



MA-102 Essential Math

Sean Keady

FORT HAYS TECH | NORTH CENTRAL

COURSE INFORMATION

Essential Math is a course starting with the basic numerical concepts and moving to more complex concepts involving critical thinking and problem solving. The course will not only deal with theory and principles, but will also concentrate on applications of using those concepts in solving problems dealing with Finance, Probability and Risk, Social Issues, and across other disciplines.

Credits: 3

Total Hours: 45

CLASS INFORMATION

Section Number: FO1

Term: Fall Year: 2026 Start Date: 8/17/2026 End Date: 12/12/2026

Meeting Times: Asynchronous

Meeting Location: Blackboard

Delivery Mode: Online

INSTRUCTOR

Sean Keady

Email: skeady@fhtechnnc.edu

Office Phone: 785-738-9022 (Please email)

Office Location: Beloit Math Classroom General Education Building

Office Hours:

Please email me when needing written problem tutorials or if you need an appointment

Regular, Substantive Interaction Statement:

1. Providing Information: The instructor will blackboard message the whole class of students once a week (usually Sunday or Monday) to provide information about the course including deadlines, any course changes, suggestions, and resources.

2. Facilitating group discussions: The instructor will facilitate at least 5 forums which provide space for group discussion on topics like statistics, misleading graphs, algebra, and geometry.

3. Feedback: The instructor will provide feedback by replying to those forums as well as providing comments on written assignments submissions that are not forums.

TEXTBOOKS

(Required) Cengage Unlimited (Preferred Option)--> includes e-book access

<https://www.cengage.com/unlimited/>

^Sometimes Cheaper to buy Cengage unlimited directly through weblink.

(Recommended) print book: **Mathematical Excursions, Fifth Edition**

By Aufmann, Richard; Lockwood, Joanne; Nation, Richard; Clegg, Daniel K.

ISBN:9798214011264

Edition: 5th

Type:Hardcover

Pub. Date: 1/1/2026

Publisher: Cengage Learning

SUPPLIES

- **Calculator Choice (Choose One):**
 - Casio fx-300ESPLUS2 2nd Edition, Standard Scientific Calculator, Black (preferred choice, available cheaply on amazon)
 - Casio fx-115ESPLUS2 2nd Edition, Advanced Scientific Calculator (very similar to the prior calculator)

COURSE COMPETENCIES

1. Apply critical and logical thinking skills to analyze various applications.
2. Apply estimation, measurement, and an understanding of numbers to various applications.
3. Use and evaluate statistics for decision making.
4. Demonstrate basic concepts of probability and risk.
5. Apply mathematical methods to personal finance.
6. Apply mathematics to the study of real-world situations.

GRADING INFORMATION

Fort Hays Tech | North Central Grading Scale:

- A 100% -90%
- B 89% - 80%
- C 79% - 70%
- D 69% - 60%
- F 59% and below

AI Policy

Usage of Artificial Intelligence systems such as Chat GPT or Photomath is not allowed for the final and midterm exams, WebAssign quizzes, and writing assignments.

Usage of AI is considered an academic integrity violation for the final and midterm exams, WebAssign quizzes, and writing assignments.

For homework, if you are stuck on a problem, watch any available help videos first and read the relevant part of the textbook. Then, if still stuck, use AI to generate a similar example with a solution. Homework answers that get submitted should be your own.

Late work Policy:

Even If you have an absence that would be excused, your weekly assignments on blackboard are still due on Wednesday at 11:59 PM. I highly recommend working ahead.

However, if you have a serious situation including severe illness, death in the family, or hospitalization, please email me and I will consider the situation. I will try to find a way to work with you.

Last Day to Withdraw:

The last day to withdraw from a class is October 21, 2026.

Please email Darsey Offutt at doffutt@fhtechnnc.edu if you want to withdraw a class!

Grade Calculation & Parts

15% Writing Assignments

- Including assignments about class introductions, final week, misleading graphs, geometry, and algebra

10% Homework

- On Web assign, the home works are for chapters 1, 2, 6, 7, 4, 5, 11, 12, 10
- Home works may include questions from outside the chapter that are important for the Exams.

15% Web assign Quizzes on Chapters: 1, 2, 6, 7, 4, 5, 11, 12, 10

- Practice exams for the midterm and final also count in the quiz category.

30% Midterm Exam

- Test Requirement: You will need to use Honorlock through blackboard on a google chrome browser. Honorlock is webcam proctoring
- Test Notes Requirements:
 1. Maximum of both sides of 4 pages of notes on the final exam (8.5 by 11 inch sheets only)

30% Final Exam (Cumulative)

- Test Requirement: You will need to use Honorlock through blackboard on a google chrome browser. Honorlock is webcam proctoring
- Test Notes Requirements:
 1. Maximum of both sides of 5 pages of notes on the final exam (8.5 by 11 inch sheets only)

Tentative Schedule

First Week

Due Date: Wed. August 25th at 11:59 PM

This week's focus will be on getting everything set up for the course, while beginning the first few assignments. Here are the expectations of you during this first week:

1. Introduce yourself in the **Introductions Discussion Board**

2. Click on the Basic math Review assignment then log in to Cengage's WebAssign using your fhtechnc.edu email or create an account using your fhtechnc.edu email.
3. After joining Cengage's WebAssign Complete the **Basic Math Review** Assignments on Blackboard. This assignment is powered by Cengage's WebAssign.

Chapter 1: Problem Solving

Due Date: Wed. Sept. 2nd at 11:59 PM

This week, you are expected to:

- Watch Chapter 1 Lecture Video & Take Notes
- Complete Chapter 1 Homework (WebAssign)
- Complete Chapter 1 Quiz (WebAssign)
 - *You will be unable to begin Chapter 1 Quiz until you complete Chapter 1 Homework to 70% mastery*
- Watch the Misleading Graphs & Statistics video(s), and write a short summary.

Course Competencies in this chapter:

#1 Apply critical and logical thinking skills to analyze various applications.

#2 Apply estimation, measurement, and an understanding of numbers to various applications.

Chapter 2: Sets

Due Date: Wed. Sept. 9th at 11:59 PM

This week, you are expected to:

- Watch Chapter 2 Lecture Video & Take Notes
- Complete Chapter 2 Homework (WebAssign)
- Complete Chapter 2 Quiz (WebAssign)
 - *You will be unable to begin Chapter 2 Quiz until you complete Chapter 2 Homework to 70% mastery*
- Complete the "Fuzzy Sets" assignment.

Course Competencies in this chapter:

#1 Apply critical and logical thinking skills to analyze various applications.

Chapter 6: Numeration Systems & Number Theory

Due Wed. Sept. 16th at 11:59 PM

This week, you are expected to:

- Watch Chapter 6 Lecture Video & Take Notes
- Complete Chapter 6 Homework (WebAssign)
- Complete Chapter 6 Quiz (WebAssign)
 - *You will be unable to begin Chapter 6 Quiz until you complete Chapter 6 Homework to 70% mastery*
- Complete Misleading Graphs Discussion Board

Course Competencies in this chapter:

#2 Apply estimation, measurement, and an understanding of numbers to various applications.

Chapter 7: Measurement & Geometry

Due Date: Wed. Sept. 23rd at 11:59 PM

This week, you are expected to:

- Watch Chapter 7 Lecture Video & Take Notes

- Complete Chapter 7 Homework (WebAssign)
- Complete Chapter 7 Quiz (WebAssign)
You will be unable to begin Chapter 7 Quiz until you complete Chapter 7 Homework to 70% mastery
- Complete Geometry IRL Discussion Board

Course Competencies in this chapter:

#6 Apply mathematics to the study of real-world situations.

Midterm Exam proctored by webcam through Honorlock

This week, you are expected to:

- Complete the Practice Midterm Due **Wednesday Sept. 30th at 11:59 PM**
- Complete the Midterm Due **Wednesday Oct. 7th at 11:59 PM**

Chapter 4: Apportionment and Voting

Due Date: Wed. Oct. 14th at 11:59 PM

This week, you are expected to:

- Watch Chapter 4 Lecture Video & Take Notes
- Complete Chapter 4 Homework (WebAssign)
- Complete Chapter 4 Quiz (WebAssign)
You will be unable to begin Chapter 4 Quiz until you complete Chapter 4 Homework to 70% mastery
- Complete Misleading Graphs #2 Discussion Board

Course Competencies in this chapter:

#6 Apply mathematics to the study of real-world situations.

Chapter 5: The Mathematics of Graphs

Due Date: Wed. Oct. 21st at 11:59 PM

This week, you are expected to:

- Watch Chapter 5 Lecture Video & Take Notes
- Complete Chapter 5 Homework (WebAssign)
- Complete Chapter 5 Quiz (WebAssign)
You will be unable to begin Chapter 5 Quiz until you complete Chapter 5 Homework to 70% mastery
- Complete Graph Theory Vocab/Descriptions Assignment

Chapter Objectives:

- Understand relationships in a graph
- Model relationships using graphs
- Understand and use the vocabulary of graph theory
- Understand and use weighted graphs
- Use the Greedy Algorithm to solve traveling salesperson problems
- Use the Edge-Picking Algorithm to solve traveling salesperson problems

Course Competencies in this chapter:

#1 Apply critical and logical thinking skills to analyze various applications.

#6 Apply mathematics to the study of real-world situations.

Chapter 11: Combinatorics and Probability

Due Date Wed. Oct. 28th at 11:59 PM

This week, you are expected to:

- Watch Chapter 11 Lecture Video & Take Notes
- Complete Chapter 11 Homework (WebAssign)
- Complete Chapter 11 Quiz (WebAssign)

You will be unable to begin Chapter 12 Quiz until you complete Chapter 12 Homework to 70% mastery

- Complete Misleading Graphs Discussion Board #3

Chapter Objectives:

- Use the Fundamental Counting Principle to determine the number of possible outcomes in a given situation
- Compute theoretical probability
- Compute empirical probability
- Compute probabilities with permutations
- Compute probabilities with combinations
- Find the probability that an event will not occur
- Find the probability of one event or a second event occurring
- Understand and use odds
- Find the probability of one event and a second event occurring
- Compute expected value
- Use expected value to solve applied problems
- Use expected value to determine the average payoff or loss in a game of chance
- Identify deception in visual displays of data

Course Competencies in this chapter:

#4 Demonstrate basic concepts of probability and risk

Chapter 10: The Mathematics of Finance

Due Date: Wed. Nov. 4th at 11:59 PM

This week, you are expected to:

- Watch Chapter 10 Lecture Video & Take Notes
- Complete Chapter 10 Homework (WebAssign)
- Complete Chapter 10 Quiz (WebAssign)

You will be unable to begin Chapter 10 Quiz until you complete Chapter 10 Homework to 70% mastery

- Complete Algebra assignment on blackboard

Course Competencies in this chapter:

#5 Apply mathematical methods to personal finance.

Chapter 12: Statistics

Due Date: Wed. Nov. 11th at 11:59 PM

This week, you are expected to:

- Watch Chapter 12 Lecture Video & Take Notes
- Complete Chapter 12 Homework (WebAssign)
- Complete Chapter 12 Quiz (WebAssign)

You will be unable to begin Chapter 12 Quiz until you complete Chapter 12 Homework to 70% mastery

- Complete Correlation vs Causation Discussion Board

Course Competencies in this chapter:

#3 Use and evaluate statistics for decision making.

Extension Activity

Due Date: Wed. Nov. 18 at 11:59 PM

- Extension activity(ies) to be announced on blackboard later

Essential Math Final Review & Discussion Board

Due Date: Wed. Dec. 2nd at 11:59 PM

This week, you are expected to:

- Complete Practice Final Exam
- Practice and Final Exam Notes Requirements: Maximum of both sides of 5 pages of notes on the final exam (8.5 by 11 inch sheets only).
- Complete the Final Discussion Board of the course

Final Exam

Due Date: Wed. Dec. 9th at 11:59 PM

- Complete the Final Exam for Essential Math

ACADEMIC HONESTY

Membership in the Fort Hays Tech | North Central learning community imposes upon the student a variety of commitments, obligations, and responsibilities. It is the policy of this College to impose sanctions on students who misrepresent their academic work. Appropriate classroom instructors or other designated persons will select these sanctions consistent with the seriousness of the violation and related considerations.

Examples of academic dishonesty include but are not limited to:

- Plagiarism: i.e. taking someone else's intellectual work and presenting it as one's own. Each department set standards of attribution. Faculty will include disciplinary or class-specific definitions in course syllabi.
- Cheating is unacceptable in any form. Examples include consultation of books, library materials, notes or intentional observation of another student's test on paper or a computer screen; accessing another student's answers from an exam to be given or in progress; submission of falsified data; alteration of exams or other academic exercises; and collaboration on projects where collaboration is forbidden.
- Falsification, forgery or alteration of any documents pertaining to assignments and examinations.
- The use of AI generated content from AI tools such as, but not limited to, ChatGPT, Dall-E, Co-Pilot, etc., is up to faculty discretion per course as stipulated within the course syllabus. Submitting AI generated work as your own, without attribution, will be considered academic dishonesty.
- In courses where the use of AI tools are not permitted as stipulated within the course syllabus, work submitted using AI will be considered academic dishonesty.
- Students who participate in, or assist with, cheating or plagiarism will also be in violation of this policy.

Classroom instructors and/or administrators will assess sanctions for violations of this policy. The seriousness of the violation will dictate the severity of the sanction imposed. Academic sanctions may include but are not limited to any of the following:

1. verbal or written warning
2. lowering of grade for an assignment
3. lowering of term grade

Administrative sanctions may include but are not limited to either of the following

1. Suspension from the course, program, or College
2. Dismissal from the course, program, or College

FORT HAYS TECH | NORTH CENTRAL MISSION STATEMENT

Fort Hays Tech | North Central delivers applied, innovative and personalized education to empower learners, enrich lives, develop skilled professionals and strengthen economic systems.

Vision Statement

Fort Hays Tech | North Central is dedicated to being a leader in workforce development by maximizing value for students, employers and communities through educational excellence.

Core Values

Achieving EXCELLENCE with INTEGRITY through

DEDICATION

INNOVATION

COLLABORATION

COMMUNICATION

FORT HAYS TECH | NORTH CENTRAL NON-DISCRIMINATION POLICY

To provide equal employment, advancement, and learning opportunities to all individuals, employment and student admission decisions at Fort Hays Tech | North Central will be based on merit and qualifications. Fort Hays Tech | North Central does not discriminate on the basis of any characteristic protected by law in all aspects of employment and admission in its education programs or activities. Any person having inquiries concerning Fort Hays Tech | North Central's non-discrimination policy, including the application of Equal Opportunity Employment, Titles IV, VI, VII, IX, Section 504, ADA, and impending regulations, is directed to the VP of Student and Instructional Services at (800) 658-4655, or compliance@fhtechnc.edu, or PO Box 507, 3033 Hwy 24, Beloit, KS 67420.

FORT HAYS TECH | NORTH CENTRAL TOBACCO USE POLICY

The use of tobacco products in any form and/or electronic cigarettes is prohibited in, or within ten (10) feet of any building owned, leased, or rented by the College. Kansas Law established the minimum age of 21 to sell, purchase, or possess cigarettes, electronic cigarettes, or tobacco products. Underage use or possession of any of these products is prohibited on property owned, leased, or rented by the College.

FORT HAYS TECH | NORTH CENTRAL WEAPONS POLICY

Fort Hays Tech | North Central prohibits the possession and use of firearms, explosives, and other weapons on Fort Hays Tech | North Central property, with certain limited exceptions. Please refer to the Fort Hays Tech | North Central Student Handbook for the full policy.

INCLEMENT WEATHER

College campus dismissals and cancellations will be announced using the College Alert system. Local media will also be notified.

OVERVIEW FOR STUDENTS WITH DISABILITIES

Fort Hays Tech | North Central is dedicated to providing equal access and opportunity to all campus programs and services for students with disabilities. We are committed to providing reasonable accommodations in accordance with applicable state and federal laws including, but not limited to, Section 504 and 508 of the Federal Rehabilitation Act of 1973 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. We strive to create a safe, respectful and inclusive environment and promote awareness, knowledge and self-advocacy.

Fort Hays Tech | North Central acknowledges that traditional methods, programs and services are not always appropriate or sufficient to accommodate the limitations experienced by some qualified persons with disabilities. When a student's disability prevents him/her from fulfilling a course requirement through conventional procedures, consideration will be given to alternatives, **keeping in mind that academic standards must be maintained**.

Services are provided through Student Accessibility Services (SAS) staff located in the Student Success Center, on the Beloit Campus, and in Student Services, on the Hays Campus.

- Director of Learning Services, may be reached at [1-785-738-9020](tel:1-785-738-9020); or by mail at [Fort Hays Tech | North Central, 3033 US Hwy 24, Beloit, KS 67420](#).

Student Responsibilities

Students requesting support services will need to register ("self-disclose" and complete Student Accessibility Services Intake and Consent Form), provide appropriate documentation (if available) including how the disability affects academic performance and suggested accommodations, and communicate with the Director of Learning Services as part of the interactive process to create an *Educational Accommodation Plan* that will notify Instructors of approved accommodations, services and/or auxiliary aids.

Students are encouraged to make timely and appropriate disclosures and requests, at least two weeks in advance of a course, program, or activity for which an accommodation is requested (or as soon as realistically possible) to allow adequate time for accommodation services to be set in place.

Accommodations, Academic Support Services, or Auxiliary Aids

Reasonable accommodations including academic support services and auxiliary aids are provided to allow students with disabilities an equal opportunity to participate in and benefit from our educational programs. Accommodations will be provided on a case-by-case basis determined by student request, documentation, intake interview, Educational Accommodation Plan team, and assessment of individual needs and course requirements.

Reasonable testing accommodations may include, but are not limited to:

- Extended testing time
- Reduced distraction testing environment
- Test reader and/or scribe
- Use of calculator

Academic support services/auxiliary aids may include, but are not limited to:

- Note-taking assistance (second set of notes, power point slides, or other visual aids provided)
- Sign Language Interpreter
- Preferential seating in the classroom
- Large print exams, handouts, signs, etc.
- Telecommunications devices
- Use of Assistive Technology

Accommodations may not fundamentally alter the nature of the program or activity, lower academic standards, present undue financial or administrative burden on the college, or pose a threat to others or public safety.

Additionally, some accommodations and services cannot be provided, such as personal devices or assistance with personal services.

Auxiliary aids may be available through a variety of sources available to individual students. The student may make a request in obtaining specialized support services from other resources such as Vocational Rehabilitation Services (VR), Recordings for the Blind, Kansas Talking Book Service, etc. For example, Vocational Rehabilitation may fund such items as transportation to the institution, tuition, textbooks, hearing aids, and other individually prescribed medical devices.

If at any time throughout the academic year, a student feels that the agreed upon accommodations are not being followed or that alternate accommodations need to be provided, the student should notify Student Accessibility Services (SAS) staff. Fort Hays Tech | North Central is committed to student success; however, we do not require students to use accommodations. The decision of when to utilize approved accommodations or services is up to the student. Integration, self-advocacy and individual responsibility are promoted and expected.

Grievance Procedure

Any student who believes he or she has been subjected to discrimination on the basis of disability or has been denied access or accommodations, shall have the right to invoke the Grievance Procedure.

Students are encouraged to first discuss their concerns with SAS. An attempt will be made to resolve the issue(s) causing concern by assisting the student in discussions with the person(s) involved. Most situations are positively resolved through this process. If the student does not feel the concern or complaint has been appropriately resolved, he or she should contact the [Vice President of Student and Instructional Services](#) at 1-800-658-4655 or PO Box 507, 3033 US Hwy 24, Beloit, KS 67420, where grievance procedures are filed for all students, including students with disabilities.

If the complaint is not resolved at the College level, a student may choose to file a complaint with the [Office for Civil Rights](#) at 1-816-268-0550 or [U.S. Department of Education, One Petticoat Lane, 1010 Walnut Street, Suite 320, Kansas City, MO 64106](#).

Confidentiality

All information regarding a student's disability is confidential. All documentation will remain separate from academic records and will not be released to an individual or source external to Fort Hays Tech | North Central without the student's written consent. In order to provide effective services, it may be necessary to communicate limited information on a need-to-know basis regarding disability-related needs to Fort Hays Tech | North Central faculty and/or staff.

REASONABLE SUSPICION

If reasonable suspicion of substance abuse exists regarding an employee or student based on objective criteria (including, but not limited to, behavior, appearance, demeanor, detection of the odor of alcohol or any controlled substance), the employee or student will be requested to consent to drug testing performed by Fort Hays Tech | North Central's contract vendor at the expense of the college.

- A. A college administrator (or their designee) shall drive the employee or student to the vendor's site for drug testing and shall return the employee or student to his/her residence (or arrange for transportation) following the testing.
- B. Test results shall be sent directly to the college administrator, with a copy also sent to the employee or student. All test results will be considered confidential, access to the results will be limited to institutional personnel who have a legitimate need-to-know.
- C. In the event of a positive test result, the employee or student may request a retest of the sample at the employee or student's expense. The request must be submitted within 24 hours.
- D. Positive results for any illegal drugs, or prescription drugs (either not prescribed for the employee or student, or at levels above the prescribed dosage), or blood alcohol level of 0.04 or greater shall be grounds for disciplinary action, up to and including termination or expulsion.
- E. Refusal to provide a specimen for this testing shall be treated as a positive drug test result.
- F. Test results or specimens that have been determined to be altered by the employee or student shall be grounds for disciplinary action, up to and including termination or expulsion.
- G. If the employee or student tests positive for an authorized prescription drug which may impair his/her performance or judgment, the employee or student may not be permitted to participate in college activities until he/she provides a doctor's release.

RIGHT TO MODIFY THE SYLLABUS

The instructor reserves the right to modify the syllabus during the semester. Students will be given advanced notice if a change would occur.