TABLE PT3.1 Specific study objectives for Part Three.

1. Understand the graphical interpretation of ill-conditioned systems and how it relates to the determinant.
2. Be familiar with terminology: forward elimination, back substitution, pivot equation, and pivot coefficient.
3. Understand the problems of division by zero, round-off error, and ill-conditioning.
4. Know how to compute the determinant using Gauss elimination.
5. Understand the advantages of pivoting; realize the difference between partial and complete pivoting.
6. Know the fundamental difference between Gauss elimination and the Gauss-Jordan method and which is more efficient.
7. Recognize how Gauss elimination can be formulated as an *LU* decomposition.
8. Know how to incorporate pivoting and matrix inversion into an *LU* decomposition algorithm.
9. Know how to interpret the elements of the matrix inverse in evaluating stimulus response computations in engineering.
10. Realize how to use the inverse and matrix norms to evaluate system condition.
11. Understand how banded and symmetric systems can be decomposed and solved efficiently.
12. Understand why the Gauss-Seidel method is particularly well suited for large, sparse systems of equations.
13. Know how to assess diagonal dominance of a system of equations and how it relates to whether the system can be solved with the Gauss-Seidel method.
14. Understand the rationale behind relaxation; know where underrelaxation and overrelaxation are appropriate.