

PHYSICS STUDY PLAN

for

Name:

Date:

AMERICAN BOARD
for Certification of Teacher Excellence

About Your Study Plan

This Study Plan comprises the full spectrum of materials and resources available to a candidate. 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. Your efforts will not only help you pass the test, but will also prepare you to become a successful teacher.

How to study:

ABCTE 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 both the content and resources to review this material. It is your job to commit to preparing and stay dedicated while studying.

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 this a syllabus for what you want to study.

ABCTE Teacher Forums:

Become a part of the ABCTE community by participating in our Teacher Forums today!

You can discuss the program, ask questions, and learn what other candidates have done to succeed in their classrooms.

<http://www.abcte.org/forums>



Physics Exam Snapshot

Time Allowed	240 minutes	
Format	Multiple-choice	
Number of Questions	125	
On-Screen Exhibits	Scientific calculator; Formula sheet	
Passing Score	Proficient: 258 Distinguished: 344	(The number of questions answered correctly is converted to a scaled score ranging from 0 to 500.)
Exam Summary	Content Domains	Approximate Percentage of Examination
	General Science Knowledge	6%
	Scientific Investigation	7%
	Classical Mechanics	24%
	Fluids and Thermodynamics	12%
	Electricity and Magnetism	24%
	Waves and Optics	15%
	Modern Physics	12%

About This Exam

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

How to use ABCTE 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 would 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.

ABCTE's Standards Stepwise Method

The right way to get started: using the Standards as your syllabus

Your Self Assessment is a summary of the standards; by doing it, you have identified which ones need the most attention. The Standards are your study lifeline; you can find them on your MyAccount page. Throughout the course of your study you will learn all of them. How to begin? Here is ABCTE'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 are do not recognize. After all, you cannot answer a question definitively if you don't even know the terms.

Domain 1: Instructional Design

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	Guides curricular planning (e.g., content clusters, instructional methods, learning activities and assessment tools) based on goals of the instruction.
1.1.04	Guides curricular planning (e.g., content clusters, instructional methods, learning activities and assessment tools) based on goals of the instruction.
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 over several occasions rather than all at once.
1.1.07	Selects lesson materials to illustrate concepts.

PROFESSIONAL TEACHING KNOWLEDGE STUDY PLAN
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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. Your advisor will provide you with a more efficient, customized plan based on your needs.

Area of Study	Required Resource	Recommended Resource						
<input type="checkbox"/> Instructional Delivery <ul style="list-style-type: none"><input type="checkbox"/> Communicating effectively<input type="checkbox"/> Presents clear and focused instructions<input type="checkbox"/> Effective questioning techniques<input type="checkbox"/> Makes efficient use of learning time<input type="checkbox"/> Applications<input type="checkbox"/> Research Strategies	<input type="checkbox"/> Review the specific PTK standard: www.abcte.org/teach/exam-preparation Workshops can be found at: http://www.abcte.org/teach/exam-preparation	<table border="1"><thead><tr><th>Web Resources</th><th>Books</th><th>(Time)</th></tr></thead><tbody><tr><td><ul style="list-style-type: none"><input type="checkbox"/> Teaching Methods: Instructional Strategies<input type="checkbox"/> The First Days of School: How to Be an Effective Teacher<input type="checkbox"/> Inside Teaching for Dummies</td><td><ul style="list-style-type: none"><input type="checkbox"/> Instructional Delivery: Research and Practice<input type="checkbox"/> The Characteristics of Successful Teachers<input type="checkbox"/> Characteristics 1 - 6<input type="checkbox"/> Characteristics 9 - 16<input type="checkbox"/> VIDEO CASE STUDIES: Characteristics of Successful Teachers (13:57)<input type="checkbox"/> Pedagogy and Instructional Design<input type="checkbox"/> How Students Learn<input type="checkbox"/> Whole Group Strategies Part 1<input type="checkbox"/> Whole Group Strategies Part 2<input type="checkbox"/> Small Group Strategies and Individual Instruction<input type="checkbox"/> Lesson Closure<input type="checkbox"/> VIDEO CASE STUDIES: Pedagogy and Instructional Design (14:58)</td><td></td></tr></tbody></table>	Web Resources	Books	(Time)	<ul style="list-style-type: none"><input type="checkbox"/> Teaching Methods: Instructional Strategies<input type="checkbox"/> The First Days of School: How to Be an Effective Teacher<input type="checkbox"/> Inside Teaching for Dummies	<ul style="list-style-type: none"><input type="checkbox"/> Instructional Delivery: Research and Practice<input type="checkbox"/> The Characteristics of Successful Teachers<input type="checkbox"/> Characteristics 1 - 6<input type="checkbox"/> Characteristics 9 - 16<input type="checkbox"/> VIDEO CASE STUDIES: Characteristics of Successful Teachers (13:57)<input type="checkbox"/> Pedagogy and Instructional Design<input type="checkbox"/> How Students Learn<input type="checkbox"/> Whole Group Strategies Part 1<input type="checkbox"/> Whole Group Strategies Part 2<input type="checkbox"/> Small Group Strategies and Individual Instruction<input type="checkbox"/> Lesson Closure<input type="checkbox"/> VIDEO CASE STUDIES: Pedagogy and Instructional Design (14:58)	
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Your Notes:								
<small>Note: The resources recommended outside of the ABCTE program are often freely accessible online or can be found in your library. To ease your search we have hyperlinked them.</small>								

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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: go to the resources section of ABCTE.org and identify additional resources to use as needed. Use the Forums to see what other people are using.

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.

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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 Resource	Recommended Resource	Timeline
<ul style="list-style-type: none"><input type="checkbox"/> Domain 1: Scientific Investigation<input type="checkbox"/> Domain 2: General Science Knowledge	<ul style="list-style-type: none"><input type="checkbox"/> Review the specific Physics standard http://www.abcte.org/teach/physics-standards <p>The corresponding sessions can be found in your ABCTE Refresher Workshops at: http://abcte.org/courses/physics/index.html</p> <p>Scientific Knowledge</p> <ul style="list-style-type: none"><input type="checkbox"/> Scientific Method<input type="checkbox"/> Measurement and Analysis<input type="checkbox"/> General Science<input type="checkbox"/> Review	<p>Web Resources</p> <ul style="list-style-type: none"><input type="checkbox"/> Easypysics.net<input type="checkbox"/> The Physics Classroom<input type="checkbox"/> Water Science for Schools<input type="checkbox"/> WebElements<input type="checkbox"/> Introductory Physics Notes <p>Books</p> <ul style="list-style-type: none"><input type="checkbox"/> The Practical Geologist<input type="checkbox"/> Chemistry: Concepts and Problems: A Self-Teaching Guide<input type="checkbox"/> Physics Demystified : A Self-Teaching Guide <p>Other Media</p> <ul style="list-style-type: none"><input type="checkbox"/> These and other resources can be found at: http://www.abcte.org/teach/exam-preparation/Physics	{Time}

Your Notes:

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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 Resource	Recommended Resource	Timeline
<ul style="list-style-type: none"> <input type="checkbox"/> Domain 3: Classical Mechanics <input type="checkbox"/> Topic 1: Kinematics and Dynamics <input type="checkbox"/> Topic 2: Work, Energy, Power and Momentum <input type="checkbox"/> Topic 03: Rotational Motion <input type="checkbox"/> Topic 04: Universal Gravitation 	<ul style="list-style-type: none"> <input type="checkbox"/> Review the specific Physics standard http://www.abcte.org/teach/physics-standards <p>The corresponding sessions can be found in your ABCTE Refresher Workshops at:</p> <p>http://www.abcte.org/teach/physics-standards</p> <p>Classical Mechanics</p> <ul style="list-style-type: none"> <input type="checkbox"/> Kinematics <input type="checkbox"/> Dynamics I <input type="checkbox"/> Dynamics II <input type="checkbox"/> Energy and Work <input type="checkbox"/> Momentum and Impulse <input type="checkbox"/> Angular Kinematics and Dynamics <input type="checkbox"/> Angular momentum and Rotational Kinetic Energy <input type="checkbox"/> Universal Gravitation and Kepler's Law <input type="checkbox"/> Gravitational Potential Energy <input type="checkbox"/> Motions of the Sun and Moon <input type="checkbox"/> Review 	<p>Web Resources</p> <ul style="list-style-type: none"> <input type="checkbox"/> ABCTE Physics Exam Formulas and Constants <input type="checkbox"/> Regents Exam Prep Center: Physics <input type="checkbox"/> Mechanics, Kinematics <p>Books</p> <ul style="list-style-type: none"> <input type="checkbox"/> Engineering Mechanics, Dynamics <input type="checkbox"/> Conceptual Physics with Practicing Physics Workbook <p>Other Media</p> <ul style="list-style-type: none"> <input type="checkbox"/> These and other resources can be found at: <input checked="" type="checkbox"/> http://www.abcte.org/teach/exam-preparation/Physics 	{Time}

Your Notes:

"I can give children the inspiration and encouragement to confront their own challenges, surpass negativity and persevere....Without this program, I wouldn't have had the opportunity to pursue teaching."

-Traci Brown, ABCTE Teacher, FL

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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	Required ABCTE Resource	Recommended Resource	Timeline
<ul style="list-style-type: none"><input type="checkbox"/> Domain 4: Fluids and Thermodynamics<input type="checkbox"/> Topic 1: Mechanics of Life (Liquids or Gases)<input type="checkbox"/> Topic 2: Thermodynamics	<ul style="list-style-type: none"><input type="checkbox"/> Review the specific Physics standard http://www.abcte.org/teach/physics-standards <p>The following sessions can be found in your ABCTE Refresher Workshops at:</p> <p>http://www.abcte.org/teach/physics-standards</p> <p>Fluids and Thermodynamics</p> <ul style="list-style-type: none"><input type="checkbox"/> Density and Pressure of a Fluid<input type="checkbox"/> States of Matter<input type="checkbox"/> The Four Laws of Thermodynamics<input type="checkbox"/> Review	<p>Web Resources</p> <ul style="list-style-type: none"><input type="checkbox"/> Fluid Mechanics<input type="checkbox"/> Thermodynamics and Thermal Physics<input type="checkbox"/> About Temperature <p>Books</p> <ul style="list-style-type: none"><input type="checkbox"/> The Complete Idiot's Guide to Physics<input type="checkbox"/> College Physics <p>Other Media</p> <ul style="list-style-type: none"><input type="checkbox"/> These and other resources can be found at: <p>⇒ http://www.abcte.org/teach/exam-preparation/Physics</p>	{Time}

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

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We love to highlight ABCTE teachers in local newspapers. Not only does this provide publicity for a potential job search, it can also help highlight your school as one that is committed to providing students with the best possible teacher. Visit <http://www.abcte.org/get-involved/share-your-story>.

Area of Study	Required Resource	Recommended Resource	Timeline
<ul style="list-style-type: none"><input type="checkbox"/> Domain 5: Electricity and Magnetism<input type="checkbox"/> Topic 1: Electrostatics<input type="checkbox"/> Topic 2: Electric Currents<input type="checkbox"/> Topic 3: Magnetism<input type="checkbox"/> Topic 4: Ampère's Law, Faraday's Law, and Maxwell's Equations	<ul style="list-style-type: none"><input type="checkbox"/> Review the specific Physics standard http://www.abcte.org/teach/physics-standards <p>The following sessions can be found in your ABCTE Refresher Workshops at:</p> <p>http://www.abcte.org/teach/physics-standards</p> <p>Electricity and Magnetism</p> <ul style="list-style-type: none"><input type="checkbox"/> Elementary Charges and Net Electric Charge<input type="checkbox"/> Coulomb's Law<input type="checkbox"/> Electric Fields<input type="checkbox"/> Graphs of Electric Fields<input type="checkbox"/> Electrostatic Potential and Electric Potential Energy<input type="checkbox"/> Electric Current, Ohm's Law, Electric Energy and Power<input type="checkbox"/> Resistors in Series and in Parallel<input type="checkbox"/> Magnets and Their Properties<input type="checkbox"/> Magnetic Force and Its Equations<input type="checkbox"/> The Laws of Ampere, Faraday and Lenz<input type="checkbox"/> Inductance and Maxwell's Equations<input type="checkbox"/> Review	<p>Web Resources</p> <ul style="list-style-type: none"><input type="checkbox"/> Electricity and Magnetism<input type="checkbox"/> Hyperphysics<input type="checkbox"/> VRML Gallery of Electromagnetism <p>Books</p> <ul style="list-style-type: none"><input type="checkbox"/> Classical Electricity and Magnetism: Second Edition<input type="checkbox"/> Basic Electricity <p>Other Media</p> <ul style="list-style-type: none"><input type="checkbox"/> These and other resources can be found at:<input checked="" type="checkbox"/> http://www.abcte.org/teach/exam-preparation/Physics	{Time}

Your Notes:

Study Tip: Use a science survey text

A basic survey text on chemistry like Biology textbooks or the Idiot's Guide to Biology is recommended as a starting point. If you have another survey book from college, or you have access to a 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.

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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 Resource	Recommended Resource	Timeline
<ul style="list-style-type: none"> <input type="checkbox"/> Domain 6: Waves and Optics <input type="checkbox"/> Topic 1: Waves <input type="checkbox"/> Topic 2: Geometrical (Ray) Optics <input type="checkbox"/> Topic 3: Physical (Wave) Optics 	<ul style="list-style-type: none"> <input type="checkbox"/> Review the specific Physics standard http://www.abcte.org/teach/physics-standards <p>The following sessions can be found in your ABCTE Refresher Workshops at:</p> <p>http://www.abcte.org/teach/physics-standards</p> <p>Waves and Optics</p> <ul style="list-style-type: none"> <input type="checkbox"/> Types and Properties of Waves <input type="checkbox"/> Sound Waves and Electromagnetic Waves <input type="checkbox"/> Reflection <input type="checkbox"/> Refraction <input type="checkbox"/> Lenses <input type="checkbox"/> Diffraction and Interference <input type="checkbox"/> Thin Film Interference <input type="checkbox"/> Review 	<p>Web Resources</p> <ul style="list-style-type: none"> <input type="checkbox"/> Waves <input type="checkbox"/> The Optics <input type="checkbox"/> MIT OpenCourseWare: Physics III: Vibrations and Waves <p>Books</p> <ul style="list-style-type: none"> <input type="checkbox"/> Introduction to Modern Optics <p>Other Media</p> <ul style="list-style-type: none"> <input type="checkbox"/> These and other resources can be found at: ⇒ http://www.abcte.org/teach/exam-preparation/Physics 	{Time}

Your Notes:



"The podcast for new teachers is very helpful. I have them all on my iPod and they really hit some good topics."

- Lisa Mayo, ABCTE Teacher, PA

Dr. Glen Moulton, a supervisor of instruction and life-long teacher trainer, and Michael Kelley, author of *Rookie Teaching for Dummies*, provide advice, tips, and discussions for new and veteran teachers monthly. Sign up for this great resource. It is free for anyone to download for help in the classroom: www.newteacherhotline.com.

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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 Resource	Recommended Resource	Timeline
<input type="checkbox"/> Domain 7: Modern Physics	<p><input type="checkbox"/> Review the specific Physics standard http://www.abcte.org/teach/physics-standards</p> <p>The following sessions can be found in your ABCTE Refresher Workshops at:</p> <p>http://www.abcte.org/teach/physics-standards</p> <p>Modern Physics</p> <ul style="list-style-type: none"><input type="checkbox"/> Special Relativity<input type="checkbox"/> The Experiments of Modern Physics<input type="checkbox"/> The Physics of the Atom I<input type="checkbox"/> The Physics of the Atom II<input type="checkbox"/> Review	<p>Web Resources</p> <ul style="list-style-type: none"><input type="checkbox"/> Relativity Tutorial<input type="checkbox"/> Fear of Physics<input type="checkbox"/> Light and Matter <p>Books</p> <ul style="list-style-type: none"><input type="checkbox"/> Physics for the Utterly Confused <p>Other Media</p> <ul style="list-style-type: none"><input type="checkbox"/> Physics Practice Exam CD-ROM <p><input type="checkbox"/> These and other resources can be found at:</p> <p>⇒ http://www.abcte.org/teach/exam-preparation/Physics</p>	{Time}

Your Notes:



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