AMS 10: Mathematical Methods for Engineers

Required Skills to pass the course

1. Understanding of complex numbers and their algebra
2. Knowledge of matrix algebra, including inverses, determinants and transformations
3. Ability to find and classify solutions to linear systems
4. Knowledge of vectors and their algebra
5. Understanding of the concepts of vectors spaces and subspaces and their applications to linear systems
6. Understanding of linear independence of vectors, span, bases and orthogonality
7. Knowledge of eigenvalue-eigenvector problems
8. Ability to apply all these concepts to concrete examples of linear systems problems

Core topics (must be taught)

1. Complex numbers
2. Linear systems
3. Matrix algebra (including inverses, determinants and transformations)
4. Vectors and vector spaces (including linear independence, span, bases, orthogonality)
5. Eigenvalues and eigenvectors
6. Real-world applications
7. MATLAB as a tool to aid in the solution of such problems.