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

Course: 32678 – MATH 118 AC: MW 8:00AM - 9:45AM  Room: S214
32680 – MATH 118 BD: TR 8:00AM - 9:45AM  Room: S214
32683 – MATH 118 CE: MW 10:35AM - 12:20PM  Room: S203

Instructor: Julius Nadas
Phone: 773-481-8340 (Please do not call)
EMAIL: jnadas@ccc.edu  I prefer to be contacted via email.
OFFICE HOURS: MW 9:55-10:25 AM; TuTh 9:55 AM - 1:50 PM  (L-304 or L-320)

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 calculators and computers is strongly encouraged. Writing assignments, as appropriate to the discipline, are part of the course.

Credit Hours: 4  Contact Hours: 4  Lecture Hours: 4
Length of Course: 16 weeks / semester  Method of Delivery: Face to Face.

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 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 ever 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 simple computational tasks to a computer. Your job is to be a manager, directing the work done by a computer. You analyse a 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 shows you step by step how to solve a problem, gives 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.

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.
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 miss any of the tests 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](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:** Vocal side-conversations are prohibited. Please text each other.

**Topical Outline / Course Calendar:**

<table>
<thead>
<tr>
<th>Class Meeting</th>
<th>Lecture Content (details)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Symbols Negation of Statements Quantifiers Negation of Statements with Quantifiers Truth Tables for Negations, Conjunctions, and Disjunctions De Morgan’s Laws</td>
</tr>
</tbody>
</table>
| Week 3 | Use Euler Diagrams to Analyze Arguments  
|        | Testing the Validity of an Argument with a Truth Table |
| Week 4 | Test 1 |
| 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, Basic Probability  
|        | Definition, Theoretical Probability, Empirical Probability,  
|        | Law of Large Numbers, Odds In Favor of an Event, Odds Against an Event |
| Week 9 | Complements Rule of Probability, Mutually Exclusive Events, Addition Rules of Probability  
|        | Conditional Probability, Independent Events, Multiplication Rules of Probability |
| Week 10 | Bernoulli Trials  
|        | Binomial Probability  
|        | Expected Value |
| Week 11 | Test 3 |
| 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 |
| Week 16 | Final Exam |

**Evaluating Student Performance:**  
Final grades are determined primarily by averaging scores from: 4 Unit Tests and a Final Examination. 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:**  
*Text:* MATHEMATICAL IDEAS 12th ed  
*Author:* Miller, Heeren & Hornsby Jr.,  
*Publishing Co.* Pearson Addison Wesley  
*Materials:* You are strongly encouraged to use a smart phone, pad, or laptop or notebook computer.

**Methods of Instruction:**  
Lecture-discussion method using board and/or overhead, small-group work, and question and answer.
**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 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:**

<table>
<thead>
<tr>
<th>Four tests will each count for 20%</th>
<th>Grade Distribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Final Exam: 20%</td>
<td>90% to 100% = A</td>
</tr>
<tr>
<td></td>
<td>80% to 89% = B</td>
</tr>
<tr>
<td></td>
<td>70% to 79% = C</td>
</tr>
<tr>
<td></td>
<td>60% to 69% = D</td>
</tr>
<tr>
<td></td>
<td>Below 60% = F</td>
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</tbody>
</table>

**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:

- Academic Support Center (Tutoring) Room A-245
- Business Services Room A-138
- Gateway Advising and Transfer Center Room A-120
- Financial Aid Room A-128
- Math Tutoring Room S-305
- Wellness Center Room S-106
- Wright in Your Corner (Student Center) Room S-100
- Writing Center (for help with papers) Room L-213