

Course: Math 217, Sections 2 & 3 (Data Exploration and Analysis)

Section 2: MWF 10:20 - 11:20 am, Swart 4

Section 3: MWF 11:30 am - 12:30 pm, Swart 4

Instructor: Jason Belnap, 219 Swart, 920-424-3011, belnapj@uwosh.edu

Office Hours: Mondays, 3:00 – 4:00 pm (219 Swart)

Wednesdays, 9:00 – 10:00 am (Swart 219)

Please do not let yourself fall behind; I am happy to meet with you outside of office hours, just email me your availability and I'll schedule an appointment with you.

Prerequisite: Prior to taking this class, you must have a minimum grade of C in Math 110 (Number Systems).

Course Objectives: This class is designed to further prepare you for teaching, helping you increase your independence as a mathematical learner by giving you additional experience in thinking mathematically. You will solve problems, make conjectures, make arguments, evaluate the claims of others, and communicate your findings and ideas. The class content includes important ideas from the common core state standards in data analysis and probability. This class will provide you with: 1) experience collecting, analyzing, and displaying data; 2) an understanding of statistical techniques, probability, and simulation; and 3) experience independently and collaboratively approaching, making sense of, and solving novel problems. It will give you the skills to interpret and critically analyze statistical claims and provide you with knowledge you will need to teach probability and statistics to elementary school children.

Content is covered in five units:

Proportions and Sampling (2 weeks): representative samples, proportional reasoning, and survey data

Dealing with Data (2.5 weeks): data displays, descriptive statistics, and distributions.

Correlation versus Causation (3 weeks): relationships among data sets, the idea of linear regression, the idea of correlation, causation cautions, and clinical studies.

Counting (2.5 weeks): the multiplication rule, permutations, and combinations.

Probability (4 weeks): the language and tools for dealing with chance, misconceptions held by children, expected value, binomial situations.

Textbook: Szydlik, J. and Seaman, C. (2007). *Big Ideas in Mathematics for Future Elementary Teachers: Big Ideas in Data Analysis and Probability*. This text is available at the University Bookstore. This text will provide opportunities to discover important ideas through collaboration in novel tasks; DO NOT read/work ahead in the text, as it will disrupt these learning opportunities.

Instructional Methodology: This class may be different from any mathematics class that you have taken before; it is designed to give you the opportunity to practice skills you will need as a teacher: listening and making sense of others' mathematical ideas; explaining your ideas to others (both orally and in writing); understanding that people think about problems in many ways; and learning to help others understand mathematical ideas. The concepts of this course will be explored individually, in teams, and as a class through hands-on activities and discussion, with most class time spent discussing and solving interesting problems in teams and discussing mathematical behaviors and problem solving strategies as a class. Sometimes you will write up those ideas and solutions for me and sometimes we will just discuss them, but you are *always* expected to think about the problems and communicate your ideas with others.

Evaluation: You will earn your grade as follows:

Attendance (5%): Your timeliness and participation in solving problems are critical to class discussions. You may miss two classes without penalty *for whatever reason*. After that, you will lose one percentage point of your grade for each day missed (up to 5%). Coming late or leaving early may count as half a point.

Individual Work (10%): This consists of both written work (e.g. quizzes, problem sets, and write-ups*) and significant contributions** to whole-class discussions (e.g. presenting and explaining solutions).

Team Work (10%): This consists of team quizzes, collected team-work, and written projects—graded for correctness. Team scores will be adjusted by your teams’ ratings of your individual preparedness, participation, and contributions.

Exams (75%): There will be three in-class exams (each worth 25% of your grade). The dates for these are: Fri, 28 Feb; Fri, 4 Apr; and Fri, 16 May.

Minimum percents for each grade are:

Letter grade	Grade +	Grade	Grade -
A	N/A	94%	90%
B	87%	84%	80%
C	77%	74%	N/A
D	67%	64%	60%