Math 106 - 003 - Quantitative Reasoning
George Mason University
Fall 2022

General Information:

Instructor:	Hannah Klawa
Email:	hklawa@gmu.edu
Class Location:	Horizon Hall, Room 5018
Class Times:	MW 5:55 PM - 7:10 PM
Date Range:	August 22 - December 14, 2022
Office Hours:	MW 7:20 - 8:20 PM and by appointment
Location of Office Hours:	Exploratory Hall, Room 4307

Email Policy: Please feel free to email me if you have any questions during the course. Please note that all emails to me ***must*** be sent through your official GMU student email account. If you email me from a non-GMU email, you will not get any response. Also, please use the following subject line format

Math 106 - Subject of Email

This helps me prioritize student emails. If you have another question before you have received a response, please reply to your previous message rather than sending a new email. You should receive a response within 24 hours for emails sent Monday - Friday and within 36 hours for emails sent Saturday - Sunday. If you do not receive a response in this time-frame, please resend your email.

Text: Viewing Life Mathematically 2nd edition by Denley. Your course fees paid for access to the eBook and online homework system. You do not need to spend any more money on materials (except a calculator) for this class. You may choose to also purchase the printed book from the bookstore, but most students are fine without it. You will access the Hawkes learning system via Blackboard.

Technology: You will need a computer with reliable internet access for completing the online homework and quizzes. You will also be required to have a calculator for the course with an $\mathbf{e^x}$ function and factorial function (!). We are recommending TI-83/84 (ONLY IF YOU HAVE ONE ALREADY) or TI-30II. You may also use Excel for some more involved calculations. As an active GMU student, you have access to Excel for free. You can find the details at `https://its.gmu.edu/service/office-365-proplus/`.

Supplies: You will need to bring a pen or pencil to class. It will be useful to have a 3-ring binder or notebook to keep all your work related to homework in. Although you will be submitting homework through an online system, keeping your written work will help you study for tests and the final exam. You may also want to bring a dry erase marker to class.

Asking Questions in Class: You can speak up and ask relevant questions any time during class. You do not need to raise your hand. I am unused to students raising hands to ask questions and might not realize you are wanting to ask a question. If you hear another student ask a question and I did not hear it, you can help to ask the question. Please do remember that a civil, academic learning environment must still be maintained. Note that this is only for this particular course. Please follow your instructor's preferred method for questions in your other courses.

Course Description and Learning Objectives: This course meets the quantitative reasoning requirement, one of the Foundation requirements of the University General Education program. The goal of the Foundation requirement is to help ensure that students are equipped with the tools and techniques necessary to succeed in college and throughout their lives and careers. The learning objectives for this requirement are:

1. Students are able to interpret quantitative information (i.e., formulas, graphs, tables, models, and schematics) and draw inferences from them.
2. Given a quantitative problem, students are able to formulate the problem quantitatively and use appropriate arithmetical, algebraic, and/or statistical methods to solve the problem.
3. Students are able to evaluate logical arguments using quantitative reasoning.
4. Students are able to communicate and present quantitative results effectively.

Topics include critical thinking, modeling by functions, graphs, growth, scaling, probability, and statistics.

Grading Scheme: Your grade will be weighted as follows:

Category	**Weight**
Syllabus Quiz	2%
Worksheets	28%
Hawkes Certify (Online HW)	20%
Tests	30%
Final Exam	20%

Your letter grade will be determined based on the following grading scale.

Grading Scale	**Letter Grade**
$90-100\%$	A- to A+
$80-89\%$	B- to B+
$70-79\%$	C- to C+
$60-69\%$	D- to D+
$0-59\%$	F

In each range, $+$ or $-$ is for the upper or lower 2 points in the score range.

Syllabus Quiz: There will be an in-class syllabus quiz on the first day of class.

Worksheets: Each week that is not a test week, we will do in-class group worksheets. You will write out all your work for the problems and show/explain how you arrived at your final answer. You must carefully show all steps and explain your reasoning to get credit. On the show-work problems, final answers without supporting work and explanations will be given no credit even if the final answer is correct. You will lose credit for incorrect work/explanation even if your final answer is correct. While these are group worksheets, you must submit your own copy and will receive an individual score based on what is written on your worksheet.

Online Homework: Your homework grade in this course comes entirely from the Hawkes online homework system. The weekly homework will be due on **Saturdays 11:59 PM**. There are **late penalties for late homework**. There is a 5% late penalty for anything that is up to 1 day late, 10% penalty for up to 2 days, 20% penalty for up to 3 days late, and 35% penalty for anything more than 3 days late.

HOW TO USE HAWKES

Each lesson of the software offers three modes:

1. **Learn** is an interactive presentation of the material found in your textbook and includes instructional video clips and example problems.

2. **Practice** gives you access to unlimited practice problems, provides error- specific feedback for commonly made mistakes, hints for all incorrect answers, and includes an interactive Tutor with Step-by-Step guidance and fully worked out solutions. Note that every question type from Certify can be found in the Practice mode.

3. **Certify** is the homework portion of the lesson. After answering the set of questions without exceeding the available strikes (or lives), you will receive a perfect 100% score for your homework. If you are not able to Certify in your attempt, you are able to start a new set of questions over again with no penalty. In the meantime, you may wish to spend more time in the Practice mode before attempting Certify again. You have unlimited attempts in each lesson to receive full credit before the due date.

Additional videos can be found at `www.hawkestv.com`.

GETTING HELP WITH HAWKES

I am not able to provide technical support. If you run into technical problems including creating your username and password, finding your Access Code or license number, or completing your work, please contact Hawkes.

Phone: 1.800.426.538 Available Monday-Friday, from 8:00 AM - 10:00 PM ET.
Email: `support@hawkeslearning.com`
Chat: `www.hawkeslearning.com/chat` Chat support is available 24/7.

While I can't provide technical support, let me know if there is any extended problem with Hawkes that you are running.

Tests: There will be three in-class tests (one lowest score will be dropped) and a final exam. By university policy, you **must show ID** in order to take the test or exam. Please be sure to have your GMU student ID with you.

1. **Test 1: Wednesday, 09/21/2022, 5:55 PM - 7:10 PM**
2. **Test 2: Wednesday, 10/19/2022, 5:55 PM - 7:10 PM**
3. **Test 3: Monday, 11/21/2022, 5:55 PM - 7:10 PM**
4. **Final Exam: Monday, 12/12/2022, 4:30 PM - 7:10 PM**

There will be **no make-up** tests given.

Final Exam: The final exam will be cumulative and will occur in class on **Monday 12/12/2022 at 4:30 PM - 7:10 PM**. By university policy, you **must show ID** in order to take the exam. Please be sure to have your GMU student ID with you.

Accessibility: Disability Services at George Mason University is committed to providing equitable access to learning opportunities for all students by upholding the laws that ensure equal treatment of people with disabilities. If you are seeking accommodations for this class, please first visit `http://ds.gmu.edu/` for detailed information about the Disability Services registration process. Then please discuss your approved accommodations with me. Disability Services is located in Student Union Building I (SUB I), Suite 2500. Email: `ods@gmu.edu` | Phone: (703) 993-2474

Religious Holidays: GMU is accommodating to all religious holidays observed by its students and faculty. It is **each student's responsibility during the first two weeks of the semester** to inform instructors the dates of any major religious holidays on which the student will be absent or unavailable due to religious observances. `https://ulife.gmu.edu/religious-holiday-calendar/`

Student Conduct and Communication Policy: You are expected to abide by the GMU Student Code of Conduct: https://studentconduct.gmu.edu/university-policies/code-of-student-conduct/. You are expected to communicate civilly and do your part to maintain a productive learning environment for everyone.

Technical Assistance: You have free technical support as a GMU student. For technical assistance (non-Hawkes), please visit https://its.gmu.edu/service/its-support-center/ for details. Please contact GMU ITS if you have any technical difficulties as I am not able to provide technical support. Please let me know if there is any extended technical problem that you run into.

Math Tutoring Center: You can get free tutoring for this class online from the Math Tutoring Center https://science.gmu.edu/academics/departments-units/mathematical-sciences/math-tutoring/tutoring-center-hours-and. Do not hesitate to utilize this additional help that is available to you!

Academic Integrity and University Honor Code: You are expected to follow the GMU Honor Code https://oai.gmu.edu/mason-honor-code/. In this class,

- You are allowed to discuss homework problems and in-class worksheet problems with each other and myself.
- The tests and final exam are given in-class, proctored, and you are responsible for working all test and final exam problems independently by yourself.

Student Privacy/FERPA: The Family Educational Rights and Privacy Act of 1974 (FERPA) is a federal law that governs the education records of eligible students. It grants students continuous access to their education records upon request, allows students to amend their records if they feel they're inaccurate, and restricts how and when their education records can be disclosed. https://registrar.gmu.edu/ferpa/

Some Additional Resources/Student Services:

- University Libraries: https://library.gmu.edu
- Counseling and Psychological Services: https://caps.gmu.edu
- Student Support and Advocacy Center: https://ssac.gmu.edu/
- University Career Services: https://ssac.gmu.edu/

Tentative Schedule of Topics

Week/Dates	**Topics**
Week 1 (8/22 - 8/27)	Section 3.1 - Logic Statements and Their Negations Section 3.2 - Truth Tables Section 3.2 - Logical Equivalence and De Morgan's Law
Week 2 (8/29 - 9/3)	Section 4.1 - Proportions, Percentages, and Ratios Section 4.2 - Using Percentages
Week 3 (9/5 - 9/10)	Section 4.3 - Rates, Unit Rates, and Rates of Change Section 4.4 - Using Rates for Dimensional Analysis Section 4.5 - Proportionality
Week 4 (9/12 - 9/17)	Section 5.1 - Linear Equations and Functions Section 5.2 - Linear Modeling Section 5.7 - Exponential Functions
Week 5 (9/19 - 9/24)	Review & Test 1
Week 6 (9/26 - 10/1)	Section 6.1 - Understanding Interest Section 6.2 - Saving and Investing
Week 7 (10/3 - 10/8)	Section 6.3 - Borrowing Money Section 6.5 - Budget
Week 8 (10/10 - 10/15)	Section 7.4 - The Metric System Section 7.5 - Converting between the US System and the Metric System
Week 9 (10/17 - 10/22)	Review & Test 2
Week 10 (10/24 - 10/29)	Section 10.1 - Introduction to Probability Section 10.2 - Counting Outcomes
Week 11 (10/31 - 11/5)	Section 10.3 - Probability of Single Events Section 10.4 - Addition and Multiplication Rules of Probability
Week 12 (11/7 - 11/12)	Section 11.1 - Statistical Studies Section 11.2 - Displaying Data
Week 13 (11/14 - 11/19)	Section 11.3 - Describing and Analyzing Data Section 11.4 - The Normal Distribution
Week 14 (11/21 - 11/26)	Test 3 & Thanksgiving Break
Week 15 (11/28 - 12/3)	Review for Final Exam
Monday 12/12/2022, 4:30 PM - 7:10 PM	**Final Exam**

Note: Please note that some part of the syllabus may be changed during the semester at the instructor's or math department's discretion due to time constraints and unforeseen circumstances. Any change to this syllabus will be announced via Blackboard announcement.