Comparison between Version 19.2 (2024) and Version 19.3 (2025) of “Fundamentals of Physics” Volume I

I changed all references to 9.8 N/kg (gravitational field strength) to 10 N/kg. The values are not as accurate but students will learn how to deal with accuracy in lab. Using 10 N/kg avoids having students be distracted by the numbers. I’ve found that they are fine with using estimates in lecture and a more precise value (9.802, for example) in lab, so it shouldn’t be a problem.

Title	Old	Comments
A. Force and motion		
1. The natural state of things	1	(20 pages)
2. Multiple forces	2	Changed the puzzle to something more familiar (a swimmer) rather than a sliding box. (17 pages)
3. Force and motion equation	3	(18 pages)
4. Using the force and motion equation	4	(16 pages)
5. Forces as interactions	5	(11 pages)
6. Collisions	6	Revised to start with recoil rather than general collisions. Added a section on obtaining the velocity prior to the collision (as in the puzzle). Replaced “accident” and “car” in initial discussion with “motor vehicle accident” and “vehicle”, respectively. (18 pages)
B. Describing Motion (was “Definitions”)		
7. Acceleration and Velocity	8	(20 pages)
8. Distance	9	(13 pages)
9. Turning Around	New	(14 pages)
10. Graphs	10	Long (23 pages)
11. Oscillations	11	(14 pages)
C. The gravitational force		
12. The law of gravity	7	Clarified the question and answer to checkpoint about tripling the distance. (15 pages)
13. Gravitational field strength	12	(14 pages)
14. Free fall	13	(18 pages)
15. Gravity with other forces	14	Long (23 pages)
D. Two dimensions		
16. Projectile motion	15	(18 pages)
17. Motion Along Surfaces	16	(21 pages)
18. Obtaining Component Values	17	(19 pages)
19. Applications in 2 dimensions	18	(15 pages)
E. Periodic motion		
20. Circular motion	19	(17 pages)
21. Rotational motion	20	(10 pages)
22. Circular-angular relationships	21	(17 pages)

23. Predicting rotational motion	22	Long (24 pages)
24. Balance	23	Fixed checkpoint 24.3 to include the meter stick mass (0.5 kg) and fixed answer key (as only two of the three upward forces balance gravity). (12 pages)
F. Problems Without Time (was “Energy”)		
25. Work and kinetic energy	24	Added a footnote explaining how NIST prefers wordier language rather than “per mass”. Long (24 pages)
26. Conservation of energy	25	Long (22 pages)
27. Conservation of momentum	26	(16 pages)

Available class meetings for a MWF class: 42 + final

27 chapters (1 per day) + 6 reviews + 6 tests = 39 meetings; allows for intro and review for final

*Longer chapters might require additional days.