COURSE SYLLABUS
DEPARTMENT OF MATHEMATICS AND SCIENCE
MTH 103 – Fundamental Concepts I
Section D01 Spring 2017

Class Meeting Times: Monday & Wednesday 12:25 to 2:25 pm
Class Room: BH 210
Instructor: Erika Gerhold, Instructor of Mathematics
Office: Henson Hall 103K
Phone Number: 410-572-8726
Email Address: egerhold@worwic.edu
Office Hours: Mondays 10:30 am – 12 pm
Tuesdays 4:15 pm – 6:15 pm
Wednesdays 10:30 am – 12 pm

COURSE DESCRIPTION: The properties of the natural number system are taught using set concepts. Additional topics include algorithms, numeration systems and the extension of the natural number system. This course satisfies the general education mathematics requirement only for students enrolled in the early childhood education associate of applied science degree program. Hours: 52 lecture. Prerequisite: MTH 099 with a grade of “C” or better or an acceptable mathematics placement test score. Usually offered in the fall and spring. Four credits.

I. MATERIALS:
   A. Textbooks:
   B. **Required:** Manipulative Kit packaged with the activity approach spiral bound text by Bennett/Nelson.
   C. **Optional Materials:** Four-function calculator or a graphing calculator and a protractor.
   D. **Blackboard:** Blackboard is being used as a supplementary site in this course. To access course content in Blackboard you need to have access to a computer with an internet connection, (other requirements may apply). Please refer to this link for computers available on campus that meet these requirements:

http://www.worwic.edu/Students/LearningResources/ResourceLabs.aspx
Please follow these directions to access course syllabi and any other materials posted for this course:

**Login Information**
1. From the Wor-Wic home page, click on myWor-Wic (top-right above Quick Links).
2. Enter your Wor-Wic user ID and password (same as your Wor-Wic email user ID and password) to access the portal homepage.
3. In the "My Blackboard Classes" web part, click on a class listed to be directed to the Blackboard site.
4. Blackboard may also be accessed through Quick Links on the college homepage and also through a link at the bottom of the homepage.

**Blackboard academic integrity and computer usage policy:**
All students logging into Blackboard affirm that they understand and agree to follow the Wor-Wic Community College policies regarding academic integrity and the use of College resources as described in the college catalog. Wor-Wic Community College considers the following as violations of the computer usage policy:

- Using the campus computing network and facilities to violate the privacy of other individuals.
- Sharing of account passwords with friends, family members or any unauthorized individuals

Violators are subject to college disciplinary procedures.

**II. COURSE OBJECTIVES, ASSESSMENT GOALS, AND ASSESSMENT STRATEGIES:**
Upon the successful completion of this course the student will demonstrate the ability to:

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<tr>
<th>Course Objectives</th>
<th>Assessment Goals</th>
<th>Assessment Strategies</th>
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</thead>
<tbody>
<tr>
<td>1. Demonstrate a thorough understanding of the mathematical concepts taught in grades one through eight. (GEO 1, 2, 3, 4, 5, 6)</td>
<td>A. Make, refine and test conjectures in the problem-solving process for application problems.</td>
<td>Homework Group activity Written Assignments Test Questions</td>
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<td>B. Use inductive reasoning to form conclusions based on observations, patterns, or experiments.</td>
<td>Homework Group Activities Writing Assignments Test Questions Exam Questions</td>
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<td>C. Identify, analyze and explain mathematical patterns.</td>
<td>Homework Written Assignments Test Questions Exam Questions</td>
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<td>D. Identify, interpret, and explain Venn diagrams and symbols used in set theory.</td>
<td>Homework Written Assignments Test Questions Exam Questions</td>
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<td>E. Classify and analyze functions.</td>
<td>Homework</td>
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<tr>
<td>Written Assignments</td>
<td>Test Questions</td>
<td>Exam Questions</td>
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<td><strong>F. Analyze and make predictions for mathematical patterns; form algebraic expressions to represent the pattern abstractly.</strong></td>
<td>Homework</td>
<td>Written Assignments</td>
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<td><strong>G. Given a conditional statement in “if-then form,” identify the hypothesis and conclusion. Create three related conditional statements: the converse, the inverse and the contrapositive.</strong></td>
<td>Homework</td>
<td>Written Assignments</td>
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<tr>
<td><strong>H. Analyze and explain numeration systems:</strong></td>
<td>Homework</td>
<td>Written Assignments</td>
</tr>
<tr>
<td>- Hindu-Arabic system</td>
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<tr>
<td>- Egyptian system</td>
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<tr>
<td>- Roman numeral system</td>
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<tr>
<td>- Base Two</td>
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<tr>
<td>- Base Five</td>
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<td><strong>I. Read, write, and round numbers using place value names.</strong></td>
<td>Homework</td>
<td>Written Assignments</td>
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<td><strong>J. Create models to represent numerals in base ten, base two, base five and base six.</strong></td>
<td>Homework</td>
<td>Group Activities</td>
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<td><strong>K. Create models for application problems.</strong></td>
<td>Homework</td>
<td>Written Assignments</td>
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<tr>
<td><strong>L. Use base ten blocks to model and explain regrouping concepts involved in addition and subtraction.</strong></td>
<td>Homework</td>
<td>Group Activities</td>
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<td><strong>M. Analyze an expression involving the order of operations.</strong></td>
<td>Homework</td>
<td>Written Assignments</td>
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<td><strong>N. Identify and use the following properties:</strong></td>
<td>Homework</td>
<td>Written Assignments</td>
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<tr>
<td>- Closure Property</td>
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<td>- Additive and Multiplicative Identity</td>
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<td>- Commutative Property</td>
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<td>- Associative Property</td>
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<td>- Distributive Property</td>
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<td><strong>O.</strong> Recognize and identify geometric terms and apply mathematical relationships for the following: Point, line, plane, line segment, ray, angles (acute, obtuse, right, straight and reflex), pairs of angles (complementary, supplementary, vertical, adjacent, corresponding, alternate interior, alternate exterior), vertex of an angle, transversal, parallel lines, perpendicular lines, triangles (obtuse, right, acute, scalene, isosceles, equilateral), polygons (triangle, quadrilateral, pentagon, hexagon, heptagon, octagon, nonagon, decagon, dodecagon, quadrilaterals (square, rectangle, parallelogram, trapezoid, rhombus), regular polygons</td>
<td>Homework  Group Activities  Written Assignments  Test Questions  Exam Questions</td>
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<td><strong>P.</strong> Given a diagram, identify and use triangle and angle relationships to find missing angle measures.</td>
<td>Homework  Written Assignments  Test Questions  Exam Questions</td>
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<td><strong>Q.</strong> Analyze polygons to find the sum of the angle measures and vertex angle measures.</td>
<td>Homework  Written Assignments  Test Questions  Exam Questions</td>
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<td><strong>R.</strong> Analyze figures from nature, architecture, or common objects as tessellations.</td>
<td>Group Activities  Written Assignments</td>
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<tr>
<td><strong>T.</strong> Analyze plane figures for reflection symmetry and rotational symmetry.</td>
<td>Homework  Written Assignments  Group Activity  Test Questions  Exam Questions</td>
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<tr>
<td>2 Demonstrate and explain mathematical ideas, patterns, and relationships. (GEO 1, 2, 3, 4, 5, 6, 7)</td>
<td><strong>A.</strong> Identify, analyze and explain mathematical patterns</td>
<td>Homework  Written Assignments  Test Questions  Exam Questions</td>
</tr>
<tr>
<td>3 Use the correct vocabulary to explain alternative methods for mathematical skills and concepts to a variety of listeners using</td>
<td><strong>B.</strong> Identify, interpret, and explain Venn diagrams and symbols used in set theory</td>
<td>Homework  Written Assignment  Test Questions  Exam Questions</td>
</tr>
</tbody>
</table>
appropriate physical models, technology and/or activities. (GEO 2, 5, 8, 9)  

| C. Analyze and explain numeration systems:  
| Hindu-Arabic system  
| Egyptian system  
| Roman numeral system  
| Base Two  
| Base Five  
| Base Six  
| D. Use base ten blocks to model and explain regrouping concepts involved in addition and subtraction.  
| E. Create and explain models to represent numerals in base ten, base two, and base five.  
| F. Given a diagram, identify and use triangle and angle relationships to find missing angle measures and explain.  
| H. Analyze plane figures for reflection symmetry and rotational symmetry and explain.  

| Group Activity  
| Written Assignments  
| Test Questions  
| Exam Questions  

| Homework  
| Written Assignments  
| Test Questions  
| Exam Questions  

| Homework  
| Written Assignments  
| Test Questions  
| Exam Questions  

| Homework  
| Written Assignments  
| Test Questions  
| Exam Questions  

| Group Activities  
| Written Assignment  
| Exam Questions  

III. COURSE EVALUATION:  
The grade will be comprised of the following point values:  
- Homework 25%  
- Daily Warm-ups 10%  
- Portfolio Assignment 10%  
- Tests (13.3% each) 40%  
- Final Exam 15%  

A letter grade will be awarded according to the following criteria:  
- A 90 – 100%  
- B 80 – 89%  
- C 70 – 79%  
- D 60 – 69%  
- F Below 60%  

Students needing additional help should meet with their instructor during his or her office hours and/or attend statistics tutoring sessions in the Math Lab (BH 309) at the following days and times:  
- Monday – Thursday: 8:30 a.m. – 8 p.m.  
- Friday: 8:30 a.m. – 4 p.m.  
- Saturday: 10 a.m. – 3 p.m.  
- Sunday: closed
IV. ACADEMIC INTEGRITY: Academic integrity is expected of all students. Cheating and plagiarism are violations of academic integrity. Any student found violating the academic policy will receive an automatic “0” for the assignment and then the matter may be turned over to the Student Disciplinary Committee. Documented evidence of the plagiarism or cheating will be kept in the Math and Science Office.

Plagiarism: In both oral and written communication, the following guidelines for avoiding plagiarism must be followed:

1. Any words quoted directly from a source must be in quotation marks and cited.
2. Any paraphrasing or rephrasing of the words and/or ideas of a source must be quoted.
3. Any ideas or examples derived from a source that are not in the public domain or of general knowledge must be quoted.
4. ALL PAPERS AND PRESENTATIONS MUST BE THE STUDENT’S OWN WORK.

There are ambiguities in concepts of plagiarism. Each instructor will be available for consultation regarding any confusion a student may have.

Cheating: Cheating is the act of obtaining information or data improperly or by dishonest or deceitful means. Examples of cheating are copying from another student’s paper, obtaining information illegally on tests, and using crib notes or other deceitful practices. The college guidelines concerning academic misconduct will be strictly enforced in this course. Please refer to the Appendix of the current college catalog for the full description of policies pertaining to student conduct.

V. TENTATIVE SCHEDULE:

<table>
<thead>
<tr>
<th>WEEK</th>
<th>MATERIAL COVERED:</th>
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<tbody>
<tr>
<td>1- Jan. 18</td>
<td>Class Overview, Intro to Problem Solving Skills</td>
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<tr>
<td>2- Jan. 23, 25</td>
<td>Chapter 1 – Problem Solving</td>
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<tr>
<td>3 –Jan. 30, Feb. 1</td>
<td>Section 2.1 – Sets &amp; Venn Diagrams</td>
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<tr>
<td>4- Feb. 6, 8</td>
<td>Section 2.2 – Deductive Reasoning, Chapter 1/2 Review</td>
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<tr>
<td>5- Feb. 13, 15</td>
<td>Chapter 1/2 Exam, Section 3.1 – Numeration Systems</td>
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<tr>
<td>6- Feb. 20, 22</td>
<td>Section 3.2 – Addition &amp; Subtraction</td>
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<tr>
<td>7 – Feb. 27, March 1</td>
<td>Section 3.3 and 3.4 – Multiplication and Division</td>
</tr>
<tr>
<td>8- March 6, 8</td>
<td>Spring Break – No class</td>
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</tbody>
</table>
9- March 13, 15  Chapter 3 Review, **Chapter 3 Exam**

10 – March 20, 22  Sections 10.1 and 10.2 – Plane Figures & Polygons

11 – March 27, 29  Sections 10.2 cont., Section 10.3 – Space Figures

12 – April 3, 5  Section 10.4 – Symmetry, Chapter 10 Review

13 – April 10, 12  **Chapter 10 Exam**, Section 9.1 - Algebra

14 – April 17, 19  Section 9.2 and 9.3 –Slopes, Lines and Graphs

15- April 24  Final Exam Review

16 – May 1  Final Exam date is **Monday, May 1st at 12 pm**

**VI. IMPORTANT DATES:**

Last day to add – January 24
Last day to drop – February 7
Last day to withdraw – March 29
College closed – March 6 – 10
Last day of classes – April 24
Final Exam – May 1

**VII. LEARNING EXPERIENCES:**

a) **Homework Assignments** – Each class session there will be an online/written homework assigned that will be due one week later. The online portion will be due before the start of class and written work must be turned in at the beginning of class, even if the student is absent. Late assignments will NOT be accepted unless arrangements are made ahead of time. Students having difficulty with the homework are encouraged to visit the instructor during her office hours or go to the math lab for help. (*GEO* 1, 4, 5, 6)(*CO* 1, 2)

b) **Daily Warm-ups** – Each class period will begin with a graded warmup. These problems will be open note. Students must remain until the end of class to get credit for the warm-up. (*GEO* 1, 4, 6)(*CO* 1-3)

c) **Writing Assignment** – Each student will complete a portfolio of their work throughout the semester. It will be due at the time of the final exam. It will be your responsibility to make up or correct any missed class assignments that are part of the portfolio. Portfolio entries will be given periodically as writing assignments that require explanations to be written in dialogue form and examples to be created and explained in an organized and logical format, as a teacher would show an example to elementary students. Organization, neatness, and a thorough explanation are key elements in creating a portfolio entry that demonstrates a thorough understanding and an ability to explain the concept. Students needing
assistance in the preparation of the written assignment should meet with their
instructor during his or her office hours and/or contact the Reading and Writing
Center (MTC204) for technical assistance. \(GEO\ 1, 3, 4, 5, 6, 9)(CO\ 1-3)

d) Tests – Tests dates are stated in the tentative schedule and will be announced in
advance by the instructor. A maximum of one test will be permitted as a make-up,
provided the student has notified the instructor of the legitimate reason BEFORE
the exam is given in class. \(GEO\ 1, 4, 6)(CO\ 1, 2)

e) Final Exam – A cumulative final exam will be administered at the end of the
semester to all students enrolled in the course. The date of the final exam is
Monday, May 1st at 12 pm. If a student is unable to be present for the final exam
date because of an emergency, the student must contact the instructor no later than
the day of the scheduled exam by phone or email. Arrangements must be made to
approve or disapprove the absence and arrange an alternate time for the make-up
test to be taken within a 24-hour period. If no contact is made by the day of the
final exam, a zero will be assigned for the exam grade. \(GEO\ 1, 4, 6) (CO\ 1, 2)

f) Emergency Information Statement: In the event of severe inclement weather or
other emergency, information about the closing of the college will be
communicated via e2Campus and the College’s website. Faculty will
communicate with students about their courses and course requirements, such as
assignments, quiz and exam dates, and class and grading policies via Blackboard.
Students will be responsible for completing all these assignments in accordance
with class policies.

g) Students with Disabilities – Wor-Wic provides reasonable accommodations for
students with disabilities, in compliance with the Americans with Disabilities Act
of 1990 and Section 504 of the Rehabilitation Act of 1973. If you are in need of
accommodations, please contact the counseling office at (410) 334-2899. For
more information, see Wor-Wic's Services for Students with Disabilities web
page.

h) Sexual Violence Disclosures - Wor-Wic Community College seeks a campus
free of sexual violence which includes sexual harassment, domestic violence,
dating violence, stalking, and/or any form of sex or gender discrimination. Please
be aware that if a student discloses a personal experience verbally or in writing as
a Wor-Wic student to a faculty or staff member, the employee cannot maintain
confidentiality and has the mandatory responsibility to notify one of the college’s
Title IX coordinators. However, if you’d like to make a confidential disclosure of
any such violence, you can contact Wor-Wic’s director of counseling (X-2900) or
you can contact the Life Crisis Center at 410-749-HELP or 2-1-1. Information on
rights of victims of sexual violence and related resources is available in the
college catalog and at the public safety page of Wor-Wic’s website:
http://www.worwic.edu/Administration/PublicSafety.aspx.