**Math 105B Suggested Syllabus**

**Text:** *Numerical Analysis, Burden, Faires and Burden, 10th edition*

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| Lecture | Sections | Topics |
| 1 | 3.1 | Interpolation and the Lagrange Polynomial |
| 2 | 3.1 | Continued |
| 3 | 3.1 | Continued |
| 4 | 3.3 | Divided differences |
| 5 | 3.3 | Continued |
| 6 | 3.4 | Hermite interpolation |
| 7 | 3.4 | Continued |
| 8 | 3.5 | Cubic Spline Interpolation |
| 9 | 3.5 | Continued |
| 10 | 4.1 | Numerical differentiation |
| 11 | 4.1 | Continued |
| 12 | 4.2 | Richardson Extrapolation |
| 13 | 4.2 | Continued |
| 14 |  | Review |
| 15 |  | Midterm |
| 16 | 4.3 | Elements of numerical integration |
| 17 | 4.4 | Composite numerical integration |
| 18 | 4.5 | Romberg integration |
| 19 | 4.6 | Adaptive quadrature method |
| 20 | 4.7 | Gaussian quadrature |
| 21 | 4.7 | Continued |
| 22 | 8.1 | Discrete least squares approximation |
| 23 | 8.2 | Orthogonal polynomials and least squares |
| 24 | 8.2 | Continued |
| 25 | 8.3 | Chebyshev Polynomials and Economization |
| 26 | 8.3 | Continued |
| 27 | 8.5 | Trigonometric Polynomial Approximation |
| 28 | 8.5 | Continued |
| 29 | 8.7 | Fast Fourier Transforms |