PhD Qualifying Exam, MAE Department

Mathematics

Topics

1. Graduate Engineering Mathematics (all topics covered in ME 570):

   - Laplace Transforms
   - Qualitative Theories for ODEs
   - Fourier Analysis (Fourier Series, Integrals and Transforms)
   - Linear Partial Differential Equations
   - Complex Variables

2. Undergraduate Engineering Mathematics:

   - Linear ODEs with constant coefficients
   - Power series methods for linear ODEs with variable coefficients
   - Linear Algebra—Vectors and Matrices
   - Differential and Integral Vector Calculus

Guidelines

a) You are strongly advised to take ME 570 before attempting the Qualifying Exam, unless you feel very confident about your knowledge of the topics.
b) You are not required to go very deep into the undergraduate engineering mathematics topics, but make sure you are familiar with the basics. No more than one out of the four questions will be on the undergraduate engineering mathematics topics.
c) Level of difficulty of the graduate engineering mathematics questions will be comparable to ME 570 exam questions.

This is all the information I can share with you. Good luck!

Dr. Shashikanth