

DTS2701 Engineering Mathematics

This on-line module provides a basic appreciation of probability and statistics and its practical applications. It covers the following topics:

Differential Equations

- ODE classification and general solutions
- First and second-order homogeneous and non-homogeneous ODEs

Vector Calculus

- Vector fields; vector algebra; partial derivatives of vector; scalar fields
- Gradient; divergence; curl
- Line, surface and volume integrals; Green's Divergence and Stokes' Theorems

Matrices

- Matrix algebra; rank, determinants, transpose and inverse
- Simple elementary row operations; linear independence; eigenvalues and eigenvectors

Complex Numbers

- Complex numbers; Argand diagram; complex algebra
- Euler's representation and De Moivre's theorem

Fourier Analysis

- Fourier analysis; Fourier series and orthogonality relations
- Fourier transforms and applications

Probability & Statistics

- Probability concepts, random variables and their probability distributions
- Statistics and Hypothesis testing