



GEMA 113 BASIC MATHEMATICS II – 3 Semester Hours

Instructor's Name: _____ **Office Location:** _____

Phone: _____ **Email Address:** _____

Office Hours: (Additional office hours are available by appointment.)

Monday	Tuesday	Wednesday	Thursday	Friday

Course Description:

GEMA 113, Basic Mathematics II, is the second part of a basic mathematics sequence. Set theory, deductive reasoning, probability and statistics are the topics included in this course.

Textbook and Software:

Each student **MUST** purchase the following textbook:

Blitzer, Robert. **THINKING MATHEMATICALLY**, 4th edition. Upper Saddle River, New Jersey: Pearson Education/Prentice Hall, Inc. 2008.

In addition, each student **MUST** purchase the following:

MY MATH LAB, Student Access Kit (available from the bookstore and pre-packaged with new textbooks or sold separately online with a credit card or debit card at www.mymathlab.com). **MY MATH LAB** is the online resource for completing and submitting assignments. Each individual instructor will determine the amount of usage and weights of grades obtained through **MY MATH LAB** and its relationship to other course requirements and assignments.

IMPORTANT NOTE:

- a) This is the same textbook that was required for GEMA 112.
- b) A new **MYMATHLAB Student Access Kit** is not required for students who used **MYMATHLAB** in GEMA 112 last semester.

Calculator:

It is also REQUIRED that each student purchase a **scientific calculator**. Any brand or manufacturer (e.g., CASIO, Texas Instruments, Sharp, etc.) will be sufficient as long as the word "scientific" appears on the calculator. (A graphing calculator such as TI-83 or TI-84 is acceptable and preferable **but not required** in this course.) Calculators may be used but **may not be shared** on tests, quizzes, or examinations. Cell phone calculator usage **WILL NOT** be allowed during class or on tests.

All students **MUST** have the textbook, **MY MATH LAB Student Access Kit** and scientific calculator by the beginning of the **second week of class**. In-class open book quizzes or other graded activities may be given by the professor for which sharing of textbooks and calculators **WILL NOT** be allowed. Calculator use is encouraged on all in-class and out-of-class activities. Calculators may be used but **may not be shared** on tests, quizzes, or examinations.

KNOWLEDGE, SKILLS, and ABILITIES (KSAs)

Knowledge:

Upon successful completion of the course students will:
Know basic terminology, symbols and notation related to sets
Know basic terminology and operations related to logic
Know the basic forms of a valid logical argument
Know basic counting terminology and formulas
Know basic probability terminology
Identify different types of statistical graphs
Distinguish a population from a sample and differentiate the measures of central tendency
Evaluation strategies: All knowledge criteria will be evaluated by tests, quizzes, and home assignments.

Skills:

Upon successful completion of the course students will:
Use the symbols and notation of sets
Understand and manipulate set operations and set relationships
Draw Venn diagrams and use them for survey problems
Determine whether a sentence is a statement and form the negation of a statement
Determine the truth-value of a compound statement and construct truth tables
Write the converse, inverse and contrapositive of a conditional statement
Determine whether an argument is valid and form valid conclusions
Evaluate factorial notation
Distinguish between different counting techniques and solve counting problems
Compute probabilities
Construct and interpret statistical graphs
Find mean, median, mode, range, variance and standard deviation
Evaluation strategies: All skill criteria will be evaluated by tests, quizzes, in-class activities, and home assignments.

Abilities:

Upon successful completion of the course students will be able to:
Evaluate gambling games and decision-making options
Use the laws of logic or fallacy to determine validity of an argument
Compose a written paper on a mathematical topic-using library and Internet references
Evaluation strategies: Ability criteria for the preceding objectives will be measured by tests, quizzes, in-class activities, and home assignments.

Course Activities and Requirements:

At the discretion of the professor, students may be assigned in-class essays and typed out-of-class library/internet research assignments as graded activities. The grading procedure and weight of the grades of the writing assignments will be determined by the professor. Each report must include a bibliography of at least three library and two internet references. All work should be paraphrased in your own words and not plagiarized from references. Sketches, photos, graphs, and diagrams are encouraged but do not count toward the length requirement. No handwritten papers will be accepted under any circumstances. Some examples of possible topics that may be assigned are listed below.

SAMPLE INDIVIDUAL LIBRARY/INTERNET RESEARCH TOPICS

1. Understanding Word Processing, Data Base, Spreadsheet and Presentation Software
2. Installment buying, APR, and Revolving Credit
3. The Mathematics of Buying a Home and The Mathematics of Buying a Car
4. Annuities
5. Mathematical Expectation
6. The Normal Distribution
7. Internet, LAN, Email, Instant Messenger

8. Computer Ethics and Viruses

Topical Outline:

The number of class hours listed for each of the following topics is approximate and flexible. These hours include teaching, review and testing time.

All topics from sections 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, and 3.6 are to be completed by midterm. The midterm examination will be a cumulative test of these topics.

Chapter 2: 2.1 Terminology of Sets, 2.2 Venn Diagrams and Subsets, 2.3 Venn Diagrams and Set Operations, 2.4 Set Operations and Venn Diagrams with Three Sets, 2.5 Surveys and Cardinal Numbers

----- 10 Class Hours

Chapter 3: 3.1 Statements, Negations, and Quantified Statements; 3.2 Compound Statements and Connectives, 3.3 Truth Tables for Negation, Conjunction, and Disjunction; 3.4 Truth Tables for Conditional and Biconditional, 3.5 Equivalent Statements, Conditional Statements, and De Morgan's Laws; 3.6 Arguments and Truth Tables

----- 10 Class Hours

Midterm Exam Review - 1 Class Hour

Cumulative Midterm Examination - Maximum time 55 minutes

Chapter 11: 11.1 Fundamental Counting Principle, 11.2 Permutations, 11.3 Combinations, 11.4 Probability, 11.6 Probability for "NOT" and "OR"; Odds

----- 11 Class Hours

Chapter 12: 12.1 Sampling, Frequency Distributions and Graphs; 12.2 Measures of Central Tendency, 12.3 Measures of Dispersion

----- 9 Class Hours

Final Examination Review - 2 Class Hours

Final Examination:

The final examination is cumulative of the entire course and MUST be administered in accordance with the VSU final examination schedule. Any exceptions must be approved by the Chair of the Mathematics Department.

----- Maximum time - 2 Hours

Expected Outcomes

Students should be able to complete problems similar to any of the following problems from the "Practice Exercises" at the end of each textbook section:

2.1 1 - 84

2.2 1 - 74

2.3 1 - 66

2.4 1 - 70

2.5 1 - 32

3.1 1 - 25 (Omit 29 - 40 : Quantified Statements)

3.2 1 - 90 (Omit Truth tables for three compound statements)

3.3 1 - 86 (Omit Truth tables for three compound statements and Disjunction with quantified statements)

3.4 1 - 90 (Omit Truth tables with eight cases)

3.5 7 - 76 (Omit Negation of quantified statements)

3.6 1 - 50 (Omit Truth tables w/ 8 cases & negation of quantified statements)

11.1 1 - 22

11.2 1 - 54

11.3 1 - 33

11.4 1 - 48

12.1 5 - 33 (Omit Graph analysis)

12.2 1 – 50

12.3 1 – 38 (Omit Deviation from the mean and sum of the deviations)

Grading Standards:

Each student's grade will be determined by the following criteria:

1. Grading Scale

A: 90-100 B: 80-89 C: 70-79 D: 60-69 F: below 60

2. Midterm Grade

The midterm examination will comprise 1/3 of the midterm grade. The average of all other work required by the professor (including tests, quizzes, home assignments, essays, and research papers) determines the other 2/3.

3. Final Grade

The midterm average will be weighted as 40%. The average of all work after midterm (including tests, quizzes, home assignments, essays, and research papers) will be weighted as 40%. The final examination will make up the other 20%.

Attendance:

Classroom attendance is **MANDATORY**. At the professor's discretion, grades may be reduced or other penalties imposed for any student who is chronically late or who **exceeds** three unexcused absences from a Mon/Wed/Fri class or two unexcused absences from a Tue/Thu or Mon/Wed class.

For all students, regardless of classification, absence (including excused absence) does not relieve you of completing or making up all missed assignments. It is your responsibility (not the professor's) to make certain that you have made up all required academic content.

An **"EXCUSED ABSENCE"** is one in which the student brings an official written medical, legal or professional excuse to the instructor from an authorized source. All other absences are considered "unexcused".

Students who are covered under the American Disability Act should privately inform the teacher of this fact so that appropriate instructional arrangements can be made.

Classroom Management

1. Turn off all cell phones and pagers **BEFORE** entering the class. (**DO NOT** set the phone to **VIBRATE**.) **No cell phone communication will be allowed during class for any reason.** You **ARE NOT** to leave the classroom to answer a cell phone call. (NOTE: As previously stated, cell phone calculators **WILL NOT** be allowed on tests.)
2. Homework **WILL NOT** be accepted after the due date
3. All male students should remove hats, caps, scarves, or any other head cover garments **BEFORE** entering the classroom.
4. Class will begin and end as scheduled. **DO NOT** enter any class for which you are **more than 10 minutes late**. If on a rare occasion you happen to be late, **you must enter the classroom and take your seat silently and without distraction**. Lateness is both rude and disruptive to the class and **WILL NOT** be tolerated by the professor. Students who are chronically late will be penalized. Packing up or leaving class early is also rude and disruptive and **WILL NOT** be permitted.

Bibliography:

The following books are *recommended references* for use at various times throughout the course. Professors **may** assign readings from these or other books for book reports as required or for extra credit:

The Nature of Mathematics, 10th edition, Karl Smith (Brooks/Cole, 2004)

Innumeracy, John Allen Paulos (New York: Hill and Wang, 1988)

Mathematical Ideas, 9th edition, Charles Miller, et al (Boston: Addison Wesley 2001)

Mathematics – A Practical Odyssey, 4th edition, Johnson & Mowry (Pacific Grove, CA: Brooks/Cole 2001)