PURDUE UNIVERSITY FORT WAYNE

MA 14000 Practical Quantitative Reasoning- 3 Credits

Purdue Fort Wayne

Westview High School

Prerequisites

Successful completion of the following yearlong courses:

1. Algebra I
2. Geometry
3. Algebra II

Instructor:

Room: 310
Phone:
Email:
Office hours: 7:45-8:30 T, W, R, F or by appointment

Course Description

A course for liberal arts students that shows mathematics as the language of modern problem solving. The course is designed around problems concerning management science, statistics, social choice, size and shape, and computer science. Applications in quality control, consumer affairs, wildlife management, human decision making, architectural design, political practices, urban planning, space exploration, and more may be included in the course.

Grading Scale

Grading : The following percentages for each category will be used to the 9-weeks grade.

93-100	A
90-92	A-
87-89	B+
83-86	B
80-82	B-
77-79	C+
73-76	C
70-72	C-
67-69	D+
63-66	D
60-62	D-
0-59	F

Projects/Tests= 60%, Quizzes = 20%, Assignments = 20%

Each 9-weeks grade counts 43% of your final semester grade and your final exam counts 14% of your final semester grade.

Each student is expected to keep up with their current grade on power school. Students are encouraged to ask questions about their grade when they think something may be wrong.

If a student fails for the semester, the student must retake the semester to receive credit for the class.

Course Content: Blitzer, Thinking Mathematically, 8th edition

First 9 Weeks (8/11-10/10):

Chapter 1: Problem Solving & Critical Thinking

- Inductive and Deductive Reasoning
- Estimation, Graphs, and Mathematical Models
- Problem Solving

Chapter 2: Set Theory

- Basic Set Concepts
- Subsets
- Venn Diagrams & Set Operations
- Set Operations and Venn Diagrams with Three Sets

Chapter 8: Personal Finance

- Percent, Sales Tax, and Discounts
- Income Tax
- Simple Interest
- Compound Interest
- Annuities, Methods of Saving, and Investments
- Cars
- The Cost of Home Ownership
- Credit Cards

Second 9 Weeks (10/13-12/19):

Chapter 11: Counting Methods & Probability Theory

- The fundamental counting principle
- Permutations/Combinations
- Fundamentals of Probability
- Events Involving Nor and Or
- Events involving And/ Conditional Probability
- Expected Value

Chapter 12: Statistics

- Sampling, Frequency Distributions
- Measures of Central Tendency
- Measures of Dispersion

Assignment Expectations

1. Show **complete supporting work** (including **formulas** needed, **all labels**, …) to solve the problem. Answer the question completely. Do not be okay with not understanding a question.

2. **Check answers**. Answers will always be on google classroom, you need to correct any answers that are incorrect.

3. **SEEK HELP. Ask** about questions that you have over the assignment. If you have a *few* questions, ask during homework time in class – several others may also have had that question. If you have several questions, come in before or after school. Feel free to use email to get help at home.

4. **Do your assignment completely!** Completion credit is only given when the **entire** assignment is completed and **all** the answers are correct.

Project Expectations

1. Be sure to have all project topics approved before starting.

2. Your project should be organized, neat and free of spelling/grammar errors.

3. You will need to work cooperatively with your peers.

4. You will be expected to show your knowledge of the topics in your projects.

Indiana General Education Area 3 Quantitative Reasoning Competencies

3.1. Interpret information that has been presented in mathematical form (e.g. with functions, equations, graphs, diagrams, tables, words, geometric figures).

3.2. Represent information/data in mathematical form as appropriate (e.g. with functions, equations, graphs, diagrams, tables, words, geometric figures).

3.3. Demonstrate skill in carrying out mathematical (e.g. algebraic, geometric, logical, statistical) procedures flexibly, accurately, and efficiently to solve problems.

3.4. Analyze mathematical arguments, determining whether stated conclusions can be inferred.

3.5. Communicate which assumptions have been made in the solution process.

3.6. Analyze mathematical results in order to determine the reasonableness of the solution.

3.7. Cite the limitations of the process where applicable.

3.8. Clearly explain the representation, solution, and interpretation of the math problems

Student Learning Objectives:

By the end of the semester, you should be able to:

1. Display a basic understanding of personal finances, including savings, loans, investments, and credit scores.
2. Compute/construct and interpret basic descriptive statistics and statistical graphs.
3. Draw conclusions from and make informed decisions about normal distributions, implementing the Empirical rule and z-scores.
4. Apply counting techniques to count the total number of ways to select or arrange objects or events.
5. Apply the basic concepts of probability theory and describe how these concepts relate to statistical analysis.
6. Implement the basic properties of Graph Theory to see how graphs can be used to solve a diverse series of realistic problems.

Course Evaluation:

Students will be provided a link through their email. This link will be to a form created and managed by the Collegiate Connection office, all data collected is anonymous and will be shared with instructors and their departments at the end of the school year.

Academic Misconduct / Plagiarism / AI:

Academic Misconduct, including plagiarism (using other people's ideas/words and not giving them credit thus implying the work is your own original work) or using your own work from a previous course without the express permission of the instructor, is taken very seriously at any learning institution. It is taken very seriously in this class. Please be aware of what behaviors constitute academic misconduct (See Bulletin, Code of Students Rights, Responsibilities and Conduct Part II. A.) If caught cheating or plagiarizing, a student may receive no credit on the assignment and may result in an F for the course. Any instances of academic dishonesty will be reported to the Office of Student Conduct and Care and your Department Chair and may result in expulsion from the University. Additional potential consequences can be found under: potential consequences (See Bulletin, Code of Students Rights, Responsibilities and Conduct, Part III. A.: i.e., failure of the assignment, failure of the course and/or dismissal from the university) of such behavior.

Student Support Services

Purdue University Fort Wayne is committed to your academic and personal success. Visit the Student Support Services page for a list of student support services, including academic services, technology services, health and wellness, and support from administrative offices. For help with technology, including Brightspace, visit the IT Services Student Technology Support page.

If you observe and/or are made aware of student behavior that leaves you feeling concerned, worried, and/or alarmed, trust your instincts and say something. The CARE Team can assist with the student of concern, whether that's you or someone you are referring. Report the concern through the online CARE referral form. Please note that this form is not for emergencies. If you know of a student who is injured, is injuring themselves or others, or is threatening injuries to themselves or others, please call 911 immediately.

Your emotional wellness and mental health are important. If you have a mental health disorder, are struggling with your mental health, your stress overwhelms your ability to cope with it, or you find yourself needing emotional support, please talk to someone. If you or someone you know is in a mental health crisis situation, call 911 or go to the local emergency room. Otherwise, please reach out to our Center for Student Counseling (CSC). All currently enrolled PFW and IUFW students have access to free counseling at the center. To make an appointment to talk with a counselor call 260-481-6200 or email csc@pfw.edu.