

# MATH 4713 (02)

## Probability and Statistics for P-8 Teachers

(Spring 2017)

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**Office hours:** 9:15-10:45 & 12:45-2 T, Th (Carrollton Campus)  
11:30-1:30 F (Newnan Campus)

**Textbook:**

Billstein, R., Libeskind, S., & Lott, J. (2015). *A Problem solving approach to mathematics for elementary school teachers*, 12<sup>th</sup> Edition. Pearson Addison-Wesley: Boston, MA.

**Overview of the Course:** This course is designed to help prospective P-8 teachers develop mathematical understanding of elementary mathematics through collaboration and problem solving. From this course, you will have opportunities to construct concepts in probability and statistics through problem solving and to use those concepts to solve realistic mathematics problems. Although there will be some lecturing at times, most of the instructional time will be used to reconstruct mathematical ideas by communicating and sharing your mathematical ideas with your classmates. Most of the activities in this course are from the textbook listed above, especially from Chapters 9 & 10.

**Goals and Objectives** of the course include, but not limited to,

- Define (theoretical) probability and the law of large numbers and apply them in problem solving.
- State the properties of probability and apply them in problem solving.
- Explain the properties of probability using various representations (such as tree diagram and area model).
- Explain how the results from simulations are related to theoretical probabilities.
- Compute and differentiate between permutations and combinations and use them in problem solving.
- Differentiate among categorical, ordinal, and numerical data and organize real-life data using appropriate representational methods.
- Find and differentiate among the central tendencies (mean, median, and mode) and variations (mean absolute deviation, variance, and standard deviation).
- Explain the properties of normal curve and use them to interpret data.

**Attendance and Classroom Rules:**

- Students should always attend class. Students are allowed to have **FIVE** absences, including excused absences. More than 5 absences will result in no credit for the course.
- Students must be punctual. Attendance will be checked at the beginning of each class and students who are not present at that time will be recorded as absent.
- Students who disrupt the class for any reason will be escorted to outside of the classroom, disallowed to return for the day, and marked absent.
- Calculator is the only electronic device students can use in the classroom. **Calculator as a phone accessory is NOT allowed.** In fact, in no circumstance are students allowed to use any types of electronics other than calculators. Students who do not abide by this rule will be escorted to outside of the classroom, disallowed to return for the day, and marked absent.

**Other University Rules:** See <http://www.westga.edu/UWGSyllabusPolicies/>

**Grading:** The final grade in the course will be based on the performance on homework assignments (10 Points), three mid-term exams (20 points each) and a final exam (30 points), totaling 100 points.

- Homework will be assigned regularly and collected one class day before each midterm exam. The homework grade will be based on the organization, completeness and correctness. Late homework won't be accepted.
- If students should miss a test due to an emergency that can be documented, then the final examination will be used for the missed test in the calculation of the final course grade.
- If students miss the final exam, the final exam score will be 0, with no exception.

**Grade Components and Dates**

**Final Course Grade**

Homework:	10%		A	90-100
Midterm 1	20%	Feb. 7	B	80-89.99
Midterm 2	20%	March 14	C	70-79.99
Midterm 3	20%	April 25	D	60-69.99
Final	30%	May 9 (2-4:30)	F	Below 60

### Tentative Schedule

Week	Topics	Materials
1, 2 & 3	Introduction Law of Large Numbers Properties of Probability Multistage Experiments & Geometric Probability	Textbook 9.1 Textbook 9.2
4, 5, 6 & 7	Odds, Conditional Probability, & Expected value Permutation & Combination	Textbook 9.4 Textbook 9.5
8 & 9	Data Types Displaying Categorical Data	Textbook 10.1 Textbook 10.2
10 & 11	Displaying Numerical Data Trendline Correlation	Textbook 10.3 Textbook 10.4
12, 13 & 14	Central Tendency & Variation Percentile & Normal Curve	Textbook 10.3 Textbook 10.4
15	Review	
16	Final Exam	