academic calendar

math3511 – numerical analysis II

spring semester 2019
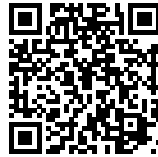
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The section and the page numbers below refer to the the course textbook: T. Sauer, *Numerical Analysis*, Pearson, 2 ed., 2012.

Tuesday	Thursday
Jan 22nd **Lecture 1** Course logistics. Discrete Fourier transform.	Jan 24th **Lecture 2** Discrete Fourier transform, II. Fast Fourier transform. Homework 1 assigned: due Jan 31
Jan 29th **Lecture 3** Discrete Fourier transform, III. Inverse Fourier transform. Application: filtering noisy signals.	Jan 31st **Lecture 4** Matlab crash course.
Feb 5th **Lecture 5** The Jacobi and the Gauss-Seidel iterative methods.	Feb 7th **Lecture 6** Programming iterative methods. Relaxation technique for linear systems. Homework 2 assigned: due Feb 14
Feb 12th **Classes cancelled due to snow storm**	Feb 14th **Lecture 7** Recap: matrix and vector norms; eigenvalues and eigenectors. Homework 3 assigned: due Feb 21
Feb 19th **Lecture 8** Convergence of iterative methods.	Feb 21st **Lecture 9** Methods of steepest descent and conjugate gradient Homework 4 assigned: due Feb 28
Feb 26th **Lecture 10** Eigenvalues and eigenvectors. The power method.	Feb 28th **Midterm I**

Tuesday	Thursday
Mar 5th — Lecture 11 The inverse power method.	**Mar 7th** — Lecture 12 Deflation methods. Homework 5 assigned: due Mar 14
Mar 12th — Lecture 13 Rayleigh quotient iterations. QR algorithm, I.	**Mar 14th** — Lecture 14 QR algorithm, II.
Mar 19th **Spring recess – No classes**	**Mar 21st** **Spring recess – No classes**
Mar 26th — Lecture 15 QR factorization.	**Mar 28th** — Lecture 16 Linear least squares approximation.
Apr 2nd **Midterm II**	**Apr 4th** — Lecture 17 Nonlinear systems of equations. Newton's method. Broyden's method. Sec. 2.7
Apr 9th — Lecture 18 Boundary value problems for linear ODEs.	**Apr 11th** — Lecture 19 Review session Homework 6 assigned: due Apr 18
Apr 16th — Lecture 20 Boundary value problems for nonlinear ODEs. Shooting methods.	**Apr 18th** — Lecture 21 Finite difference method for boundary value problems for linear ODEs Homework 7 assigned: due Apr 25
Apr 23rd **Classes cancelled due to power outage**	**Apr 25th** — Lecture 22 Elliptic partial differential equations.
Apr 30th — Lecture 23 Parabolic partial differential equations.	**May 2nd** — Lecture 24
May 7th **Week of Finals**	**May 9th** **Week of Finals**