## Updates

<table>
<thead>
<tr>
<th>Page</th>
<th>Updates (The current version of PNM3Suite incorporates the following updates).</th>
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<td></td>
<td><strong>PNM3Suite</strong> (Feb 4, 2015) Added scaled row pivoting to Crout’s method of LU decomposition to avoid division by zero from zeros on the diagonal of the coefficient matrix. Sub <strong>CROUT</strong> calls subs <strong>CROUTLU</strong> to return the reduced LU matrix as the matrix A, then calls Sub <strong>CROUTLUX</strong> to calculate the solution vector x to a system of linear equations with constant vector b.</td>
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<td><strong>PNM3Suite</strong> (Feb 5, 2015) Add the following VBA statement in the nomenclature section of sub <strong>QUASINEWTON</strong>: Dim q as Double</td>
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<td><strong>PNM3Suite</strong> (Feb 18, 2015) Added a macro <strong>EIGENVI</strong> for finding eigenvalues and eigenvectors of real square matrices by the method of interpolation. The macro requires sub procedures <strong>GAUSSPIVOT</strong> and <strong>QUADRADF</strong>. The new macro is more robust than <strong>EIGENVP</strong> that uses the power method.</td>
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<td><strong>PNM3Suite</strong> (Feb 19, 2015) Macros QPLOT and QYXPLOT use Excel default axis scales.</td>
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<td><strong>PNM3Suite</strong> (July 15, 2015) Added user function <strong>UNITS</strong> to extend the unit conversions available in the worksheet function <strong>CONVERT</strong>. Run the macro <strong>UNITS_TABLES</strong> to view the additional unit strings.</td>
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<td><strong>PNM3Suite</strong> (Feb 15, 2016) Added SIMPLEXNLP macro for nonlinear optimization by the Nelder and Mead method</td>
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<td><strong>PNM3Suite</strong> (April 27, 2016) Added <strong>ASPLINE</strong> user-defined function for Akima’s constrained spline method of interpolation. Also <strong>ASPLINE2D</strong> for bivariate interpolation.</td>
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**Examples** Animations are available in the Ch 7 Optimization examples folder for SIMPLEX, Firefly, and Powell methods of optimization.

## Errata

<table>
<thead>
<tr>
<th>Page</th>
<th>Corrections</th>
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<td></td>
<td><strong>The following errata apply to book copy printed before 4 Aug, 2016.</strong></td>
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<td><strong>Ch 4</strong> Thomas Algorithm: ( b_i = \frac{b_1}{a_{i1}} ) and ( b_i = \frac{b_i - b_{i-1}a_{i,i-1}}{a_{i,i} - a_{i-1,i}a_{i,i-1}} ) for ( i = 2 ) to ( n )</td>
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<td><strong>139</strong> Example 4.3, For 3x3 matrix example with eigenvalue 7, vector is 0.5, 0, 1</td>
</tr>
</tbody>
</table>

**Ch 7** Chong and Zak equation: last term should read \((1-x_1)\) as follows:

\[
f(x_1,x_2) \cong 3(1-x_1)^2 e^{-x_1^2-(1+x_2)^2} - 10\left(\frac{x_1}{5} - x_1^3 - x_2^5\right) e^{-(x_1^2-x_2^2)} - \frac{e^{-(1-x_1)^2-x_2^2}}{3}
\]

**425** Equation 10.67, Langmuir: \( y = \frac{1323x}{1 + 1704x} \)

**604** Unit Conversion Table for Ideal Gas Constant, should read 8315 L Pa/mol K

**The following errata apply to book copy printed before March 17, 2015.**
Figure 3.4 shows a workbook project for inserting a module to hold custom VBA code. To insert a module for your code, first activate the project explorer and click on the VBAProject with the name of the workbook in parenthesis. Do NOT save your code to modules (existing or inserted) in other workbook objects, such as FUNCRES, that delete custom VBA code when saved and reopened.

(Mar 12, 2015) Section 4.3 reads, “...the small system in Section 4.2.”

(Mar 12, 2015) Second to last sentence in Section 9.5 reads “(See Section 9.5.10)”

(Mar 12, 2015) Last sentence in Section 9.5.4 reads, “...VBA code for this in Sections 9.5.10 to 9.5.14.”

(Mar 12, 2015) In section 9.5.10, bullet 1 reads, “... presented next in Section 9.5.11 to ...”

(Mar 11, 2015) Section 9.5.12, reads “... described in Section 9.5.11, ...”

(Mar 12, 2015) Second sentence in top paragraph reads, “... described in Sections 10.3.1 and 10.3.2.”

The sentence below Figure 13.13, reads “... with a false node.”

Table 14.3 - The order of arguments for the first two arguments in the following user-defined functions is as follows:

- CSPLINE(Y,X,...)
- DREX(F,X,...)
- FDERIV(F,X,...)
- FINDIF(F,X,...)
- GKAD(F,XLOW,...)
- KSPLINE(Y,X,...)
- KSPLINE2D(F,X,...)
- LAGRANGE(Y,X,...)
- LINTERP(Y,X,...)
- LINTERP2D(F,X,...)
- MPEX(F,XLOW,...)
- NEWTON(F,X,...)
- NEWTONPOLY(Y,X,...)
- RATLIN(Y,X,...)
- REGFAL(F,X,...)
- ROOT(F,X,...)
- SIMP(F,XLOW,...)
- SIMPSONDATA(Y,X)
- STINEMAN(Y,X,...)
- STINEMAN2D(F,X,...)
- TRAP(F,XLOW,...)
- TRAPDATA(YDATA,XDATA,...)
- TREX(F,XLOW,...)

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Thank You