

**Quantitative Reasoning (Dual Credit—BSU MATH125)**  
**Spring 2022**

**Instructor:** Joshua Ruark  
**Office:** WA150  
**Office Hours:** MW 1-4 PM; F 1-3PM; TR By appointment

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**Text and Materials:** Our text is *Thinking Mathematically*, 6<sup>th</sup> edition, by Blitzer. We will cover most of chapters 8, 11, 12, and 14. Cell phones and other personal devices may not be used during class. Students will regularly need to bring laptops.

**Course Description & Rationale:** MATH 125 satisfies the university core curriculum requirement for mathematics. This course covers aspects of personal finance, graph theory, probability, and statistics. We will use a variety of fundamental mathematical skills to analyze situations not typically covered in a traditional sequence of mathematics courses. We will develop problem-solving skills enabling students to be capable and productive leaders and citizens.

**Course Objectives & Learning Outcomes:** Students are expected to master the manipulation of mathematical symbols and gain a new perspective on mathematical thinking, with the hope that they will recognize situations where these skills may be applied. These tools are used to provide a new way of looking at today's world at a collegiate level. Among other things, students will learn the following:

- How to extract useful mathematical information from data presented in numerical or graphical form.
- How to present data in graphs and tables to communicate information, both by hand and using technology.
- How to use technology to gain knowledge and solve real-world problems.
- How to employ specific algorithms to explore problems in graph theory.
- How to interpret and draw conclusions from data, both for a single variable and for two variables.
- How to communicate effectively in writing, using proper English and correct mathematical terminology, in the context of finances and statistics.

**Class Structure and Participation:** Class time will be divided between lecture, classroom work, and assessment. Since the classroom work and assessments will be done in class, it is imperative that you attend class faithfully.

**Assignments:** There will be a mixture of homework and classroom work in this class. Class work can be completed in a small group (2-4 students), but each individual must turn in their own paper with their own name to receive credit. Unless given specific deadlines, class work should be completed during the class it is assigned, but it may be turned in at the beginning of the next class.

Furthermore, I will post a lesson plan for each section covered on the Canvas page for this course. I highly recommend reviewing and printing off the page before you come to each lecture. Additionally, you will find the homework assignment for each section at the bottom of the posted lesson plan. Warning: these lesson plans are meant as a guide to help you in your note taking, and should not be considered a substitute for coming to class.

**Exams:** There will be 4 exams and a comprehensive final. Because the final exam is comprehensive, the final exam grade will replace any or all unit exams that have a lower grade.

**Course Grade:** Homework will constitute 10% of a student's overall grade. Class work will account for 10%. Regular quizzes will constitute 12%. I will drop the lowest 3 homework and quiz grades at the end of the semester. The unit exams and comprehensive final will be worth 12% each and 20% respectively. Students earn the grade determined by the standard 100—90—80—70 scale, with plus and minus grades used in the top and bottom 3% with the exception of A+.

**Academic Integrity:** As a firm believer that grades should reflect learning, academic integrity is paramount to the academic experience. Please review the Academy's Academic Integrity policy as it will be strictly adhered to in my class.

Examples of behavior subject to review under the Academic Integrity policy include, but are not limited to:

- 1, Copying someone's work and turning it in as one's own
- 2, Use of aids and/or other materials on quizzes and exams without expressed permission.
- 3, Use of calculators when explicitly forbidden to do so.
- 4, Copying another person's work or answers on a quiz or exam.

I encourage you to work in groups when doing the homework assignments as much can be learned from your peers that you may not always pick up in class. However, each individual is required to turn in work in their own handwriting accompanied by the requisite work shown to receive full credit.

**Technology:** The use of technology is limited to that which will enhance the learning process. Use of laptops is permitted as long as it is not distracting from what is transpiring in the classroom. Calculators, though not required, are welcome to be used for the majority of homework, quiz, and exam assignments. However, there will be instances where calculators are NOT allowed, but you will be informed in advance when these times occur.

**Attendance:** Attendance will be taken at the beginning of the hour. You are responsible to be on time for each class period. Arrival within the first 10 minutes of class will constitute a tardy, otherwise you will be marked absent. Failure to attend class will result in disciplinary action as set forth by Academy policy regarding absences and tardies.

**Unexcused Absence:** 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. Any unsubmitted assignment that is due on the day of an unexcused absence is subject to receiving a grade of "0" with no possibility of changing the grade. The only exception is an exam, which will still be recorded as a "0" but may be replaced with a higher percentage attained on the final exam minus ten percent.

**Late Work/ Make-up policy:** It is my policy not to accept late work/ allow make-up work unless there is an excused absence the day an assignment was due. If you can't be in class the day an assignment is due, please bring it by my office. If you miss a quiz or exam due to an excused absence, it is up to you to schedule a time with me (office hours or other) during which you can take the exam or quiz. You must contact me within a week of the missed assignment and complete the assignment within two weeks of missing it.

**Institutional Diversity:** 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 and

through university resources found at <http://cms.bsu.edu/campuslife/multiculturalcenter>.

**Mask Policy:** The Indiana Academy will follow [Ball State University's mask policy](#). Effective July 1, 2020, all people on campus—including faculty, staff, students, vendors, contractors, suppliers, and visitors—should wear face masks (covering nose and mouth) while inside campus buildings. Face masks are specifically required in the following situations:

- i. When in the presence of others (indoors or outdoors) and physical distancing is difficult to maintain, such as in hallways, elevators, stairs, public spaces, and common areas;
- ii. When in a classroom or laboratory;
- iii. When using campus transportation (such as a shuttle bus);
- iv. When multiple individuals are in a University vehicle.

Students, faculty, and staff are encouraged to bring their own mask. Masks will be provided to anyone who is unable to bring a mask or their mask is damaged.

#### Non-compliance

If a student declines to wear a face mask as required, the student will be referred to the Director of Academic Affairs or the Director of Residential Affairs. If the situation occurs in a classroom or other academic setting, it is considered a classroom management issue, and the teacher will remind the student of the requirement and give the student a chance to comply with it prior to referring the matter to the Director of Academic Affairs or the Director of Residential Affairs. Wearing masks is crucial to preventing the spread of COVID-19 to others.

3-Jan	Syllabus	8.3	8.4
10-Jan	Interest Activity	8.5	Savings Activity-Q
17-Jan	MLK	8.6	8.7
24-Jan	Borrowing Activity-Q	Review	Exam 1
31-Jan	11.1	11.2	11.3
7-Feb	Extended	Probability Activity-Q	11.4
14-Feb	11.5	11.6	Probability Activity-Q
21-Feb	11.7	11.8	Probability Activity-Q
28-Feb	Topics in Probability	Review	Exam 2
14-Mar	12.1	12.2	Stats Activity-Q
21-Mar	12.3	12.4	12.5
28-Mar	SND Activity-Q	12.6	Applied Stats Activity
4-Apr	Extended	Review	Exam 3
11-Apr	14.1	14.2	14.3-Q
18-Apr	Graph Theory Activity	14.4	Tree Activity-Q
25-Apr	Topics in Graph Theory	Review	Exam 4
2-May	Topics in Logic	Review for Final	Review for Final