

Introduction to Analysis
MATH 503 -- CRN 35144
Fall 2021
(Tentative)

Instructor: Dr. Kanita K. DuCloux (pronounced Do-clue)

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Office Location: COHH 4124

Course Hours: At your leisure (Be careful!)

Course Location: Web Course Delivery

Office Hours: T 10 AM – 11 AM & W 9:00 – 10:00 AM or by appointment

I am often in my office many days outside these times so capture or appointment works as well! In addition, I am available via discussion board, email, and Zoom (by appointment).

Important Dates:

Classes Begin

August 23 (Monday)

Last day to add/drop/full refund

August 30 (Monday)

Labor Day

September 6 (Monday)

Fall Break

October 14 – 15 (Thurs – Fri)

Last day to withdraw from a full semester class

November 1 (Monday)

Thanksgiving Holiday

November 24 – 26 (Wed – Fri)

Final Exam

November 30-December 3 (T– F)

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.

Required Course Materials:

- **Textbook:** Abbott, S. (2016). *Understanding Analysis*. 2nd Edition.
ISBN-10: 1493927116
ISBN-13: 9781493927111
<https://elliespathtostatistics.files.wordpress.com/2018/03/abbott-second-edition.pdf>
- Prerequisite(s): Admission to the Master of Arts in Mathematics program or permission of instructor.

- **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 to be online frequently each week to check your WKU email and the discussion board -- this is VITAL (See benefits to discussion boards below).

In a face-to-face class, we would meet in person just shy of 3 hours each week. In addition to this, it is beneficial to your success in class 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. You should expect to do the same amount work as if this course was meeting in person so as not to 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. If you fall behind, please contact me so that we can work together to get you back on track.

Assessment & Evaluation:

- **Discussion Boards (5%)**

Even though this is an online course that utilizes an asynchronous environment, your participation is expected. Every week, you will post comments and/or questions about any readings, videos, assignments, or discussion board prompts and responses to your classmates' comments/questions on the Blackboard discussion board for the week. After you complete the weekly reading and attempt the assigned problems (Module, textbook, or additional), you will make two (2) initial posts. After you have read your classmates' posts, you will make one additional post ON DIFFERENT DAYS. YOUR POSTS MUST BE ON AT LEAST TWO DIFFERENT DAYS. You will only receive 1 point if you make all of your posts on the same day.

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>)

- **Assignments (35%):** It will be very advantageous for you to work through all problems that are assigned, even if they are not going to be graded. You will find that doing the homework, 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 or article critiques. 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 my office (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 **10:00 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!**
- **Tests (60%):** There will be 4 (2 online and 2 proctored) tests throughout the semester that will be announced in advance. There will be a “window of opportunity” to take each test. The online tests will be available on Blackboard, and you will have 3-hour window to complete and upload the test. For the proctored tests, I will post detailed information about this once the first proctored test is scheduled. Each student will schedule her/his testing time with the appropriate testing center and then take the proctored test at the scheduled time and place. You will receive one email from the DL Testing Center that will instruct you on how to register for your tests – **please do not delete this email**, as they only send it out once. The only exceptions will be for students that have written permission from the Student Accessibility Resource Center. Please feel free to contact me if you have extenuating circumstances and need to reschedule a test because missing a test will result in a grade of zero.

Grading Scale: 90 – 100% A 80 – 89% B 70 – 79% C 60 – 69% D 0 – 59% F

Notes:

- **Reading the articles, 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 (which you will discuss on Blackboard) 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.
- 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.

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/>

Student Resource Portal: <https://www.wku.edu/online/srp/>

Student Handbook: <https://www.wku.edu/handbook/index.php>

Student Code of Conduct: <https://www.wku.edu/studentconduct/student-code-of-conduct.php/>

The Learning Center Peer Tutoring Services

The Learning Center (TLC) provides free tutoring services that empower students to achieve academic success. Trained peer tutors are available to review course content, answer questions, and demonstrate effective study strategies. TLC offers individual appointments and group sessions (PASS) for hundreds of undergraduate courses. For more information or to make an appointment, visit www.wku.edu/tlc.

Course materials (assignments, problem sets, etc.) are for use in this course only. You may not upload them to external sites, share with any person outside of this course, or post them for public commentary without my written permission.

COVID Regulations: All students are strongly encouraged to [get the COVID-19 vaccine](#). Out of respect for the health and safety of the WKU community and in adherence with CDC guidelines and practices of all public universities and colleges in [Kentucky](#), the University requires that a cloth face covering (reusable or disposable) that covers both the nose and mouth must be worn at all times when in public areas within all buildings. Students must properly wear face coverings while in class regardless of the room size or the nature of the classroom activities. Students who fail to wear a face covering as required will be in violation of the WKU Student Code of Conduct and will be asked to comply or will face disciplinary action, including possible dismissal from the University. Accommodations can be requested in special cases through the Student Accessibility and Resource Center ([SARC](#)) and must be documented before a student may attend class: [270-745-5004](#) (voice), [270-745-3030](#)(TTY), or [270-288-0597](#) (video).

All students must immediately report a positive Covid-19 test result or close contact with a person who has tested positive to the Covid-19 Assistance Line at 270-745-2019. The assistance line is available to answer questions regarding any Covid-19 related issue. This guidance is subject to change based on requirements set forth by public health agencies or the office of the governor. Please refer to the Healthy on the Hill website for the most current information. www.wku.edu/healthyonthehill

Dishonesty: Such as cheating, plagiarism, misrepresenting of oneself or an organization, knowingly furnishing false information to the University, or omitting relevant or necessary information to gain a benefit, to injure, or to defraud is prohibited.

Academic Integrity: The maintenance of academic integrity is of fundamental importance to the University. Thus, it should be clearly understood that acts of plagiarism or any other form of cheating will not be tolerated and that anyone committing such acts risks punishment of a serious nature.

<http://www.wku.edu/Dept/Support/StuAffairs/StuLife/handbook/P1Policy/14AcademicOffenses.htm>

ADA Accommodation: 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.

Title IX/Discrimination & Harassment: Western Kentucky University (WKU) is committed to supporting faculty, staff and students by upholding WKU's [Sex and Gender-Based Discrimination, Harassment, and Retaliation](#) (#0.070) and [Discrimination and Harassment Policy](#) (#0.2040). Under these policies, discrimination, harassment and/or sexual misconduct based on sex/gender are prohibited. If you experience an incident of sex/gender-based discrimination, harassment and/or

sexual misconduct, you are encouraged to report it to the Title IX Coordinator, Deborah Wilkins, 270-745-5398 or Title IX Investigators, Michael Crowe, 270-745-5429 or Joshua Hayes, 270-745-5121. Please note that while you may report an incident of sex/gender-based discrimination, harassment and/or sexual misconduct to a faculty member, WKU faculty are “Responsible Employees” of the University and MUST report what you share to WKU’s Title IX Coordinator or Title IX Investigator. If you would like to speak with someone who may be able to afford you confidentiality, you may contact WKU’s **Counseling and Testing Center** at 270-745-3159.



Sexual Assault Resources

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.***