Introduction to Analysis
Math 503
Fall 2020
(Tentative)

Instructor: Dr. Kanita K. DuCloux (pronounced Do-clue)
E-mail & Phone: kanita.ducloux@wku.edu
Office Location: COHH 3102
Course Hours: At your leisure (Be careful!)
Course Location: Web Course Delivery (Online)
Online Office Hours: T & W 10 AM – 11 AM or by appointment
I am available via discussion board and email on a very regular basis!

Important Dates:

Classes Begin	August 24 (Monday)
Labor Day (**university open/classes in session**)	September 7 (Monday)
Election Day (**university closed/no classes)**	November 3 (Tuesday)
Final Exam	**Nov 29 - Dec 3 (Mon – Thurs)**

Course Description:
A theoretical examination of selected topics in real analysis including sequences, series, limits, continuity, derivatives, and integration.

Learning Outcomes:
After the completion of this course, students will be able to:

- Demonstrate a conceptual understanding of the interconnectedness among sets, functions, sequences, differentiation, and integration.
- Recognize and develop multiple theoretical, as well as pictorial, representations of functions.
- Apply theories of advanced calculus to solve problems.
- Write proofs using theory development and a theoretical understanding of real analysis.
- Respond to authentic classroom situations from high school mathematics.

Prerequisite(s):
Admission to the Master of Arts in Mathematics program or permission of instructor.

Required Course Materials:
Textbook: Abbott, S. (2016). *Understanding Analysis*. 2nd Edition.
ISBN-10: 1493927116
ISBN-13: 9781493927111

Internet/Blackboard access: This course will utilize Blackboard. Course documents, such as the syllabus, handouts, and supplemental materials will be posted on Blackboard. The instructor will post announcements, grades, comments, and etc. via Blackboard. Check your email regularly and

save class emails for future reference. You will also submit most of your assignments and/or assessments via Blackboard. Please contact the Information Technology Helpdesk at 270-745-7000 for more information and questions regarding Blackboard.

Graphing Calculator: This course will utilize the TI-83 and/or TI-84 graphing calculators throughout the semester.

Attendance Policy

We will not have a set meeting time when everyone will be online; however, you are expected to be online frequently each week to check your WKU email and the discussion board -- this is VITAL. In a face-to-face class, we would meet in person just shy of 3 hours each week. In addition to this, you are expected to put in additional time outside of class for reading, completing assignments, and studying -- this is typically figured as 1 to 3 hours per credit hour per week. So, in a face-to-face class that can range from 6 to 12 hours a week for one class. I will expect you to do the same amount
work as if this course was meeting in person -- I will not compromise the integrity of the course. Since we are not meeting in person, some students will find that they need to put in additional time to understand the material. Make sure you do not get behind!

Assessment & Evaluation:

Projects (10%): There will be a three-part project that you will complete during the semester. Part one is due 9/21/20. Part II is due 10/19/20. Part III is due 11/16/20. See **Project** folder in Blackboard for details, materials, and rubrics. Due dates are also highlighted in yellow on the calendar.

Tests (65%): There will be 2 – 3 tests throughout the semester that will be announced in advance. There will be a "window of opportunity" to take each test. These "windows of opportunity" will be short, so it will be very important for to you to schedule a time with me as soon as you they are announced. I will post detailed information about this once the first test is scheduled. Each student will schedule her/his testing time with me. There will be no planned make-up tests and missing a test will result in a zero. Only under the most **extenuating** circumstances will a make-up test be considered if the instructor is aware of an issue in **advance**.

On Blackboard is posted an *Expectations and Grading – Tests* document that has more information about tests.

- The only exceptions will be for students that have written permission from the Student Accessibility Resource Center. There will be no planned make-up tests and missing a test will result in a zero. Only under the most extenuating circumstances will a makeup test be considered if the instructor is aware of an issue in advance.

- **Assignments (25%):** It will be very advantageous for you to read every chapter that we cover and work through all problems that are assigned, even if they are not going to be graded. You will find that doing the homework/modules, reading the textbook, watching the videos, and corresponding

with classmates or with the instructor will increase your chances for success on the assignments and exams. In addition to your textbook, you may want to consult mathematics sources in the library or in the Internet. Feel free to share anything you reference with your classmates via the discussion board. You will have several assignments during the semester that may vary in format: writing assignments, proofs, or individual projects. The requirements for each will vary and will be communicated at the time the assignment is made.

- All assignments should be turned in via the links given or dropped off at the main office on the 4th floor (for students on the main campus). Any assignment uploaded on Blackboard for me to grade should be either a **Word document or a PDF file**. It is fine to handwrite your assignments to then scan as a PDF file. However, all uploaded assignments should be turned in as **one file -** do not type your assignments into text boxes. To summarize – any assignment uploaded to Blackboard **MUST** be uploaded as **ONE** document or **ONE *pdf file*** – **no other file type is acceptable**. For help combining your documents into one file, see http://jpg2pdf.com/.

- ***If you accidentally upload the wrong assignment, please e-mail me but DO NOT attach/send the correct assignment. I will remove the incorrect assignment from Blackboard so that you can upload the correct version.*** Your assignments are always due by 11:59 pm on the due date. Points will be deducted for late assignments. No assignments will be accepted after solutions are posted. **Once the grades have been posted, NO late assignments will be accepted or graded!**

- **Online Discussion Boards (Expected)**
  Discussion is a very important part of the learning process. While we cannot replicate in-class discussions in an online class, we can come close. Keeping in mind that this is an online course that utilizes an asynchronous environment, your participation is expected and required. That is, you will not be awarded (given points) for completing the Discussion Boards (DBs). Instead, you will be graded punitively, that is, if you fail to post, you will lose points from your overall grade.

  For each DB that is required, you will receive a check mark for completing the discussion on time and as expected (i.e., professional, respectful, a substantial post/response, and appropriate number of posts/responses - See Calendar). If you do not meet ALL of these expectations, you will not receive a check mark. I will review students' check marks and their final grade for the course will be lowered as followed (by percentage points):
  _ Missing 0 checks -- final grade is not lowered
  _ Missing 1 check -- lowered by 3% points
  _ Missing 2 checks -- lowered by 6% points
  _ Missing 3 checks -- lowered by 9% points
  _ Missing 4 checks -- lowered by 12% points
  _ Missing 5 + checks -- lowered by 15% points

  If you have any questions about what is expected, please email me ASAP (i.e., BEFORE the due date). For each week's Discussion Board, I will have an entry in the Gradebook; a '1' means you got a check mark and a '0' means you did not get a check mark.

On Blackboard is posted an *Expectations and Grading Rubric -- Discussion Boards* document, which has more information on Discussion Boards.

There are many benefits to online discussion boards. Participation the online discussion boards can …
Allow students to **learn** from one another and **share** ideas.
Allow time for in-depth **reflection**- students have more time to reflect, research & compose their thoughts before participating in the discussion.
Build **online class community** by promoting discussion on course topics.
Facilitate learning by allowing students to **view & to respond** to the work of others.
Allow students to **work together** to create a product or to come to an agreement on some topic.
Develop **writing & critical thinking skills**.
Encourage **student leadership** by giving them a voice in the classroom.
(https://www.edutopia.org/pdfs/stw/edutopia-onlinelearning-mastering-online-discussion-board-facilitation.pdf)

Determination of Final Course Grade: Final course grades will be determined using the following scale:

Percentage	**0% – 59%**	**60% – 69%**	**70% – 79%**	**80% – 89%**	**90% – 100%**
Letter Grade	**F**	**D**	**C**	**B**	**A**

Notes:

- **Reading the material in the book and completing the Modules are critical to your success.**

A. Reading any sort of technical writing is different from reading something like a novel or Cosmopolitan. For one, it will take you longer to read one page of mathematics than it will for you to read one page of a novel or magazine article.

Here are some tips to help you read mathematics more easily:

1. Go slowly.
2. Focus - do not read while watching television/listening to music/checking email. Studies show that no one does better while multi-tasking (a lot of people think they do better while multitasking, but they are all wrong).
3. Read with paper and a pencil. Write what you need to understand a statement. Sometimes this means seeing how the statement relates to a concrete example, and sometimes this means literally writing down exactly what is in the book to help you focus on it.
4. Be active. Ask questions of the textbook, and see if you can answer them yourself. See how statements relate to concrete examples. Summarize in your own words.
5. Do not skim. Much of what we read contains filler that is not essential to read in order to understand the main point. This is not so in mathematics -- almost every word is important.
6. Re-read, both when you are first reading (go back over what you did not understand), and also re-read a couple of days later.

B. The Modules are activities designed to help you make meaningful connections between the teaching of secondary mathematics and real analysis. In each Module, you are presented with an

authentic classroom situation from high school followed by questions to which a teacher needs a deep understanding of mathematics to respond appropriately. You do not have to re-enact the modules, just read and reflect on them as you answer the questions. At the end of each module (on the last page), there are assigned textbook exercises that should be completed as part of the weekly assignment.

- Optional resources are provided to supplement the readings and to aid in understanding the concepts.
- Homework assignments may be challenging and lengthy. You should begin working on them, after reading the section(s) and optional resources, if necessary. I encourage you to do as many problems as you possibly can to build your confidence and understanding.
  I will not grade all of the assigned problems but you are expected to complete them for practice.

Please Note: In compliance with University policy, students with disabilities who require academic and/or auxiliary accommodations for this course must contact the Student Accessibility Resource Center located in Downing Student Union, 1074. SARC can be reached by phone number at 270-745-5004 [270-745-3030 TTY] or via email at sarc.connect@wku.edu. Please do not request accommodations directly from the professor or instructor without a faculty notification letter (FNL) from The Student Accessibility Resource Center.

- **No Masks Exemptions.** The SARC will NOT be providing masks exemptions or anything of the like. The University plans to accommodate students in another way as to not put the WKU community at risk. As such, any student insistent on not wearing a mask due to a disability/diagnosis can be directed to our office. If you have any questions or concerns, please contact us immediately. You can call our office or email hayley.rigsby@wku.edu.

- **Online-Only during COVID.** Students are being instructed to work with departments directly if they wish to have only online courses for the Fall. If you have any questions or concerns, please contact us immediately. You can call our office or email hayley.rigsby@wku.edu.

WKU Center for Literacy Assistance
The WKU Center for Literacy is located in Gary A. Ransdell Hall 2066. At the Center for Literacy, students can receive assistance in developing strategies to help **reading/studying to learn** and **writing for evidence and argument**. The Center for Literacy offers both individual and small group sessions throughout the semester. More information about the WKU Center for Literacy can be found on the website: http://www.wku.edu/literacycenter/

Academic dishonesty will not be tolerated. This includes any form of cheating or plagiarism. The policy is found on the web at
http://www.wku.edu/Dept/Support/StuAffairs/StuLife/handbook/P1Policy/14AcademicOffenses.htm

Tentative Course Schedule:

Please consult the Course Documents menu of Blackboard for a more detailed outline of course activities and a tentative course calendar. ***Please note that the instructor reserves the right to augment and/or amend the course schedule at any point during the course when it is deemed necessary for the benefit of the class.***