Department of Mathematics
Fall Semester/Academic Year (2025-2026)

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

Classes:

MATH 18-COR1 (30259) MoTuWeTh 8:56AM - 9:25AM Zoom - Synchronous
MATH 118-COR1 (30260) MoTuWeTh 8:00AM - 8:55AM Zoom - Synchronous
MATH 118-DF (30277) TuTh 10:00AM - 11:45PM
MATH 118-EG (30278) MoWe 11:00AM – 12:50PM Zoom - Synchronous
MATH 118-HJ (30763) TuTh 12:30PM - 3:00PM Zoom - Synchronous

Office Hours:

M&W 9:25 AM – 11:00 AM Zoom
M&W 12:50 PM - 1:55 PM Zoom
Tu&Th 9:25 AM – 10:00 AM Zoom
Tu&Th 11:45 AM – 12:30 PM Zoom

Instructor: Julius Nadas
Office: L-304
Phone: ~~773-481-8340~~ **(Please do not call, use email)**
Web Site: http://nadas.org/jnadas
EMAIL: 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: **16 weeks / semester** **Method of Delivery: Remote & 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 offload 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.)

Topical Outline / Course Calendar:

Class Meeting	Lecture Content (details)
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: Oct 7 – Oct 10
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: Oct 28 – Oct 31
Webek 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: Nov 11 – Nov 14
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: Dec 2 – Dec 5
Week 16	Final Exit Exam: Dec 9 – Dec 12

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 use: MATHEMATICAL IDEAS by Miller, Heeren & Hornsby Jr., Published by Pearson Addison Wesley. I use the 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 discusion 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.