Errata for the **1st** Edition, **7th** & **above** Printings, of
"*Understanding Digital Signal Processing*", **(First Edition)**
by Richard Lyons

On page 52, the incorrect letter "*v*" in the third line of
Eq. (3-4d) should be replaced with a "·" multiplication symbol.

On page 69, in equation (3-20) the second "x(3)"
should be "x(5)".

On page 71, in the list of x(n)'s in the middle of the
page, the second "x(3)" should be "x(5)".

On page 102, at the top of the page, delete that derivative:
d[X(m)]/dm. It shouldn't be there.

On page 124, there's a missing minus sign in the exponent
of the 2nd term of Eq. (3-73). It should be:
... + e^-j[pi(k+m)-pi(k+m)/N]...

Page 140: Replace everything thing from the top of the
page down to, and including, Eq. (4-24) with the following:

$$A(m) = \sum_{n=0}^{(N/2)-1} x(2n)W_{N/2}^{nm} = \sum_{n=0}^{(N/4)-1} x(4n)W_{N/2}^{2nm} + \sum_{n=0}^{(N/4)-1} x(4n+2)W_{N/2}^{(2n+1)m}. \quad (4\text{-}22)$$

Because $W_{N/2}^{2nm} = W_{N/4}^{nm}$, we can express $A(m)$ in the form of two $N/4$-point DFTs, as

$$A(m) = \sum_{n=0}^{(N/4)-1} x(4n)W_{N/4}^{nm} + W_{N/2}^{m} \sum_{n=0}^{(N/4)-1} x(4n+2)W_{N/4}^{nm} \quad (4\text{-}23)$$

Notice the similarity between Eq. (4-23) and Eq. (4-20). This capability to subdivide an $N/2$-point DFT into two $N/4$-point DFTs gives the FFT it's capacity to greatly reduce the number of necessary multiplications to implement DFTs. (We're going to demonstrate this shortly.) Following the same steps we used to obtained $A(m)$, we can show that Eq.(4-21)'s $B(m)$ is

$$B(m) = \sum_{n=0}^{(N/4)-1} x(4n+1)W_{N/4}^{nm} + W_{N/2}^{m} \sum_{n=0}^{(N/4)-1} x(4n+3)W_{N/4}^{nm} \quad (4\text{-}24)$$

On page 206, the upper limit of the summation in
Eq. (5-26) is printed as:

"P + Q - 2"

It should be:

"P + Q - 1"

On page 221 The last term in Eq. (6-1), h(4)x(n-4), should
be deleted making Eq. (6-1) look as follows:

y(n) = h(0)x(n) + h(1)x(n-1) + h(2)x(n-2) + h(3)x(n-3).

On page 269, Figure 6-27: The "zero" should be located
at the origin of the z-plane, and not at point z = 0.7005.

On page 302, in the last paragraph of this page,
the sentence,

> "If we implement this digital mixing process we'll find that the spectral replication period in Figure 7-3(d) is half what is was in Figure 7-3(c)."

is incorrect and should be deleted from the text.

On page 340, in Section 8.4, 1st paragraph, in the 4th line
down the text:

"... (N-1)-tap FIR filter ..."

should be

"... N-tap FIR filter ..."

On page 340, in Section 8.4, 2nd paragraph, in the 5th line
down the text:

"... b(N) coefficient ..."

should be

"... b(N-1) coefficient ..."

On page 372, in the middle of the page: it is stated that
"...the value of T bits, all ones, to the right of the
binary point is 1-2^T." It should read:
"... of the binary point is 1-2^-T."

On page 392, Fig. 10-6: the plots in part (b) should be
relabeled as: "Magnitude of 1, 1, -1, -1" and
"Phase of 1, 1, -1, -1".

On page 394, Figure 10-7: In part (b), the negative spectral
component should be located at an index value of m = -8,
not m = -9.

On page 427, Eq. (10-74): In the right-hand side of the
first line, the conjugation symbol ("*") is missing over
the (e^j2pinm/N) term. It should show: (e^j2pinm/N)^*.

On page 467, the text there is so badly written, that
I suggest you completely cross out the bottom five lines
of the text starting with "If we say that the ...".

On page 484, the final ratio at the end of Eq. (D-12)
is printed as

"(b - a)^2 over 4".

It should be "(b + a)^2 over 4"

On page 487, in the sentence just following Eq. (E-2),
there is a missing "P(sub 1)/P(sub 2)" ratio.

That sentence should read as:

"The logarithmic function
10log(sub 10)[P(sub 1)/P(sub 2)], plotted in ..."

On page 496, under the "Chebyshev Function": the fifth line down is printed as:

"...ripples in the passband and flat passbands..."

It should be printed as:

"...ripples in the passband and a flat stopband..."

On page 505, the year for reference [3] for Appendix F (Laakso, et, al) should be 1996 ... *not* 1972.