Errata Sheet

Y. A. Çengel, *Heat and Mass Transfer: A Practical Approach, 3rd* ed, McGraw-Hill, 2007.
(Last update: January 30, 2006)

Note: Corrections in blue are cosmetic in nature, not technical, and are intended for McGraw-Hill. They can be ignored by instructors and students.

Chapter 1

p. 14, Ex. 1-2, 8th line of 'Analysis': Change "c" to "c_p" (2 times)
p. 52, Prob. 1-74E, Answer: Change "130" to "131"
p. 59, Prob. 1-143, 3rd line: Change "if" to "of"
p. 59, Prob. 1-153, 5th line: Change "he" to "the"

Chapter 2:

p. 68, 1st line: The middle term is "dropped". Raise it.
p. 114, Prob. 2-16, Answer: Change "12.3" to "17.3"
p. 118, Prob. 2-64E, 6th line: Change "1.25" to "12.5"
p. 120, Prob. 2-82, 1st line: Change "thickness L" to "thickness L and thermal conductivity k".
p. 121, Fig. P2-82: Change "g_0" to "$\dot{e}_{\text{gen}}$". Also, delete the line on the very left and the word "insulated" and its arrow, and change the color of the left part of the figure to gray just like in Fig. P2-87.
p. 125, Fig. P2-134E: Change "T_0" to "T_1"
p. 126, Fig. P2-140: Delete the line on the left. Also, the top line should be irregular like the one at the bottom, instead of being straight.
p. 126, Prob. 2-142: Change "T_w = 600 K" to "T_0 = 600 K"
p. 128, Prob. 2-155, 3rd line: Change "It" to "If"

Chapter 3:

p. 167, Fig. 3-42: In "$(1- x/L)^z$", change the exponent z to 2 to make it "$(1- x/L)^2$".
p. 167, Fig. 3-43: The 3 lines of equations in lower left: Change "$A_p = L_2 t$" to "$A_p = L_c t$". Also, change "ηfin" to "η_{fin}".
p. 173, the line with the large square root sign: Move 0.96 to the line before. Extend into margin, if necessary as before.
p. 178, [Ignore – this is for 4th ed], Ex. 3-15, 12th line: Change "4.0 Btu/h·ft^2·F" to "6.0 Btu/h·ft^2·F" and re-solve the problem accordingly. This is the correct design value for winter.
p. 179, Fig. 3-51: Change "R = 13" to "R-13"
p. 181, Tables 3-9 through 3-11 captions: Delete "Ref. 1"
p. 189, [Ignore – this is for 4th ed] Ex. 3-19: Change the R-value for building paper "0.10" to "0.06" as given in table 3-8 and change the solution accordingly.
p. 193, Prob. 3-25, 5th and 7th lines: Change "resistor" to "transistor"
p. 201, Prob. 3-84: Change problem number to "3-84E".
p. 202, Fig. P3-112: Delete the arrow on the left of "L = 10 cm."
p. 202, Prob. 3-114: The relation for a fin with prescribed tip temperature is not available in the text. It may be added to the end of problem statement as follows: "For fin with prescribed tip temperature, the temperature distribution and the rate of heat transfer are given by

$$\frac{\theta}{\theta_b} = \frac{\theta_L / \theta_b \sinh(mx) + \sinh[m(L-x)]}{\sinh(mL)} \quad \text{and} \quad \dot{Q} = \theta_b \sqrt{hpkA_c}\,\frac{\cosh(mL)}{\sinh(mL)}$$

p. 205, Prob. 3-133E, 4th line: Change "depth 15 ft" to "depth of 15 ft".
p. 212, Fig. P3-189: Correct the spelling of "composite"

p. 212, Fig. P3-191: Change capital *X* to lowercase *x* [both of them].
p. 215, the equation in Prob. 3-222: Change italic "*n*" in the denominator to Roman "ln".
p. 215, P3-227: Change choices to "(a) 13°C (b) 9°C (c) 2°C (d) -3°C (e) -12°C "
p. 216, Prob. 3-232: Change the last choice to "(e) 95 W/m"
p. 216, Prob. P3-234: In parts b and c, the last terms are misaligned. Raise them to align. Also, move this figure before the choices

Chapter 4:

p. 245, Fig. 4-28: In all 4 figures, make the T in T_i italic. In bottom-left figure, change "t = 0.01 h" to "t = 10 h". In bottom-right figure, move the label "10 h" to the very right above the curve that extends to the right furthest (close to 1 on horizontal axis).
p. 246, Fig. 4-30: Make the entire regions to the left and to the right of the vertical line in the middle different colors (one color the other gray). There should be no rectangles of different colors. [to indicate that two different solids are pressed against each other].
p. 248, Fig. 4-32: Fix the text in the block as "T_i = 20°C." [Change minus sign to equal sign].
p. 248, Fig. 4-33: On horizontal label, insert a space before m in "*x*,m".
p. 260, Fig. 4-46 caption: Delete "Ref. 3"
p. 265, Fig. 4-54 caption: Change "Ref. 11" to "1958"
p. 266, Ex. 4-11, 2nd calc: Change "m_{beef}" to "$\dot{m}_{beef}$ "
3rd calc: Change "m" to "$\dot{m}$ ". Also change "c" to "c_p".
5th calc: Change "m" to "$\dot{m}$ "
p. 267, 1st calc, numerator: Delete the space in the subscript. Also, in the line before last calc: Leave a space in the subscript "air side".
p. 267, 2nd calc: Place an over dot to vee as "$\dot{\boldsymbol{V}}$ "
p. 272, Prob. 4-41, Answer: Change "16,015" to "15,960"
p. 275, Prob. 4-66, 3rd line from the end: Change "0.15×80^{-6}" to "0.15×10^{-6}"
p. 279, Prob. 4-115E, 2nd line: Change "an 14-lb" to "a 14-lb".
p. 281, Prob. 4-123, 9th line: Change "steam" to "stem"
p. 281, Prob. 4-130, 2nd line: Change "1.6×10^{-7}" to "1.6×10^{-6}"
p. 283, Prob. 4-146, 3rd line: Change "Such a meat chunk" to "Fifteen such meat chunks".
p. 283, Prob. 4-150, choices: Change "(b) 2.2 min" to "(b) 2.4 min"

Chapter 5:

p. 308, Fig. 5-33, top part: Insert a comma between h_i and Ti. (2 times).
p. 322, 10th line from bottom: Change "75" to "114"
p. 323, 9th line from bottom: Change "-17,078 Btu" to "-17,048 Btu"
p. 340, Prob. 5-47, Table, 2nd column: Change "10" to "20" (3 times)
p. 341, Fig. P5-47: Place an over dot for "$\dot{q}_{out}$ "
p. 342, Prob. 5-54, First two lines: Change "in a long solid bar whose cross section is" to "in two long solid bars whose cross sections are" .
p. 342, Fig. P5-56E: Change "$\dot{g}$ " to "$\dot{e}$ "
p. 343, Prob. 5-62: Change problem number to "5-62E".
p. 350, Fig. P5-117: Change capital K to lower case k in K_A and K_B.
p. 352, Prob. 5-125: Change choice (e) to "(e) $T_6 = (T_1 + T_2 + T_9 + T_{10}) / 4$"
p. 352, Prob. 5-127, 4th line: Change the writing to this style "T_6^* "
p. 352, Prob. 5-127, choice (a), 2nd line: Change "2*k*" to "4*k*"
p. 353, Prob. 5-130: Change the choices to

(*a*) $2T_1 + 2T_9 + T_6 - T_5 + h\Delta/k\,(T_0 - T_5) = 0$

(*b*) $2T_1 + 2T_9 + T_6 - 2T_5 + h\Delta/k\,(T_0 - T_5) = 0$

(*c*) $2T_1 + 2T_9 + T_6 - 3T_5 + h\Delta/k\,(T_0 - T_5) = 0$

(*d*) $2T_1 + 2T_9 + T_6 - 4T_5 + h\Delta/k\,(T_0 - T_5) = 0$

(*e*) $2T_1 + 2T_9 + T_6 - 5T_5 + h\Delta/k\,(T_0 - T_5) = 0$

Chapter 6:

p. 389, References: In Reference #2, change 2005 to 2006.

p. 391, Fig. P6-39: The lower plate is missing.

p. 392, Prob. 6-52, 3rd line: Delete the closing parenthesis.

p. 393, Fig. P6-56: use italic for "(*a*), (*b*), (*c*)"

p. 393, Prob. 6-57, 2nd line: Use non-italic for "μm"

p. 393, Prob. 6-58, 1st line: Make sure that the *w* in $\left(\frac{\partial T}{\partial y}\right)_w = 80$ K/m is a subscript. Also, it is better to write it as "$(\partial T / \partial y)_w = 80$ K/m"

p. 393, Prob. 6-58, 2nd line: Change "of width 1.2 μm if it is " to "of width 1.2 μm if the wall temperature is 50°C and it is".

p. 393, Prob. 6-63, 2nd line: Use a much shorter line like in prob. 6-61

p. 393, Fig. P6-59: Delete the right portion of the figure [to the right of the arrow for *V*] since it gives the answer of part (a)

p. 394, Prob. 6-68, 2nd line: Delete " : " at the end.

Chapter 7:

p. 404, Ex. 7-1, 2nd calculation: Change "1.338" to "1.33" (2 times)

p. 407, Properties: Delete "0.7344 ft^2/h =".

p. 408, Last calc: Change "± 4639 Btu/h" to "– 4639 Btu/h"

p. 412, 2nd line of 'Properties': Move the dot before "(Table A-9)" after it.

p. 437, Prob. 7-16, Answers: Change "9081" to "9080"

p. 437, Fig. P7-22: Change "T_s = 25°C" to "T_s = 75°C"

p. 443, Prob. 7-75, 9th line: Change "(*b*) and pressure drop" to "(*b*) pressure drop".

p. 447, Prob. 7-113, equation: Insert the power "0.5" as $V_t = \left[\frac{2(\rho - \rho_{air})Vg}{C_D \rho_{air} A_p}\right]^{0.5}$.

p. 447, Prob. 7-115, 8th line: Delete the first "maximum". Also, in Fig. P7-115, delete the subscript ∞ from V_∞.

p. 447, Fig. P7-116: Change "*D* = 24 mm" to "*D* = 12 mm"

p. 448, Prob. 7-122, last line: Change "0.658×10^{-5}" to "0.658×10^{-6}"

p. 448, Prob. P7-124, 2nd line: Change "15°C" to "–15°C"

p. 448, Prob. P7-126, last line: Change "4032" to "4.32" and change "4179 J/kg" to "4179 J/kg·°C".

p. 448, Prob. P7-127, the line before last: Change to "kg/m·s"

Chapter 8:

p. 472, last line: Make the black bold result color bold.

p. 477, Fig. 8-27: D_0 is the inner diameter of outer pipe. Therefore, shorten the arrow for it a little from both the top and the bottom.

p. 483, 4th line before Table A-5: Change "Gr 104,500" to "Gr ≤ 104,500".

p. 484, Fig. 8-33: The label for the horizontal axis is missing. Insert "Re" [all 3 of them].

p. 494, Prob. 8-41, 2nd line: Change "10^{-8} " to "10^{-3} "
p. 495, Prob. 8-55, Answers: Change to "(a) 34.2°C, (b) 3775 W, (c) 4.7 W"
p. 496, Prob. 8-61, Answers: Change "72.8°C" to "72.2°C"
p. 496, Prob. 8-66: Delete the last sentence: "Then recalculate ….. unchanged."
p. 496, Prob. 8-65E, Answer: Change "*Answer:* 0.00869" to "*Answers:* 0.00859, 0.00776".
p. 496, Prob. 8-68, 5th line: Change "at the locations x/D =10 and 90" to "at the location x/D =10".
p. 499: Move the title "Fundamentals of Engineering (FE) Exam Problems" before Prob. 8-94.
p. 500, Prob. 8-108, 2nd line from the end: Change "0.0255" to "0.02551"

Chapter 9:

p. 508, Eq. 9-13: Change the vee after the equal sign to Greek nu (to make it $\nu \frac{\partial^2 u}{\partial y^2}$).
p. 511, Table 9-1, Vertical plate, 3rd column: Change "$10^{20} - 10^{13}$ " to "$10^{10} - 10^{13}$ "
p. 529, Properties: Delete "0.6310 ft^2/h ="
p. 530, 2nd calc, denominator: Change "$2.117\times10^{\pm 4}$ " to "2.117×10^{-4} "
p. 542, last calc, denominator: Correct the writing of the unit as "1.46 Btu/h·ft^2·°F"
p. 548, Prob. 9-29, Answers: Change "50.7°C" to "50.3°C"
p. 548: Clear "FIGURE P9-33" from Prob. 9-34 [it is too close].
p. 552, Prob. 9-57, last line: Change "Çengel and Zing."to "Çengel and Zing, 1987."
p. 553, Prob. 9-82: Delete "Take $\beta = 0.0004$ K^{-1} for water" (We get kinematic viscosity from Table A-9 and we can get beta as well, which is 0.000396)
p. 555, Prob. 9-103E, Answer: Change "212°F" to "211°F"

Chapter 10:

p. 583, 2nd line before Eq; 10-23: Change "= $kl/h_{r=L}$" to "= $k_l/h_{x=L}$". [l is a subscript].
p. 606, Prob. 10-100: Change "(*e*) none of them" to "(*d*) none of them"
p. 606, Prob. 10-103, 4th line: Change "2308" to "2309"
p. 606, Prob. 10-104, 4th line: Change "275" to "152" and change "(a) 172 W/m^2·K" to "(a) 95 W/m^2·K"

Chapter 11:

p. 648, prob. 11-23, 1st line: Change "Prob. 11-21" to "Prob. 11-22"
p. 651, Prob. 11-61, Answer: Change "25.6 m^2" to "25.7 m^2"
p. 654, Prob. 11-103E, 1st line: Change "double-pipe heat exchanger" to "double-pipe, counter-flow heat exchanger".
p. 657, Prob. 11-134, 2nd line: Change "70°C" to "58°C"
p. 659, Prob. 11-156, 3rd line: Change "30°C." to "30°C (h_{fg} = 2431 kJ/kg)."
p. 661, Prob. 11-168, 7th and 8th lines: Place an overdot on the terms "$\dot{m}_c$" and "$\dot{m}_h$"

Chapter 12:

p. 665, Eq. 12-2: Use the correct style of lambda "λ"
p. 704, Prob. 12-48, Answers: Change "0.153" to "0.154"
p. 704, prob. 12-51, Answers: Change to "0.870, 0.00016, 566 W/m^2"
p. 705, Prob. 12-73, Answers: Change "$53, 23 years" to "$76, 16 years".
p. 707, Prob. 12-92, 1st line: Change "%" to "percent".

Chapter 13:

p. 711, Eq. 13-9: There is a zero that needs to be deleted.
p. 738, 3rd calc from bottom, denominator: Change "$1.809\times10^{\pm4}$" to "1.809×10^{-4}"
p. 748, Fig. 13-38, caption: Change "328" to "3.28"
p. 763, Prob. 13-44E, 1st line: Change "19-ft" to "9-ft"
p. 764, Prob. 13-58E, Answer: Change "866 Btu/h" to "872 Btu/h"
p. 765, Prob. 13-75, 2nd line: Change "10 percent N_2" to "10 percent O_2"
p. 768, Prob. 13-100, Answers: Change "26.2 W" to "26.1 W"
p. 770, Prob. 13-120, 3rd line: Modify to "If 300 W/m^2 of radiation is incident on the surface,"

Chapter 14:

p. 794, Table 14-10, 6th line: Leave a space in "19 mm"
p. 829, Prob. 14-38, 4th line: Correct spelling in "temperature"
p. 833, Prob. 14-73, answer: Change "9 h" to "5.9 h"
p. 835, Prob. 14-110E, Answer: Change "0.0525 ft/s" to "0.0524 ft/s"
p. 836, Prob. 14-121, Answers: Change "(b) 14.1 kW" to "(b) 14.2 kW"
and change "(d) 80.8 kW, 44.9 kg/h" to "(d) 80.9 kW, 45.1 kg/h"
p. 836, Prob. 14-123, Answers: Change "(a) 40.6 W, (b) 352 W" to "(a) 40.5 W, (b) 385 W".
p. 837, Prob. 14-134, 4th line: Change "23×10^{-9}" to "23×10^{-12}"
p. 838, prob. 14-135E, Answers: Change "1436 Btu/h" to "1213 Btu/h"
p. 838, Prob. 14-140, Answer: Change "104 days" to "103 days"
p. 839, Prob. 14-145E, Answers: Change to "(b) 1,057,000" to "(b) 1,060,000"
and change "(c) 3,396,000" to "(c) 3,410,000"
p. 839, Prob. 14-151, 5th line: Change $1.21ReSc^{2/3}$ to $1.21(ReSc)^{2/3}$. Also, change bracelets to brackets.

Appendix 1:

p. 854, title of Table A-9: In 8th column (thermal conductivity), change the second k to K.
p. 860, Table A-15, -100°C line, 5th value: Change "1.189×10^{-6}" to "1.189×10^{-5}"
p. 863, Table A-17: In footnote, change capital S to s at the end of last line.
p. 867, Fig. A-20: In figure caption relation $\Delta P_L = f\dfrac{L}{D}\dfrac{\rho V^3}{2}$, replace the superscript 3 by 2.

Appendix 2:

p. 870, title of Table A-1E: Change "Gas Constant R" to "Gas Constant, *R*". Also, delete the commas after c_p and c_v.
p. 875, title of Table A-5E (both pages): In 2nd column, move *L* to the line above [like the other entries]. Repeat for Table A-6E.
p. 888, Table A-16E: Move the few lines at the bottom for N_2 to the next page (together with the title) to keep nitrogen table together since there is space on next page.
p. 890, Table A-17: In footnote, delete the space before the degree sign in 59 °F.

Front end pages (Conversion Factors):

None

Back end pages (Nomenclature):

u, *v*: Change *v* to velocity component vee, v