

Northeast Iowa Community College provides in-demand education and training focused on improving lives, driving business success and advancing community vitality.

MAT 110 60100 Math for Liberal Arts

Fall 2021 Delivery Method:

• Online - Z Courses

Meet Days/Times/Location:

• Online; ONL

Start and End Dates:

• 9/14/2021 - 11/8/2021

Academic Department: Liberal Arts, Science and Business

Required Materials

No Book Required

Course Information

Course Description: During this course, the students will solve problems from many different topics of mathematics. Topics included are: set theory, logic, algebra, graphs, counting techniques,

probability, statistics, personal finance, and number representation.

Major Course Objective:

Students will analyze information from problems to make decisions regarding these problems.

Primary Common Learning Outcome Assessed: Critical Thinking

Educational Learning Outcomes:

- Students will be able to utilize set theory concepts.
- Students will be able to utilize logical statements.
- Students will be able to solve equations and inequalities.
- Students will be able to solve systems of equalities and inequalities.
- Students will be able to utilize counting techniques.
- Students will be able to calculate probability of events.
- Students will be able to apply statistical concepts to problems.
- Students will be able to apply personal finance topics.
- Students will be able to apply different number representations in calculation.

Prerequisite(s): A minimum grade of C- in MAT 063 or MAT 744 or qualifying placement score

Grading Procedures and Scale

Grade	Grading Scale by Percent of Total Points Ex. (94 - 100%)	Grading Scale by Points Ex. (940 - 1000+)
А	93 - 100 %	676 - 730
A-	90 - 92	654 - 675
B+	87 - 89	632 - 653
В	83 - 86	603 - 631
B-	80 - 82	581 - 602
C+	77 - 79	559 - 580
С	73 - 76	530 - 558
C- (or P)	70 - 72	508 - 529

D+	67 - 69	486 - 507
D	63 - 66	457 - 485
D-	60 - 62	435 - 456
F (or NP)	0 - 59	0 - 434

	# of Assignments	Points / Percentage
Class Introduction	1 @ 5 points	5 / 0.7%
Discussion & Participation	9 @ 15 points each	135 / 18.5%
Practice Quizzes	55 @ 5 points each	275/37.7%
Show Your Work Submission	53 @ 1 point each	53 / 7.3%
Quizzes	7	167 / 22.9%
Project	1	50 / 6.8%
Common Assessment Quizzes	3 @ 15 points each	45 / 6.2%
Total Points possible		730

DISCUSSIONS

Each week you will participate in a discussion. The topics are related to what you are learning that week. You must first post using Video Note (or something equivalent) by Friday at11:59 PM CST. You will respond to at least two people on two different days by Monday at 11:59 PM CST.

PRACTICE QUIZZES

Each objective has practice problems for you to complete. You can attempt theses quizzes an unlimited amount of time. Please note that some practice quizzes have open response questions. These will be graded by the instructor. There will also be some questions that require you to show your work. You can submit this work using ASSIGNMENTS in Brightspace. Pay attention to the name of the folder so you submit your work in the correct folder.

QUIZZES

After completing all of the practice quizzes, you will complete one quiz with only one attempt. There will be some open response questions which will need to be graded by the instructor. After you submit the quiz, you will receive a 0 for those open responses. Do not be alarmed. This will change once the questions have been graded by the instructor.

PROJECT

You will have one project. You will be asked to submit a written summary, all of your calculations, and present your findings.

COMMON ASSESSMENTS QUIZZES

You will be completing three summative assessments throughout the course. You will only have one attempt. You can either download the document and write your calculations and answers there OR you can write your calculations and answers on your own paper. Then upload a picture of the calculations and answers to the same folder.

Course Calendar

The course calendar is a guide for activities and subject to change at faculty discretion.

MAT 110 FALL 2021 Course Calendar

PROGRAM LEARNING OUTCOME: Students will demonstrate competence in problem-solving, logical thinking, and the application of mathematical processes.

COMMON LEARNING OUTCOME: Critical Thinking (All objectives), Communicate Effectively (All objectives), and Diversity (Introduction)

WEEK	LEARNINGOBJECTIVE	ASSIGNMENT	POINTVALUE	DUEDATE
0		Week 0: Discussion - Class Introduction	5	9/16/2021
1		Week 1: Discussion - Which Set Do You Belong? INITIAL POST	5	9/17/2021
	9.1.1 Use terminology and symbols for set representation.	Week 1: Practice - Set Representation	5	9/20/2021
	9.1.2 Identify sets as infinite or finite.	Week 1: Practice - Infinite and Finite Sets	5	
	9.1.3 Find a set's complement.	Week 1: Practice - Set Complements	5	

	9.1.4 Solve Venn diagram problems.	Week 1: Practice - Answering Problems with Venn Diagrams	5	
		Week 1: Show Your Work - Answering Problems with Venn Diagrams	1	
	9.1.5 Perform set operations.	Week 1: Practice - Set Operations	5	
		Week 1: Show Your Work - Set Operations	1	
	9.1.6 Use the cardinal number formula for finite sets.	Week 1: Practice - Solve Real Life Problems Involving Set Theory	5	
		Week 1: Show Your Work - Solve Real Life Problems Involving Set Theory	1	
		Week 1: Quiz - Set Theory	18	
		Week 1: Show Your Work - Quiz- Set Theory	1	
		Week 1: Discussion - Which Set Do You Belong? TWO RESPONSES	10	
2		Week 2: Discussion - Logical Conclusions INITIAL POST	5	9/24/21
	9.2.1 Express statements using symbols.	Week 2 : Practice - Symbolic Form	5	9/27/2021
	 9.2.2 Utilize the definitions of negation, conjunction and disjunction. 9.2.5 Write a conditional statement's equivalent. 9.2.8 Write conditional statement's converse and inverse. 	Week 2: Practice - Statements	5	
	9.2.3 Construct truth tables.9.2.6 Utilize a truth table to determine if a compound statement	Tables	5	

			-
	Week 2: Show Your Work - Truth Tables	1	
9.2.7 Utilize a truth table to show that statements are equivalent.	Week 2: Practice - Logically Equivalent Statements	5	
9.2.4 Utilize De Morgan's Laws.			
9.2.2 Utilize the definitions of negation, conjunction and disjunction.	Week 2: Practice - De Morgan's Laws	5	
	Week 2: Show Your Work - De Morgan's Laws	1	
9.2.9 Utilize forms of valid arguments to draw logical conclusions.	Week 2: Practice - Valid Argument Conclusions	5	
	Week 2: Show Your Work - Valid Argument Conclusions	1	
	Week 2: Quiz - Logic Basics	28	
	Week 2: Show Your Work - Logic Basics	1	
	Program Learning Outcome Assessment AY20	15	
	Week 2: Discussion - How Logical Are You? TWO RESPONSES	10	
	Week 3: Discussion - Other Number Systems INITIAL POST	5	10/1/20
9.9.1 Evaluate an exponential expression.	Week 3: Practice - Evaluate Exponential Expressions	5	10/4/20
9.9.2 Construct a Hindu-Arabic numeral in expanded form.	Week 3: Practice - Hindu- Arabic in Expanded Form	5	
	Week 3: Show Your Work - Hindu-Arabic in Expanded Form	1	
9.9.3 Apply the expanded form of	Week 3: Practice -	5	

	between alternative historical number systems.	Number System		
		Week 3: Show Your Work - Convert Historical Number System	1	
	9.9.4 Convert between numerals in base ten to bases other than ten.	Convert Different Bases	5	
		Week 3: Show Your Work - Convert Different Bases	1	
	9.9.5 Compute arithmetic operations in bases other than ten.	Week 3: Pracitce - Operations in Bases Other Than Ten	5	
-		Week 3: Show Your Work - Operations in Bases Other Than Ten	1	
		Week 3: Quiz - Number Representation	25	
		Week 3: Show Your Work - Quiz - Number Representation	1	
		Week 3: Discussion - Other Number Systems TWO RESPONSES	10	
		Week 4: Discussion - Simple Interest VS Compound Interest INITIAL POST	5	10/8/2021
	9.8.1 Calculate simple interest.	Week 4: Practice - Simple Interest and Future Value	5	10/11/2021
	9.8.2 Calculate future and present value using simple interest formula.			
		Week 4: Show Your Work - Simple Interest and Future Value	1	
,	9.8.3 Calculate future and present value using compound interest formula.	Week 4: Practice - Future Value of Compound Interest	5	
		Week 4: Show Your Work - Future Value of	1	

	Compound Interest		
	Week 4: Practice - Present Value of Compound Interest	5	
	Week 4: Show Your Work - Present Value of Compound Interest	1	
financed, the installment price, the financing charge and the APR for a		5	
	Week 4: Show Your Work - Amount Financed, Installment Price, Finance Charge, and APR	1	
9.8.4 Compare the effective annual yield of investments.	Week 4: Practice - Effective Annual Yield	5	
	Week 4: Show Your Work - Effective Annual Yield	1	
of a partial loan amortization	Week 4: Practice - Partial Loan Amortization Schedule	5	
5 5 5	Week 4: Practice - Mortgage Options	5	
	Week 4: Show Your Work - Mortgage Options	1	
for long-term financial stability (eq	Week 4: Project - Personal Finance	50	
	Week 4: Show Your Work - Project - Personal Finance	1	
	Week 4: Discussion - Simple VS Compound Interest TWO RESPONSES	10	
	Week 5: Discussion - Would You Play? INITIAL POST	5	10/15/202
9.5.1 Utilize the Fundamental	Week 5: Practice -	5	10/18/202

number of possible outcomes for a given situation.	Гппсрс	
	Week 5: Show Your Work - Fundamental Counting Principle	1
9.5.2 Calculate the number of permutations of a given situation.	Week 5: Practice - Permutations	5
	Week 5: Show Your Work - Permutations	1
9.5.3 Calculate the number of combinations of a given situation.	Week 5: Practice - Solving Applied Problems Using Combinations	5
	Week 5: Show Your Work - Solving Applied Problems Using Combinations	1
9.5.4 Compare permutation and combination problems.	Week 5: Practice - Compare Combinations and Permutations	5
	Week 5: Show Your Work - Compare Combinations and Permutations	1
9.5.5 Solve applied problems using Counting Methods.	Week 5: Practice - Applied Counting Methods	5
	Week 5: Show Your Work - Applied Counting Methods	1
9.6.1 Compute theoretical probability.	Week 5: Practice - Computing the Probability of Events	5
9.6.4 Find the probability that the given event will not occur.		
	Week 5: Show Your Work - Computing the Probability of Events	1
9.6.2 Compute empirical probability.	Week 5: Practice - Empirical Probability	5
	Week 5: Show Your Work	1

	- Empirical Probability	
9.6.3 Utilize the probability of an event to determine the odds in	Week 5: Practice - Using Probability to Find Odds	5
favor and odds against.	For and Against Week 5: Show Your Work	
	- Using Probabiliuty to Find Odds For and Against	1
9.6.5 Recognize whether two events are mutually exclusive.	Week 5: Practice - Mutually Exclusive	5
9.6.6 Calculate "or" probabilities.	Week 5: Practice - Using the Addition Rule to Calculate Probability	5
9.6.7 Utilize the addition rules of probability.		
9.6.8 Calculate conditional probability.		
	Week 5: Show Your Work - Using the Addition Rule to Calculate Probability	1
9.6.9 Recognize whether two events are independent.	Week 5: Practice - Using the Multiplication Rule to Calculate Probability	5
9.6.10 Utilize the multiplication rules of probability.		
	Week 5: Show Your Work - Using the Multiplication Rule to Calculate Probability	1
9.6.11 Compute the expected value of applied problems.	Week 5: Practice - Computing Expected Value	5
	Week 5: Show Your Work - Computing Expected Value	1
	Week 5: Quiz - Probability	28
	Week 5: Show Your Work - Quiz - Probability	1
	Common Learning Outcome Assessment	15

		AY20		
		Week 5: Discussion - Would You Play? TWO RESPONSES	10	
		Week 6: Discussion - Outlier Effect INITIAL POST	5	10/22/2021
	9.7.1 Organize data using frequency distributions and graphs.	Week 6: Practice - Organize Data with Frequency Distributions and Graphs	5	10/25/2021
	central tendency for a data set: mean_median_mode and	Week 6: Practice - Calculate Measures of Central Tendency	5	
		Week 6: Show Your Work - Calculate Measures of Central Tendency	1	
	dispersion for a data set: range	Week 6: Practice - Calculate Measures of Variation	5	
		Week 6: Show Your Work - Calculate Measures of Variation	1	
	nercentiles as measures of nosition	Week 6: Practice - Using Quartiles and Percentiles	5	
		Week 6: Show Your Work - Using Quartiles and Percentiles	1	
	9.7.6 Construct a boxplot for a data set.	Week 6: Practice - Constructing Boxplots	5	
	measure of position of a data item	Week 6: Practice - Z- Scores	5	-
	9.7.7 Compare discrete and continuous data.			
	9.7.9 Compute a z-score from a given data item.			
		Week 6: Show Your Work	1	

9.7.8 Utilize properties of the	Week 6: Practice -		_
normal distribution.	Normal Distributions	5	
	Week 6: Show Your Work - Normal Distributions	1	
	Week 6: Quiz - Statistics	24	
	Week 6: Show Your Work - Quiz - Statistics	1	
	Week 6: Discussion - Outlier Effect TWO RESPONSES	10	
	Week 7: Discussion - Real-World Functions INITIAL POST	5	10/29/2021
0.3.1 Solve linear equations using algebraic properties.	Week 7: Practice - Linear Equations	5	
	Week 7: Show Your Work - Linear Equations	1	
9.3.2 Solve applied problems using inear equations.	Week 7: Practice - Applied Problem with Linear Equations	5	
	Week 7: Show Your Work - Appled Problems with Linear Equations	1	
0.3.3 Solve linear inequalities.	Week 7: Practice - Solve and Graph Inequalities	5	
9.3.4 Graph linear inequalities.			
9.3.5 Solve applied problems using inear inequalities.			
	Week 7: Show Your Work - Solve and Graph Inequalities	1	
0.3.6 Factor polynomials.	Week 7: Practice - Polynomials	5	
	Week 7: Show Your Work - Polynomials	1	
9.3.7 Solve quadratic equations.	Week 7: Practice - Quadratic Equations	5	
	Week 7: Show Your Work - Quadratic Equations	1	

	9.4.1 Graph linear equations.	Week 7: Practice - Linear	5	
		Functions		
		Week 7: Show Your Work - Linear Functions	1	
	9.4.2 Graph quadratic functions (parabola).	Week 7: Practice - Quadratic Functions	5	
	9.4.3 Solve applied problems based on a parabola's vertex.			
	based on a parabola's venex.	Week 7: Show Your Work - Quadratic Functions	1	
		Week 7: Quiz - Algebra	24	
		Week 7: Show Your Work - Quiz - Algebra	1	
		Week 7: Discussion - Real-World Functions TWO RESPONSES	10	
3		Week 8: Discussion - Which is Better Method? INITIAL RESPONSE	5	11/5/2021
	9.4.4 Solve linear systems of equations.	Week 8: Practice - System of Equations	5	11/8/2021
		Week 8: Show Your Work - System of Equations	1	
	9.4.5 Solve applied problems using systems of linear equations.	Week 8: Practice - Appled Problems with System of Equations		
		Week 8: Show Your Work - Applied Problems with System of Equations	1	
	9.4.6 Graph a system of linear inequalities.	Week 8: Practice - System of. Inequalities	5	
		Week 8: Show Your Work - System of Inequalities	1	
	9.4.7 Utilize linear programming to solve applied problems.	Week 8: Practice - Linear Programming	5	
		Week 8: Show Your Work - Linear Programming	1	
		Week 8: Quiz - System of Equations and Inequalities	20	

Week 8: Show Your Work - Quiz - System of Equation and Inequalities	1
Summative Assessment AY20	15
Week 8: Discussion - Which is Better Method? TWO RESPONSES	10
Week 8: Discussion - Biggest Takeaway	15

Student Course Feedback

Prior to course completion you will receive an email providing a link to share your feedback. You are EXPECTED to complete the feedback form for each class.

Assessment

Northeast Iowa Community College is an institution dedicated to continuous instructional improvement as part of our assessment efforts. It is necessary for us to collect and analyze course level data. Data drawn from student work for the purposes of institutional assessment will be posted in aggregate and will not identify individual students. Your continued support in our ongoing effort to provide quality instructional services at NICC is appreciated.

College Policies

Attendance/Academic Engagement

(See College Handbook for more details) Regular attendance is expected. A strong relationship exists between success in college and class attendance. Absence in class interferes with the learning process and may lead to academic failure. Students should confer with the instructor immediately following an absence. When there is advance knowledge of an absence, students should discuss this with the instructor prior to the absence.

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let your instructor know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructor when difficulties arise during the semester so that we can help you find a solution.

Academic Integrity

Academic integrity is the commitment to and demonstration of honesty, ethics, and taking personal responsibility for your work in an academic setting. Academic integrity includes honesty, fairness, respect and responsibility. Academic integrity requires student's work to be the product of their own thought and effort, and to ensure that the intellectual contribution of others is properly documented. Academic integrity applies to all academic activities, including, but not limited to, classwork, labs, clinical field, practicum or co-op assignments. Examples of violations of academic integrity include, but are not limited to, plagiarism, cheating, lying, falsifying data, and aiding dishonesty. Violations of academic integrity are addressed according to the <u>Academic Integrity Policy</u>, and sanctions may include, but not be limited to, warnings (either verbal or written), grade reduction for an assignment, project or test, or a failing grade for the course. Sanctions for violations of academic integrity for a course shall be determined by the faculty member for the course. Pursuant to the Student Conduct Code, egregious or repeated violations of the academic integrity policy may result in the suspension or expulsion from a class or from the College, as determined by the College.

Class Continuation during Campus or Center Closing

Instructional continuity is critical to the College mission and to your success in this class. As such, should a campus or center close due to weather or unforeseen circumstances, please check your Brightspace class for specific instructions and expectations from your instructor due to the campus closure.

Classes will not be canceled, and students will be expected to continue to engage in this class remotely until such a time as classes can return to normal.

For notification on campus closures, please refer to the following:

https://www.nicc.edu/about/consumer-information/emergency-response-and-procedure/

Campus Emergencies

In the event of a campus emergency, an alarm will sound or an appropriate announcement will be made. An emergency response guide, building evacuation routes and severe weather shelter areas are posted in each room. Safety drills are held on a regular basis. For more information, visit campus emergencies in the college catalog.

Course Section Policies

Absence/Illness

If you are going to be absent for a long period of time, please inform the instructor ahead of time. Arrangements will be made. If you become ill, contact the instructor as soon as you are able so arrangements can be made.

Academic Integrity Violations

Academic dishonesty will not be tolerated in any course at NICC. Plagiarism and other forms of cheating are examples of such dishonesty and are subject to review and possible sanctions as outlined in the NICC Student Conduct Code. For a detailed explanation of plagiarism, please visit the Plagiarism Lib Guide at http://nicc.lebguises.com/citingsources.

EXAMPLES of CHEATING/PLAGIARISM

- Submitting work that is not your own
- Submitting work for which so much help has been received that the work is significantly different from your own
- Copying another's exam or part of an exam and submitting it as your own
- Passing test answers to another before, during or after a test

DISCIPLINARY ACTIONS

- First offense: The student will receive a "0" for the given assignment or exam. The student will not be allowed to redo the assignment or exam. Documentation of the offense will be given to the Dean and placed in the student's academic file. Students are encouraged to speak with the instructor to discuss their actions.
- Second offense: If a student conducts another act of academic misconduct, the student will
 receive a "0" for the given assignment or exam and a final grade of "F" for the course.
 Documentation will be given to the Dean and placed in the student's academic file.

Late Work

Late work will NOT be accepted. Each assignment will have a specific opening and closing date, which will be rigorously adhered to and not reopened or extended. Computer malfunctions and "lost" internet connections will not be accepted as excuses for missed due dates on assignments. You should have a backup plan for computer use if your computer or internet is not working correctly.

Missing Assignments

Any assignment not turned in at all or does not meet the deadline will result in no credit given (0 points).

Makeup Testing

You will be allowed to make-up one test during the course. Please contact the instructor to set up the new test within two days of the test's deadline. Failure to make-up the test will result in a zero credit for the assessment.

Use of Technology

Cell Phone/Text Messaging Usage

Not applicable for this course

Laptop Use

Laptops/computers will be used for this class. If you are having technical difficulties with your computer, you may use the computers on the NICC campuses/ centers.

Recording

Not applicable for this course

Classroom Conduct

As a student in this course (and at this College) you are expected to maintain a high degree of professionalism, commitment to active learning and participation in this class; and also integrity in your behavior in and out of the classroom in which the rights, dignity, worth, and freedom of all members of the class are respected. Please refer to the <u>College Catalog</u> for detailed information on the <u>Student Conduct Code</u>.

Additional Information

Learning Center

The NICC Learning Centers provide tutoring assistance free of charge to any student in person Monday through Friday or virtually online with our online tutoring service 24/7 with <u>Upswing</u>. Students are encouraged to utilize the Learning Centers in Calmar, Peosta or Dubuque.

Access

Take advantage of the *ReadSpeaker Listen Button* to enhance understanding and comprehension of the materials in this and any syllabus within the content area. All of the materials posted in the content area of NICC Brightspace classrooms have a *Listen Button* to have the text highlighted and read for you. Listening to text read aloud is shown to improve reading comprehension. www.nicc.edu/readspeaker



Course Copyright

All course materials students receive or to which students have online access are protected by copyright laws. Students may use course materials and make copies for their own use as needed, but unauthorized distribution and/or uploading of materials without the instructor's express written permission is strictly prohibited. Students who engage in the unauthorized distribution of copyrighted materials may be held in violation of the College's Code of Conduct, and/or liable under Federal and State laws.

Netiquette

The term "Netiquette" refers to the etiquette guidelines for electronic communications, such as e-mail and bulletin board postings. Netiquette covers not only rules to maintain civility in discussions, but also special guidelines unique to the electronic nature of forum messages.

Accommodation Policy

In accordance with the Americans with Disability Act, NICC ensures the accessibility of its programs, classes, and services to students with disabilities. For any questions or to apply for disability services please contact the Accessibility Services Office to set up an appointment, or visit the Accessibility Services website at: <u>https://www.nicc.edu/academic-support/disability-services/accommodations/</u> for additional information. Any student eligible for and needing academic accommodations because of a disability is requested to speak with their instructor.

Sally Mallam, M.S. Director of Accessibility Services 844.642.2338 ext. 1258 <u>mallams@nicc.edu</u>

Statement of Non-Discrimination

It is the policy of Northeast Iowa Community College not to discriminate on the basis of race, color, national origin, sex, disability, age (employment), sexual orientation, gender identity, creed, religion, and actual or potential parental, family or marital status in its programs, activities, or employment practices as required by federal and state civil rights regulations. If you have questions, concerns or to read the full policy at: <u>https://www.nicc.edu/aboutnicc/nondiscriminationpolicy/</u>.

Title IX: Confidentiality and Responsible Employee Statement

Northeast Iowa Community College faculty are committed to helping create a safe and open learning environment for all students. If you (or someone you know) have experienced any form of sexual misconduct, including sexual assault, dating or domestic violence, or stalking, know that help and support are available. The College strongly encourages all members of the community to take action, seek support and report incidents of sexual misconduct to the Title IX Office. Please be aware that under Title IX of the Education Amendments of 1972, I am required to disclose information about such misconduct to the Title IX Office.

If you wish to speak to a confidential employee who does not have this reporting responsibility, you can contact one of NICC's Counselors (Calmar Campus 844.642.2338, ext. 1378 / Peosta Campus 844.642.2338, ext. 2215). For more information about reporting options and resources visit <u>Sexual</u> <u>Respect and Title IX</u>.

Disclaimer

This syllabus, along with course assignments and due dates, are subject to change. It is the student's responsibility to check the Learning Management System (Currently Brightspace) for corrections or updates to the syllabus. Any changes will be clearly noted by your instructor or listed in the course announcements or through NICC email.

Advice

- You will need to be self-disciplined and highly organized to take this online course.
- Your initial post for all discussions need to use VideoNote. Any responses to your peer's posts need to be done on separate days.
- Manage your time carefully. Please do not wait until the last moment to submit assignments and assessments.
- Remember late work for assignments will NOT be accepted for this course.

- Use the Learning Center and/or contact the instructor to get help with the concepts.
- Log into Brightspace at least 4 times a week to get updated announcements and information regarding the course.