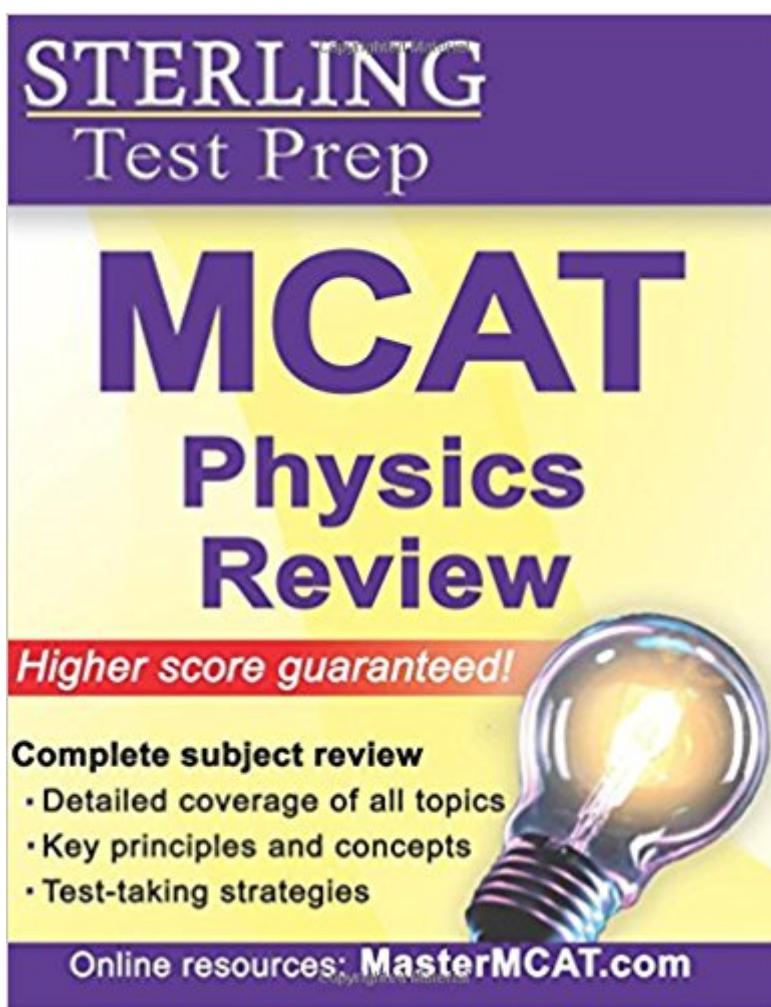


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# Sterling Test Prep MCAT Physics Review: Complete Subject Review



## **Synopsis**

MCAT Physics Complete Subject Review provides a detailed and thorough review of Physics topics tested on the MCAT. The content covers foundational principles and theories necessary to answer related questions on the test. Translational motion, Force, Work and energy of point object systems, Periodic motion, Fluid statics and dynamics, Electrostatics, Circuit elements, Magnetism, Sound, Light and geometrical optics, Atomic nucleus and electronic structure, and Thermodynamics.

## **Book Information**

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## **Customer Reviews**

This book provides a detailed and thorough review of Physics topics tested on the MCAT. The content covers foundational principles and theories necessary to answer related questions on the test. The information is presented clearly and organized in a systematic way to provide students with targeted MCAT Physics review tool. You can focus on one knowledge area at a time to learn and fully comprehend important concepts and theories, or to simply refresh your memory. By reading these review chapters thoroughly, you will learn important physics concepts and the relationships between them, so you can answer related questions on the test. This will prepare you for the MCAT physics and you will significantly increase your score. To achieve a high MCAT score, you need to develop skills to properly apply the knowledge you have and quickly choose the correct answer. Understanding key concepts, having the ability to extract

information from the passages and distinguishing between similar answer choices is more valuable than simply memorizing terms. All the material in this book is prepared by physics instructors with years of experience in applied physics, as well as in academic settings. It was reviewed and organized by our MCAT editors to ensure strict adherence to the topics and skills outlined by the AAMC for the current MCAT. Our MCAT editors possess extensive credentials, were educated in top colleges and universities and have been admitted to medical school with stellar MCAT scores. They are experts on teaching, preparing students for the MCAT and have coached thousands of premeds on admission strategies. Used books may have outdated content. We make content updates regularly based on customers' comments, editorial input and latest test changes. The most current version is only available directly from (sold & shipped by ), Barnes & Noble and Sterling Test Prep web store.

MCAT Test-Taking Strategies

- Translational Motion
- Units and dimensions
- Vectors, components
- Vector addition
- Speed, velocity (average and instantaneous)
- Acceleration
- Force
- Newton's First Law, inertia
- Newton's Second Law ( $F = ma$ )
- Newton's Third Law, forces equal and opposite
- Friction, static and kinetic
- Center of mass
- Vector analysis of forces acting on a point object
- Torques, lever arms
- Work and Energy of Point Object Systems
- Work done by a constant force
- Mechanical advantage
- Work Kinetic Energy Theorem
- Conservative forces
- Kinetic Energy
- Potential Energy:  $PE = mgh$  (gravitational, local);  $PE = \frac{1}{2}kx^2$  (spring)
- Conservation of energy
- Power, units
- Periodic Motion
- Amplitude, frequency, phase
- Transverse and longitudinal waves: wave length and propagation speed
- Fluid Statics and Dynamics
- Density, specific gravity
- Buoyancy, Archimedes' Principle
- Hydrostatic pressure: Pascal's Law;  $P = \rho gh$  (pressure vs. depth)
- Viscosity: Poiseuille Flow
- Continuity equation ( $A\dot{V} = \text{constant}$ )
- Concept of turbulence at high velocities
- Surface tension
- Bernoulli's equation
- Venturi effect, pitot tube
- Absolute temperature, (K) Kelvin Scale
- Pressure, simple mercury barometer
- Molar volume
- Ideal gas: definition; Ideal Gas Law ( $PV = nRT$ )
- Boyle's Law ( $PV = \text{constant}$ )
- Charles' Law ( $V/T = \text{constant}$ )

constant); Avogadro's Law ( $V/n = \text{constant}$ ) Kinetic Molecular Theory of Gases: heat capacity; Boltzmann's Constant Deviation of real gas behavior from Ideal Gas Law: qualitative; quantitative Partial pressure, mole fraction Dalton's Law relating partial pressure to composition Electrostatics Charges, electrons/protons, conservation of charge Conductors, insulators Coulomb's Law Electric field E Potential difference, electric potential at point in space Equipotential lines Electric dipole Electrostatic induction Gauss's Law Circuit Elements Current  $I = \frac{Q}{t}$ , sign conventions, units Electromotive force, voltage Resistance Ohm's Law ( $I = V/R$ ); resistors in series; resistors in parallel; resistivity ( $\rho = RA/L$ ) Capacitance: parallel plate capacitor; energy of charged capacitor Capacitors in series; capacitors in parallel; dielectrics Conductivity: metallic, electrolytic Meters Magnetism Magnetic fields and poles Magnetic field force Faraday's Law Torque on current carrying wire Sound Production of sound Intensity of sound, decibel units, log scale Attenuation (damping) Doppler effect: moving source or observer, reflection of sound from a moving object Pitch Resonance in pipes and strings Ultrasound Shock waves Light and Geometrical Optics Reflection from plane surface: angle of incidence = angle of reflection Refraction, refractive index Snell's law Dispersion, change of index of refraction with wavelength Conditions for total internal reflection Spherical mirrors: center of curvature; focal length; real and virtual images Atomic Nucleus and Electronic Structure Atomic number, atomic weight, neutrons, protons, isotopes Nuclear forces, binding energy Radioactive decay ( $\alpha$ ,  $\beta$ ,  $\gamma$ ): half-life, exponential decay, semi-log plots Mass spectrometer Ground state, excited states, principal quantum number  $n$  Absorption and emission line spectra Pauli Exclusion Principle Paramagnetism and diamagnetism Heisenberg Uncertainty Principle Photoelectric effect Thermodynamics PV diagram: work done = area under or enclosed by curve Calorimetry, heat capacity, specific heat Heat transfer - conduction,

convection, radiation  
Coefficient of expansion

Physics was not my strongest premed class. I think my teacher was not able to explain many concepts. This book is clear in its presentation of the material. It covers the topics tests on the MCAT and does it nicely. I did not get frustrated when I read this book and actually found the presentation easy to follow with great examples and content. Comprehensive coverage of physics where I was able to apply what I learned to solving actual problems. My confidence and understanding increased while my frustration level remained low throughout this experience. Great prep book for physics.

Very clear and detailed review of physics topics. I like that it is structured to match the topic outline by the AAMC. It goes through each topic and concept with clear explanations and examples. I really like this book since I lacked confidence in the topic before I had this systematic review. I am testing better and have a much better understanding of how to approach questions in an effective manner to solve the problems. Now I have a clear and solid foundation of physics for the MCAT. I told several of my friends about this book.

Easy to follow guide on all physics concepts needed for the MCAT. A great refresher on topics I was familiar with, as well as study aid for things I didn't understand much about. I got this one in conjunction with their practice questions book and they are both very helpful in my preparation. This review book, while boiled down to essentials, is much more complete and detailed than some other review books from other publishers - a lot of solid content.

I am using this physics review book in conjunction with Sterling MCAT physics questions. The two books compliment each other. The review material is comprehensive and the questions reinforce the concepts I learned from the review book. Great combination to prepare the physics component on the new MCAT. My understanding and test scores have really increased.

I recently took the MCAT. I am a master student in biology preparing to enter medical school. I wanted a prep book for a complete review of physics concepts for the MCAT. Even though I have a very strong background in the natural sciences, this book taught me physics concepts needed for the MCAT. I was prepared when I took the exam. Although I did not expect to see the same questions as I studied, I know a broad and solid foundation was very important. I used this physics

review book along with the physics practice questions book to apply the concepts. Great results from being prepared.

I am a post-bac at the Harvard Extension School. I graduated a few years ago as a biochemistry major and have been working in research for 2 years. I consider myself a strong student with a great foundation in the sciences needed for the MCAT. A few classmates of mine took the MCAT last year and recommended the Sterling Prep books. I used several of their products (along with some donated book from other publishers). The Sterling products are very comprehensive and covered the AMCAS listed topics for the MCAT. I just got my scores and I am very pleased with my preparation and the results that I was able to achieve. I recommend the books for proper preparation for this important exam.

Great content review for physics. This material is much better than some other books I compared it to. Clear and meaningful coverage of physics material for the MCAT. Comprehensive and easy to follow, which made retention of essential physics topics easy.

Good companion to the physics review book by Sterling. Detailed, yet easy to understand and process the concepts. Highly recommend this series for MCAT physics.

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