Information sheet for Math 304 Winter 2020

Class meets: MTRF 12:00 - 12:50 pm in ES 418

Teacher: Branko Ćurgus   **Office:** BH 184A   **Office Hours:** MTRF 1:00-1:50 pm   **Email:** curgus@wwu.edu

Course website: http://faculty.wwu.edu/curgus/Courses/304_202010/304.html

Text: *Linear algebra and its applications, Fifth edition* by David C. Lay

Material covered: We will review parts of Chapter 4 and study Chapters 5, 6 and 7.

Course Objectives: The successful student will demonstrate: (0) understanding of the concept of change of coordinates matrix and ability to calculate such matrices in simple examples; (1) the ability to compute eigenvalues and eigenvectors (of small matrices), establish whether or not a matrix is diagonalizable, and diagonalize a matrix when possible; (2) geometric understanding of the eigenvalues and eigenvectors of a real matrix, including the case of complex eigenvalues; (3) the ability to construct a matrix representation of a linear transformation, relative to given bases, and to choose a convenient basis for a representation of a linear transformation; (4) the ability to use eigenvalues and eigenvectors in the analysis of linear discrete dynamical systems; (5) understanding of the role of an inner product in the geometry of vector spaces; (6) geometric and analytic understanding of orthogonality and orthogonal projection, both in real n-dimensional space and in more abstract vector spaces, including vector spaces of functions; (7) the ability to construct an orthogonal basis for a subspace by using the Gram-Schmidt process; (8) understanding of least-squares problems, the ability to solve them, and knowledge of their applications to linear models and to approximation; (9) knowledge of the properties of symmetric matrices and their associated quadratic forms; (10) the ability to compute the singular value decomposition of a matrix and the understanding of its relationship to other concepts of linear algebra.

Exams: There will be two "mid-term" exams and a comprehensive final exam. The "mid-term" exams are scheduled as follows: Tuesday, February 4, 2020 and Tuesday, March 3, 2020. The final exam is scheduled for *three hours* on Monday, March 16, 2019 from 1pm to 4pm. (Notice that the final exam time is set by the school. I did my best to copy it right from the schedule. Please verify that I did it right.) Notice that I extended the duration of the final by one hour. If you are unable to take an exam for a very serious reason verified in writing, please see me beforehand. This does not apply to the final exam which cannot be taken neither early nor late.

Assignments: There will be three written homework assignments. Each assignment will be handed out in class one week before it is due. The assignments will be graded and these grades will count towards the final grade as specified below.

Homework: A list of suggested homework problems will be posted daily on the class website. Homework will not be collected. To succeed in class you should do each problem on your own. While working on problems you should recognize which theoretical tools are being used to solve a particular problem. As a result you will acquire general problem solving strategies, which is one of the goals of higher education. Incidentally, this will also lead to your success on exams.

Grading: Each exam and assignment will be graded by an integer between 0 and 100. Your final grade will be determined using the following formula

$$FG = \lceil 0.16*E1 + 0.16*E2 + 0.12*A1 + 0.12*A2 + 0.12*A3 + 0.32*FE \rceil,$$

where E1, E2 are the grades for the in-class exams, A1, A2, A3 are the grade for the assignments and FE is the grade for the final exam. In the above formula the symbol $\lceil x \rceil$ denotes the ceiling of a real number x. Your letter grade will be assigned according to the following table:

F : 0 - 49	D : 50 - 54	C−: 55 - 59	C : 60 - 64	C+: 65 - 69
B− : 70 - 74	B : 75 - 79	B+: 80 - 84	A−: 85 - 89	A : 90 - 100

This course is a continuation of Math 204. It relies heavily on concepts and methods learned in Math 204. Therefore it is essential that you keep up with the material presented every day; do the homework problems; review Math 204 material as needed; look for help if you encounter difficulties.

How to succeed: Doing well in mathematics depends on understanding, not memorizing. Exercise critical thinking while reading the text and doing the problems since understanding cannot be achieved through superficial studying. Talking to other students is a good way to check your understanding. If you feel that you are not on your way to understanding the material do not hesitate to ask questions. I will be glad to talk to you during my office hours, or you can make an appointment.

Syllabi@WWU Please also check https://syllabi.wwu.edu/