pp 36, Exercise Problem 1.10:
(i) (for Exercise problem 1.4) should be (for Exercise problem 1.7)
(ii) “in terms of PGA for 10% probability of exceedance” should be “in terms of PGA for 10% probability of exceedance in 1 year”.
Fig. 1.24/1.26, P[R=r] should be P[M=m]
Chapter -2

pp 45, Equation 2.10, should be \( \phi_n = \tan^{-1}\left( \frac{a_n}{b_n} \right) \)

pp 48, Last two lines, \( \frac{32\pi}{(31 \times 0.02)} = 335 \text{rads}^{-1} \) should be \( \frac{32\pi}{(32 \times 0.02)} = 157.07 \text{rads}^{-1} \) and

\[ d\omega = \frac{2\pi}{T} = 9.81 \text{rads}^{-1} \]

pp 49, 2 lines above section 2.4, .the outputs from the FFT of MATLAB are divided by N/2 should be replaced by inputs i.e., \( x_i \) for FFT in MATLAB are divided by N/2

pp 50, below Equation 2.16, \( c_n \) is the absolute value of the complex quantity (Equation 2.9 should be replaced be Equation 2.13)

pp 63, remove [6]

pp 68, 2nd line, O should be D

pp 79, Equation 2.43, PHA in cm\(^{-1}\) should be in cm\(^{-2}\)

pp 81, Equation 2.54, PGA in cm\(^{-1}\) should be in cm\(^{-2}\)

pp 89, Example 2.11, (i) Kanai and Tajimi (Equation 2.73 should be 2.72)

(ii) Clough and Penzien (Equation 2.75 should be 2.74)

(iii) given by Equations 2.70, 2.71, 2.73 and 2.76 should be 2.70, 2.71, 2.72 and 2.74

pp 91, Equation 2.83, \( e^{(r-t_2)} \) should be \( e^{-c(t-t_2)} \)

pp 92, Equation 2.92, (i) terms within exp should be with negative sign

(ii) \( \omega_0 = 1.09 \) should be \( f_0 = 1.09 \)

pp 95, Exercise problem 2.18, Equation 2.69 should be 2.66

Exercise problem 2.19, Equation 2.75 should be 2.74

Exercise problem 2.20, Equation 2.75 should be 2.74

Equation 2.94 should be 2.93

Equation 2.93 should be 2.92

Equation 2.95 should be 2.94

Exercise problem 2.21, Equations 2.84, 2.85 and 2.87 should be 2.83, 2.84 and 2.86 respectively.
pp 100, 3.2.2 subheading, “Absolute motion” should be “Absolute motions”

pp 101, Equation 3.5b, k and c should be \( \frac{k}{m} \) and \( \frac{c}{m} \) respectively.

pp 104, Just above Example 3.2, \( u_1 \) and \( u_2 \) should be \( u_1 \) and \( v_1 \)

pp 108, 2nd para, 2nd line, “the other two DOF locked” should be “the other DOF locked”

pp110, Equation 3.16, \( r \) should be placed after \( M_{ss}, C_{ss} \) etc.

pp110, Equation 3.19, \( r \) should be placed after \( M_{ss} \)

pp 111, Example 3.4,

\[
K_r = \frac{EI}{3.6L} \begin{bmatrix} 38.4 & 12 & 0 \\ 12 & 48 & 12 \\ 0 & 12 & 38.4 \end{bmatrix}; \quad K_r^{-1} = \frac{L}{EI} \begin{bmatrix} 0.102 & -0.028 & 0.009 \\ -0.028 & 0.039 & -0.028 \\ 0.009 & -0.028 & 0.102 \end{bmatrix}
\]

Second part of \( \bar{K}_{uu} \) matrix changes to

\[
\frac{EI}{L^3} \begin{bmatrix} 8 & 5.33 & -8 & -4 \\ -8 & 5.33 & 8 & 4 \\ -4 & 6.33 & 4 & 3.69 \end{bmatrix}
\]

\[
\bar{K}_{uu} = \frac{EI}{L^3} \begin{bmatrix} 16.03 & 10.68 \\ 10.68 & 129.5 \end{bmatrix} \quad \bar{K}_{uvg} = \frac{EI}{L^3} \begin{bmatrix} -4 & -8 \\ -8 & -22.3 \end{bmatrix}
\]

\[
r = -\bar{K}_{uu}^{-1}\bar{K}_{uvg} \begin{bmatrix} 0.661 & -0.0054 \\ -0.0054 & 0.0082 \end{bmatrix} \begin{bmatrix} -4 & -8 \\ 5.33 & -22.3 \end{bmatrix} = \begin{bmatrix} 0.2926 & 0.4074 \\ -0.654 & 0.1389 \end{bmatrix}
\]

pp.113, Example 3.5, \( K_{41} \) should be \(-\frac{3AE}{2l_1}\cos^2 \theta\); \( K_{71} \neq 0 \), but \(-\frac{AE}{2l_1}\cos^2 \theta\);

\[
K_{42} \neq 0 \), but \( = K_{71}
\]

pp 115, Example 3.6, A matrix, 4th diagonal term should be \(-0.1025 \rho \)

pp.115, r matrix is changed to

\[
r = \begin{bmatrix} -0.781 & -0.003 & 0.002 & -0.218 \\ -0.218 & 0.002 & -0.003 & -0.781 \\ -0.147 & -0.0009 & 0.0009 & 0.147 \end{bmatrix}
\]

pp 123, Equation 3.79, \( e^i \) should be \( e^j \)

pp 123, 2nd line after Eqn 3.79, \( r = 1 ---- N \) and \( k = 1 ---- N \) should be \( r = 0 ---- N-1 \) and \( k = 0 ---- N-1 \)
pp 123, 2nd paragraph, 6th line, $2\pi/T$ should be $2\pi/(T + \Delta t)$

pp 123, 2nd paragraph, 7th line, $\omega_j = \left[(N/2 - 1)\right]$ should be $\omega_j = N(\Delta \omega)/2$

pp 123, after Eqn 3.80, 1st line, $j=1$---- $N/2$ should be $j = 0$---- $N/2$

pp 123, last line, $(r=1$----$N)$ should be $(r = 0$----$N-1)$

pp 124, first line, $N/2$ should be $N/2+1$

pp 124, 2nd line, $\left[(N/2)-1\right]2\pi/T$ should be $N\pi/(T + \Delta t)$

pp 124, 3rd line, $j = 0$to$(N/2-1)$ should be $0$to$N/2$

pp 124, 4th line, $\omega_j = 0$to$(N/2-1)\Delta \omega$ should be $0$to$N(\Delta \omega)/2$

pp 124, 5th line, $j = 0$••(N/2−1) should be $j = 0$••N/2

pp 124, 6th line, $j = N/2$ should be $j = N/2+1$

pp 124, 7th line, $j = N−1$ and $j = 0$ should be $j = N$ and $j = 1$

pp 124, Example 3.7, $C_1 = 0.97$, $C_2 = 0.0196$, $C_3 = 1.31 \times 10^{-4}$, $C_4 = 6.6 \times 10^{-5}$, $D_1 = -2.93$, $D_2 = 0.946$, $D_3 = 9.69 \times 10^{-3}$, $D_4 = 9.87 \times 10^{-3}$

pp 125, Figure 3.11, $u$ should be replaced be $x$

pp 126, after $\phi$ matrix, $e^{zT}$ should be $e^{z\Delta t}$ and $e^{z4\Delta t}$ should be $e^{4z\Delta t}$

pp 128, Equation 3.91, $\alpha$ should be replaced $\beta$

pp.131, Example 3.9, $r = \begin{bmatrix} 0.2926 & 0.4074 \\ -0.654 & 0.1389 \end{bmatrix}$; $K = \frac{EI}{L^3} \begin{bmatrix} 16 & 10.49 \\ 10.49 & 129 \end{bmatrix}$

Figure 3.14b will have 0 ordinates

pp 135, Values of Matrix A should be multiplied by m

$\begin{bmatrix} -0.781 & -0.003 & 0.002 & -0.218 \\ -0.218 & 0.002 & -0.003 & -0.781 \\ -0.147 & -0.0009 & 0.0009 & 0.147 \end{bmatrix}$

The peak values of $z_1$, $z_2$ and $z_3$

(given in the first row of Table 3.4) change to 0.0377m, 0.025m and 0.02m respectively.

pp 136, Figure 3.17b, should be replaced by the new Figure given at the end of Errata of Chapter-3

pp 139, 2nd paragraph, 2nd line, after 45 s duration, add (a segment of 35s is shown in the figure)
pp 142, Equation 3.115, $\rho_i = \frac{\sum_{r=1}^{n} m_r \phi_{ir}}{M}$ should be $\rho_i = \frac{\sum_{r=1}^{n} \lambda_r m_r \phi_{ir}}{M}$

pp.142, after Equation 3.115 and after “where”, add “$\lambda_i$ is defined by Equation 3.114 for single support excitation”.

pp 147, Table 3.6, all -0.0001 should be replaced by -0.0015

pp 147, Above Section 3.5.7, 2nd line, time histories of the moment should be replaced by time histories of the shear

pp 152, Figure 3.23, black dot showing the mass is missing for the 3rd mass from the left.

pp 160, Figure 3.35a, $F_2$ should be changed to $F_1$; $1L \frac{\sqrt{13}}{6}$ should be $\frac{\sqrt{13}}{6} L$ ; a force vector $\vec{F}_4$ must be shown at the base of right hand column.

pp 160-161, all $M$ should be changed to $m$
Chapter 4

pp 172, Figure 4.1, t, t₁ should be changed to t₁, t₂ respectively and within the gap τ should be shown

pp 173, 1st line, sample s should be samples and equation should be corrected as

\[ \sigma_{x_i}^2 = \frac{1}{T} \int_{0}^{T} [x_i(t) - \bar{x}_i(t)]^2 dt \]

pp 175, \( k = 0 \ldots \frac{N}{2} - 1 \)

pp 178, 4th para, 8th line: \( \phi \neq 225^0 \), but \( 180^0 \)

pp 179, 2nd line of Equation 4.29 should be omitted

pp 180, after equation 4.32b, \( a = [a_1 \ a_2] \)

pp 183, 3rd line from bottom, \( S_{yg} \) should be \( S_{g} \)

pp 184, Equation 4.68 should be \( S_{xx} = (i\omega S_x)^* \) and Equation 4.69a should be \( S_x = (-\omega S_x)^* \)

pp 184, below Equation 4.69a, the line should be replaced by; As \( S_x \) is a complex matrix with diagonal terms as real quantities, it is found that

pp 186, Equation 4.76 should be \( S_{yg} = -HMIS_{y} \)

pp 187, just above section 4.9.2, 0.0154 should be 0.0154m

pp 188, just above the last equation, Equation 2.93 should be replaced by Equation 2.93 (with c=1)

pp 189, Example 4.3, \( K = \frac{EI}{L} \begin{bmatrix} 16 & 10.49 \\ 10.49 & 129 \end{bmatrix} \); \( r = \begin{bmatrix} 0.2926 & 0.4074 \\ -0.654 & 0.1389 \end{bmatrix} \)

the rms responses are to be corrected as: DOF(4)=0.0237m DOF(5)=0.00081m for partially correlated; DOF(4)=0.0332m DOF(5)=0 for fully correlated

The figure 4.14a should be removed; caption of the figure should be changed accordingly

pp 191, 1st line Equation 4.36 should be replaced by Equation 4.37

pp 191, add after Equation 4.83; if \( S_{xy} \) is a complex matrix, then \( S_{xx} = S_{xy}^* \)

pp 193, Section 4.10, 3rd line, Figure 4.7 should be Figure 3.7

pp 193, Section 4.10, all \( \theta, x, \delta \) should be in bold

pp 196, Equation 4.98, \( h_ih_j^* \) should be \( h_i^*h_j \)

pp 197, 2nd line, Equation 2.93 should be Equation 2.93 (with c=1)

pp 197, below \( r \), add the following:
\[ \rho_1 = \exp\left(-\frac{5\omega}{2\pi}\right); \rho_2 = \exp\left(-\frac{10\omega}{2\pi}\right); \rho_3 = \exp\left(-\frac{15\omega}{2\pi}\right) \]

\[ S_x = \begin{bmatrix} 1 & \rho_1 & \rho_2 & \rho_3 \\ \rho_1 & 1 & \rho_2 & \rho_3 \\ \rho_2 & \rho_1 & 1 & \rho_1 \\ \rho_3 & \rho_2 & \rho_1 & 1 \end{bmatrix} \]

pp 197, Example 4.6, rms values of displacement of DOF (1), left tower, and DOF(3, not 2 as printed), centre of the deck should be corrected as 0.0219m and 0.0152m respectively.
Chapter-5

pp 214, Example 5.3, 1st line, (…. Example 3.9) should be (…. Example 3.1)

pp 216, above Equation 5.24a, (for s=3 and m=3) should be (for s=3 and m=2)

Equation 5.24a: \( \Phi \beta_{21} \) should be \( \Phi \beta_{12} \)

Equation 5.24b should be modified as, \( \{z_1 \} = \{z_{11} \ z_{21} \ z_{31} \ z_{12} \ z_{22} \ z_{32} \} \)

Equation 5.27b, \( \Phi_m \beta_{11} \phi_m D_{1m} \) should be \( \Phi_m \beta_{1m} D_{1m} \) and \( \Phi_m \beta_{1s} D_{sm} \) should be \( \Phi_m \beta_{sm} D_{sm} \)

pp 218, Example 5.4, \( \phi \), r should be made bold and \( \phi_{BD} \) should be \( \phi_{BD}^T \)

pp 219, above Example 5.5, (Example 3.10…) should be (Example 3.8….)

pp 221, Figure 5.5, Caption (b) SDOF is to…. Should be (b) SDOF to……

pp 222. Example 5.6, For Example 3.5…should be replaced by For Exercise Problem 3.18…

pp 225, Equation 5.43, \( \sum |V_i| \) should be replaced by \( \sum |V_{hi}| \)

pp 227, Figure 5.7 is wrong plots of Equations 5.46 and 5.47. The values of \( c_a \) and \( \frac{A}{g} \) should be obtained directly from the given Equations (revised Figure 5.7 is given at the end of Errata of Chapter-5)

pp 228, In Equation 5.51b, replace U by v; U in Equation 5.51a is defined as a calibration factor.

pp 229, In Figure 5.9, top curve is for \( Z_\alpha > Z_\gamma \); middle one is for \( Z_\alpha = Z_\gamma \); last one is for \( Z_\alpha < Z_\gamma \).

pp 231, (i) Figure 5.11 is drawn for stiff soil

(ii) In Figure 5.12, categories 1 and 3 refer to stiff and soft soils respectively.

![Figure 5.7: Variation of \( C_h \) and \( A/g \) with time period \( T \)](image-url)
Chapter-6

pp 241, Section 6.2.2.3, Equation 6.3, should be Equation 6.8
pp 241, Example 6.1, solution, $\Delta \hat{x}_g$ should be $-0.0312$ or $-0.00312g$

pp242, Figure 6.3, 0.147m should be 0.0147m
pp 242, 6th line from bottom, $\Delta x$ should be $-0.00004156$
pp 242, 8th line from top, $\Delta x_2$ and $\Delta \dot{x}_2$ should be $\Delta x$ and $\Delta \dot{x}$

pp 242, last two equations should be replaced by

$$\Delta \dot{x}_i = \frac{2}{\Delta t} e \Delta x - 2 \dot{x}_i$$

$$\dot{x}_i + \Delta \dot{x}_i = 0 \text{ gives }$$

$$e = -6.8; \Delta x_i = 0.000283$$

pp 243, 3rd line, $\Delta x_2 = 0.00028$ should be replaced by $\Delta x_2 = -0.000325$
pp 243, last equation, should be corrected to

$$f_{x(t+\Delta t)} = f_{xt} + k_i \Delta x_2 = 1.4435N$$

pp 244, Figure 6.5a, all $k$ should be $k/2$
pp 245, 4th and 5th lines from bottom, $k$ should be $k/2$

pp 246, $K_i$ matrix should be

$$
\begin{bmatrix}
100 & -100 & 0 \\
-100 & 200 & -100 \\
0 & -100 & 100
\end{bmatrix}
$$

and $\bar{K}$ should be

$$
10^4 \times \begin{bmatrix}
1.026 & sym \\
-0.0124 & 1.026 \\
0 & -0.0124 & 1.0137
\end{bmatrix}
$$

pp 259, Example 6.5, solution, 1st line, 1 and 6 should be 1 and 2

pp 262, step iv $\Delta_{in} = \sum_{i=1}^{n} \delta \Delta_{ii}$; Step vii $V_{Bi} V_s \Delta_{ii}$

pp 269, equation 6.41, 2nd equation, $T_c$ should be $T_c^{\dagger}$
pp 273, Exercise problem 6.12, at the end of the problem, add $\zeta = 5%$

pp 274, In Figure 6.32, section B is at the left end of the third beam from the bottom
Chapter-7

pp 277, last para, 2nd line, creast should be crust

pp 294, 2nd para, 3rd line, \((V_i - u_s)^T\) should be \((V_i - lu_s)^T\)

pp 295, Section 7.5.2, 1st line, soil-structure foundation should be soil-structure-foundation

pp 298, 5th line, flooring should be footing

pp 300, Figure 7.30, \(v(t)\) should be \(u(t)\)

pp 301, Equation 7.50, should be \(-\begin{bmatrix} V_b \\ M_s \end{bmatrix} = G_d(\omega)\begin{bmatrix} v(\omega) \\ \theta(\omega) \end{bmatrix}\)

pp 315, Equation 7.77, \(\frac{1}{2}\bar{m}\omega_i\) should be \(\frac{1}{2}\bar{m}\omega_i\)

pp 320, Section 7.6.3, 1st line, Figure 7.46 should be 7.47

pp 320; Example 7.9: First line should read as: It is assumed that a building frame is pile founded in soft soil...(of Exercise 7.5 should be omitted)

pp 322: first line; Exercise 7.4 should be Example 7.4

pp 325: Example 7.10, solution, \(C_s = \rho V_s S u r l\) should be replaced by \(C_s = \rho V_s S u r l\)

pp 330, Example 7.11, 4th line, \(\xi\) for the pipe = 2% (not 5%)

pp 331, 1st line, should read as, Stiffness and mass matrices for the structure, shown in Figure 7.57, are obtained as

pp 331, in matrix \([K]\), 3rd element of 6th row should be \(-\frac{l}{2}\) (not 0); 4th element of 7th row should be \(-\frac{l}{2}\) (not 0);

In \(\overline{K}_i\) matrix, 4th diagonals value should be 19.75 (not 23.17);

In \(\overline{K}_s\) matrix, 2nd 3rd and 4th diagonal values should be 60 (not 6);

Note: For all exercise problems, take \(\xi = 5\%\) for both soil and structure wherever these material damping are not mentioned.
Chapter-8

pp 339, Equation 8.14, \( \frac{\partial^2 G}{\partial x_i \partial x_j} \) should be \( \left( \frac{\partial G}{\partial x_i} \right) \left( \frac{\partial G}{\partial x_j} \right) \).

pp 340, Equation 8.17, \( X_d \) should be \( X'_d \).

pp 341, Equation 8.26, \( \frac{\partial G}{\partial x'^i_{di}} \) should be \( \left( \frac{\partial G}{\partial x'^i_{di}} \right) \).

pp 343, last para above Section 8.4.4, add at the end, \( \ldots \) space at the design point.

pp 344, Equation 8.35, denominator \( P_f \) should be \( \bar{P}_f \).

pp 352, 357, Examples 8.3, 8.5: Damping of the structure \( \xi \) should be taken as 5%.

pp 360, Below Table 8.7, \( \sum (8)(11) \) means multiplication of values of columns 8 and 11 of Table 8.7 etc.

pp 360, in Table 8.7, \( P_1, P_2, P_3 \) should be replaced by \( P_1,I; P_2,I; P_3,I \) respectively.

pp 365, Exercise problem 8.8, at the end of the problem, add \( \xi = 5\% \).
Chapter 9

pp 384, Equation 9.23a, $\Delta \ddot{u}_b$ should be $\Delta \ddot{u}_s$

pp 386, in $K$ matrix, last entry 0.431 should be aligned with -0.431

pp 390, the line above Equation 9.48, vector should be vectors

pp 404, Equation 9.68b, $\dot{x}_g$ should be $\dot{x}_{g_0}$

pp 405, Equation 9.69a, $\ddot{x}_g$ should be $\ddot{x}_{g_0}$

pp 407, Equation 9.75d: in $\bar{K}$ matrix, all $k$ should be $k_i$

pp 408, Example 9.5, add at the end of the problem, $\xi_f = 2\%$; take $\xi$ for the frame as 5%.

pp 409, matrices, $K$, $M$ and $C$ should be $\bar{K}$, $\bar{M}$, and $\bar{C}$

pp 409, $\bar{C}$ matrix, last but one row, 512.3 0, should be 527.7 -15.4

pp 409, $\bar{C}$ matrix, last row, 0 15.4, should be -15.4 15.4

pp 410 and 411, Figs 9.42 and 9.43, time scale 35s as in Figure 9.41

pp 419, Example 9.6, Solution: 1st line; Example 9.4 should be 9.5

pp 428, 1st line, Equation 9.153b should be Equation 9.156b

pp 440, Equation 9.190, $\frac{\tau^2}{2}$ should be $\frac{\tau^2}{2}$

pp 443, 3rd para, 2nd line, the damping coefficient should be damper coefficient

pp 444, after the 1st line, $K$ (Equation 9.201b) should be $K_s$ (stiffness matrix)