Analytical Dynamics Errata Sheet

Please Note: My word processor does not print boldface Greek characters. So, to denote a boldface Greek character, I underline it in this errata sheet.

Page	Location	Error and its Correction
4	Eq. [b]	Middle line units should be 1 lb/ft*3
17	First line	$\tau = 0$ should read $t = 0$
54	before Eq. [1.8.2]	Last sentence of paragraph should read From Eq. [1.7.27] we have
91	Eq. [2.3.2]	Unit vectors should be $\mathbf{e}_1,\ \mathbf{e}_2,\ \mathbf{e}_3$, not $\mathbf{i},\ \mathbf{j},\ \mathbf{k}$
100	Footnote	Eq. [2.14.12b] should be Eq. [2.4.12b]
155	Eq [3.2.7]	should read $\sum_{i=1}^{N} m_i \dot{\underline{\rho}}_i = \mathbf{0}$
187	Fig. 3.22	Line closest to x axis it should read $a\epsilon$
203	Eq. [l]	Last term on left side should read $mg(R-r)\sin\theta$
213	Problem 37	Should read: Consider the bar attached to a disk in Problem 33 ...
233	Before Ex. 4.5	remove th word *holonomic* from last line
234	Fig. 4.13	R_ϕ is mislabeled. Length of short line is $R\phi$
235	Eq. [d]	First term on right side should be $B_x L_1 c\theta_1 \delta\theta_1$
240	Eq. [c]	left side of second expression should be $\mathbf{r}_{G_1}$ (boldface for $\mathbf{r}$)
245	Before Sec. 4.7	Last sentence should read: The only equilibrium solution is if $\cos\theta_1 = \cos\theta_2 = 0$, which is the upright position of the linkage.
262	betw Eqs. [b]&[c]	$v_\theta = r\dot{\theta}\mathbf{e}_\theta$ should be $v_\theta = r\dot{\theta}$
265	Fig. 4.24	Grounded link is of length L_4
284	Fig 5.2	Caption should be Mass-spring-damper system
288	Eq. [c]	33 element of $[D]$ should be c_2, not 0
295	Eq. [e]	Middle terms in the two expressions should be $2m\alpha_2^2$ and $2m\alpha_3^2$
308	Eq. [5.7.11b]	Last term should be $\{g\}^T$
309	Fig. 5.7	Caption should read A spring pendulum
312	eq. [5.12.6]	Right parenthesis missing on top line. $...\frac{\partial}{\partial\{q\}}([r_{iq}]\{\dot{q}\} + 2\frac{\partial}{\partial t}[r_{iq}]\{\dot{q}\}) + ...$
314	After [5.13.1]	Say keeping the independent variable,
320	Problem 19	Last sentence should read: Approximate the two natural frequencies and plot the free response.
320	Problem 20	Add to end of problem the following: The initial angular velocities are zero.
321	Problem 29	Should read: Derive the equations of motion ...
321	problem 32	Should read: Solve problem 4.39 using ...
336	Eq. [6.4.5]	last term should be $m(d_y^2 + d_z^2)$
340	Eq. [j]	Right paren missing after $I_{G_{bar}}$
340	Eq. [l]	Second term on right should be $[I_{G_{mass}}]$
351	Problem 1	Length of body along x axis should be b
354	Problem 16	Add: for the value $b = 4a$
379	[Eq. 7.6.6]	In second term, minus sign missing before summation signs
380	Eq. [b]	Third term should be $u_3 = \omega_3 = \dot{\phi}\cos\theta + \dot{\psi}$
410	Fig. 7.40	radius of front wheel is R_3
412	Problem 1	Last sentence should read: Find the velocity of the tip of the bar as a function of the angle θ.
412	Problem 2	problem should read: For the system shown in Fig. 7.43, find the instantaneous center of the rod AB and its angular velocity.
414	Problem 9	last part of sentence should read: using the derivatives of the Euler angles as the generalized speeds.
415	Problem 21	In this problem θ is constant.
418	Problem 31	In this problem, the length of the rod is 2.5 R.
419	$[R]$ for 3-1-3	21 element should be $-c\phi s\psi - s\phi c\theta c\psi$
436	Eq. [8.5.31]	All the left subscript $_f$ should be subscript $_F$

440	Eq. [o]	should read $-M - M_z \cos\theta + M_x \sin\theta = 0$ Consequently, all the signs in Eqs. [q] and [r] are reversed.
444	Fig. 8.13	Direction of mg should be along negative Y axis.
445	Eq. [f]	M_X M_Y should be replaced with $-M_X$ and $-M_Y$
475	Eq.[8.11.8]	There should be no dm term in the middle expression (the one with the integral sign)
483	Problem 16	In this problem $\dot{\theta} = 0$
486	Fig. 8.35	Axis pointing down should be b_1
498	Eq. [9.3.3]	Left side should read $\{mv_G\}$ and not $\{v_G\}$
503	Eq. [f]	In second line, 32 element of fist matrix should be $-\omega_3 + \frac{\omega_2}{\tan\theta}$
507	Eq. [9.5.12]	Second term ($\mathbf{v}^t = ...$)is incorrect, ignore it.
512	Eq. 9.6.19	T_{kr} should be T_{rk}
526	over Eq. [9.8.8]	In next to last line of paragraph $\mathbf{w}_i$ should be boldface ω_1
535	under Eq.[9.10.27]	Paragraph should read: For constrained systems, a Lagrange multiplier vector enters the formulation the same way that it does in the traditional Lagrange's equations. Alternatively, one can select a set of independent generalized speeds. In this case, $[Y]$ should be written such that Eq [9.10.18] is satisfied.
543	Problem 6	Last line should read : the partial velocities of points D and P.
543	Problem 8	Add to problem: Calculate the partial velocities of G.
544	Problem 19	Last sentence should read: Consider rotational motion of the main body only.
544	Problem 25	Solve Problem 3 using .... not problem 2
553	Eq/ [10.2.22]	Third term should be $\omega_3 = \dot{\phi}\mathrm{c}\theta + \dot{\psi}$
564	Eq. [10.5.1]	No i after the one half, $\frac{1}{2}(I_1\omega_1^2 \cdots$
576	above Eq.[10.6.25]	In line above Eq.[10.6.25], it should say Recall from Eq. [e], not Eq. [f]
585	4th line	Note that the inner gimbal is stationary.
585	Fig. 10.20	This figure should be the same as Fig. 2.49 (p. 148).
583	Fig. 10.19	f_2 should read $-f_2$
586	Eq. [10.7.23]	Minus sign missing from 1st term on right side $-\frac{\pi_\psi}{k}\omega_Y$ ...
586	Eq. [10.7.24]	Minus sign missing from 1st term on right side
586	Eq. [10.7.25]	Minus sign missing from 1st term on right side
586	Eq. [10.7.26]	Minus sign missing from 1st term on right side
587	Problem 1	Length of football should be 25 cm, and player tips the football at the front
587	Problem 3	Precession rate should be 0.25 rad/s, not 0.2 rad/s.
599	Eq. [11.2.27]	Left side should be $u(x, y, z, t)$
603	Eq. [b]	Second line should have added term $Mgw(h, t)$ due to potential energy of ring Also, in first line the 1/2 should be before EI_y.. It should not cover the $\mu(x)gw(x, t)$ term
604	Eq. [11.3.2]	Third term should be $\dot{w}\delta\dot{w}$ and not $\dot{w}\delta\ddot{w}$
611	under [11.3.27]	term on right on line immediately below Eq. [11.3.27] should read $k_y(x)v(x, t)$
615	Eq. [e]	Add dx to first term on top line
627	Table 11.3	4th column 3rd term (corresponding to Consistent admissible functions) should read: All geometric boundary conditions. Do not prevent dynamic ...
641	Eq. [11.6.7]	Integrand is $\mu(x)[(x + u(x, t))\mathbf{i} + v(x, t)\mathbf{j}]dx$
648	eq. [11.7.12]	On right side, $\underline{\underline{\delta}}(x)$ should not be boldface
649	Above Eq 11.7.15	Two lines above, replace "the extended Hamilton's principle" with "Lagrange's equations"
656	Table 11.7	3rd column (yes, yes, no, yes, yes, no, yes, no) should be all Yes.
662	Below Eq. [e]	$\phi(x)$ should be $\phi_1(x)$
665	Fig. 11.41	Length of bar is not given. It should be L.
666	Problem 10	3rd line should read $a = L/2,\ k = 2EI_o/L^3$, where $I_o = bh^3/12$.
667	Problem 18	Radius of shaft should be 2 cm, not 3 cm. Also, $a = 0.8$m.
668	Problem 23	Last word of problem should be satellite, not hub.
668	Problem 25	In second line, $J = 0.3MR^2$, not $I = 0.3MR^2$
674	and also p. 680	Mauperitus should read Maupertuis.
690	Eq. [B11]	Second term should be $c'_{sr} = \frac{\partial c_r}{\partial x_s}$

698	Eq. [e]	First term in integrand should be $-\frac{d}{dx}(p(x)\frac{dy}{dx})$
698	Table B.1	Last column, last element should read: Mass moment of inertia per unit length $I(x)$
715		Poincari should be Poincaré.

Last revised 5/6/2002