ERRATA

First Printing of
Introduction to the Finite Element Method
by Erik G. Thompson
(July 19, 2005)

page 1

The dimension of y should be L.

page 6

Equation 1.20 should read:

$$\frac{\partial J}{\partial A_1} = \int_0^{\mathrm{L}/2} [\mathrm{T}(6x - 2\mathrm{L})]\,[2TA_0 + T(6x - 2\mathrm{L})A_1 - 3\mathrm{W}]\;dx$$
$$+ \int_{\mathrm{L}/2}^{\mathrm{L}} [\mathrm{T}(6x - 2\mathrm{L})]\,[2TA_0 + T(6x - 2\mathrm{L})A_1 - \mathrm{W}]\;dx = 0$$

page 7

In equations 1.24 and 1.25, the signs in front of the W terms should be negative.

page 18

In equation 1.57, $\dfrac{\partial E}{\partial A_1}$ should be $\dfrac{\partial E}{\partial A_i}$.

In the following two equations, the B terms should be B_i.

page 27

Two lines above Eq. 2.29: Change the word “pints” to “points”.

page 28

Second term on RHS of Eq. 2.34 should be multiplied by 2.

page 39

Change sign of second term on RHS in equations 3.16 and 3.17.

page 53

Footnote: Should reference Chapter 12.

page 66

Change subscript of L in Eq. 4.56 from 2 to e.

page 96

Change sign of second term on RHS of Eq. 6.29 from + to −.

page 99

The terms on the first row of the matrix should be on the second row. No terms should be on the first row.

page 127

First line should read:
where ϵ is the material's electrical permittivity.

In Eq. 7.52, replace ϵ with ρ_T.

page 128

Second line of text and Eq. 7.55 should read:

By noting that Q^2 has the dimensions of FT^2, the dimensions can be written as

$$\begin{array}{cccc} [K] & \{V\} & = & \{Q\} \\ \boxed{\dfrac{T^2}{L}} & \boxed{\dfrac{QL}{T^2}} & & \boxed{Q} \end{array} \tag{1}$$

Remove third line of text beginning with "Note that this substitution . . . ".

page 132

In the list of conditions, change the L's to D's.

page 138

Last term of column matrix in Eq. 8.9 (a) should be 1.

page 140

Figure 8.9, right side: change $\Phi(u, y)$ to $\Phi(x, y)$

page 159

Last term in both Eq. 9.11 and 9.12 should have a derivative wrt to y rather than x as well as the same term in Eq. 9.13.

Last integral in Eq. 9.13: B should read G.

page 160

Add a $\delta\Phi$ to the second term in the first integral of Eq. 9.18, just before R_z.

page 163

Reverse the order of X and Y in Eq. 9.39.

The (2,2) term in the $[R]$-matrix should be R_y rather than R_x - two places in Eq. 9.42.

page 165

Change last term in Eq. 9.51 to be f_a; hence:

$$\{Q\} = \{f_H\} + \{f_q\} + \{f_a\}$$

In Eq. 9.52, the (2,2) term in $[R]$ should be R_y.

page 171

NOTE: At corner points it might be necessary to specify both Φ and an ambient value, Φ_a. Hence, the code on the web page does have both.

page 172

Flow chart: Dotted line starting with [FOR all elements in mesh] should end after box described as [Assemble [S] and {QE} into global matrices].

page 173

Code on web page differs slightly from this code to include an array for nodal ambient Φ values.

page 186

Problem **P2**, change values and units given on last four lines of table to read:

k for concrete walls and floor	0.0112 W/cm·°C
k for finished wall with insulation	0.00138 W/cm·°C
k for soil	0.0130 W/cm·°C
C_h for all surfaces	0.0142 W/cm^2·°C

page 214

Problem **S2** is incorrect; disregard.

page 215

Problem S5(f) : Change wording to read:

(f) Sketch the exact solution of the problem for some initial displacement on a graph of x vs. t. Mark off a Δt from $t = 0$ and sketch on this graph, each slope used for the three methods to predict $x(t+\Delta t)$. From this, convince yourself that the backward difference is unconditionally stable. Next, convince yourself that the central difference is the most accurate of the three methods. Finally, graphically determine on the graph values for Δt that would, for the forward difference method, correspond to

i. Stable with no oscillations
ii. Stable with oscillations
iii. Unstable

page 220

Seventh line from bottom of page: Change dimensions for $(c_v)_A$ to read: $(c_v)_A = 7$ ft^2/year.

page 225

In Eq. 11.9, change ϵ to σ.
In Eq. 11.10, change the limit of integration in the last integral from V to S.

page 227

In Eq. 11.24, change the limit of integration of the last integral from S_e to S_s.

page 241

On lines 5 and 4 from the bottom of left side of page should contain `WT(1,J)*`. Code on web is correct.

page 251

Note, the traction shown is for a vertical face. The x-component of traction on the slanted face is $300/\sqrt{136}$.

page 257

Fifth line from top of page: Change subscript xx to zz.

page 260

Right hand figure is wrong, disregard.

page 284

In MESH change all NPcode values to zero.

In INITIAL.m, change description from "Simply ..." to read "Cantilever beam.".

In INITIAL.m, change `NPBC(1) = 3;`, `NPBC(4) = 0;`, and `RHS(2*4) = -1 %Force on right`.
Files on web are correct.

page 286

In MESH change all NPcode values to zero.
In COEF.m change `Qx = 1;` to `Qx = -1;`.
In INITIAL.m, change description from "Simply ..." to read "Foundation support only".
Files on web are correct.

page 296

The diagonal column is the first column; hence, the D should be above that column.

page 302

Second figure on page: third row should have partial derivatives with respect to v rather than u.