Errata, Modeling of Combustion Systems –
A Practical Approach, [first printing of] 2nd ed., Colannino, J. © 2025
(last updated 24 September 2025)

As found:	$\alpha_w = \frac{W_a}{W_f}\left(\frac{100}{21}\right)\left(1+\frac{\psi}{4}\right)$	Equation 13-14a p 28
Corrected:	$\alpha_w = \frac{W_a}{W_f}\left(\frac{100}{21}\right)\left(1+\frac{\psi}{4}\right)(1+\epsilon)$	
As found:	To convert emissions referenced at 3% to a new basis of 15%, multiply by 7/3.	2nd sentence p 43
Corrected:	To convert emissions referenced at 0% to a new basis of 15%, multiply by 7/3.	
As found:	How can one estimate a fuel's maximum temperature and how is it affected by preheated air?	2nd sentence p 46
Corrected:	How can one estimate a fuel's maximum combustion temperature and how is it affected by preheated air?	
As found:	$\alpha_w = \frac{W_a}{W_f}\left(\frac{100}{21}\right)\left(1+\frac{\psi}{4}\right)(1+\epsilon)$	Example 4.5-1 p 50
Corrected:	$\alpha_w = \frac{W_a}{W_f}\left(\frac{100}{21}\right)\left(1+\frac{\psi}{4}\right)(1+\epsilon)$	*note form of epsilon*
As found:	(5.1-2a)	Eqn. number p 52
Corrected:	(5.1-2a, b)	
As found:	(or 8.6 [mm]/0.34 [in.] draft)	2nd ¶ from bottom, last sentence therein p 54
Corrected:	(or 8.6 [mm], 0.34 [in.] draft)	
As found:	Summary of Control Method Effects on Fan Performance	Title, Table 5.3-1 p 66
Corrected:	Summary of Control Method Effects on Fan Curve	
As found:	For example, Rankine and Kelvin are ratio scales for temperature: [K] = [°C] + 273.15°C, [R] = [°F] + 459.67[°F]. Although the ratios 95[°C]/5[°C] or 203°/4°F have no meaning, ratios in absolute temperatures are valid: (95+273.15) [K]/[(5+273.15)[K] = (203+459.67)[R]/(5+459.67)[R] ≈ 1.324.	2nd ¶ p 94
Corrected:	For example, Rankine and Kelvin are ratio scales for temperature: [K] = [°C] + 273.15[°C], [R] = [°F] + 459.67[°F].Although the ratios 95[°C]/5[°C] or 203[°F]/4[°F] have no meaning, ratios in absolute temperatures are valid: (95+273.15)[K]/[(5+273.15)[K] = (203+459.67)[R]/(5+459.67)[R] ≈ 1.324.	*units in brackets*
As found:	$n = \sum k = 1_{\mathrm{T}}1$	(8.7-6) p 113
Corrected:	$n = \sum k = \mathbf{1}^{\mathrm{T}}\mathbf{1}$	
As found:	$\frac{1}{n} = \frac{1}{\sum k} = (1_{\mathrm{T}}1)^{-1}$	(8.7-7) p 113
Corrected:	$\frac{1}{n} = \frac{1}{\sum k} = (\mathbf{1}^{\mathrm{T}}\mathbf{1})^{-1}$	*note superscript and bold typeface*

As found:	$\bar{v} = \frac{\sum v}{n} = (1_{\mathrm{T}}1)^{-1}1^{\mathrm{T}}\mathbf{v}$	(8.7-8) p 113
Corrected:	$\bar{v} = \frac{\sum v}{n} = (\mathbf{1}^{\mathrm{T}}\mathbf{1})^{-1}\mathbf{1}^{\mathrm{T}}\mathbf{v}$	*note superscript and bold typeface*

As found:	$\sum u = 1^{\mathrm{T}}\mathbf{u} = \mathbf{u}^{\mathrm{T}}1$	(8.7-10) p 113
Corrected:	$\sum u = \mathbf{1}^{\mathrm{T}}\mathbf{u} = \mathbf{u}^{\mathrm{T}}\mathbf{1}$	*note bold number ones*

As found:	"… noting that … $\mathbf{X}^{\mathrm{T}}\boldsymbol{\varepsilon} = 0$; therefore, $\boldsymbol{\varepsilon}^{\mathbf{T}}\mathbf{X} = 0^{\mathrm{T}}$ and $\boldsymbol{\varepsilon}^{\mathbf{T}}\mathbf{X} = 0^{\mathrm{T}}$and $\boldsymbol{\varepsilon}^{\mathrm{T}}\hat{\mathbf{y}} = \boldsymbol{\varepsilon}^{\mathrm{T}}\mathbf{X}\mathbf{a} = 0^{\mathrm{T}}\mathbf{a} = 0$…"	sentence above 9.3-1, p 120
Corrected:	"… noting that … $\mathbf{X}^{\mathrm{T}}\boldsymbol{\varepsilon} = \mathbf{0}$; therefore, $\boldsymbol{\varepsilon}^{\mathbf{T}}\mathbf{X} = \mathbf{0}^{\mathrm{T}}$ and $\boldsymbol{\varepsilon}^{\mathbf{T}}\mathbf{X} = \mathbf{0}^{\mathrm{T}}$and $\boldsymbol{\varepsilon}^{\mathrm{T}}\hat{\mathbf{y}} = \boldsymbol{\varepsilon}^{\mathrm{T}}\mathbf{X}\mathbf{a} = \mathbf{0}^{\mathrm{T}}\mathbf{a} = \mathbf{0}$…"	*note bold zeroes*

As found:	$\mathbf{X}^{\mathrm{T}}\boldsymbol{\varepsilon} = 0$	(9.3-2) p 120
Corrected:	$\mathbf{X}^{\mathrm{T}}\boldsymbol{\varepsilon} = \mathbf{0}$	*note bold zero*

As found:	"… which are similarity to…"	sentence above 9.3-8
Corrected:	"… which are similar to…"	p 122

As found:	*Ambiguous limits due to typesetting*	Table 9.4-1
Corrected:	*The limits for Gegenbauer, Jacobi I, Lengendre, and Chebyshev I polynomials are all from -1 to +1:the limits for Chebyshev II, Jacobi II, Shifted Legendre, and Shifted Chebychev I are all from 0 to 1; the limits for Laguerre and Generalized Laguerre are all from 0 to +∞; the limit for the Hermite polynomials is –∞ to +∞. infinity.*	pp 126-127

As found:

Series	Orthogonal Polynomial	Weight Function
Taylor/Maclaurin	Legendre	1
Normal Probability	Hermite	$e^{-\frac{x^2}{2}}$
Arrhenius	Laguerre	e^{-x}
Exponential	Chebyshev	$e^{-\frac{1}{x}}$
Trigonometric	Fourier	$e^{\theta i}$ (i.e., sin *x*, cos *x*)

Corrected:

Series	Orthogonal Polynomial	Weight Function
Taylor/Maclaurin	Legendre	1
Normal Probability	Hermite	$e^{-\frac{x^2}{2}}$
Exponential	Laguerre	e^{-x}
Trigonometric	Fourier	$e^{\theta i}$ (i.e., sin *x*, cos *x*)

TABLE 9.5-1 p128

As found:	"For example, =1BETA.DIST(0.9362,3/2,5/2)=0.0020…"	last sentence p 143
Corrected:	"For example, =1 – BETA.DIST(0.9362,3/2,5/2)=0.0020…"	*note minus sign*
As found:	"… for this is p =1-BETA.DIST(Rk2/(Rk2+RR2),m/2,n/2,1)."	footnote p147
Corrected:	"… for this is p =1-BETA.DIST(R_k^2/(R_k^2+R_R^2),m/2,n/2,1)."	*note sub- and superscripts*
As found:	"… and a diagonal matrix of eigenvalues (Λ)"	last sentence, p 149
Corrected:	"… and a diagonal matrix of eigenvalues (**Λ**)"	*note bold lambda*
As found:	$\mathbf{b} = \Lambda^{-1}\mathbf{U}^{\mathrm{T}}\mathbf{y} = \mathbf{U}_{\mathrm{L}}^{-1}\mathbf{y} = \mathbf{K}^{\mathrm{T}}\mathbf{a}$	(11.3-2b) p 150
Corrected:	$\mathbf{b} = \mathbf{\Lambda}^{-1}\mathbf{U}^{\mathrm{T}}\mathbf{y} = \mathbf{U}_{\mathrm{L}}^{-1}\mathbf{y} = \mathbf{K}^{\mathrm{T}}\mathbf{a}$	*note bold lambda*
As found:	"… the cross products in **A** to give ∧…"	second sentence p 153
Corrected:	"… the cross products in **A** to give Λ …"	*wrong point size for* Λ
As found:	$x_k = \frac{\xi_k - \xi_k}{\hat{\xi}_k}$	(12.1-1a) p 166
Corrected:	$x_k = \frac{\xi_k - \bar{\xi}_k}{\hat{\xi}_k}$	*note overbar*
As found:	"Then, for the factorial design, the information for the factorial design…"	2nd sentence p 173
Corrected:	"Then, the information for the factorial design…"	*remove redundancy*
As found:	vf	Table 12.5-2 top-right entry
Corrected:	7.8	p 177
As found:	*Temperatures mistakenly reported as* "[F]"	Example 12.5-2
Corrected:	*Temperatures should be reported as* "[C]"; *however, analyses are otherwise unaffected.*	pp 177 – 180
As found:	"… comprising 16 runs: $2_{6\text{-}2}$ = …"	First sentence below Section 12.10, p 185
Corrected:	"… comprising 16 runs: $2^{6\text{-}2}$ = …"	*note superscript*
As found:	$x_1\ x_2\ x_3\ x_4$	1st paragraph, 3 places p 185
Corrected:	$x_1x_2x_3x_4$192	*note removal of spaces*

As found:	"Then, MSB = SSB/DFB…"	Text below 12.12-a,b p 190, *add text*
Corrected:	"Here, u is the number of unique points, replicated or not. Then, MSB = SSB/DFB…"	
As found:	5. With burner has the shortest length.	Last sentence p192
Corrected:	5. Which burner has the shortest length?	
As found:	"Using $2_{6\text{-}3}$…"	2nd sentence under *Solution:* p 207
Corrected:	"Using $2^{6\text{-}3}$…"	*note superscript*
As found:	"… gives a design is identical to…"	last sentence of 2nd ¶ p 208
Corrected:	"… gives a design identical to…"	*omit "is"*
As found:	"… Lewallen et al.[8] have …	Second to last sentence above Section 15.4.1, p 236
Corrected:	"… Lewallen et al [6] have…"	*incorrect reference*
As found:	*horizontal line below C_2H_6*	Table 15.4-1 p 237
Corrected:	*move horizontal line below C5+*	*misplaced line*
Add Reference:	6. Lewallen J. et al, Burner testing, in *John Zink Combustion Handbook,* 1st ed., Baukal, C.E. Jr., CRC Press, Boca Raton, FL, Ch 14, 2001, p 435.	p 240
As found:	"Surely, if the analysis from the previous second's analysis shows…"	last paragraph p 243
Corrected:	"Surely, if the analysis from the previous second shows…"	*eliminate redundancy*
As found:	When $\|\mathbf{X}^T\mathbf{X}\|$=0 the matrix… when $\|\mathbf{X}^T\mathbf{X}\|$=0…	2nd to last sentence, p 253
Corrected:	When $\|\mathbf{X}^T\mathbf{X}\|$=0 the matrix… when $\|\mathbf{X}^T\mathbf{X}\|$=0…	*correct font color of left brackets*
As found:	"… instantiated by Excel as =T.INV.2T(p/2,n-m)…"	p 259, sentence below Equation 16.6-1
Corrected:	"… instantiated by Excel as =T.INV.2T(p,n-m)…"	
As found:	This figure shows the O2 ′ O2 leverage…	Caption, Figure 16.8-1, p 267
Corrected:	This figure shows the O2 × O2 leverage…	
As found:	Then $\hat{\mathbf{Y}}^T = (1 \quad \hat{\mathbf{y}})$ and for a particular value, $\hat{\mathbf{y}}^T = (1 \quad \hat{\mathbf{y}})$	Text above (16.9-1a,b) p 268
Corrected:	Then $\hat{\mathbf{Y}}^T = (\mathbf{1} \quad \hat{\mathbf{y}})$ and for a particular value, $\hat{\mathbf{y}}^T = (1 \quad \hat{y})$	
(Note that entries in first set of parentheses are bold and entries in the second set are not.)		
As found:	"… referred to as the right axes)."	4th line of Figure 16.9-1 caption, p 269
Corrected:	"… referred to the right axes)."	*omit "as"*

As found:	*figure occurs on p 275 before callout in Section 17.2*	Figure 17.2-1
Corrected:	*place figure on p 276 after callout in Section 17.2*	p 275
As found:	"… then a cubic equation will do…"	2nd sentence after 18.1-9
Corrected:	"… then a quartic equation will do…"	p 281
As found:	"e.g., $0.1714 \cdot 10^{-8}$ … or $5.67 \cdot 10^{-8}$…"	Sentence after 18.2-1
Corrected:	"e.g., $0.1714 \cdot 10^{-8}$ … or $5.67 \cdot 10^{-8}$…"	p 284 *note form of unary minus*
As found:	"…and $T\infty$ is the ambient temperature…"	Sentence after 18.2-1
Corrected:	"…and T_∞ is the ambient temperature…"	p 294 *note subscript*
As found:	"… adjusted per Equation 19.5-9."	Caption, Figure 19.5-1
Corrected:	"… adjusted per Equation 19.5-8."	p 304 *note equation reference*
As found:	*missing horizontal line under 20.3-1c*	Equation 20.3-1c
Corrected:	*add long horizontal line under 20.3-1c*	p 318
As found:	*missing horizontal line under 20.3-3d*	Equation 20.3-3d
Corrected:	*add long horizontal line under 20.3-3d*	p 319