



**Department of Mathematics**  
**Spring Semester/Academic Year (2023-2024)**

**Course Prefix and Number: Math 118**  
**Course Title: GENERAL EDUCATION MATH**  
**PCS Code #: 1.1 Transfer**  
**IAI Code#: MI 904**

**Classes:**

6:00 PM – 8:15 PM T&Th MATH 118 PR (60031) A-310

**Office Hours:**

9:20 AM – 10:35 AM M&T&W&Th ZOOM By appointment

2:30 PM – 3:00 PM M&W ZOOM By appointment

4:55 PM – 5:25 PM T&Th L-304

**Instructor:** Julius Nadas  
**Office:** L-304  
**Phone:** 773-481-8340 (Please do not call, use email)  
**Web Site:** <http://nadas.org/jnadas/index.htm>  
**EMAIL:** [Jnadas@ccc.edu](mailto:Jnadas@ccc.edu)

**Course Catalog Description:**

This course is designed to fulfill general education requirements. It is not designed as a prerequisite for any other college mathematics course. This course focuses on mathematical reasoning and solving of real-life problems. Three or four topics are to be studied in depth, with at least three chosen from the following list: counting techniques and probability, game theory, geometry, graph theory, linear programming, logic and set theory, mathematical modeling, mathematics of finance, and statistics. Applications involving problem-solving skills are emphasized throughout the course. Technology is an integral part of this course. Writing assignments, as appropriate to the discipline, are part of the course.

**M-118 Credit Hours: 4**                      **Contact Hours: 4**                      **Lecture Hours: 4**  
**Length of Course: 12 weeks / semester**                      **Method of Delivery: In person.**

**Prerequisites:**

A minimum grade of 'C' in one of the following courses: [MATH 90](#) or [MATH 99](#) or [MATH 100](#); or a minimum grade of C in [MATH 98](#) and concurrent or successful completion of [MATH 18](#); or appropriate score on Placement Test; or Consent of Department Chair.

## **Course Objectives:**

This course will teach students how to:

1. use logic in analyzing real-life situations.
2. apply counting method techniques to solve real-life problems.
3. develop the basic skills in probability necessary to understand and determine the likelihood of real-life events.
4. gather, interpret, and analyze real-life data statistically.

## **Instructor's Thoughts**

I started programming computers in 1958 and since then I have been a strong proponent of radically changing the Math curriculum to incorporate Technology. Unlike other math teachers I want you to off-load all computational tasks to a computer. Your job is to be a manager, directing the work done by a computer. You analyze the problem, explain to the computer what it needs to do and then devise some way of verifying the correctness of the computer's solution.

This is not going to be anything like other math classes you have taken. Typically a teacher will train your brain by showing you step by step how to solve a problem, giving you a bunch of sample problems with which to practice and then has you demonstrate your mastery by doing manual calculations. I see this as a waste of your time and brainpower. Once you get out of school you will never have to solve problems that way. Solving them that way does not prepare you for what you will be expected to do after you leave.

For this class you will need an HTML5 compliant device such as a smartphone, a pad or a laptop computer. If you don't have one, the IT department has some that you can borrow from them, but I strongly urge you to get something of your own.

I have found that students who do best in my class are the ones who interact with me by asking questions and having me repeat what I said until it starts to make sense to them. Students who expect me to teach the old way will not do well at all.

I do not feel the same way about "cheating" as other teachers. I want you to read and understand a problem and then use ANY resource to get an answer. Some of my questions might have multiple interpretations and there could be different answers. If your answer is one I did not anticipate you will need to show me what you were thinking. For example if I ask you what is  $2+2$ , most people will interpret the  $+$  sign as representing addition. But in many programming languages it represents concatenation, and therefor you would get a different answer, like this:

<https://www.youtube.com/embed/Zh3Yz3PiXZw>

There are five tests, one on each of the four topics, and a departmental exit test on the SLO's (Student Learning Outcomes.) You have three days for each test and no make ups. I do not prepare you by giving you sample questions. You need to review the vocabulary and ASK QUESTIONS if there is anything you don't already know.

Fasten your safety belts - you are in for an exciting ride.

## **Student Learning Outcomes:**

Upon successful completion of the course, students will be able to:

### **Logic and Set Theory**

1. Relate Logical operators like AND and OR into set theory operators like Intersection and Union
2. Translate non mathematical words into set language and logic language and vice-versa.
3. Apply the concepts, language, and notation of sets to solve problems
4. Determine the truth-value for compound statements and the negation of statements
5. Determine the converse, inverse, and contrapositive of conditional statements.
6. Construct truth tables for compound statements
7. Determine the validity of arguments using sets with Euler diagrams and truth tables.

### **Counting Techniques**

8. Develop and apply common counting method strategies such as the use of tables, charts, diagrams, patterns, sketches, equations, and formulas.
9. Apply the fundamental counting principle to application problems.
10. Use the factorial formula to determine the number of ways to arrange objects.
11. Apply permutations to application problems.
12. Apply combinations to application problems.
13. Use the complement and/or additive principles for counting to solve application problems.

### **Probability**

14. Determine the empirical probability and theoretical probability for events.
15. Determine the odds in favor and the odds against events.
16. Apply the addition rule of probability to real-life problems.
17. Apply the multiplication rule of probability to real-life problems.
18. Apply the binomial probability formula to application problems.
19. Determine the expected values of random variables that occur in real-life.

### **Statistics**

20. Gather, interpret, and present data in frequency distribution tables, histograms, and graphs.
21. Students find and interpret various measures of central tendency.
22. Find and interpret various measures of dispersion.
23. Use z-scores (standard scores) to compare the relative position of data from different distributions.
24. Determine the percentiles and quartiles for data sets and construct box and whiskers plots from the results.
25. Apply the principles of a normal distribution to real-life data that is normally distributed.
26. Use regression analysis to formulate relationships that exist between variables.

**Definition / Statement of Active Pursuit of the Course:**

Students who do not take any of the tests on a scheduled date are considered to be in violation of the active pursuit policy. District and College attendance policies are listed in the college catalog and the Student Policy Manual: <http://www.ccc.edu/menu/Pages/Policies.aspx>

**“No Show” Policy:** (If a student registered for the course before the start time of the first class period, but 1) did not attend the first 2 classes, or 2) attended only 1 of the first 3 classes and failed to notify the instructor of his or her intentions to continue the class, the Registrar’s Office will remove the student from the course.)

**Important Dates for Spring 2024:**

Martin Luther King, Jr. Holiday: January 15, 2024 (Monday)

Start of semester: January 16, 2024 (Tuesday)

Schedule Revision Period: Jan 16 – Jan 19, 2024 (Fri)

President’s Day Holiday: Feb 19, 2024 (Monday)

Mid-term: Mar 14, 2024

Spring Break: Mar 24, 2024 (Mon) – Mar 31, 2024 (Sun)

Last day for student-initiated withdrawal: April 12, 2024 (Fri)

Fall term ends (last day of classes): May 11, 2024 (Sat)

**Academic integrity:** The City Colleges of Chicago is committed to the ideals of truth and honesty. In view of this, students are expected to adhere to high standards of honesty in their academic endeavor. Plagiarism and cheating of any kind are serious violations of these standards and will result, minimally, in the grade of “F” by the instructor.

**Student Conduct:** City Colleges of Chicago students are expected to conduct themselves in a manner which is considerate of the rights of others and which will not impair the educational mission of the College. Misconduct for which students are subject to College Discipline (e.g. expulsion) may include the following: (1) all forms of dishonesty such as stealing, forgery, (2) obstruction or disruption of teaching, research, administration, disciplinary proceeding, (3) physical or verbal abuse, threats, intimidation, harassment, and/or other conduct that threatens or endangers the health or safety of any person, and (4) carrying or possession of weapons, ammunition or other explosives.

**Disability Access Center:** Please note: Any student with a disability, including a temporary disability, who is eligible for reasonable accommodations should contact the Disability Access Center located in room L135, Learning Resource Center of the Wright North Campus or call (773) 481-8016 as soon as possible.

**Classroom Etiquette:** Please use the chat function to talk to each other.

**Math Tutors:** Our tutors can do either one on one or group sessions. When you make an appointment with them make sure you tell them that you are in my technology enhanced version of Math 118. Go to this page to make an appointment:

<https://www.ccc.edu/colleges/wright/departments/pages/tutoring.aspx>

## Topical Outline / Course Calendar:

<b>Class Meeting</b>	<b>Lecture Content (details)</b>
Week 5	Set symbols and terminology, Venn Diagrams and subsets, Set operations, Cardinal numbers, Negation of Statements, Quantifiers, Negation of Statements with Quantifiers, Truth Tables for Negations, Conjunctions, Disjunctions,
Week 6	De Morgan's Laws, Conditional Statements, Negations of Conditional Statements, Equivalent Statements, Conditional Statements, Converse of Conditional Statements, Inverse of Conditional Statements, Contrapositive of Conditional Statements Various Translations of Conditional Statements Biconditional Statements, Truth Tables for Biconditional Statements, Euler Diagrams to Analyze Arguments, Testing the Validity of an Argument with a Truth Table
Week 7	Test 1: Feb 27 – Mar 1
Week 8	List Outcomes for a Two-Part Task Using Product Tables List Outcomes for a Three-Part Task (or more) Using Tree Diagrams Systematic Listing Outcomes. Fundamental Counting Principle Factorials to Arrangement Objects
Week 9	Guidelines for Choosing a Counting Method. Pascal's Triangle Binomial Theorem. Counting strategies, Complement Principle of Counting, Additive Counting Principle
Week 10	Test 2: Mar 19 – Mar 22
Week 11	Complements Rule of Probability, Mutually Exclusive Events, Addition Rules of Probability, Conditional Probability, Independent Events, Multiplication Rules Basic Probability Definition, Theoretical Probability, Empirical Probability, Law of Large Numbers, Odds In Favor or Odds Against an Event. Binomial Probability Expected Value
Week 12	Test 3: Apr 9 – Apr 12
Week 13	Grouped Frequency Distribution Tables, Histograms Relative Frequency Circle Graph Line Graph, Mean, Weighted Mean, Median Mode Sample Standard Deviation, Z-Score, Percentiles, Quartiles, Box and Whiskers
Week 14	Properties of the Normal Curve, Linear Regression Analysis, Scatter Plot, Sample Correlation Coefficient, Regression Coefficient Formulas, Line of Best Fit: Least Squares Line
Week 15	Test 4: Apr 30 – May 3
Week 16	Final Exit Exam: May 7 – May 10

### Evaluating Student Performance:

Final grades are determined by averaging scores from: the 4 Unit Tests and the comprehensive Exit Exam. The student will be apprised of his standing at mid-term and at the end of the semester by a letter grade.

### Recommended Texts, Materials and Resources:

Mathematics is universal but it can be presented in many different ways. You are encouraged to utilize any reference material that discuss the SLO's listed above. Some instructors are using: MATHEMATICAL IDEAS by Miller, Heeren & Hornsby Jr., Published by Pearson Addison Wesley For the most part I will be using this OER text: Math in Society by David Lippman

<http://www.opentextbookstore.com/mathinsociety/>

### **Methods of Instruction:**

You will be using a variety of on line tools such as the one at <http://www.wrightcalc.com/>  
I rely very heavily on your asking questions. I am more than happy to explain anything as many times as necessary, but YOU have to initiate the exchange of information by telling me what you want to know. I prefer to explain course material in class so everyone can get involved in the discussion and benefit. Please use my office hours for conversations that are of a personal nature.

**Materials:** You are required to use a smart phone, pad, laptop or notebook computer.

**My web sites:** <http://nadas.org/jnadas> and <http://Wrightcalc.com>

### **Students Course is Expected to Serve:**

You should not be taking this class if you have already taken a college level Math class or are planning on taking one in the future. This course is designed for students who only need one gen ed math course to fulfill the mathematics requirement for some associate degrees such as the AA or AAS. It is not appropriate for an AS or an AES degree.

### **Grading Procedure:**

Four tests will each count for 20%

Final Exam: 20%

#### **Grade Distribution**

90% to 100% = A

80% to 89% = B

70% to 79% = C

60% to 69% = D

Below 60% = F

### **Exit Assessment:**

The final exam of each course is also the exit test. A student scoring 40% on the final exam will be graded by his/her instructor according to the grading policy of that instructor. The highest grade a student can receive if he/she scores less than 40% is D. Those students, who fail the exit test, have the right to appeal by completing the appeals form (copies are available in the department office) and submitting it to the department. The department will form a committee of three members to examine the student's appeal. The chairperson of the committee is the department chairperson, one of the committee members is the student's teacher and the second is a full time math professor appointed by the department chairperson. The committee, after hearing the case, may decide to set aside the grade and ask the student to retake the final exam, in which case the student's teacher will recalculate his/her final grade, or the committee may decide to let the grade stay. In this case the student has the right to appeal to the Dean of Instruction if he/she so desires.

## **Support Services:**

Wright College is committed to your success!

Below you will find a list of offices you may wish to contact during the semester for assistance:

Zoom links can be found at: <https://prepare.ccc.edu/wrightvss/>

### ACCESS Center Room: A-245

Admissions Room: A-129 773-481-8450 wradmissions@ccc.edu

Adult Education Room: A-205 (773) 481-8823 WrightAdultEd@ccc.edu

Advising & Transfer Room: A-120 773-481-8200 wradvising@ccc.edu

Business Office Room: A-138 773-481-8500 wwcbusinessoffice@ccc.edu

Career Planning and Placement Room: A-100 773-481-8527 wrightcareercenter@ccc.edu

Continuing Education Room: A-140 773-481-8059 akashuba@ccc.edu

Early College Room: A-113 773-481-8234 msimeonovska@ccc.edu

Financial Aid Room: A-128 773-481-8100 wrfinaid@ccc.edu

Information Technology Room: L112 773-481-8775 wrightit@ccc.edu

Library Room: L-200 773-481-8400 wwclibrary@ccc.edu

Registrar Room: A-129 773-481-8080 wrregistrar@ccc.edu

Star Scholarship starscholarship@ccc.edu

Student Activities 773-481-8149 www-activities@ccc.edu

Student Government Association ccastle2@student.ccc.edu

Testing Center 773-481-8304

Title IX Room: A-109 773-481-8186 aguengerich1@ccc.edu

Tutoring Rooms: S-100, S-101, S-102 773-481-8458 wwc-academicssupport@ccc.edu

Tutoring- Remote Enterprise remotetutoring@ccc.edu

Veterans Services Room: S-139 773-481-8012 wr-veteranservices@ccc.edu

Wellness Center Room: S-106 773-481-8560 wrwellness@ccc.edu