Functions and Modeling
MAT 3503
Fall 2020

Course Instructor: Dr. Konstantina Christodoulopoulou

Lectures: The class is synchronous with class meetings on MWF5 (11:45am-12:35pm) in Zoom Conferences in Canvas.

Online Office Hours in Zoom: M6, R5, F4 and by appointment

You can find the Zoom link for the office hours on Canvas. You must sign in your UF Zoom account to attend lectures and office hours.

Email: kchristod@ufl.edu

All course materials will be posted in eLearning Canvas, http://elearning.ufl.edu/.

Course Content: We will cover selected topics from: functions and relations, sequences, patterns and mathematical modeling, and, if time permits, we will explore functions in other systems (parametric & polar relations and complex numbers).

Course Objectives: In revisiting secondary mathematics content, prospective mathematics teachers will be able to:

- Deepen and broaden function-related mathematical content knowledge from algebra through calculus by exploring relevant topics in an inquiry based learning setting
- Make connections between college mathematics and secondary school mathematics
- Use collaborative learning to develop their communication and leadership skills
- Explore how technology such GeoGebra and Desmos can be used in the mathematics classroom

Textbook: None required. We will use notes and activities written specifically for this course through the UF Teach program. All course materials will be posted in Canvas.

Class Format: This class is synchronous with scheduled class meetings MWF5 (11:45am-12:35pm) in Zoom Conferences in Canvas. A typical class day will consist of part lecture, part group work, and part student presentations and whole class discussions.

Office Hours: I will hold regular office hours in Zoom for your convenience. If you cannot make my posted hours I will also be happy to set a meeting time that is convenient for the both of us.

Course Web Page: I will update Canvas regularly with class announcements, assignments, and additional materials. All grades are posted in the Canvas gradebook. You are responsible for verifying that those grades are accurate. **You have one week after a score has been posted to contact me to resolve any grade concerns. We will not consider any grading disputes nor make any grade adjustments at the end of the semester. Be sure to save all original documents in case of grading questions.**

Course Communications and Technology: I will be available to assist you via online office hours and review conferences. The preferred way to reach me outside office hours is via Canvas e-mail or direct e-mail. All students are expected to check the course web site on Canvas http://elearning.ufl.edu

on a daily basis. In addition, I may use your UF e-mail for specific communications and, therefore, you should check it daily as well. You should enable Canvas notifications for this class, so that you are notified immediately about grading, assignment feedback, due date changes, announcements, etc.

Please review the UF Resources and Policies for available technical assistance, resources and UF policies.

You are responsible for having access to a working computer and have your work completed on time. Complete and submit your work early.

Minimum technology requirements: The University of Florida expects students entering an online class to acquire computer hardware and software appropriate to his or her degree program. Most computers are capable of meeting the following general requirements. A student's computer configuration should include:

- Webcam
- Microphone
- Broadband connection to the Internet and related equipment (Cable/DSL modem)

Zoom: Zoom is an easy to use video conferencing service available to all UF students, faculty, and staff. You can find resources and help using Zoom at `https://ufl.zoom.us`.

Grading:

Class Participation	10%
Group Project	5%
Homework	20%
2 Semester Exams	40%
Cumulative Final Exam	25%

The following grading scale applies.

A	$\geq 90\%$	C	$\geq 70\%$
A−	$\geq 87\%$	C−	$\geq 67\%$
B+	$\geq 84\%$	D+	$\geq 64\%$
B	$\geq 80\%$	D	$\geq 60\%$
B−	$\geq 77\%$	D−	$\geq 56\%$
C+	$\geq 74\%$	E	$< 56\%$

Homework: I will regularly assign problems to be handed in by each individual. I expect all solutions to be written in full sentences and grammatically correct. Each problem will be graded on the following scale:

5	Correct mathematical solution and very well written
4	Small mathematical errors and/or grammatical errors
3	Contains good ideas, but overall an incorrect mathematical solution
2	Significant mathematical errors
1	Come and see me for help!

If you receive a grade ≤ 4 on any problem, you may turn that solution in again for an entirely new grade. I will keep only the highest score. Rewrites are due exactly one week from when I complete grading the homework. You may work with your peers to prepare problems but you must write up solutions individually. Do not submit what are essentially Xerox copies of each other's homework. **No late homework will be accepted.**

Group Project: The group project will serve to pull together various concepts that have been explored in the course. More details will be posted on Canvas.

Submitted work expectations: Submitted work should be neat, organized, and clearly presented. Papers not meeting these standards may have the scores reduced or may be returned ungraded.

Participation: You are expected to participate in class discussions. Therefore, *it is absolutely essential that you attend class*. You will be allowed 3 unexcused absences with no penalty. After this point, I reserve the right to drop your final grade by 2% for each additional absence. Excused absences are consistent with university policies in the undergraduate catalog https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx and require appropriate documentation.

Exams: Two semester exams and a cumulative final exam are scheduled for this course and will be proctored by Honorlock. The mid-term exams are scheduled for October 2 and November 6, and the final exam is scheduled for Friday, December 18. **The exams cannot be rescheduled unless you meet the University requirements; see** https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx Absolutely no collaboration on exams is allowed.

Honorlock: Proctoring services are provided by Honorlock. Honorlock is an online proctoring service that allows students to take exams on-demand 24/7. There are no scheduling requirements. You will need a laptop or desktop computer with a webcam, a microphone, and a photo ID. The webcam and microphone can be either integrated or external USB devices. Honorlock requires that you use the Google Chrome browser; furthermore, the Honorlock extension must be added to Chrome.

Beginning July, 1, 2020, Honorlock has updated their minimum system requirements and will no longer support Windows 8, Windows 8.1, Mac OSX 10.11, or Mac OSX 10.12. After July 1, you can find the updated Minimum System Requirements, as well as a system compatibility test, at Honorlock's support page. Students are expected to review the Honorlock system requirements and use their compatibility tool before the end of the drop/add period by visiting https://honorlock.com/support/ and scrolling down to the Simple Single-Click Test section of that page. The student guide to testing with Honorlock can be accessed via https://honorlock.com/wp-content/uploads/2019/09/Canvas_Student_Guide_Accessible.pdf. For further information, FAQs, and technical support, please visit Honorlock.

Make-up policies: Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/

Acceptable absences include but are not limited to the following: you are participating in a UF-sponsored

event and provide me with documentation at least a week in advance; you were verifiably ill during the exam and notified me within 24 hours of its conclusion; you are observing a religious holiday and have notified me of this during the first two weeks of classes; you have a court-ordered obligation and have provided me documentation a week in advance. Please note that "I just didn't feel well" without documentation, travel plans, and personal schedule conflicts are NOT excused.

One-week policy: All grades are posted in the Canvas gradebook. You are responsible for verifying all grades are accurate. You have one week after a score is available to discuss any grade concerns with me. There is no grades dispute after one week.

Incomplete: A student who has completed a major portion of the course with a passing grade but is unable to complete the final exam or other course requirements due to illness or emergency may be granted an incomplete, indicated by a grade of "I". This allows the student to complete the course within the first six weeks of the following semester. You must contact me before finals week to sign an incomplete grade contract (http://clas.ufl.edu/forms/incomplete-grade-contract.pdf), and must provide documentation of the extenuating circumstances preventing you from taking the final exam. The grade of "I" is never used to avoid an undesirable grade, and does not allow a student to redo work already graded or to retake the course. See the official policy at http://www.math.ufl.edu/department/incomplete-grades/.

Students with Disabilities: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. Click here to get started with the Disability Resource Center. It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Academic Honesty: UF students are bound by The Honor Pledge which states, "We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code." On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: "On my honor, I have neither given nor received unauthorized aid in doing this assignment." The Honor Code (https://sccr.dso.ufl.edu/process/student-conduct-code/) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor in this class.

Online Course Evaluation: Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at https://gatorevals.aa.ufl.edu/students/. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or https://viaufl.bluera.com/ufl/. Summaries of course evaluation results are available to students https://atgatorevals.aa.ufl.edu/public-results/.

Privacy Statement for Online Classes: Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded

or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.

In addition, we remind you that *lectures and the course materials given in this class are the property of the University/faculty member and may not be taped/shared without prior permission from the lecturer and may not be used for any commercial purpose. Students found to be in violation may be subject to discipline under the Honor Code.*

Diversity Statement: I am committed to diversity and inclusion of all students in this course. I acknowledge, respect, and value the diverse nature, background and perspective of students and believe that it furthers academic achievements It is my intent to present materials and activities that are respectful of diversity: race, color, creed, gender, gender identity, sexual orientation, age, religious status, national origin, ethnicity, disability, socioeconomic status, and any other distinguishing qualities.

Campus Resources:

Health and Wellness

U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit https://umatter.ufl.edu/ to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center: Visit https://counseling.ufl.edu/ or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit https://shcc.ufl.edu/.

University Police Department: Visit https://police.ufl.edu/or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center|: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608;https://ufhealth.org/emergency-room-trauma-center.

Academic Resources

E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center: Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support: Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center: Broward Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.

This syllabus is subject to change. You will be notified if any changes are made.
Updated 8/21/2020

MAT 3503 Functions and Modeling Calendar

The actual pace of the course and assignment dates may be slightly different than listed in the weekly calendar below. It will depend on the students' response to the material. Course materials and assignments are posted in Canvas. **Please check CANVAS for updates on a weekly basis.**

	Topics	Assignments
Week 1	Orientation-Course Introduction Math Connections	Explorations: A Cube Enigma; How to Built a Waterline; The Distance Formula Take Home Reflection: Making Connections Homework 1
Week 2	What is a Function?	Explorations: Function Definition? Identifying Functions Take Home Exercise: A Mapping Homework 2
Week 3	A Rigorous Definition of Function Types of Functions	Historical Notes Explorations: Types of Functions Take Home Connections Exercise Homework 3
Week 4	Rates of Change	Exploration: A Qualitative Look of Rates of Change Homework 4
Week 5	A Further Investigation of Rates of Change Review of Conic Sections	Exploration: Differential Equations Models Exam 1
Week 6	Conic Sections continued	Explorations: Conic Equations from the Definitions Homework
Week 7	Sequences and Triangular Differences	Explorations: What is sequence? Triangular Differences Take Home Challenge Activity Homework 5
Week 8	Recurrence Relations	Explorations: Arithmetic and Geometric Sequences; Linear Recurrence Relations. Homework 6
Week 9	Recurrence Relations continued Functions Defined by Patterns	Explorations: The Fibonacci Sequence; Finding Function Patterns. Homework 7
Week 10	Applications/Catch-up/Review	Exploration: An Application of Function Patterns. Take Home Challenge Exam 2
Week 11	Data and Regression	Explorations: Examples of Linear Regression.
Week 12	Residual Plots and Applications	Explorations: An Application Activity Using Residual Plots; Using "Real" Data Exploration Homework 8
Week 13	Catch-up/Thanksgiving Break	
Week 14	Catch-up/Parametric and Polar Relations (if time)	Explorations: A position-time relationship; More Information Needed; The Golf Shot Homework 9
Week 15	Catch-up/Complex Numbers and Properties (if time)	Explorations (if time) Group Project due

Exam 1-October 2
Exam 2-November 6
Cumulative Final Exam-December 18