Department of Mathematics
Fall Semester/Academic Year (2020-2021)

Course Prefix and Number: Math 118
Course Title: GENERAL EDUCATION MATHEMATICS
**PCS Code #*: 1.1 Transfer*
**IAI Code#*: M1 904*

Classes:

MATH 118-AC2 (30268) MW 9:05AM - 10:50AM Remote/ZOOM
MATH 118-DF (30351) TuTh 9:30AM - 11:15AM Remote/ZOOM
MATH 118-EG (30271) MoWe 11:00AM - 12:45PM Remote/ZOOM
MATH 118- HJ (30884) TuTh 12:30PM - 2:50PM Remote/ZOOM

Instructor:	**Julius Nadas**
Phone:	**773-481-8340** **(Please do not call, use email)**
Web Site:	http://nadas.org/jnadas/index.htm
EMAIL:	**jnadas@ccc.edu**
OFFICE HOURS:	see website:

Course Description:

This course is designed to fulfill general education requirements. It is not designed as a Prerequisite for any other college mathematics course. The focus is on mathematical reasoning and solving real life problems, rather than on routine skills and appreciation. A maximum of four of the following topics is studied in depth: geometry, counting techniques and probability, graph theory, logic, game theory, linear programming and statistics. The use of smart phones, pads, or computers is required. Writing assignments, as appropriate to the discipline, are part of the course.

M-118 Credit Hours: 4   **Contact Hours: 4**   **Lecture Hours: 4**
M-18 Credit Hours: 2   **Contact Hours: 2**   **Lecture Hours: 2**
Length of Course: **16 weeks / semester**   **Method of Delivery: Remote.**

Prerequisites:

Grade of C or better in Math 99; or COMPASS PRE-ALGEBRA (17-99), ALGEBRA (43-99), and College ALGEBRA (1-50); or ACT Math (min. 21); or SAT Math (min. 500); or ALGEBRA Placement Test Waiver, or concurrent enrollment in the co-req class, or Consent of Department Chairperson.

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 the 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

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
1. Translate symbolic statements into words and vice-versa.
2. Determine the truth-value for compound statements.
3. Determine the negation of statements.
4. Determine and relate the converse, inverse, and contrapositive of conditional statements.
5. Construct truth tables for compound statements.
6. Determine the validity of arguments using Euler diagrams and truth tables.

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

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

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

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:

Class Meeting	Lecture Content (details)
Week 1	Symbols, Negation of Statements, Quantifiers, Negation of Statements with Quantifiers, Truth Tables for Negations, Conjunctions, Disjunctions, De Morgan's Laws, Conditional Statements, Negations of Conditional Statements
Week 2	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
Week 3	Euler Diagrams to Analyze Arguments Testing the Validity of an Argument with a Truth Table
Week 4	Test 1 – 16 week: Sep 16 to Sep 18, 12 week: Oct 7-9
Week 5	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 6	Guidelines for Choosing a Counting Method. Pascal's Triangle Binomial Theorem
Week 7	Counting strategies, Complement Principle of Counting, Additive Counting Principle
Week 8	Test 2 – 16 week: Oct 14 to 16, 12 week: Oct 28 to 30
Week 9	Complements Rule of Probability, Mutually Exclusive Events, Addition Rules of Probability, Conditional Probability, Independent Events, Multiplication Rules
Week 10	Basic Probability Definition, Theoretical Probability, Empirical Probability, Law of Large Numbers, Odds In Favor or Odds Against an Event. Binomial Probability Expected Value
Week 11	Test 3 – 16 week: Nov 4 to 6, 12 week: Nov 11 to 13
Week 12	Grouped Frequency Distribution Tables, Histograms Relative Frequency Circle Graph Line Graph, Mean, Weighted Mean, Median Mode
Week 13	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 – Dec 2 to Dec 4
Week 16	Final Exit Exam – Dec 9 to Dec 11

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:

Optional Text: Math in Society by David Lippman
http://www.opentextbookstore.com/mathinsociety/
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

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.

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%   **Grade Distribution**
Final Exam: 20%   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:

The Wright Stop	Room A-100
Gateway Advising and Transfer Center	Room A-120
Financial Aid	Room A-128
Math Tutoring	Room S-103
Wellness Center	Room S-106
Writing Center (for help with papers)	Room L-213