

# MATHEMATICS 135B

## NUMERICAL ANALYSIS II

**Text:** *Numerical Methods Using Matlab, Third Edition*, by J.H. Mathews and K.D. Fink

Topics covered include numerical integration, numerical solution of ordinary differential equations, computation of eigenvectors and eigenvalues and computer applications.

| TOPICS | SUGGESTED NO. OF<br>50 MIN. CLASSES |
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| Numerical Integration.....8<br>(§§ 7.1-7.5) |  |
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Simple and composite quadrature rules, recursive rules, Romberg integration, Adaptive quadrature, Gauss-Legendre integration.

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| Numerical solutions of differential equations.....11<br>(§§ 9.1-9.9) |  |
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Basic theory, Euler's and Heun's methods, Taylor series methods, Runge-Kutta methods, systems of differential equations, boundary values, finite difference methods.

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| Computing eigenvectors and eigenvalues.....5<br>(§§ 11.1-11.4) |  |
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Preliminary estimates, power method, Jacobi's method, symmetric Matrices.