
Latest update: 11/05/2012

This is a list of errors (and *enhancements*) in the textbook. If you find any additional errors in the book, or have suggestions for improvement, please contact John M. Cimbala at 814-863-2739 or jmc6@psu.edu to report it. [By way of acknowledgment, the person (other than the authors) who first reports an error is listed in brackets, unless requested otherwise.]

*Note:* First check the copyright page to see which printing you have. At the time of this writing, there have been three printings. As new printings are made, the errors and enhancements from previous printings will have been fixed. The errors are listed according to printing number in reverse chronological order to save you time.

For each printing, we categorize the changes as *major errors*, *minor errors*, or *enhancements*:

- **Major errors** are important and significant (e.g., incorrect equations or numerical values) – these must be changed.
- **Minor errors** are spelling or typo errors and other minor changes – these may be skipped without impacting understanding of the material.
- **Enhancements** are changes that clarify something and/or help you to understand the material better (e.g., improvements to a figure or wording changes) – these may be skipped since they are not really errors, but are useful changes that enhance understanding of the material.

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**Corrections in the third printing** – “3 4 5 6 7 8 9 0 DOW/DOW 0” on the copyright page. These will be corrected in the 4th printing, if there is a 4th printing. Make these changes only if you have the 1st, 2nd, or 3rd printing of the book.

**Major Errors in the Third Printing**

- p. 54, The viscosity for glycerin in Table 2-3 and in Fig. 2-26 do not match: We traced the problem to the figure. The data in the table are correct – the curve on the figure is incorrect. Users are advised to use the tabulated data for all fluids, and not to rely on the figure, which is meant to be used for qualitative comparison only. [Hesham Othman]
- p. 65, Prob. 2-38, lines 1 and 3 [2 identical errors in this problem]: Change “decreases” to “increases” and “decrease” to “increase”. [Nikki Aaron]
- p. 201, Fig. 5-28: Change the dimension in the middle from $\frac{V^2}{2\rho}$ to $\frac{V^2}{2g}$. [Tahsin Engin]
- p. 213, Fig. 5-47: The label for $W_{\text{shaft, in}}$ is missing a dot. Should be $W_{\text{shaft, in}}$. [Nurudin Abd Sathar]
- p. 409, Prob. 8-94: In reality, the hose should go into the top of the tanker, not the middle. [Tahsin Engin]
- p. 597, Top right portion of Table 11-2: The two drag coefficients for the front and rear bicycles are listed backwards. The front one should have $C_D = 0.9$, and the back one $C_D = 0.5$. [Marie-Amélie Boucher]
- p. 727, Table 13-3: The first (top) figure on the left is the wrong figure. Somehow it got misplaced from the first edition. Replace that figure with the correct figure from Ed. 1, p. 705 (the second figure from the top, on the left side. I show it here as well. [Marie-Amélie Boucher]
- p. 768, Eq. (1): Do not cross off the term $(z_2 - z_1)$ – it is *not* negligible in this problem. Also, remove the bracket and the description “negligible for gases” [Alistair Sproul]. The modified Equation (1) should look like this:

\[
H_{\text{required}} = \frac{P_2 - P_1}{\rho g} + \frac{\alpha_1 V_2^2 - \alpha_1 V_1^2}{2g} + \left(z_2 - z_1\right) + h_{\text{total}}
\]

(1)
- p. 768, the four lines above Eq. 2: Change the two sentences above Eq. 2 from “At point 1, … reduces to” to “At point 1, we let $P_1 = P_{\text{atm}}$. At point 2, $P_2$ is then equal to $P_{\text{atm}} - \rho g(z_2 - z_1)$ since the jet discharges into stagnant outside air at higher elevation $z_2$ on the roof of the building. Thus, the pressure terms cancel with the elevation terms, and Eq. 1 reduces to”. [Alistair Sproul]
- p. 779, Fig. 14-28: Change the label in the figure from “Increasing velocity” to “Increasing viscosity”. [Hesham Othman]

**Minor Errors in the Third Printing**

- p. vi of the front matter – the page “About the Authors”: In line 2 of the paragraph about John M. Cimbala, “University” is spelled wrong.
- p. 41, 3rd line of paragraph beginning with “The vapor pressure…”: Add a period after “(Fig. 2-7)”. [Yun-Ho Choi]
- p. 69, Prob. 2-93: Change “2-93C” to “2-93”. [Yun-Ho Choi]
- p. 71, Prob. 2-122: Change “filed” to “filled”. [Thad Morton]
- p. 246, first full paragraph, line 3: Change “Section 4-5” to “Section 4-6”. [Thad Morton]
p. 250, Eq. 6-29: Delete “$= \vec{F}_{\text{body}}$” from the equation. [Thad Morton]

p. 408, Prob. 8-87: Change the first word “Oil” to “Engine oil”. [Tahsin Engin]

p. 690, Ref. 7. Change the website URL for NACA Report 1135 to “hdl.handle.net/2060/19930091059”. [Gary Settles]

p. 913, Prob. 15-40, line 6: Change “compare with” to “compare” (remove the word “with”).

p. 920, 6th line of Prob. 15-92: Change “$v$ as a function” to “$v$ as a function”. In other words, change the font from the italic vee ($v$) to a script italic vee ($\upsilon$) since the italic $v$ looks too much like a Greek nu ($\nu$). Note: $\nu$ is the symbol we use for the $\nu$-component of velocity as in Eq. 9-17 on page 427.

Enhancements to the Third Printing

p. 459, 4th line of second paragraph: Change “flat, surface” to “flat and surface”. [Yun-Ho Choi]
Corrections in the first printing (March 27, 2009) and second printing – either ‘0 2 3 4 5 6 7 8 9 0 DOW/DOW 0 9’ on the copyright page or ‘0 2 3 4 5 6 7 8 9 0 DOW/DOW 0 9’ on the copyright page. These were corrected in the 3rd printing. Make these changes only if you have the 1st or 2nd printing of the book.

Major Errors in the First and Second Printing

- p. 48, Figure 2-14: Somehow the wrong figure ended up here. Replace with Fig. 2-10 of Ed. 1, also shown here to the right. [WoonJean Park]
- p. 63, Prob. 2-14, line 1: Change “The in” to “The pressure in”. [Jim Brasseur]
- p. 65, Prob. 2-41, line 1: Change “100” to “95” in order to agree with the solutions manual and the given answer. [Ziliang Zhou]
- p. 67, Prob. 2-82, 5th line: Change “P2-49” to “P2-81”. [Mehmet Kanoglu]
- p. 71, Prob. 2-119E, Answers: Change “0.087 in” to “0.874 in”. [Mehmet Kanoglu]
- p. 79, Fig. 3-12: Change label “W=rghA” to “W=ρghA”. [WoonJean Park]
- p. 90, Fig. 3-29: Fig. is missing the “O” on the top – at the beginning of the z axis. [Thad Morton]
- p. 102, Fig. 3-49: In the second and third sketches, the black dot should be at the arrow tip, just to the left of the B in each case, as in the first sketch. [Thad Morton]
- p. 112, Prob. 3-21, Answer: Change “974 m” to “934 m”. [Mehmet Kanoglu]
- p. 116, Prob. 3-50, Answer: Change “5.00” to “1.34”. [Mehmet Kanoglu]
- p. 117, Prob. 3-54, Answers: Change “0.415 kPa, 0.311 cm” to “1.60 kPa, 1.20 cm”. [Mehmet Kanoglu]
- p. 120, Prob. 3-87, last line: Change “P2-49” to “P2-81”. [Mehmet Kanoglu]
- p. 123, Prob. 3-142, Answer: Change “0.233 L” to “0.157 L”. [Mehmet Kanoglu]
- p. 126, Prob. 3-148, Answers: Change “0.415 kPa, 0.311 cm” to “1.60 kPa, 1.20 cm”. [Mehmet Kanoglu]
- p. 127, Prob. 3-148: Add a dimension to the figure showing 65 cm as the oil depth. [Mehmet Kanoglu]
- p. 180, Prob. 4-119, 5th line: Change “Fig. P4-99” to “Fig. P4-119”; and 6th line: Change “Prob. 4-97” to “Prob. 4-117”. [Mehmet Kanoglu]
- p. 194, Fig. 5-17: Change symbol “x” to symbol “≈” (approximately equal) in three places. [Yun-Ho Choi]
- p. 224, right in the middle, far right: Change “Fig. 5-56” to “Fig. 5-60”. [Yun-Ho Choi]
- p. 228, Prob. 5-11, Answers: Change the answers to “0.00467 kg/s, 0.0569 m”. [Mehmet Kanoglu]
- p. 234, Prob. 5-82, Answers: Change “1.20 m” to “1.18 m”. [Mehmet Kanoglu]
- p. 236, Prob. 5-97, Answer: Change “201 kW” to “199 kW”.
- p. 237, Prob. 5-111, last line: Change “5” to “6.5” (otherwise the required head is negative!). [Mike Foster]
- p. 238, 3rd line from bottom: Change “.cvs” to “.csv” (comma separated values). [Yun-Ho Choi]
- p. 272, Prob. 6-21, Answers: Change “7.80 kPa” to “7.85 kPa”. [Mehmet Kanoglu]
- p. 272, Figure P6-23: Add “30.0 kg/s” to the label just below the word “Water”. [Ziliang Zhou]
- p. 272, Prob. 6-27E, line 2: Change “20 ft/s” to “18 ft/s”. [Jim Brasseur]
- p. 278, Prob. 7-115, Answers: Change “(a) D^2/3P/3V^2 =” to “(a) D^2/3P/3V^2 =” (the V font should be a volume font with an overdot (volume flow rate), not a velocity font). [Yun-Ho Choi]
- p. 360, Eq. 8-53, second term inside the square brackets: Change font from a script vee (v) to a Greek nu (ν) as in Eq. 8-52 above it. [Mike Foster]
Minor Errors in the First and Second Printing

- p. 493, Eq. 10-1: The equation is missing! It should be “$$\vec{V} \cdot \vec{U} = 0$$” [Mehmet Kanoglu]
- p. 592, line 3: Change “friction drag” to “pressure drag”. [Tahsin Engin]
- p. 597, Table 11-2, entry for drafting bikes (top right): Exchange “$$C_D = 0.5$$” and “$$C_D = 0.9$$” (the higher drag coefficient should be for the upstream bicycle, and the lower one for the downstream bicycle). [Yun-Ho Choi]
- p. 623, Prob. 11-29E, Answer: Change “4640 lbf” to “2690 lbf”. [Ashley Giegel]
- p. 630, Prob. 11-101, Answers: Change “94 km/h” to “110 km/h”.
- p. 646, line 2: Change “12-3” to “12-2”. [Yun-Ho Choi]
- p. 690, line 3: Change “channel” to “duct”. [Yun-Ho Choi]
- p. 691, Prob. 12-29E, Answers: Change to “958 ft/s, 856 R, 34.7 psia, 0.109 lbm/ft$^3$”. [Mehmet Kanoglu]
- p. 692, Prob. 12-42, Answers: Change to “359 K, 348 kPa, 0.573”. [Mehmet Kanoglu]
- p. 696, Prob. 12-116, Answers: Change to “0.624 kg/s” to “0.0624 kg/s”. [Mehmet Kanoglu]
- p. 696, Prob. 12-123: Add a “laptop EES” icon to this problem like the problem before. [Mehmet Kanoglu]
- p. 697, Prob. 12-127, 2nd line: Change “0.6” to “0.5”. [Mehmet Kanoglu]
- p. 697, Prob. 12-129, Answer: Change “67.1°C” to “67.0°C”. [Mehmet Kanoglu]
- p. 698, Prob. 12-152, 5th line: Change “97 kPa” to “87 kPa”. [Mehmet Kanoglu]
- p. 698, Prob. 12-158, Answer: Change “64.3” to “28.2”.
- p. 749, line 3 of Problem 13-19: Change “1.030” to “1,030” (comma instead of period). [Yun-Ho Choi]
- p. 751, Prob. 13-55, Answer: Change “3.74 m” to “5.61 m”. [Mehmet Kanoglu]
- p. 751, Prob. 13-60, Answer: Change “9.20” to “5.08”. [Mehmet Kanoglu]
- p. 752, Fig. P13-65: Wrong figure. The correct one is Fig. P13-122 from FM 1st edition. [Mehmet Kanoglu]
- p. 757, Fig. P13-131: Change the label from “$$R = 1$$ m” to “$$R = 0.5$$ m”. [Mehmet Kanoglu]
- p. 757, Prob. 13-133, Answer: Change “0.246” to “0.123”. [Mehmet Kanoglu]
- p. 758, Prob. 13-142, Answers: Change “0.0103 and 1.47” to “0.0215 and 0.657”. [Mehmet Kanoglu]
- p. 802, Figure 14-72, top item: Change “3.568” to “3.658”.
- p. 834, 1st line below Eq. 14-65: Change “Eq. 14-51” to “Eq. 14-65”. [WoonJean Park]
- p. 842, Prob. 14-37, 8th line: Change “P14-37” to “P14-34”. [Mehmet Kanoglu]
- p. 861, line 3: Change “Fig. 5-11b” to “Fig. 5-12b”. [Yun-Ho Choi]
- p. 866, 3rd line of second-to-last paragraph: Change “Fig. 15-60” to “Fig 15-58”. [Yun-Ho Choi]
- p. 909, 1st line of Prob. 15-17: Change “Prob. 15-15” to “Prob. 15-16”. [Yun-Ho Choi]
- p. 911, 6th line of Prob. 15-30: Change “Fig. P15-26b” to “Fig. P15-27b”. [Yun-Ho Choi]
- p. 913, Prob. 15-40, line 3: Change the problem statement from the third line to the end of the problem statement, i.e., change “but with the… Discuss.” to “but with your choice of a “pressure outlet” boundary condition or an “outflow” boundary condition. Run both cases, record $$P_{in}$$ and $$P_{1}$$, calculate $$\Delta P = P_{in} - P_{1}$$, and compare the two results. Discuss.”
- p. 920, 6th line of Prob. 15-92: Change “y as a function” to “v as a function”. [Yun-Ho Choi]
- p. 957, 6th line of entry fluid particle/element: Change “$$\rho_{particle}$$" to “$$\rho_{particle}$$". [Yun-Ho Choi]
- p. 957, 5th and 6th lines of entry fluid particle/element: Change “$$V_{particle}(t)$$, $$\rho_{particle}(t)$$" to “$$V_{particle}(t)$$, $$\rho_{particle}(t)$$" (remove the extraneous blank spaces so that it is of the same format as “$$x_{particle}(t)$$" on the 5th line).

Minor Errors in the First and Second Printing

- p. 7, 6th line from bottom: Change “1623–1662” to “1623–1662” (remove the extra blank space). [Yun-Ho Choi]
- p. 35, line above Prob. 1-59: Change “Problem” to “Problems”.
- p. 41, line 2 of Example 2-1: Change “Fig. 2-4” to “Fig. 2-6”. [WoonJean Park]
- p. 50, Section 2-6 caption: Add a gray square dot between “2-6” and “VISCOSITY”. [WoonJean Park]
- p. 56, two lines below the last equation: Change “inter-preted” to “interpreted” (remove the dash). [WoonJean Park]
- p. 63, Prob. 2-12, Answers: Change “126 kg” to “125 kg”. [Mehmet Kanoglu]
- p. 64, Prob. 2-15: Change problem number “2-15” to “2-15E”. [Mehmet Kanoglu]
- p. 65, Prob. 2-48, 2nd line: Change “1/T” to “1/ $$T$$”. [Mehmet Kanoglu]
- p. 82, Discussion, 3rd line: Change “kg/m$^3$” to “kg/m$^3$”. [Mehmet Kanoglu]
- p. 85, Figure 3-22 caption: Change “3-3” to “3-6” (wrong example reference). [Mehmet Kanoglu]
- p. 86, Section title: Change “Measurement, Devices” to “Measurement Devices” (delete the period). [WoonJean Park]
- p. 116, Prob. 3-51: Delete the FlowLab icon – this is not a FlowLab problem. [Mehmet Kanoglu]