	<b>MATH103N</b> <b>Quantitative Reasoning</b> <b>Section 1</b>	<b>FALL</b> <b>2022</b>
<b>Department</b>	<b>Department of Mathematics &amp; Science</b>	
<b>Instructor</b>	<b>Steve Opre</b>	
<b>NCC Email</b>	<b>sopre@ccsnh.edu</b>	
<b>Telephone Number</b>	n/a - adjunct faculty	
<b>Office Hours</b>	By appointment	
<b>Office Location</b>	Adjunct Faculty Center is located in Rm. 100	
<b>Class Days/Meeting Time</b>	<b>Tuesday 6:00 – 9:30 PM</b>	
<b>Class Location</b>	<b>Gregg Hall Room 183</b>	

## Rationale:

The ability to apply quantitative reasoning and problem-solving skills has become increasingly more important as our technological society advances. Virtually all areas of study and careers require sound analytical skills.

This course introduces students to a variety of mathematical applications that develop logical and abstract reasoning skills as well as numerical literacy.

## Course Description:

This course is designed to expose the student to a wide range of general mathematics. Problem Solving and Critical Thinking skills, along with the use of technology, will be emphasized and reinforced throughout the course as the student becomes actively involved solving applied problems. Topics included: Number Theory and Systems, Functions and Modeling, Finance, Geometry and Measurement, Probability and Statistics, and selected subtopics. Prerequisite: Placement exam score. Students who do not satisfactorily place into MATHN103N with the required Accuplacer or SAT scores will be required to enroll in the corresponding Co-Requisite Workshop.

## Course Competencies:

At the successful completion of this course, students should be able to:

1. Solve annuity, amortization, and compound interest applications
2. Discuss the fundamentals of set theory
3. Analyze data using statistical tools including charts, histograms, graphs and formulas
4. Model data using equations, graphs, formulas and tables
5. Demonstrate critical thinking and a variety of problem solving strategies
6. Convert data to different units of measurement including English and Metric systems
7. Create and accurately interpret data expressed in a Venn diagram
8. Solve basic problems involving probability and counting principles
9. Solve problems involving basic geometric figures and apply basic geometric principles.

## Essential Questions:

- How does the time value of money affect the future value of an investment?
- How can data be organized and represented to provide insight into the relationship between quantities?
- What strategies are available to solve unfamiliar problems?
- How do measurements change when we change dimensions?
- Why is it important to understand how probability is determined?

## Required Materials:

### Textbook(s)

The text book is free and available to download at:

<https://sccmath.files.wordpress.com/2017/07/college-mathematics-textbook-1st-edition.pdf>

Or you can purchase it at the book store  
College Mathematics Textbook  
1st edition ISBN: 978-1-63434-553-8

Click on this link to access the NCC bookstore's website

<https://www.bkstr.com/nashuaccstore/home>

### **Technology**

In order to be successful at NCC, all students need a laptop or personal computer (PC) as well as reliable internet access. It is recommended that students purchase a laptop for in-class use. Specifications can be found by clicking on the link below. If you do not have Internet access or the right kind of computer equipment (e.g., laptop, webcam, etc.) you may be eligible for the college's technology lending program, which is a first come first served program. Click on this link for more information

<https://www.nashuacc.edu/technology>

Laptops that meet NCC technology specifications are available for purchase at the NCC bookstore. Financial aid may be used for purchases made at the bookstore. Contact the bookstore for more information

<https://www.bkstr.com/nashuaccstore/home>

### **Supplemental Materials:**

A scientific calculator is required for this course. I recommend a TI30X.

### **Course Expectations:**

#### **Attendance:**

Attendance is directly related to success in this course. You are expected to attend all classes and to be on time. It is extremely difficult to make up for lost hours of instruction time. **You are responsible for all material and information given in class whether present or not.**

#### **Cell Phones:**

**DO NOT TEXT DURING CLASS.** If something important should arise and you need to use your cell phone for personal matters you are expected to excuse yourself from the room before completing the call or text. If you need to leave your cell phone on, please put it on vibrate.

**All exams are closed book.**

**Calculators are allowed for all exams.**

**Cell phones are not permitted to be used as a calculator**

#### **Problem Solving:**

In mathematics it is never acceptable to just write an answer to a multi-step problem. It is expected that your answer will demonstrate a sufficient

sequence of steps required to reach the answer showing your thought process. Your answer should be considered a tutorial read by someone who is unfamiliar with the problem.

### **Exams/Final:**

There will be 4 cumulative exams, a project paired with a take-home exam (the project and take-home exam count as an exam), and a final for this course.

### **Quizzes:**

There will be daily quizzes throughout the course, starting on the first day. The quizzes are given in the first 10-15 minutes of class. There will be no makeup for missed quizzes. A score of 0 will be assigned to a missed quiz.

### **Homework:**

Homework is collected on the day of an exam and graded for accuracy and completion.

### **Make-up:**

- Exams may not be made up, unless there are extenuating circumstances. If not present at the time an exam is given, a grade of zero will be recorded.
- The lowest exam grade will be dropped.
- There will be no makeup for missed quizzes
- Your two lowest quizzes will be dropped
- Partial credit given for late homework
- The Final Exam must be taken on the date announced by the instructor. Only in an extreme case will a make-up exam be permitted. The student also must provide documentation for the absence and it is the student's responsibility to notify the instructor of the absence prior to the exam.

### **Additional:**

- Please see the instructor at any time if you have a question.
- Use the Math Tutoring available to you in the Library (see schedule)
- If any student needs special accommodations due to disabilities, please feel free to discuss these matters with the instructor.

### **Course Cancellation Expectation:**

If for some reason I need cancel a class you will be notified through your CCSNH email. I will also have a note posted on the door. In this situation I will post a reading assignment or video related to the lesson on Canvas as well as a practice assignment to be completed before the next class. This will also be the case if campus is closed due to weather or an emergency. You are responsible for the posted lesson and practice assignment.

### **Statement:**

This class is a partnership. We will be engaging in many mathematical discussions both as a whole class and small groups. Be an active participant. Do not let yourself fall behind, nor assume that it is ok to not understand a topic here and there. You should always ask for clarification of anything you do not understand and you are strongly encouraged to communicate any other matters relevant to your learning to me.

### **Grading:**

- ✓ **Exams 60%**
- ✓ **Quick 2 question quizzes at the beginning of class 10%**
- ✓ **Homework 10%**
- ✓ **Final Exam 20%**

**Grades will be assigned according to the following department scale:**

#### Mathematics Department Grading Scale:

> 93	A	73-76	C
90-92	A-	70-72	C-
87-89	B+	67-69	D+
83-86	B	63-66	D
80-82	B-	60-62	D-
77-79	C+	< 60	F

### **Diversity, Equity, and Inclusion Statement:**

We are all responsible for creating a diverse, equitable, inclusive, and just environment. Thus, we must treat individuals with respect by valuing all types of diversity. This is fundamental in creating a welcoming and inclusive learning

environment. Diversity may include multiple ways of identifying ourselves, including, but not limited to race, color, national origin, language, sex, disability, age, sexual orientation, gender identity, religion, creed, ancestry, belief, veteran status, or genetic information. These diverse identities, among many others not mentioned, influence the perspectives our students, faculty, and staff bring to the NCC community. Through use of various approaches that enhance intellectually rich, respectful, safe, and inclusive learning environments, this dynamic process will demonstrate our sustained commitment at NCC. It is our core belief that diversity, equity, and inclusion promote excellence, collaboration, and innovation while also seeking justice.

## **Available Support Services**

**NCC Library:** Get help with research for your papers and assignments from the NCC librarian and staff. Email [ncclibrary@ccsnh.edu](mailto:ncclibrary@ccsnh.edu)

**Tutoring and Writing Center:** The Tutoring and Writing Center, located in the library, offers free academic support services to all NCC students. Meet in-person or via Zoom with experts who can tutor you in math or accounting or help you with writing for any course. Tutoring is drop-in or by appointment. View the current tutoring schedule at <https://library.nashuacc.edu/home/tutoring>

Online chat tutoring is also available 24/7 with Smarthinking. Find a link on the left navigation menu inside Canvas courses.

**Disability & Accessibility** (*Reasonable Accommodation Plan*): Students who think they may have or have a documented disability (*physical, learning, or mental health*) and/or had an IEP or 504 Plan in high school who may need classroom accommodations must meet with the Disability Services Coordinator to set up an NCC Reasonable Accommodation Plan (RAP). For more information view the Disability & Accessibility page: <https://www.nashuacc.edu/student-services/disability-accessibility-information> and/or contact Jodi Quinn, Disability Services Coordinator (office located in the library), at [jquinn@ccnsh.edu](mailto:jquinn@ccnsh.edu) or (603) 578-8996.

In order to receive reasonable accommodations, it is the student's responsibility to email the current semester's RAP to each instructor and as needed meet with instructors to discuss the Plan. Each term the student wants to utilize accommodations, the RAP must be renewed and the student provides the current term Plan to instructors even if provided a Plan to an instructor for a previous term course.

**Audio Record Classroom Lecture:** Please note that as a student in this class, you may have a classmate who by permission can audio record class lectures for

his/her learning purposes. **Only students with prior written permission** from the instructor or the Disability Services Coordinator may audio record class lectures - *for educational purposes only*. Students who audio record class lectures are prohibited from selling, transcribing, or distributing the recordings in *any manner* and are asked to delete the recordings when it is no longer essential for their learning purposes.

Instructors may record their own class lectures, activities, and discussions using electronic video, still photo, or audio recording for educational purposes, including academic research, professional development, and recording of course content for access through online learning and other formats. Every student present will be informed by the instructor of any recording at the beginning of class.

### **CARE Team**

If you need information or a referral to local resources in the areas of Mental Health or basic support services (such as food, clothing, shelter, substance abuse or others including domestic and sexual violence), you can email the NCC CARE team ([NCCCare@ccsnh.edu](mailto:NCCCare@ccsnh.edu)) and we will assist you in connecting to community resources. <https://nashuacc.edu/student-services/care-team>

**Student Assistance Program:** The Community College System of NH (CCSNH), which includes NCC, offers a Student Assistance Program (SAP) provided by Kepro to provide students with access to free confidential Student Counseling Services (SCS) by licensed mental health professionals in the local area and other supports 24 hours a day, 7 days a week, 365 days a year. Kepro's services are confidential. <https://nashuacc.edu/student-services/student-assistance-program>

## **Department Policies**

Attendance policy is in line with the college attendance and AF policy.

### **Policy for Students Enrolled in the Co-Requisite Workshop:**

The Co-Requisite Workshop is an integral component of this course for students that did not meet the pre-requisite placement requirements. In order to achieve the optimum experience for success, attendance in the Workshop is essential. To that end, a student enrolled in the Co-Requisite Workshop may not miss more than **two (2)** Workshop classes. In the event that you should miss more than two meetings of the co-requisite workshop you will be dropped from this class and receive an **AF** grade in the course.

## College Policies

**Non-Discrimination:** The NCC Equity Committee is designated to coordinate compliance with the Non-Discrimination Policy and handles all concerns of discrimination that occur on campus that are not covered under Title IX. View more information here [Non-Discrimination Policy and Grievance Procedure](#)

**Title IX:** Classroom instructors at Nashua Community College are encouraged to create and maintain a safe learning environment in which students feel able to share opinions and related life experiences in classroom discussions, in written work, and in meetings with professors. To the greatest extent possible, this information will be kept private. However, staff and faculty have a legal obligation to report information concerning sexual misconduct, violence and exploitation of individuals per federal statute and in compliance with established policies and procedures at Nashua Community College. If you have been subjected to sexual misconduct, violence or exploitation, we encourage you to contact your Title IX Coordinator, Vice President Lizbeth Gonzalez, for support and assistance. She can be reached at Nashua Community College, 505 Amherst Street, Nashua, NH, 603-578-8928 or [lgonzalez@ccsnh.edu](mailto:lgonzalez@ccsnh.edu). View more information here [Title IX Policy and Grievance Procedure](#)

**Attendance:** Regular attendance and active participation are essential for academic success. Every student should carefully review the department and college attendance requirements posted in the Department and College Policies Sections of this syllabus.

If a student must be absent from class, the student should contact his/her professor and follow the professor's make up policy listed in the syllabus under Course Expectations. In an online or hybrid class, measures of attendance and active participation include contributing to discussion board, submitting an assignment, taking a test or quiz on Canvas, etc. Logging into Canvas does not count as class attendance or participation. (For a complete definition of active participation, see regular and substantive interaction statement in student handbook.)

Rarely, a student may experience a serious situation that prevents that student from attending class for an extended period. This could be for reasons such as illness/hospitalization, loss of childcare, or lack of transportation. In these situations, the student should notify his/her professor as soon as possible and contact the advising center for assistance

[NCCAcademicAdvisingCenter@ccsnh.edu](mailto:NCCAcademicAdvisingCenter@ccsnh.edu).

**AF Policy:** In all cases, faculty **will** issue an AF grade if a student has 1) missed more than two consecutive weeks of class and 2) failed to communicate with the instructor by responding to EAB attendance alerts and other outreach.

**Students should also refer to department attendance policy under the Department Policies section of the syllabus.**



In addition, an instructor or administrator may issue an AF grade if a student's behavior violates the Student Code of Conduct and disrupts classroom instruction.


Please be advised that if the behavior of any student (or students) disrupts the learning of his/her classmates, the following steps will be taken by the instructor 1) verbal warning; 2) meeting with instructor and department chair; 3) filing of written complaint and referral to Vice President of Academic Affairs for possible removal from the course with AF grade.

An AF grade may also be issued if a student registered in a clinic, practicum, internship, or lab is deemed unsafe or performing in an unsatisfactory manner as determined by an evaluation by a faculty member/agency supervisor in accordance with department criteria and procedure.

An "AF" grade is calculated in the GPA as an "F". Students should refer to the student handbook for additional information about the AF policy.

**Canvas:** Canvas is the online learning management system used by instructors and learners at Nashua Community College. Instructors will post syllabi, course related documents and grades in Canvas. Students may be required to submit assignments and/or take assessments through Canvas and/or participate in discussion boards. **If class is ever cancelled because of instructor illness or inclement weather, students will need to check Canvas for their assignment.**

**24/7 Canvas Support:** To access support through email, phone or chat

click on the  icon. Students can also find guides, videos, and a Canvas community by clicking on the *CCSNH Resources* icon on the tool bar at the left of the Canvas screen then choosing Canvas Resources.

If you have forgotten your Easy Login Password information, please visit the following link: <https://password.ccsnh.edu/accounts/Reset>

EAB Alerts Faculty can issue "Alerts" for students at any time. The administration at NCC encourages professors to issue alerts for any student who may be having difficulty in the course. When a faculty member raises an alert, both the student and student's advisor receive an automated email based on the alert raised. Faculty can issue an alert through EAB Navigate on the college website or directly using the following link: <https://nashuacc.campus.eab.com>

**College Email System:** Nashua Community College has established a College email system as a means of the College sending official information to enrolled students, and for students to send communication to their instructors and College personnel. All students registered at NCC will be assigned a College email account/address to be used as the only email address for all email

communication: 1) sent to the students from their instructors and from all College personnel; and, 2) sent by the students to their instructors and to all College personnel.

In addition:

- Students should check their College email account regularly to ensure they are staying current with all official communications. Official communication includes, but is not limited to, policy announcements, registration and billing information, schedule changes, emergency notifications and other critical and time sensitive information.
- Students should also check their college email account to be sure that they are current with all email communication from their faculty.
- The student email account/address should be the only e-mail address students use to send email to faculty and College personnel so that student email is recognized and opened.
- This service is provided exclusively to the students of NCC. Accounts are for individual use only, and are not transferable or to be used by any other individual.
- Students using their College email account do so under the policies set forth in the Student Handbook under "Student Computer Conduct Code".

**Sensitive Materials Policy:** During the semester, in order to cover certain academic topics, there may be occasions to view or discuss material which may not meet the student's own personal definition of appropriateness. At such times, every student has the right to decide not to participate. Every effort will be made by the instructor to notify students in advance of when such sensitive material will be used so that students can make alternative arrangements. Faculty will guide students in the identification of alternate learning opportunities consistent with relevant course objectives so that students opting out of scheduled "sensitive" learning experiences will not be penalized academically in any way. Please note the opportunity to leave the classroom discretely is always available to each student when such sensitive material is being discussed. The student then has the responsibility before the next class meeting to inform the instructor as to the reason for leaving.

## **Academic Conduct**

All students are expected maintain high standards of academic integrity as they complete their coursework at NCC. Cheating and plagiarism are violations of the Student Code of Conduct and all instances of academic dishonesty are taken very seriously by the College.

**Cheating:** Cheating includes, but is not limited to: (1) use of any unauthorized assistance from other persons or technologies in taking quizzes, tests, or examinations or in the preparation and completion of class assignments; (2) dependence upon the aid of resources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out

other assignments; (3) the acquisition, without permission, of tests or other academic material belonging to a member of college faculty, staff, or students; or (4) knowingly providing unauthorized assistance of any kind to another for the purpose of providing unfair advantage to the recipient in the completion of course assessments/assignments (sometimes known as facilitation).

When a student is found to have cheated on an academic assignment, it will be up to each instructor to determine the grading penalty. Depending on the severity of the incident, this could range from a warning to a loss of credit for the course. **In all cases of cheating, the instructor will notify the student's advisor and the advisor will document the incident on EAB using advisor notes.**

If any further incidents of cheating are reported to the student's advisor, the advisor or VPAA will file a complaint with the appropriate college Judicial Body. Additional sanctions may be imposed.

**Plagiarism:** Plagiarism is a serious violation of a student's academic integrity and the trust between a student and his or her teachers. Plagiarism is the act of a person presenting another person's work as if it were his or her own original work. Such acts of plagiarism include, but are not limited to:

1. A student submitting as his or her own work an entire essay or other assignment written by another person.
2. A student submitting as his or her own creation the artwork (including but not limited to a painting, drawing, photograph, object, digital representation) of another person.
3. A student taking word for word a section or sections of another person's work without proper acknowledgment of the source and quotation.
4. A student using statistics or other such facts or insights as if these were the result of the student's efforts and thus lacking proper acknowledgment of the original source.
5. The paraphrasing of another person's unique work with no acknowledgment of the original source.
6. Copying another student's work on a quiz or test.

Some instructors may consider self-plagiarism to be a form of plagiarism. Self-plagiarism includes **submitting the same paper** in response to two **different** assignments. Please consult with your instructor and carefully review instructor expectations posted on your syllabus if you have any questions.

When a student is found to have plagiarized an academic assignment, it will be up to each instructor to determine the grading penalty. **Depending on the severity of the incident**, this could range from a warning to a loss of credit for the course. **In all cases of plagiarism, the instructor will notify the student's advisor by posting an alert on EAB Navigate. The advisor will then document the incident on EAB using advisor notes.** If any further incidents of plagiarism are reported to the student's advisor, the advisor or VPAA will file a complaint with the appropriate college Judicial Body. Additional sanctions may be imposed. For other examples

of Academic Misconduct and a full description of the Student Disciplinary Process, please refer to the NCC Student Handbook

### **Credit Hour Guidelines**

1. A credit hour shall be the equivalent of one (1) hour of classroom or direct faculty instruction and a minimum of two (2) hours of out-of-class student work each week for 15 or 16 weeks.
2. A credit hour shall be allocated based on the following:

Category	Contact Hours per Week	Contact Hours per Sem. (based on minimum 15 week semester)
Class	1	15
Laboratory	2 or 3	30-45
Clinical	3 to 5	45-75
Practicum, Fieldwork	3	45
Internship	3 to 6	45-90
Co-op	Variable by Dept.	Variable by Dept.

## Course Calendar

### MATH103N Fall 2022

Class #	Section and Topic	Assignment	Targeted Competencies*
1 8/30	1.1 Geometry Basics 1.2 Perimeter 1.3 Area 1.4 Pythagorean Theorem 1.5 Circles 1.6 Perimeter and Area of Composite Figures 1.7 Volume  2.1 Length 2.2 Weight	Pages 28 – 37 Problems: 3, 5, 7, 8, 9, 11, 13, 14, 19, 22, 26, 28 Challenge: 35 & 39  Pages 61 – 64 Problems: 1, 3, 9, 13	Solve problems involving basic geometric figures and apply basic geometric principles  Convert data to different units of measurement including English and Metric systems
2 9/6	No class	ONLINE Quiz	
3 9/13	2.3 Capacity 2.4 The Metric System 2.5 Converting Between Systems 2.6 Problem Solving Using Rates and Dimensional Analysis Review	Pages 61 – 64 Problems: 20, 25, 27, 34, 37, 39, 42, 48, 51, 59, 60 Challenge: 54 & 65	Convert data to different units of measurement including English and Metric systems
4 9/20	<b>Unit 1 Exam</b>		
5 9/27	4.1 Percentage Basics 4.2 Applications Involving Percentages 4.3 Absolute and Relative Change 4.4 Percent Increase and Decrease  5.1 Simple Interest 5.2 Compound Interest 5.3 Annual Percentage Yield  6.1 Annuities	Pages 114 – 118 Problems: 1, 3, 5, 6, 9, 14, 16, 20, 23, 25, 32, 34, 35 Challenge: 37 & 38  Page 127 Problems: 1, 5, 7, 11, 16, 20, 23, 26, 28, 35  Page 146 Problems: 1, 4, 6	Solve annuity, amortization, and compound interest applications

6 10/4	6.2 Payout Annuities 6.3 Loans Review	Pages 146 – 150 Problems: 12, 16, 20, 21, 27, 32 Challenge: 34 & 35	Solve annuity, amortization, and compound interest applications
7 10/11	<b>Unit 2 Exam</b>		
8 10/18	8.1 Types of Probability 8.2 Basic Concepts 8.3 Complementary Events 8.4 Calculating Odds 8.5 Expected Value 9.1 Independent Events 9.2 Conditional Probabilities 9.3 “Or” Probabilities 9.4 Basic Counting	Pages 186 – 188 Problems: 1 – 33 odd  Pages 211 – 218 Problems: 1, 3, 5, 9, 11, 15, 17, 19, 20, 23, 25, 27, 29, 37, 39, 40, 41, 46, 49, 52	Solve basic problems involving probability and counting principles
9 10/25	9.5 Permutations 9.6 Combinations Review	Pages 211 – 218 Problems: 59, 63, 67, 74, 76 Challenge: 55	Solve basic problems involving probability and counting principles
10 11/1	<b>Unit 3 Exam</b>		
11 11/8	10.1 Introduction to Statistics 10.2 Sampling Methods 10.5 Categorizing Data 10.6 Presenting Categorical Data Graphically 10.7 Presenting Quantitative Data Graphically 11.1 Describing a Distribution 11.2 Measures of Central Tendency 11.3 Measures of Variation 11.4 Quartiles, Five Number Summary and Boxplots	Pages 250 – 256 Problems: 1, 3, 4, 10, 23, 25, 29, 30, 32, 33, 34, 37  Pages 282 – 289 Problems: 2, 3, 4, 6, 9, 11, 15, 16, 18, 21, 23	Model data using equations, graphs, formulas and tables  Analyze data using statistical tools including charts, histograms, graphs and formulas
12 11/15	12.1 Normal Distribution 12.2 Empirical Rule	Pages 307 – 312	Analyze data using statistical tools including charts,

	12.3 Standard Scores (z-scores) 12.4 Finding Percentages with Normally Distributed Variables  Intro Linear Functions Project & Review	Problems: 3, 5, 7, 8, 9, 11, 16, 19, 21, 23, 27, 29, 33, 37, 39, 43	histograms, graphs and formulas
13 11/22	<b>Unit 4 Exam</b>		
14 11/29	3.1 Functions 3.2 Linear Functions 3.3 Linear Regression 3.4 Correlation  7.1 Set Basics 7.2 Union, Intersection and Complement 7.3 Venn Diagrams  Review	Pages 90 – 97 Problems: 2, 3, 5, 6, 10, 11, 17, 18, 21, 22, 27, 28, 29, 31, 32, 33, 36, 37, 39, 40, 41, 45, 46, 47, 49  Pages 163 – 172 Problems: 1, 4, 9, 16, 19, 20, 22, 24, 26, 28, 30, 31, 32, 33, 34, 39, 43, 46, 48, 49	Demonstrate critical thinking and a variety of problem solving strategies  Discuss the fundamentals of set theory  Create and accurately interpret data expressed in a Venn diagram
15 12/6	<b>Final Exam &amp; Linear Functions Project Due</b>		

\*Targeted competencies refer to the established course competencies listed above.

**[This schedule is subject to change](#)**