Information Sheet for Math 226 Spring 2020

Class meets: MTRF 12:00 - 12:50 online

Instructor: Branko Ćurgus **Office Hours:** MTRF 13:00 - 13:50 **Email:** curgus@wwu.edu

Course website: http://faculty.wwu.edu/curgus/Courses/226_202020/226.html

Text: Limits and Infinite Series, notes by Branko Ćurgus

Material Covered: In the first part of the course, we will study the limits of functions and sequences based on rigorous mathematical definitions. We shall also rigorously study the concept of continuity. In the second part of the course, we will study infinite series of numbers and functions in a less rigorous way similar to traditional calculus courses.

Homework: Your daily homework should consist of studying the material covered in class, both theory and examples. The goal is understanding, or even more, internalizing the concepts and methods that we study. Your goal in learning is to make what is being learned your own knowledge. In what we study here there is a beautiful confluence of theory and specific examples; they become alive only together. Therefore, study theory and do the exercises.

Assignments: There will be three assignments during the class and the final assignment. The assignments during the class will be due one week after they have been posted. I will email the final assignment on the last day of classes. It will be due by the end of the day of the final exam, Tuesday, June 9, 2020. You will be expected to scan your work and submit it to me as a single legible pdf file. More details of the submission will be posted later.

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

$$\texttt{FG} = \left\lceil \texttt{0.25*A1} + \texttt{0.25*A2} + \texttt{0.25*A3} + \texttt{0.25*FA} \right\rceil,$$

where `A1`, `A2`, `A3` are the grades for the assignments during the class and `FA` is the grade for the final assignment. Your letter grade will be assigned according to the following table.

F : 0 - 39	D−: 40 - 44	D : 45 - 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

How to succeed: Attend online classes regularly and do all the suggested homework problems. Do and redo more problems. Read the class notes before online classes and ask questions if there is anything that is not clear. Keep organized notes of all your work. Make sure that you *fully understand* how to do each assigned problem. Do not hesitate to ask a question whenever something does not make sense. Take advantage of the online Math Center. I will post instructions how to use the online Math Center.

Student learning outcomes: By the end of this class, a successful student will demonstrate: (1) the understanding of the basic inequalities involving real numbers and the absolute value function and the ability to apply these inequalities to specific examples; (2) the knowledge and the understanding of ϵ-δ definitions of limits of functions; (3) the ability to apply ϵ-δ definitions of limits of functions in examples and to prove simple theorems involving limits; (4) the understanding of the negation of a definition of limit and ability to prove that a limit of a function does not exist in simple examples; (5) the knowladge and the understanding of the ϵ-δ definition of continuity of a function; (6) the ability to use the rigorous definition of continuity to prove that important elementary functions are continuous; (7) the knowledge and the understanding of the rigorous definition of the convergence of a sequence; (8) the ability to apply the rigorous definition of the convergence of a sequence in examples and to prove simple theorems involving convergent sequences; (9) the knowledge of and the ability to apply the algebra of limits theorems for sequences; (9) the knowledge of the Monotone Convergence Theorem and its relationship to the Completeness Axiom; (10) the ability to apply the Monotone Convergence Theorem in significant examples; (11) the knowledge and understanding of the definition of a convergent series; (12) the knowledge and understanding of the definition of a divergent series; (13) the ability to rigorously justify convergence or divergence of a geometric series, the harmonic series and telescopic series; (14) the knowledge of several convergence tests for infinite series with positive terms and ability to apply these test on examples; (15) the understanding of the concept of an alternating series, the knowledge of the Alternating Series Test and ability to apply it to specific infinite series; (16) the understanding of the concepts of absolute and conditional convergence and their significance; (17) the knowledge of the ratio and the root test of convergence and ability to apply these tests to specific examples; (18) the understanding of the concept of a power series, its interval of convergence and the ability to calculate the interval of convergence for specific power series; (19) the knowledge of the properties of the functions represented by power series; (20) the understanding of the concept of a Taylor series of a function and the ability to decide whether the Tayor series converges to the original function in specific significant examples.