

ACADEMIC CALENDAR

MATH3511 – NUMERICAL ANALYSIS II

SPRING SEMESTER 2020

http://www.phys.uconn.edu/~rozman/Courses/m3511_20s/



Last modified: April 30, 2020

Section and page numbers in the table below refer to the following edition of the course textbook: T. Driscoll and R. Braun, *Fundamentals of Numerical Computation*, SIAM, 2017.

TUESDAY		THURSDAY	
Jan 21st	Lecture 1 Course logistics. Eigenvalue decomposition. Ch. 7.2, pp. 286–291	Jan 23rd	Lecture 2 Eigenvalue decomposition, II. Ch. 7.2, pp. 286–291 Homework 1 assigned: due 1/30/2020
Jan 28th	Lecture 3 Singular value decomposition. Ch. 7.3, pp.293–303	Jan 30th	Lecture 4 Dimension reduction. Ch. 7.5, pp.304–306. Sparse matrices. Ch. 8.1, pp.312–317
Feb 4th	Lecture 5 Power iterations. Ch. 8.2, pp. 319–324.	Feb 6th	Lecture 6 Inverse iterations. Rayleigh quotient iterations. Ch. 8.3, pp. 326–330. Homework 2 assigned: due 2/13/2020
Feb 11th	Lecture 7 Krylov subspaces. Ch. 8.4, pp. 332–334.	Feb 13th	Lecture 8 Arnoldi iteration. Ch. 8.4, pp. 334–336. Homework 3 assigned: due 2/20/2020
Feb 18th	Lecture 9 Applications: deblurring images. Ch. 8.7, pp.349–352. Preconditioning. Ch. 8.8, pp.353–355.	Feb 20th	Lecture 10 Lagrange interpolation. Ch. 9.1, pp.359–361. The barycentric formula. Ch. 9.2, pp.365–366.
Feb 25th	Midterm I	Feb 27th	Lecture 11 Stability of polynomial interpolation. Runge phenomenon. Chebyshev nodes. Ch. 9.3, pp. 369–375. Homework 4 assigned: due 3/5/2020

TUESDAY		THURSDAY	
Mar 3rd	Lecture 12 Orthogonal polynomials. Ch. 9.4, pp. 377–381.	Mar 5th	Lecture 13 Trigonometric interpolation. Ch. 9.5, pp. 384–389. Homework 5 assigned: due 3/12/2020
Mar 10th	Lecture 14 Spectrally accurate integration. Ch. 9.6, pp. 390–395.	Mar 12th	Lecture 15 Spectrally accurate integration, II.
Mar 17th	Spring recess – No classes	Mar 19th	Spring recess – No classes
Mar 24th	Lecture 16 Boundary value problem for ODEs: shooting method. Ch. 10.1, pp. 410–415.	Mar 26th	Lecture 17 Differentiation matrices. Ch. 10.2, pp. 418–424. Homework 6 assigned: due 4/2/2020
Mar 31st	Class canceled	Apr 2nd	Lecture 18 Collocation for linear problems. Ch. 10.3, pp. 425–429.
Apr 7th	Lecture 19 The Galerkin method. Ch. 10.5, pp. 439–441. Takehome Midterm II assigned	Apr 9th	Lecture 20 Review
Apr 14th	Lecture 21 Finite elements. Ch. 10.5, pp. 441–443.	Apr 16th	Class canceled
Apr 21st	Lecture 22 Diffusion equation. Ch. 11.2, pp. 455–461. Takehome Midterm II due Homework 7 assigned: due 4/28/2020	Apr 23rd	Lecture 23 The methods of lines. Ch. 11.2, pp. 455–461.
Apr 28th	Lecture 24 Stability. Ch. 11.3, pp. 463–469	Apr 30th	Lecture 25 Advection equations. Traffic flow. Ch. 12.1, pp. 485–489
May 5th	Week of Finals	May 7th	Week of Finals