

QUANTITATIVE REASONING
Course Syllabus Spring 2025

Instructor: Ms. Kim Foltz
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Office Hours

<i>Monday</i>	<i>Tuesday</i>	<i>Wednesday</i>	<i>Thursday</i>	<i>Friday</i>
12–1 p.m. 2–3 p.m.	2–3 p.m.	12–1 p.m. 2–3 p.m., 5–6 p.m.	11 a.m. –1 p.m.	12–1 p.m. 2–3 p.m.

I am typically around at a lot of other times. Please let me know if you need an appointment at a different time. Any changes to these hours will be posted outside my office door.

Prerequisite/Recommended Background Advanced Algebra/Trigonometry

Course Description This course exposes students to a variety of practical applications in order to further develop problem-solving skills and other fundamental mathematics skills. Students are expected to master the manipulation of mathematical symbols and gain a new perspective on mathematical thinking. Applications to a wide variety of fields are stressed to enhance the students' ability to apply modeling techniques and to develop their appreciation of using these techniques to solve problems in the real world.

Text *Thinking Mathematically*, (6th edition), Blitzer, 2015; Pearson.

Course Content Topics covered in this course include selections from the following:

- Sets, Counting, and Probability
- Personal Finance
- Statistics

Attendance and Late Work Policy

- Promptness and attendance are expected. Academy policies on attendance/tardiness will be followed. Sleeping in class constitutes an unexcused absence. Being late more than 10 minutes late is an unexcused absence.
- Class attendance is crucial to success in this course. If a class session is missed, the student should use the assignment sheet to identify the material that was missed due to the absence and should view the corresponding lecture content using the lesson videos on the Canvas course website.
- It is the policy of the Indiana Academy that any absence from class is unexcused, except for illness, death in the family, college or school-related activities, and extenuating circumstances. When a student is absent from a class, the instructor reports the student absence to the Faculty Attendance Coordinator in the Office of Academic Affairs. Unless the absence is excused by a school official, it is considered unexcused. The decision as to whether an absence is excused is not determined by the instructor.
- If an absence is unexcused, missed homework assignments or quizzes will not be accepted for credit. Students are still encouraged to complete such assignments to gain the essential practice that is provided through them. Missed major tests will be allowed to be taken for credit but will incur a 5% penalty.
- Students should contact the instructor (in advance in the case of a pre-arranged absence or within 2 school days of the return from other excused absences) in order to make arrangements to complete missed work such as quizzes or exams. The assessment should be completed as soon as possible, but no more than two weeks after the original date.
- Assignments due on the day of an excused absence should be submitted by the following class period.
- Four (4) or more unexcused absences will lead to academic and residential consequences beyond the scope of this class as determined by the Office of Academic Affairs (i.e., residential groundings, parent conference, and/or detention).

- If an absence is unexcused, missed quizzes will not be accepted for credit. Missed major tests will be allowed to be taken for credit but will incur a 5% penalty.
- Students should contact the instructor (in advance in the case of a pre-arranged absence or within 2 school days of the return from other absences) in order to make arrangements to complete missed work such as quizzes or exams. The assessment should be completed as soon as possible, but no more than two weeks after the original date.

Technology The TI-84 graphing calculator will be used throughout the course. You must arrange to have a TI-84 or comparable substitute with you each day in class and for each class test. Some test questions will require the use of a graphing calculator. Computer software such as spreadsheet applications will also be used, but laptops should not be active during class unless requested by the instructor. (No other technology, including cell phones, video games, or music players, should be active during class!)

Student Evaluation

Exams: An exam will be given at the end of each unit of study.

Quizzes: Approximately 8-10 short quizzes, both announced and unannounced, will be given.

Homework: *Homework usually will be assigned each class period and will be **due at the beginning of the next** class period. Homework should be **labeled clearly, completed neatly**, and organized in a folder/notebook for this course. Assignments will be collected and checked or graded at the discretion of the instructor.

*If an assignment is not submitted in class when it is requested, it will be considered late. During the semester, each student will be allowed *exactly one* opportunity to submit a late assignment, if it is submitted by the next class period. **No additional LATE homework assignments will be accepted.**

Final: A two-hour comprehensive final will be given at the designated period during finals week.

Grades: Students final grades will be determined as follows:

25%	from quizzes	40%	from exams
15%	from homework/projects	20%	from final exam

Final letter grades will be assigned as follows:

A = [92 to 100 percent]	B = [82 to 87 percent]	C = [72 to 77 percent]
A- = [90 to 92 percent]	B- = [80 to 82 percent]	C- = [70 to 72 percent]
B+ = [87 to 90 percent]	C+ = [77 to 80 percent]	D* = below 70 percent (No Credit)

Adjustments in this scale may be made as deemed necessary by the instructor.

Academic Integrity Policy Academic dishonesty in any form will not be tolerated. The student is responsible for knowing the policies and consequences as stated in the Academy handbook. Specific for this course include:

- Cooperative group work on homework assignments is appropriate and is encouraged, but simple copying of an assignment from another or allowing another to copy your homework without collaboration is not acceptable.
- Artificial intelligence (AI) provides exciting new tools for academic work.
 - It is appropriate to use AI to explore solutions and to discover methods of approaching problems in homework situations. AI used as a learning tool can increase and support student understanding.
 - AI also poses significant dangers for academic integrity. Passing off as your own any research, words, ideas, work, or solutions which you did not create is plagiarism. Whether the source is print, internet content, or generated by AI, copying work from outside resources and presenting it as your original work is not allowed. Use of AI should be properly documented.
- Giving information about the content of quizzes or tests to students yet to take the exam or solicitation of such information is a severe violation of academic honesty standards.
- In quiz or test situations, calculators or other materials should not be used unless the instructor expressly communicates that such aides are allowed on that section of a quiz or test.

To preserve the credibility of all grades, I encourage you to tell me if you observe violations of the integrity policy.

Brownie Points

Be sure to bring the instructor one of your senior pictures!

Inclusive Excellence Statement

Ball State University aspires to be a university that attracts and retains a diverse faculty, staff and student body. We are committed to ensuring that all members of the community are welcome through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse as expressed in our Beneficence Pledge. As a reflection of Ball State's commitment to respect, civil discourse, and the Beneficence Pledge, Inclusive Excellence at the Indiana Academy emerges as one of the priorities of our living and learning community. We strive to exist together respectfully and compassionately, creating an environment where every member can thrive. Unfortunately, there might be occasions when something occurs that disrupts our progress toward meeting these objectives. In this case, we encourage any member of the Academy community to file a Campus Climate Report (CCR) https://bsu.qualtrics.com/jfe/form/SV_6mbRbL5acAntUTI. All reports will be taken seriously, and appropriate responses will be carried out by Academy administration.

IA Wireless Device Policy

Pursuant to Indiana Code 20-26-5-40.7, The Indiana Academy for Science, Mathematics and Humanities prohibits student use of wireless communication devices for non-instructional purposes in the classroom. As such, any and all portable wireless devices, that have the capability to provide voice, messaging, or other data communication between two or more parties, must only be used for academic purposes directly tied to the classroom activity or related educational task. Exceptions to this wireless device policy are eligible through academic accommodations, individualized education programs, or with instructor approval permitting the use of a wireless device for justification related to health, safety, and/or well-being. The improper use of a wireless device in an active classroom setting is subject to disciplinary action including but not limited to; a verbal warning, temporary seizure of said device by a school official, an unexcused absence for the class in question, written communication to parent/guardian, among other elevated consequences for repeated improper use.

Tentative Schedule

Textbook Sections

Chapter 11 – Counting Methods and Probability Theory (15 days)

- 11.1: The Fundamental Counting Principle
- 11.2: Permutations
- 11.3: Combinations
- 11.4: Fundamentals of Probability
- 11.5: Probability with the Fundamental Counting Principle
- 11.6: Events involving Not and Or; Odds
- 11.7: Events involving And; Conditional Probability
- 11.8: Expected Value

Chapter 12 – Statistics (13 days)

- 12.1: Sampling, Frequency Distributions, and Graphs
- 12.2: Measures of Central Tendency
- 12.3: Measures of Dispersion
- 12.4: The Normal Distribution
- 12.5: Problem Solving with the Normal Distribution
- 12.6: Scatter Plots, Correlation, and Regression Lines

Chapter 8 – Personal Finance (*14 days*)

8.2: Income Tax

8.3: Simple Interest

8.4: Compound Interest

8.5: Annuities, Methods of Saving, and Investments

8.6: Financing a Car

8.7: The Cost of Home Ownership

8.8: Credit Cards

Semester Review (*3 days*)