Organic Chemistry<input type="checkbox"/> Organic Chemistry I For Dummies <p>Other Media:</p> <p>https://www.americanboard.org/certification/exam-preparation/chemistry/</p>

Your Notes:

Study Tip: Use a science survey test

A basic survey text on chemistry like the Idiot's Guide to Chemistry is recommended as a starting point. If you have another survey book from college, or you have access to different text from your library, that is perfectly fine. It is important that you have access to a survey book because it will assist in covering the various domains of the exam.

American Board's Stepwise Method

The Right Way to Get Started: using the Standards as your syllabus

The Standards are your study lifeline; you can find with your study materials. Throughout the course of your study, you will learn all of them. How to begin? Here is the American Board's Standards Stepwise method:

1 Approach in bite-sized chunks: don't be overwhelmed or paralyzed by how many standards there are, simply pick a topic of a domain and get started.

2 Define the terms: take the first three items in the topic and make sure you know all the terms. Look up any you do not recognize. After all, you cannot answer a question definitively if you don't even know the terms.

Topic 1: Selects, Organizes, Plans, and Designs Content

1.1.01	Writes measurable objectives for both individual or classroom performance based on student data and subject matter.
1.1.02	Guides curricular planning (e.g., content clusters, instructional methods, learning activities and assessment tools) based on goals of the instruction.
1.1.03	Identifies central concepts, standards, and learning objectives for instruction.
1.1.04	Substantiates or moderates lesson plans.
1.1.05	Juxtaposes examples that differ in many ways but are the same in defining features, so that students can generalize to new examples and learn to discriminate same/different when faced with new examples.
1.1.06	Plans lessons, depending on size and content of unit, so that important ideas or skills are studied on several occasions rather than all at once.
1.1.07	Selects lessons to be taught.

Guides **curricular planning** (e.g., **content clusters**, instructional methods, learning activities and assessment tools) based on goals of the instruction.

Professional Teaching Knowledge Study Plan | Effective Instructional Delivery

Study Tip:
One effective way of using the practice quizzes is to look at the incorrect answer choices before looking at the correct explanation to see if you can understand why those options are wrong. If you can understand how a test maker uses distractors, you will be able to eliminate wrong answer choices faster on test day.

Area of Study	Required Resources	Recommended Resources
Domain 2 (Standards 2.1.01-2.5.01) Effective Instructional Delivery These standards cover: <input type="checkbox"/> Communicating effectively <input type="checkbox"/> Presenting clear and focused instruction <input type="checkbox"/> Effective questioning techniques <input type="checkbox"/> Making efficient use of learning time <input type="checkbox"/> Applications <input type="checkbox"/> Research Strategies	Complete the following readings and watch the following videos in the PTK Study Materials (PDF or Canvas version): The Characteristics of Successful Teachers <input type="checkbox"/> Characteristics 1-8 <input type="checkbox"/> Characteristics 9-16 VIDEO CASE STUDIES: Characteristics of Successful Teachers	Web Resources <input type="checkbox"/> "The Champion" TED Talk <input type="checkbox"/> Teaching for the 21st Century <input type="checkbox"/> Personalized Learning Books <input type="checkbox"/> Effective Teaching Methods: Research Based Practice <input type="checkbox"/> The First Days of School: How to be an Effective Teacher <input type="checkbox"/> Teaching in Today's Inclusive Classrooms <input type="checkbox"/> Inclusive Education Checklist

Your Notes:

3 Use the required resources in your Study Plan or a broad survey text to refresh your memory on the topic.

4 Use the appropriate recommended resources to probe deeper if you need better understanding. Use the Standards to target the sections you need to read.

5 Your Notes: identify additional resources to use as needed.

6 Check for understanding and reflect: think about how you would use this in a classroom or how you would teach the subject. Use your quizzes to check for understanding and move on.

7 Wash, rinse, and repeat: once you finish a chunk of three, go back and attack the next three.

Have a Plan

It is important to have a plan of attack to study. Block out set times to study and if you slip and miss a session, restart your plan instead of letting yourself get paralyzed and procrastinate.