**Errata for**
**Signals and Systems: A MATLAB Integrated Approach**

- Page 30, Eqn. (1.55) should be corrected as follows:

$$x(t) = x_r(t) + j\, x_i(t) \tag{1.55}$$

- Page 31, Example 1.4: First displayed equation should be corrected as follows:

$$x(t) = x_r(t) + j\, x_i(t)$$

- Page 40, Example 1.10: Last displayed equation should be corrected as follows:

$$P_x = \lim_{T\to\infty}\left[\frac{1}{T}\int_{-T/2}^{T/2} x^2(t)\,dt\right]$$

- Page 66, Eqn. (1.165) should be corrected as follows:

$$x[n] = x_r[n] + j\, x_i[n] \tag{1.165}$$

- Page 88, Problem 1.27, part c: Delete the word "both".
- Page 205, displayed equation for $y[0]$ should be corrected as follows:

$$y[0] = (1-\alpha)\; y[-1] + \alpha\, x[-1]$$

- Page 209, last line above Eqn. (3.59) should be corrected as follows:
"...the characteristic equation by $z^N$ to obtain"
- Page 218, Example 3.14: Last displayed equation should be corrected as follows:

$$y_h[n] = 1.5\,(1-\alpha)\,(1-\alpha)^n + 1$$

- Page 222, sentence above Eqn. (3.93) should be modified as follows:
"... that utilize an intermediate signal $w[n]$ are equivalent to ..."
- Page 245, equation at the bottom of the page should be corrected as follows:

$$\text{Eqn. (3.15):} \qquad y[n] = (1+c)\; y[n-1] - x[n]$$

- Page 248, Eqn. (3.164) should be corrected as follows:

$$a_0\, y[n] + a_1\, y[n-1] + \ldots + a_{N-1}\, y[n-N+1] + a_N\, y[n-N] =$$
$$b_0\, x[n] + b_1\, x[n-1] + \ldots + b_{M-1}\, x[n-M+1] + b_M\, x[n-M] \tag{3.164}$$

- Page 254, Problem 3.4, part a, correct as follows:

**a.** $\text{Sys}_1\{x[n]\} = 3\,x[n]$ and $\text{Sys}_2\{w[n]\} = n\,w[n]$

- Page 279, displayed equation for $a_k$ should be corrected as follows:

$$a_k = \frac{2}{3}\int_{-0.5}^{0.5}(1)\cos(2\pi k t/3)\,dt = \frac{2\sin(2\pi k/3)}{\pi k}$$

- Page 318, Eqn. (4.152) should be corrected as follows:

$$\theta(f) = \begin{cases} \beta(f) & \text{if } B(f) \geq 0 \\ \beta(f) \pm \pi & \text{if } B(f) < 0 \end{cases} \tag{4.152}$$

- Page 426, Eqns. (5.45) and (5.46) should be corrected as follows:

$$\tilde{x}[-n] = \tilde{x}[n]\,, \text{all } n \quad \text{implies that} \quad \text{Im}\{\tilde{c}_k\} = 0\,, \text{all } k \tag{5.45}$$
$$\tilde{x}[-n] = -\tilde{x}[n]\,, \text{all } n \quad \text{implies that} \quad \text{Re}\{\tilde{c}_k\} = 0\,, \text{all } k \tag{5.46}$$

- Page 427, Table 5.1: Some values in the table have incorrect signs. Corrected table is given below:

| $k$ | $\tilde{c}_k$ | $\lvert\tilde{c}_k\rvert$ | $\tilde{\theta}_k$ |
|---|---|---|---|
| 0 | 0.0 | 0.0 | N/A |
| 1 | $-j0.4710$ | 0.4710 | $-\pi/2$ |
| 2 | $j0.0625$ | 0.0625 | $\pi/2$ |
| 3 | $j0.0290$ | 0.0290 | $\pi/2$ |
| 4 | 0.0 | 0.0 | N/A |
| 5 | $-j0.0290$ | 0.0290 | $-\pi/2$ |
| 6 | $-j0.0625$ | 0.0625 | $-\pi/2$ |
| 7 | $j0.4710$ | 0.4710 | $\pi/2$ |

- Pages 447,449, Example 5.16: Change the signal in the problem statement to $x[n] = \alpha^{n-1}\,u[n-1]$. Correspondingly, the top two equations on Page 458 become

$$\alpha^n\,u[n] \overset{\mathscr{F}}{\longleftrightarrow} \frac{1}{1-\alpha\,e^{-j\Omega}} \qquad \text{and} \qquad X(\Omega) = \mathscr{F}\left\{\alpha^{n-1}\,u[n-1]\right\} = \frac{e^{-j\Omega}}{1-\alpha\,e^{-j\Omega}}$$

- Page 457, 458 Example 5.18: Change the signal in the problem statement to $x[n] = n\alpha^n u[n]$. Correspondingly, the top two equations on Page 458 become

$$\alpha^n u[n] \overset{\mathcal{F}}{\longleftrightarrow} \frac{1}{1-\alpha e^{-j\Omega}} \qquad \text{and} \qquad n\alpha^n u[n] \overset{\mathcal{F}}{\longleftrightarrow} j\frac{d}{d\Omega}\left[\frac{1}{1-\alpha e^{-j\Omega}}\right]$$

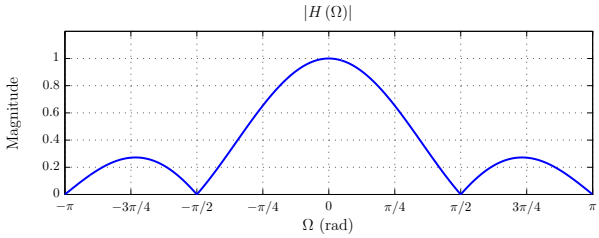
- Page 480, Example 5.28:
  Two unnumbered equations are missing a $1/N$ factor, and should be corrected as follows:

$$H(\Omega) = \frac{1}{N}\frac{1-e^{-j\Omega N}}{1-e^{-j\Omega}}$$

$$H(\Omega) = \frac{e^{-j\Omega N/2}\left(e^{j\Omega N/2} - e^{-j\Omega N/2}\right)}{N e^{-j\Omega/2}\left(e^{j\Omega/2} - e^{-j\Omega/2}\right)}$$

$$= \frac{\sin(\Omega N/2)}{N\sin(\Omega/2)} e^{-j\Omega(N-1)/2}$$

As a result, the vertical axis scaling of the magnitude graph in Fig. 5.41(a) should be modified as follows:




- Page 483, Eqns. (5.235) and (5.236): Change $\omega_0$ to $\Omega_0$.
- Page 485, unnumbered equation: The extraneous equal sign at the end of the equation should be removed.
- Page 507, Table 5.5: Some of the signs are reversed. The correct Table 5.5 should be as follows:

| $k$ | $X[k]$ | $H[k]$ | $Y[k]$ |
|---|---|---|---|
| 0 | $8.0000 + j\,0.0000$ | $15.0000 + j\,0.0000$ | $120.0000 + j\,0.0000$ |
| 1 | $5.3992 - j\,0.6735$ | $2.5000 - j\,3.4410$ | $11.1803 - j\,20.2622$ |
| 2 | $-6.8992 + j\,7.4697$ | $2.5000 - j\,0.8123$ | $-11.1803 + j\,24.2784$ |
| 3 | $-6.8992 - j\,7.4697$ | $2.5000 + j\,0.8123$ | $-11.1803 - j\,24.2784$ |
| 4 | $5.3992 + j\,0.6735$ | $2.5000 + j\,3.4410$ | $11.1803 + j\,20.2622$ |

- Page 516, MATLAB Exercise 5.3, last sentence: Change the phrase "circular convolution" to "periodic convolution".
- Page 591, Problem 6.14 should be corrected as follows: "The signal $x_a(t) = \cos(150\pi t)$ is ..."
- Page 663, unnumbered dissplayed equation in the middle of the page: Change $z$ to $s$.

$$H(s) = \frac{B(s)}{A(s)} = \frac{b_M s^M + b_{M-1} s^{M-1} + \ldots + b_1 s + b_0}{a_N s^N + a_{N-1} s^{N-1} + \ldots + a_1 s + a_0}$$

- Page 709, MATLAB Exercise7.8, second line of MATLAB code from the top should be corrected as follows:

```
>>  pls = [-1,-2,-3];
```

- Page 726, Eqn. (8.1) should be corrected as follows:

$$X(z) = \ldots + x[-2]\,z^2 + x[-1]\,z^1 + x[0] + x[1]\,z^{-1} + x[2]\,z^{-2} + \ldots \tag{8.1}$$

- Page 821, Example 8.44, first line: Change the word "cascade" to "parallel".
- Page 911, 4-th line of MATLAB code should be corrected as follows:

```
>>  H = C/z*rsm*B+D
```

- Page 973, displayed equation for $\Theta(\Omega)$ should be corrected as follows:

$$\Theta(\Omega) = -j2\Omega$$

- Page 975, Eqns. (10.173) and (10.174) should be corrected as follows:

$$h_T[n] = \begin{cases} h_d[n], & -M \le n \le M \\ 0, & \text{otherwise} \end{cases} \tag{10.173}$$

$$H_T(\Omega) = \sum_{n=-\infty}^{\infty} h_T[n]\,e^{-j\Omega n} = \sum_{n=-M}^{M} h_d[n]\,e^{-j\Omega n} \tag{10.174}$$

- Page 1019, Fig. 11.10: Vertical axis should be labeled $m(t)$.