

Syllabus: Math 220

1. **Location:** Upper Iowa University / Madison Center
2. **Course:** Math 220, Elementary Statistics, 3 credits

This course is an introduction to problems of statistical inference, descriptive statistics, probability distributions, confidence intervals, estimation of parameters and level of significance, regression and correlation.

2. **Term:** Term 2 October 26- December 19
3. **Time:** Wednesday 5:30-10:00 p.m.

4. **Instructor and Biography:** Oumar Kaba
BS City University of New York (York College) Mathematics
MA University of Wisconsin-Madison Mathematics

5. Office hours:

Before each class or by email at kabao@peacocks.uiu.edu or oumark1@hotmail.com
I suggest obtaining the phone number of at least one classmate in case of a missed class

6. Text:

Bluman, Allan G. Elementary Statistics (A Step by Step Approach) McGraw Hill (Seventh Edition)

- 2.Frequency Distributions and Graphs.
- 3.Data Description.
- 4.Probability.
- 5.Discrete Probability Distributions.
- 6.Normal Distribution.
7. Hypothesis Testing.
- 8.Correlation and Regression.
- 9.Chi-Square Distribution.
- 10.Analysis of Variance.

Calculator: any one of these calculators: TI 83, TI 83 PLUS, TI 84, TI 84 PLUS

7. Readings and Assignments

Assignments will be given at the end of each class.
Tentatively all the odd-numbered problems of each chapter.

Date	Chapter	Problems
Oct 28	2,3	Odds
Nov 4	4,5	Odds Quiz 1
Nov 11	6,7	Odds,
Nov 18	review	EXAM1
Nov 25	8	Odds
Dec 2	9	Odds Quiz 2
Dec 9	10	Odds
Dec 16	Review	FINAL exam

CITATION

While this does not pertain to this math class, I want to remind you that encyclopedias of any kind, including the very popular Wikipedia, are not primary sources and should not be cited or used in constructing academic papers at the graduate and undergraduate level. They can, however, be useful to help gather some background information and to point the way to more reliable sources.

8. Course Objectives

Students should be able to demonstrate an understanding of mathematical concepts studied. Expectations apply the major skills of this course as listed below:

- Display data with graphs: bar graphs, pie charts, histogram, stemplots
- Describe data with numbers: mean, median, five number summary, standard deviation.
- Normal distribution.
- Understand basic probability, conditional probability and independent events.
- Use Normal distribution, Binomial distribution. Normal approximation to the binomial distribution.
- Inference: confidence intervals, tests for significance, t-tests, tests for proportion, chi square and ANOVA.
- Correlation and regression.

9. General Ed. Task: Students should be able to apply mathematical problem solving skills to a variety of problem at the college level.

To accomplish this task, the students will

- a) Identify what they are given and what they need to find;
- b) Identify the type of problem they have been given and the tools necessary to solve the problem;
- c) Correctly apply the tools to the information given to set up the problem;
- d) Perform mathematically correct calculations to determine a solution;

e) Interpret their results in term of the original problem.

General Ed. Assignment

A local bank claims that the waiting time for its customers to be served is the lowest in the area. A competitor bank checks the waiting times at both banks. The sample statistics are listed below. Test the local bank claim. Use $\alpha = 0.05$. State the null and alternative hypotheses, the significance level, the critical value, the test statistic, the decision and conclusion.

Local Bank

$$n_1 = 45$$

$$s_1 = 1.1\text{min}$$

Competitor Bank

$$n_2 = 50$$

$$s_2 = 1.0\text{ min}$$

Criteria used to evaluate Artifacts for Mathematics Task Statements

- 1) Students will be able to identify what they are given and need to find.
Students set up the correct null and alternative hypotheses, identify the significance level and are able to find the critical value.
- 2) Students will be able to identify what type of problem it is and the necessary tools to solve such a problem.
Students use the correct formula for the t-value.
- 3) Students will then correctly apply the tools to the information given to set up the problem.
Students are able to compare the critical value and the t-statistic and make the correct decision.
- 4) Students will perform mathematically correct calculations to determine a solution

Students are able to identify the following correct information:

Significance level $\alpha = 0.05$

t-critical = - 1.684, df = 44

t-statistic = - 1.39

Correct decision is ‘do not Reject Null’. There is a probability of a Type II error.

- 5) Students will be able to interpret their results in terms of the original problem.

Students are able to conclude that based on this sample information, the waiting time at the local bank is not significantly lower than at the competitor’s bank.

10. Evaluation

Exams:

Grades will be based on 2 quizzes, 1 midterm exam and a final exam.

Grades are determined according to the scale:

-	A	90-100%
	B	80-89%
	C	70-79%
	D	60-69%
	F	0-59%

Course grades will consist of the following:

Quizzes	100 points
Exam 1	100 points
Final	200 points

MISSED EXAMS/LATE ASSIGNMENTS:

NOTE: Missed quizzes may not be made up.
There will be no make-up exam.

11. Cheating and Plagiarism

The term “cheating” means the use of unauthorized books, notes or other sources in the giving or securing of help in an examination or other course assignments. “Plagiarism” means the presentation of another’s published or unpublished work as one’s own. Because cheating and plagiarism are an affront to the University community as a whole and a denial of the offender’s own integrity, they will not be tolerated. Detected cheating or plagiarism will result in consequences that may, at the faculty member’s discretion, include course failure. In addition, an offender may be reported to University administration for possible disciplinary action, which may include suspension or dismissal from the University. Please refer to your Center Catalog.

12. Attendance

Students are strongly urged to attend class regularly. Attendance will be noted but will not be used in the grading process. However quiz and test material may be drawn from classroom lectures.

13. Special Needs

Please see me to arrange appropriate accommodations.

14. Skills

By completing this course, you are expected to demonstrate these learning outcomes.

You should be able to:

- reason inductively and deductively,
- utilize mathematical thinking processes and skills in performing fundamental mathematical calculations,
- use the fundamental logic of the natural sciences, and
- demonstrate the ability to analyze science-related problems and synthesize solutions.