COURSE CALENDAR

NUMERICAL ANALYSIS II

spring 2021

https://www.phys.uconn.edu/~rozman/Courses/m3511_21s/



Last modified: April 26, 2021

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.

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Tuesday	Thursday
Jan 19th Lecture 1	Jan 21st Lecture 2
Course logistics. Recap: matrix factorization	Eigenvalue decomposition, II. Powers, polynomials, and
Eigenvalue decomposition. Ch. 7.2, pp. 286–291	function of matrices. Ch. 7.2, pp. 286-291
	Rayleigh quotient. Ch. 7.4, pp. 301–302
	Homework 1 assigned: due 1/28/2021 Extended until
	Tue, Feb 2, 2021
Jan 26th Lecture 3	Jan 28th Lecture 4
Computing eigenvalue decomposition. QR iterations.	Singular value decomposition, II. Ch. 7.3, pp.293–297
Ch. 7.2, pp. 290–291	Dimension reduction. Ch. 7.5, pp.304–306.
Singular value decomposition. Ch. 7.3, pp.293	
Homework assignment 1 review	
Feb 2ndLecture 5	Feb 4thLecture 6
Sparse matrices. Ch. 8.1, pp.312–317	Inverse iterations. Ch. 8.3, pp. 326–330.
Power iterations. Ch. 8.2, pp. 319–324.	
Homework 2 assigned: due 2/11/2021	
Feb 9thLecture 7	Feb 11th Lecture 8
Krylov subspaces. Ch. 8.4, pp. 332-334.	Arnoldi iteration. Ch. 8.4, pp. 334–336.
	Homework 3 assigned: due 2/18/2021 Extended until
	Thu, Feb 25, 2021
Feb 16th	Feb 18th Lecture 9
Class canceled due to technical problems with the	GMRES algorithm. Ch. 8.5, pp. 338-340.
classroom	

Tuesday	Thursday
Feb 23rdLecture 10	Feb 25th Lecture 11
Take-home Midterm I assigned; due March 2, 2021 due Noon EDT, March 3, 2021	Kevlew
Applications: deblurring images. Ch. 8.7, pp.349-352.	
Mar 2nd Lecture 12	Mar 4th Lecture 13
Lagrange interpolation. Ch. 9.1, pp.359–361.	The barycentric formula. Ch. 9.2, pp.365–366.
	Homework 4 assigned: due $-3/11/2021$ $3/12/2021$
Mar 9th Lecture 14	Mar 11th Lecture 15
Chebyshev nodes. Ch. 9.3, pp. 369–375.	Homowork 5 assigned: due $\frac{2}{12}/2021$ $\frac{2}{10}/2021$
	1011ework 5 assigned. due <u>- 5/16/2021</u> 5/19/2021
<u>Mar 16th</u> Lecture 16 Orthogonal polynomials, II Ch. 9.4, pp. 377–381	Mar 18th Lecture 17 Review
Mar 23rd Lecture 18	Mar 25th Lecture 19
Trigonometric interpolation. Ch. 9.5, pp. 384–389.	Midterm II assigned; due April 2, 23:59 pm EDT
Spectrally accurate integration. Ch. 9.6, pp. 390–395.	Spectrally accurate integration, II. Ch. 9.6, pp. 390–395.
Mar 30th Lecture 20	Apr 1st Lecture 21
Boundary value problem for ODEs: shooting method. Ch. 10.1, pp. 410–415.	Boundary value problem for ODEs, II. Ch. 10.1, pp. 410–415.
	Homework 6 assigned: due — 4/8/2021 4/9/2021
Apr 6th Lecture 22	Apr 8th Lecture 23
Differentiation matrices. Ch. 10.2, pp. 418–424.	Differentiation matrices, II
Apr 13th	Apr 15th
Spring recess – No classes	Spring recess – No classes
Apr 20thLecture 24	Apr 22nd Lecture 25
Collocation for linear problems. Ch. 10.3, pp. 425–429.	The Galerkin method. Ch. 10.5, pp. 439–441.
Homework 7 assigned: due 4/27/2021	
Apr 27th Lecture 26	Apr 29th
Finite elements. Ch. 10.5, pp. 441–443.	Reading days – No classes
	Office hours during the regular class time
May 4th	May 6th
Week of Finals	Week of Finals