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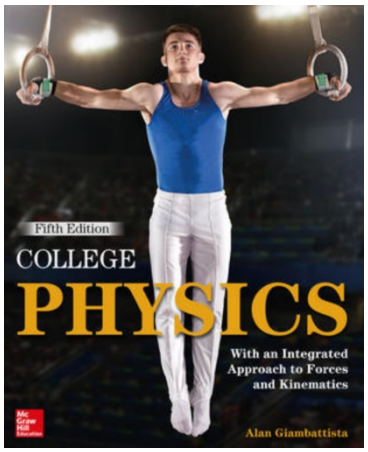
List of Changes



College Physics, 5th edition

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NEW IN THE FIFTH EDITION

Although the fundamental philosophy of the book has not changed, many improvements have been made based on detailed feedback from instructors and students using the fourth edition. Some of the most important updates include:

- The comprehensive math review, found in Appendix A, has been expanded for this edition. A new section A.8 (Sinusoidal Functions of Time) provides support for important topics such as oscillations, waves, Faraday's law, and interference.
- Section A.6 (Geometry) has been rewritten to emphasize the skills most relevant to physics problems. Math skills have been added to the Concepts and Skills to Review on the chapter opener pages. New references to Appendix A have been added to the text.
- The visual presentation has been streamlined. The content of tips and warnings found in marginal icons and text highlighting, has been moved into Problem-Solving Strategy boxes and/or into the end-of-chapter Master the Concepts boxes, as appropriate.

- Concepts and Skills to Review lists are now more prominently featured on the chapter opener page.
- Coverage of the following topics has been added or expanded based on the 2015 revision of the MCAT® exam: mechanical advantage, turbulence, surface tension, attenuation of sound waves, paramagnetism and diamagnetism, circular polarization, and lens aberrations.
- Review & Synthesis problems appear at the end of every chapter (starting with Chapter 4) instead of after related groups of chapters.
- Many of the figure legends have been expanded to help students learn more from the illustrations.

Notable revisions to the text include:

- Example 1.9 has been expanded to demonstrate an alternative method of performing dimensional analysis. New problems have been added to Chapter 1 to give students more practice using ratios and proportions.
- Example 2.13 has been rewritten to focus more clearly on Newton's third law.
- Section 3.5 on relative velocity and reference frames has been revised to emphasize that velocity of A relative to B is the vector difference of the two velocities as measured in a common reference frame.
- Section 4.6 (Apparent Weight) no longer develops a formula for apparent weight. Instead, the section emphasizes fundamental skills (drawing an FBD and analyzing the forces) and summarizes the procedure in a new Problem-Solving Strategy box.
- In Chapter 5, the Problem-Solving Strategies for uniform and nonuniform circular motion have been revised to show a parallel structure. A new figure shows the forces acting on a car traveling around a banked curve.
- Chapter 6 has new Problem-Solving Strategies for work done by a constant force and for mechanical energy.
- In Section 8.2, the discussion of the lever arm has been clarified.
- Section 11.5 (Mathematical Description of a Wave) has been rewritten to be more accessible.
- Sections 12.7 and 12.8 (Beats, The Doppler Effect) have been rewritten. Formulating the Doppler effect in terms of relative velocities makes an arbitrary sign convention unnecessary.
- Sections 15.5–15.7 contain improved explanations of heat engines and heat pumps.

- A table of circuit symbols is now included at the end of Chapter 18.
- Section 19.10 has been rewritten to provide a more complete description of paramagnetism and diagmagnetism.
- Chapter 20's treatment of inductance has been streamlined, with the quantitative material on mutual inductance moved into an online supplement. Chapter 20 has gained 10 new end-of-chapter problems on Faraday's law.
- Section 22.7 now includes a description of circular polarization.
- New Figure 23.47 is a ray diagram for the formation of a virtual image by a converging lens.
- Section 24.3 describes astigmatism of the eye. Section 24.7 contains an expanded explanation of lens aberrations.
- Chapter 25 simplifies the discussion of phase differences for constructive and destructive interference.
- Chapter 30 mentions the observation of gravitational waves by the LIGO collaboration.