

**ERRATA: Airplane Flight Dynamics and Automatic Flight Controls Part I**

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<i>page iii, line 3</i>	Topic 3.2.17 Review of Important Sign Conventions should be removed																			
<i>page x, line 4</i>	The second word ‘control’ in the description of the $c_{l_\delta}$ should be deleted																			
<i>page xxii – xxviii</i>	Add the following symbols and descriptions																			
	<table border="0"> <thead> <tr> <th style="text-align: left;"><u>Symbol</u></th> <th style="text-align: left;"><u>Description</u></th> <th style="text-align: left;"><u>Unit</u></th> </tr> </thead> <tbody> <tr> <td><i>page xxii</i></td> <td>X, Y, Z</td> <td>Body-fixed (rotating) axis system</td> <td>--</td> </tr> <tr> <td><i>page xxii</i></td> <td>X', Y', Z'</td> <td>Earth-fixed (non-rotating) axis system</td> <td>--</td> </tr> <tr> <td><i>page xxvi</i></td> <td>1, 2, 3</td> <td>Eular rotation sequence (the use of the symbol “1” to denote the first Euler rotation is used only in Chapter 1)</td> <td></td> </tr> <tr> <td><i>page xxvii</i></td> <td>P</td> <td>Origin of the XYZ system</td> <td></td> </tr> </tbody> </table>	<u>Symbol</u>	<u>Description</u>	<u>Unit</u>	<i>page xxii</i>	X, Y, Z	Body-fixed (rotating) axis system	--	<i>page xxii</i>	X', Y', Z'	Earth-fixed (non-rotating) axis system	--	<i>page xxvi</i>	1, 2, 3	Eular rotation sequence (the use of the symbol “1” to denote the first Euler rotation is used only in Chapter 1)		<i>page xxvii</i>	P	Origin of the XYZ system	
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<i>page 14, Section 1.4</i>	Last paragraph, 1 <sup>st</sup> line “ $\Theta = 90$ )” should be “ $\Theta = 90$ ”																			
<i>page 26, Eq (1.62)</i>	First equation set “ $\vec{\omega} = k\dot{\Theta}$ ” should be “ $\vec{\omega} = j_2\dot{\Theta}$ ”																			
<i>page 28, Line 9</i>	“un” should be in.																			
<i>page 34, Lines 25-26</i>	Reference should be: Roskam, J.; <u>Airplane Design</u> , Parts I through VIII; Design, Analysis, and Research Corporation, 1440 Wakarusa Drive Suite #500, Lawrence, KS 66049, USA; 1990																			
<i>page 40, Line 26</i>	Should read, “ apply to cambered (un-symmetrical) airfoils.”																			
<i>page 47</i>	First paragraph under 2.5.2 second line. “In variant” should be “invariant”																			
<i>page 51</i>	Second paragraph 8 <sup>th</sup> line. “top” should be “to”																			

<i>page 55, Eq (2.27)</i>	should be $\left(\frac{d\varepsilon}{d\alpha}\right)_M = \frac{\left(\frac{d\varepsilon}{d\alpha}\right)_{M=0}}{\sqrt{(1-M^2)}}$
<i>page 59, Figure 2.20</i>	Flap Chord, $c_f$ , should go from hinge line to trailing edge
<i>page 63, Problem 2.3</i>	the set of data under data set “a” should be data set “c”
<i>page 66, Figure 3.2</i>	$\beta$ should be $\beta_1$ in Note 3.
<i>page 84, Eq (3.30)</i>	in $\cos(\alpha + i_w - \varepsilon)$ “ $i_w$ ” should be “ $i_h$ ”
<i>page 84, Eqn (3.30)</i>	The wing incidence should be removed
<i>page 85, Line 19</i>	“as well a positive” should be “as well as positive”
<i>page 95, Last Paragraph 4<sup>th</sup> line.</i>	After “vortices” add “(at high angles of attack)”
<i>page 97, Figure 3.28</i>	Normal velocity vector on left wing should not be present.
<i>page 99, Figure 3.30</i>	Axis labeled as “Z” should be labeled as “X”.
<i>page 104</i>	Last paragraph, last line “right wheel deflection are activated” should be “right wheel deflection) are activated”
<i>page 106, Eqn (3.67)</i>	$K_{SW}$ needs to be defined: is the gearing constant between cockpit control wheel or stick and aileron or spoiler deflection.
<i>page 108, Figure 3.38</i>	The subscripts “v” should be taken out from the two variables $F_{a_{yrudder}}$ and $N_{A_{rudder}}$
<i>page 108 Eqn (3.71)</i>	$C_{l_{\delta_r}} = C_{L_{\alpha_v}} \alpha_{\delta_r} \eta_v \frac{S_v z_{v_s}}{Sb}$ replaces $C_{l_{\delta_r}} = C_{L_{\alpha_v}} \alpha_{\delta_r} \bar{q}_v \frac{S_v x_{v_s}}{Sb}$
<i>page 109, Eqn (3.72)</i>	multiply right side quantity by $\bar{q}Sb$
<i>page 111, Eqn (3.76)</i>	Should read: $F_{A_{y_v}} = C_{y_{\beta_v}} \beta \bar{q} S = -C_{L_{\alpha_v}} \left(1 - \frac{d\sigma}{d\beta}\right) \beta \bar{q}_v S_v$

<i>page 113, Eqn (3.78)</i>	Equation (3.78), the subscripts “v” should be taken out from the variables $F_{a_{yrudder}}$
<i>page 113, Eqn (3.80)</i>	Equation (3.80) should be multiplied by: $\bar{q}S$
<i>page 115, Line 14</i>	“The yawing moment due to the vertical tail me be written as:” should be “The yawing moment due to the vertical tail may be written as:”
<i>page 117, Line 20</i>	Line 20 should be between Lines 13 and 14.
<i>page 118, Figure 3.46</i>	“Positive rolling moment” should be labeled as “Yawing moment”.
<i>page 118, Figure 3.46, 1.)</i>	“induces drag” should be “induced drag”
<i>page 121, Eq (3.91)</i>	multiply right side quantity by $\bar{q}Sb$
<i>page 122, Eqn 3.92a</i>	The summation should say $i = 1$
<i>page 122, Eqn 3.92b</i>	The summation should say $i = 1$
<i>page 122, Eqn 3.92c</i>	The summation should say $i = 1$
<i>page 124, Eqn 3.95b</i>	The summation should say $i = 1$
<i>page 126, Table 3.4</i>	“ $V_1$ ” should be “ $Q_1$ ”
<i>page 127, Line 4</i>	Should read, “(2) partial derivatives in Table 3.4 indicate the slope by which a particular perturbed force or moment is affected by a particular perturbed variable.”
<i>page 133, Figure 3.51</i>	All “ $V_{r1}$ ” in this figure should be “ $V_p$ ”
<i>page 134, Figure 3.52</i>	Equation “ $\arctan \left. \frac{\partial C_D}{\partial M} \right _{M=M_2} > 0$ ” should be “ $\arctan \left. \frac{\partial C_D}{\partial M} \right _{M=M_2} < 0$ ”. Figure should be labeled “Example of Determination of: $\partial C_D / \partial M$ at a constant angle of attack”.
<i>page 136, Eqn (3.119)</i>	“ $C_L$ ” should be “ $C_{L1}$ ”
<i>page 136, Eqn (3.122)</i>	Variable M should be “ $M_A$ ”

- page 139, Eqn (3.133) Equation (3.133), change the subscript “x” to “z” in  $\frac{\partial F_{A_z}}{\partial \alpha}$
- page 141, Eqn (3.142) change “airplane, caused by” to “airplane,  $\Delta C_L$  caused by”
- page 145, Eqn (3.156) change  $\frac{\partial M_A}{\partial \left( \frac{q\bar{c}}{2U_1} \right)} = \frac{\partial C_m}{\partial \left( \frac{q\bar{c}}{2U_1} \right)} \bar{q}_1 S = C_{mq} \bar{q}_1 S$  to  

$$\frac{\partial M_A}{\partial \left( \frac{q\bar{c}}{2U_1} \right)} = \frac{\partial C_m}{\partial \left( \frac{q\bar{c}}{2U_1} \right)} \bar{q}_1 S \bar{c} = C_{mq} \bar{q}_1 S \bar{c}$$
- page 147 Equation (3.162), replace the variable  $C_{L_1}$  in (2,1) entry to  $C_{D_1}$
- page 147, Eqn (3.162) “ $\frac{\alpha\bar{c}}{2U_1}$ ” should be “ $\frac{\dot{\alpha}\bar{c}}{2U_1}$ ”
- page 148, Eqn (3.163a,b,c) The negative signs should be removed
- page 148, Section 3.2.10 First paragraph “changes in sideslip,  $\beta$ ” should be “changes in sideslip rate,  $\dot{\beta}$ ”  
 Second paragraph “sideslip angle,  $\beta$ ” should be “sideslip rate,  $\dot{\beta}$ ”
- page 162, Eqn (3.197) “ $C_{n_p}$ ” and “ $C_{n_r}$ ” should be “ $C_{n_p}$ ” and “ $C_{n_r}$ ,” respectively.
- page 167, Eq (3.214) Insert “+ u” in denominator.  

$$F_{T_x} = \frac{n_p 550 \eta_p BHP}{U_1 + u}$$
- page 173 First paragraph, 5<sup>th</sup> line. The word “be” is duplicated and should be deleted
- page 182, Lines 2-3, 17-18 Reference should be: Roskam, J.; Airplane Design, Parts I through VIII; Design, Analysis, and Research Corporation, 1440 Wakarusa Drive, Lawrence, KS 66049, USA; 1990
- page 186 Equation (4.3), remove the variable  $U_1$
- page 187 Entry (5,5), change  $\frac{\partial (M_A + M_T)}{\partial \alpha} > 0$  to  $\frac{\partial (M_A + M_T)}{\partial \alpha} < 0$

<i>page 189</i>	Equation (4.7), remove the negative sign
<i>page 189</i>	The line below Equation (4.7), change (4.1) to (4.6)
<i>page 190</i>	Line 6, “criterion (4.1)” should be “criterion (4.10)”
<i>page 190</i>	Line 11, $C_{ZT_\alpha} \ll C_{L\alpha}$ should be $C_{Tz\alpha} \ll C_{L\alpha}$
<i>page 195</i>	Equation (4.36), remove the variable $U_1$
<i>page 195, Line 6</i>	“Table 5.1” should be “Table 4.1”.
<i>page 196, Line 2</i>	“Table 5.1” should be “Table 4.1”.
<i>page 206</i>	Last paragraph, 3 <sup>rd</sup> line, “in Example 1.” should be “in Example 1).”
<i>page 209, Fig 4.11b</i>	The negative tail stall locus as shown in the diagram is wrong. The trim diagram should have a positive tail stall locus at $\alpha = 25^0$ and a negative tail stall locus at $\alpha = -12^0$ . Both of these lines are out of the range of the diagram so none of them should be shown.
<i>page 211, 11<sup>th</sup> line</i>	The sentence that reads, “Figure 4.11b shows only the negative tail stall locus because the positive locus is outside of the diagram” should be removed.
<i>page 211, 11<sup>th</sup> line</i>	“degespectively” should be “deg respectively”
<i>page 216, 15<sup>th</sup> line</i>	“Appendix A..” should be “Appendix A.”
<i>page 220, Eqn (4.81)</i>	change $V_{mc} = \sqrt{\frac{2(N_{T_1} + \Delta N_{D_1})}{\rho C_{n\delta_r} \delta_{r_{max}} Sb}}$ to $V_{mc} = \sqrt{\frac{-2(N_{T_1} + \Delta N_{D_1})}{\rho C_{n\delta_r} \delta_{r_{max}} Sb}}$
<i>page 225, Eqn (4.86b)</i>	“ $C_Y$ ” should be “ $C_{y_r}$ ”.
<i>page 225</i>	Line 20, “three of these” should be “four of these”
<i>page 226, Eq (4.90)</i>	$\psi_1$ should read $\dot{\psi}_1$
<i>page 227, Eqn (4.96)</i>	“ $C_Y$ ” should be “ $C_{y_r}$ ”.

- page 227, Eqn (4.97)(4.103)* “ $\Phi$ ” should be “ $\Phi_1$ ”
- page 227, Line 6* The first sentence should be removed
- page 228, Eqn (4.98)* Variables  $a_{11}$ ,  $b_{11}$ , and  $c_{11}$  should be a, b, and c
- page 228, Eqn (4.99)* Variables  $a_{11}$ ,  $b_{11}$ , and  $c_{11}$  should be a, b, and c
- page 228, Eq (4.100)*  $\delta_{a_1}$  should read  $\delta_{\dot{\alpha}_1}$ , Variables  $a_{11}$ ,  $b_{11}$ , and  $c_{11}$  should be a, b, and c
- page 228, Eqn (4.102)* “ $\Phi$ ” should be “ $\Phi_1$ ”
- page 228, Eqn (4.102a)* Variable  $a_{11}$  should be a.
- page 228, Eqn (4.102b)* Variable  $b_{11}$  should be b.
- page 228, Eqn (4.102c)* Variable  $c_{11}$  should be c.
- page 232, Eqn (4.113b)* “ $\gamma_1$ ” should be “ $\Theta_1$ ”
- page 232, Eqn (4.114a)* “ $\gamma_1$ ” should be “ $\Theta_1$ ”
- page 233* Third paragraph, 2<sup>nd</sup> line. The word “forward” should be changed to “aft”
- page 235* Last line, “for a conventional airplane” should be “for a canard airplane”
- page 237* Line 7, “in Eqn (4.10)” should be “in Eqn (4.131)”
- page 237, Lines 10-11* Should read: “From Eqn (4.133) it may be concluded that as long as  $L_h$  is positive (i.e. ‘up’) and  $(x_{ac_{wf}} - x_{cg})$  is positive the canard load to trim,  $L_c$ , will also be positive (i.e. ‘up’).”
- page 242, Eqn (4.136)* change  $HM = C_h \bar{q} S_e \bar{c}_e$  to  $HM = C_h \bar{q}_h S_e \bar{c}_e$
- page 244, Section 4.5.1* Last paragraph, change  $\eta_h = \frac{\bar{q}}{\bar{q}_h}$  to  $\eta_h = \frac{\bar{q}_h}{\bar{q}}$
- page 253* Last paragraph, 1<sup>st</sup> line, “found by by” should be “found by”
- page 255* Last paragraph, 2<sup>nd</sup> line, “from Eqn 4.169)” should be “from Eqn (4.169)”

- page 256,  
3<sup>rd</sup> line above Fig 4.34 ‘stick-force-per-‘g’ should be just ‘stick-force’.
- page 259, Figure 4.36 In graph a) “ $\delta_e = 2^\circ$ ” should be “ $\delta_{t_e} = 2^\circ$ ”
- page 259, Figure 4.36 In graph b) “dFe/dV” should be “dFs/dV”
- page 263, Line 2 Second “the” should be removed.
- page 267 Definitions for each variable should be:  $C_{h_{\delta_r}}$ ,  $C_{h_{\delta_n}}$ ,  $C_{h_{\beta_v}}$  normally negative, negative, positive respectively
- page 268 Include in  $\tau_r$  definition:  $\tau_r = \frac{\partial \beta}{\partial \delta_r}$  and is normally negative
- page 269, Eqn 4.199 “ $C_{n_{\beta_{fix}}} - C_{n_{\delta_r}}$ ” should be  $C_{n_{\beta_{fix}}} + C_{n_{\delta_r}}$
- page 269 Eqn (4.203) 
$$\frac{\partial F_r}{\partial \beta} = -\frac{G_r \eta_v \bar{q}_1 S_r \bar{c}_r C_{h_{\delta_r}}}{C_{n_{\delta_r}}} C_{n_{\beta_{free}}}$$
 replaces:  
$$\frac{\partial F_r}{\partial \beta} = \frac{G_r \eta_v \bar{q}_1 S_r \bar{c}_r C_{h_{\delta_r}}}{C_{n_{\delta_r}}} C_{n_{\beta_{free}}}$$
- page 273, Line 4 “and (4.209)” should be removed.
- page 278, Line 6 HM should refer to Eqn (4.136).
- page 278, Eqn (4.225) Equation # 4.225 is repeated for two different equations.
- page 278, Line 22 Should read, “The hingemoment coefficient equation...”
- page 280, Line 15 “ $\frac{\partial \delta_e}{\partial n}$ ” should be “ $\frac{\partial F_s}{\partial n}$ ”
- page 281 List at end of page is inconsistent with Figure 4.49
- page 286, Eqn (4.241)  $C_{h_{\beta_r}}$  should be  $C_{h_{\beta_v}}$
- page 288, Line 2 Sentence should read “Exceptions to this are airplanes like the

	B-52.”
page 288, Line 14	Remove “!” after “nose-gear.”
page 288-290	“ground” subscript should be “g”
page 291	Last paragraph, 1 <sup>st</sup> line. The word “are” should be “area”
page 291, Eqn.(4.250)	$\ddot{\theta}$ should be $\ddot{\theta}_{mg}$
page 292, Figure 4.52b	$x_{cg_g}$ labels should be reversed for $x_{cg_g} = 38 \text{ ft}$ and $x_{cg_g} = 39 \text{ ft}$
page 307, Eqn (5.1a)	Insert $\theta$ after $mg$ . Remove $\frac{C_D}{U_1}$ . $\dot{m}u = -mg\theta \cos \theta_1 + \bar{q}_1 S \left\{ -\left(C_{D_u} + 2C_{D_1}\right) \frac{u}{U_1} + \left(C_{T_{x_u}} + 2C_{T_{x_1}}\right) \frac{u}{U_1} + \right.$ $\left. -\left(C_{D_\alpha} - C_{L_1}\right) \alpha - C_{D_{\delta_e}} \delta_e \right\}$
page 307, Eqn (5.1b)	Insert $\theta$ after $mg$ . $m(\dot{w} - U_1 q) = -mg\theta \sin \theta_1 + \bar{q}_1 S \left\{ -\left(C_{L_u} + 2C_{L_1}\right) \frac{u}{U_1} - \left(C_{L_\alpha} + C_{D_1}\right) \alpha + \right.$ $\left. -C_{L_{\dot{\alpha}}} \frac{\dot{\alpha} \bar{c}}{2U_1} - C_{L_q} \frac{q \bar{c}}{2U_1} - C_{L_{\delta_e}} \delta_e \right\}$
page 307, Eqn (5.1c)	Should be $I_{yy} \dot{q} = \bar{q}_1 S \bar{c} \left\{ \left(C_{m_u} + 2C_{m_1}\right) \frac{u}{U_1} + \left(C_{m_{r_u}} + 2C_{m_{r_1}}\right) \frac{u}{U_1} + C_{m_\alpha} \alpha + C_{m_{r_\alpha}} \alpha + \right.$ $\left. + C_{m_{\dot{\alpha}}} \frac{\dot{\alpha} \bar{c}}{2U_1} + C_{m_q} \frac{q \bar{c}}{2U_1} + C_{m_{\delta_e}} \delta_e \right\}$
page 314, Figure 5.6	Solid black line needs removed.
page 316, Line 9	Line is “the system is zero” should be “the system are zero”
page 318	First line of second paragraph, change $\theta$ to $\dot{\theta}$
page 319	Table 5.1, third last equation, change $C_{m_\alpha}$ to $C_{m_{\dot{\alpha}}}$



- page 322, Eqn (5.35) change  $B_u = -X_{\delta_e} \left\{ (U_1 - Z_{\dot{\alpha}}) M_q + Z_{\alpha} + M_{\dot{\alpha}} (U_1 + Z_q) + Z_{\delta_e} X_{\alpha} \right\}$   
to  $B_u = -X_{\delta_e} \left\{ (U_1 - Z_{\dot{\alpha}}) M_q + Z_{\alpha} + M_{\dot{\alpha}} (U_1 + Z_q) \right\} + Z_{\delta_e} X_{\alpha}$
- page 324, Line 16 Remove the list number “1)” and align row to far left.
- page 328, Eqn (5.48) “>” should be “<”
- page 328, Eqn (5.49) “>” should be “<”
- page 332, Eq (5.53) the equation should have a minus “ - “ before  $\zeta_{1,2}\omega_{n1,2}$  and  $\zeta_{sp}\omega_{nsp}$
- page 333, Eq (5.54) the equation should have a minus “ - “ before  $\zeta_{3,4}\omega_{n3,4}$  and  $\zeta_{ph}\omega_{nph}$
- page 333, Line 8  $T_1 = -0.35$  and  $T_2 = 0.28$
- page 333, Eq (5.56) the equation should have a minus “ - “ before  $\zeta_{3,4}\omega_{n3,4}$  and  $\zeta_{3rd}\omega_{n3rd}$
- page 338 Equation (5.69), 
$$\frac{\theta(s)}{\delta_e(s)} = - \frac{(Z_{\delta_e} s - X_u Z_{\delta_e} + X_{\delta_e} Z_u)}{U_1 \left( s^2 - X_u s - \frac{g Z_u}{U_1} \right)}$$
- page 340 3<sup>rd</sup> line. The word “ration” should be “ratio”
- page 340 Equation (5.76), the term  $Z_{\delta_e} M_{\alpha}$  should be  $-Z_{\delta_e} M_{\alpha}$
- page 340 Equations (5.76) to (5.78), change  $D_1$  to  $\bar{D}_1$
- page 342, Eqn (5.82a) In equation, “ $\frac{2\zeta_p s}{\omega_{nsp}}$ ” should be “ $\frac{2\zeta_p s}{\omega_{np}}$ ”
- page 342, Eqn (5.82b) In equation, “ $\frac{2\zeta_p s}{\omega_{nsp}}$ ” should be “ $\frac{2\zeta_p s}{\omega_{np}}$ ” and “ $\frac{2\zeta_{\alpha}}{\omega_{n\alpha}}$ ” should be “ $\frac{2\zeta_{\alpha} s}{\omega_{n\alpha}}$ ”
- page 342, Eqn (5.82c) In equation, “ $\frac{2\zeta_p s}{\omega_{nsp}}$ ” should be “ $\frac{2\zeta_p s}{\omega_{np}}$ ”
- page 350, Line 5 “ $\phi(s) / \delta_e(s)$ ” should be “ $\phi(s) / \delta(s)$ ”

<i>page 364, Line 28</i>	Eqn (5.120) should be Eqn (5.121)
<i>page 371</i>	Equations (5.136) to (5.138), change $D_2$ to $\bar{D}_2$
<i>page 381, Figure 5.24</i>	For Damping Ratio “-1/T” should be “1/T”
<i>page 381, Figure 5.25</i>	For Damping Ratio “-1/T” should be “1/T”
<i>page 396, Line 25</i>	Should read, “...say 10 deg/deg/sec, a 3 deg/s pitch rate...”
<i>page 398, Line 2</i>	“elevator deflection” should be “rudder deflection”
<i>page 401, Figure 5.44</i>	On the $Y_B$ vector, the smaller vector should be labeled “q”
<i>page 405, Lines 24-28</i>	Omit paragraph contained by lines 24-28.
<i>page 407, Line 13</i>	$\cos \theta = 1$ for small angles.
<i>page 424, Table 6.4</i>	The Civilian Requirements FAR-23 are updated to the following:  For wheel controllers: $\frac{\partial F_s}{\partial n} > \frac{(W_{TO}/100)}{n_{\text{limit}} - 1} \text{ and } \frac{20.0}{n_{\text{limit}} - 1}$ but not more than: $\frac{50.0}{n_{\text{limit}} - 1}$  For stick controllers: $\frac{\partial F_s}{\partial n} > \frac{W}{140} \text{ and } \frac{15.0}{n_{\text{limit}} - 1}$ but not more than: $\frac{35.0}{n_{\text{limit}} - 1}$
<i>page 427, Line 6</i>	Remove the return so “be” and “written” are on the same line.
<i>page 427, Line 7</i>	“time to double” should be “time-to-double.”
<i>page 434, Line 12</i>	Reference 6.5 should be Reference 6.6.
<i>page 460, Lines 21-22</i>	Reference should be: Roskam, J.; <u>Airplane Design</u> , Parts I through VIII; Design, Analysis, and Research Corporation, 1440 Wakarusa Drive Suite #500, Lawrence, KS 66049, USA; 1990

- page 461, Lines 20-23* Address should be: 1440 Wakarusa Drive Suite #500, Lawrence, KS 66049, USA Tel. 785-832-0434 Fax: 785-832-0524
- page 466, Lines 26-27* Lines should read “ Design, Analysis, and Research Corporation, 1440 Wakarusa Drive Suite #500, Lawrence, KS 66049, USA”
- page 466, Lines29-31* Lines should read “Design, Analysis and Research Corporation, 1440 Wakarusa Drive, Suite #500, Lawrence, KS 66049, USA Tel. 785-832-0434 Fax: 785-832-0524
- Appendix B*  $C_{h\beta_r}$  should be  $C_{h\beta_v}$  for all examples.
- page 487, B2* C.G. location should be  $0.33 \bar{c}$
- page 560, Lines18-19* Reference should be: Roskam, J.; Airplane Design, Parts I through VIII; Design, Analysis, and Research Corporation, 1440 Wakarusa Drive Suite #500, Lawrence, KS 66049, USA; 1990