Information Sheet for Math 226 Spring 2021

Class meets: MTRF 12:00 - 12:50 (Zoom classes scheduled on Canvas)

Credits: four credits

Teacher: Branko Ćurgus, Proofesor of Mathematics

Office Hour: MTRF 13:00 - 13:50 or by appointment (see Canvas for a Zoom link)

Email: curgus@wwu.edu

Course website: http://faculty.wwu.edu/curgus/Courses/226_202120/226.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.

On Your Written Work: Students must submit their work electronically through Canvas Assignments. The only allowable file type is pdf. I cannot grade work submitted by email. Please make sure that you produce a high-quality, readable pdf file of your work. LaTeX is a free software designed for typesetting high-quality mathematical documents. I encourage you to learn LaTeX and use it for your writing. As a starting point you can use my website Getting Started with LaTeX. If you submit your handwritten work, write neatly on paper with a light-colored background using a dark pencil or ink. Please use a good scanning app to produce a high-quality, readable pdf file.

Since you will have enough time to work on the homework and assignments, your papers should be well-written. Presenting calculations alone without the context in which they occur and explanations of your reasoning is not sufficient for the full credit. Writing mathematics in complete sentences organized in meaningful paragraphs is an integral part of learning mathematics. As a guide for writing, you can use examples in my notes or my writing on the class website.

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. Almost every day I will post something on the website. In particular, I will post the pdf file of the notes that I create during online classes.

There will be five short homework assignments that will consist of two problems mostly from the notes. I will post these problems on Canvas few days before they are due. The due dates will be posted on Canvas under homework. Each homework will be graded by an integer between 0 and 20. The sum of the homework grades will cound as one assignment.

Assignments: There will be two 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 post the final assignment during the last week of classes and it will be due on Friday, June 11, 2021 at 11:59 pm.

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

$$\texttt{FG} = \max\Big\{\big\lceil(\texttt{HW}+\texttt{A1}+\texttt{A2}+\texttt{A3})/4\big\rceil, \big\lceil(\texttt{HW}+\texttt{A1}+\texttt{A2}+2*\texttt{A3})/5\big\rceil\Big\},$$

where A1, A2, A3 are the grades for the assignments and HW is the sum of the homework grades. Notice that the above formula is designed to reward impovement during the class. 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

■ OVER

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.

Diversity, Equity, Inclusion: Welcome to my class. I would love to have a face-to-face class with you. Until that is possible, we will make the best out of this mode of learning. We can make it better than a regular class since we can meet outside of class more often. I promise to keep my mind open for the mathematical experiences that you bring to this class. I want to help each of you use those personal experiences in creative ways to build your own understanding of the material studied in this class. I will bring diverse approaches to most concepts. For example, it is known that in early developments of mathematics, different cultures used different bases to represent integers. In the last assignment, we will explore decimal numbers in different bases as an application of infinite series. I do understand that each one of you comes to this class with a diverse background. If you are not happy with your background understanding of a particular topic that is expected as a prerequisite for this class, please let me know. We can meet outside of class and discuss that topic, or I can find some study material for you, or I can create some study material, especially for you. The goal is to create an environment where each of you can succeed in this class and be proud of one's individual achievement.

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.

Academic Honesty Policy: Academic dishonesty is not tolerated at Western Washington University. Representing the work of another as one's own is an act of academic dishonesty. For a full description of the academic honesty policy and procedures at Western, see Appendix D in the University Catalog.

Flexibility Statement: This syllabus is subject to change. Changes, if any, will be announced in class or online. Students will be held responsible for all changes.

Sylabii@WWU: Please go to `https://syllabi.wwu.edu/` where you will find Syllabi Policies for Students and Campus Resources for Students