Math 306 - 19322 - Matrix and Power Series Methods (4)
Syllabus - OSU - Fall 2017

Instructor: Filix Maisch e-mail: maischf@math.oregonstate.edu
Meetings: MWF 1 - 1:50 PM (and an 80-min. recitation on Tue) Room: KIDD 364
Office: KIDD 348 Off. hrs: MWF 2:00 - 2:50 PM and by appt. (Friday in the MLC)

Text: Matrix and Power Series Methods, Lee, Scarborough

Web: people.oregonstate.edu/~maischf/ Prerequisite: Math 252 with a C- or better.

Attendance: Regular attendance to lecture and recitation is expected.

Honor Code: Students are expected to be familiar with Oregon State University’s Student Conduct Code. Please review this statement at the following web link:
http://studentlife.oregonstate.edu/studentconduct/university-policies

Accommodations: Accommodations are collaborative efforts between students, faculty and Disability Access Services (DAS). Students with accommodations approved through DAS are responsible for contacting the faculty member in charge of the course prior to or during the first week of the term. Students who believe they are eligible for accommodations should contact DAS immediately at 737-4098.

Course Description: The first half of this course provides an introduction to matrix algebra, determinants, the systematic solution of linear systems, and eigenvalue problems. The second half focuses on the convergence and divergence of series, with emphasis on power series, Taylor series expansions, convergence tests for power series, and error estimates for truncated series used in practical approximations.

Schedule: See web for tentative term schedule.

Evaluation: Your grade is determined by online homework, recitation quizzes, unannounced in-class discussion quizzes, one midterm, and one final. Here is the point breakdown:

- Online Homework ... 100 (80% of each set is enough for full credit! See below.)
- Recitation Quizzes ...... 70 (Top 7 of 9 quizzes worth 10 points each.)
- Pop Quizzes .............. 30 (Top 3 of 4 quizzes worth 10 points each.)
- Midterm .................. 120 (7 – 8: 20 PM, Tuesday, Oct. 31st, Location: WGND 115)
- Final .......................... 180 (4 – 5: 50 PM, Monday, Dec. 4th. Location: TBA)

Grades will not be harder than:
450 - 500 A/A-, 400 - 449 B+/B/B-, 350 - 399 C+/C, 300 - 349 D, 0 - 299 F.

I do not use canvas. At the end of this syllabus you have a page on which you can record and track your scores.

Resources: The Math Learning Center is in Kidder 108H and is a great place to drop in for help. It is open from 9 AM to 4 PM, Monday through Friday.

Tests: No calculators on the midterm/final. You are allowed both sides of one 3x5 inch handwritten note card for the midterm and both sides of one 4x6 inch handwritten note card for the final exam, but no other resources. Tests are not allowed to be made-up unless the circumstances are truly exceptional and contact requesting the accommodation is made PRIOR to the test.
Online Homework: Homework is done online using WeBWorK. Here is the web link: http://webwork.science.oregonstate.edu/webwork2/Math306/

Your username is the same as for your onid account and your password is your OSU student ID number. Due dates below have a 48 hour grace period built-in, and if you run into any issues (questions, server crashes, etc.) during the grace period, no accommodation will be made as you are already doing the homework late. Homework CANNOT be completed after the grace period ends, no exceptions.

LinearAlgebraHomework1 - 09/29/2017 at 11:59pm PDT
LinearAlgebraHomework2 - 10/06/2017 at 11:59pm PDT
LinearAlgebraHomework3 - 10/20/2017 at 11:59pm PDT
LinearAlgebraHomework4 - 10/27/2017 at 11:59pm PDT
PowerSeriesHomework1 - 11/10/2017 at 11:59pm PST
PowerSeriesHomework2 - 11/17/2017 at 11:59pm PST
PowerSeriesHomework3 - 11/24/2017 at 11:59pm PST
PowerSeriesHomework4 - 12/01/2017 at 11:59pm PST

Each assignment is worth 12.5 points. Getting 80% or better on each is enough for full credit. Below that you start to lose credit prorated to 80%.

Quizzes: No resources are allowed on the in-class unannounced discussion quizzes, but you are intended to share your reasoning with fellow students out loud. No make-ups are allowed unless you can prove you missed class for an OSU-based obligation. No resources, except for a non-graphing calculator, are allowed on the recitation quizzes, but they will consist of 2 – 3 problems drawn directly from the suggested homework (see web page). You will take one recitation quiz per week in numerical order during weeks 1 – 9. You may work on the quizzes in groups of 2 – 3 or individually, but everyone must submit their own quiz. Your recitation TA will be in charge all policies (grading, make-ups, etc.) regarding recitation quizzes.

Specific Learning Outcomes: A successful student in Math 306 will be able to...

1. Approximate complicated functions using Taylor polynomials or partial sums of infinite series and be able to estimate the error in the approximation.

2. Use the basic comparison test, integral test, alternating series test, ratio test, and root test to determine whether particular series converge or diverge.

3. Determine the radius and interval of convergence for a power series, be able to represent familiar functions by power series, and be able to describe when they can be differentiate and integrated term-by-term.

4. Use matrix notation, basic properties of determinants, and algebraic properties of matrices to express and solve linear systems of equations, and be able to determine linear dependence and independence for a set of \( n \) vectors in \( n \)-space.

5. Find the characteristic polynomial and eigenvalues and eigenvectors of particular (small) matrices and explain the concepts as they apply to square matrices of any size.
Write down your scores!

(1) Homework: ......out of 100

(2) Quiz 1 : ......out of 10

(3) Quiz 2 : ......out of 10

(4) Quiz 3 : ......out of 10

(5) Quiz 4 : ......out of 10

(6) Midterm : ......out of 120

(7) Quiz 5 : ......out of 10

(8) Quiz 6 : ......out of 10

(9) Quiz 7 : ......out of 10

(10) Quiz 8 : ......out of 10

(11) Quiz 9 : ......out of 10

(12) Lecture Quiz 1: ......out of 10

(13) Lecture Quiz 2: ......out of 10

(14) Lecture Quiz 3: ......out of 10

(15) Lecture Quiz 4: ......out of 10

(16) Final: ......out of 180