# PRINCIPLES OF STATISTICS

## EXAM INFORMATION

This exam was developed to enable schools to award credit to students for knowledge equivalent to that learned by students taking the course. This exam covers topics such as probability, correlation, regression, sampling distribution and inferential statistics.

The exam contains 100 questions to be answered in 2 hours. The use of a non-programmable calculator is permitted in this exam. A standard normal table, also called the unit normal table or z table is provided as a reference within the exam. The table will appear as the first few items within the exam. It is advised that test takers "mark for review" these items so they can refer to the table throughout the exam.

**Form Codes:** SU450, SV450, SY450, SZ450

## CREDIT RECOMMENDATIONS

The American Council on Education's College Credit Recommendation Service (ACE CREDIT) has evaluated the DSST test development process and content of this exam. It has made the following recommendations:

**Area or Course Equivalent:** Principles of Statistics
**Level:** Lower-level baccalaureate
**Amount of Credit:** 3 Semester Hours
**Minimum Score:** 400
**Source:** www.acenet.edu

## EXAM CONTENT OUTLINE

The following is an outline of the content areas covered in the examination. The approximate percentage of the examination devoted to each content area is also noted.

**I. Foundations of Statistics – 20%**

a. A Data type (e.g., qualitative vs quantitative, discrete vs continuous) and levels of measurement (e.g., nominal, ordinal, etc.), sample vs. population
b. Sampling techniques (e.g., simple random, stratified, etc.; sample size, bias) and Research Design (e.g., Experimental vs Observational)
c. Descriptive Statistics (e.g., Measures of Central Tendency, Measures of Dispersion, Shape of Distribution (e.g.,Skewing) and Measures of Position ( Five-number summary, IQR, Outliers))
d. Visual Representation of Data (e.g., Bar graphs, Stem and Leaf Plot, Histograms, Line graphs, Box Plots, Pie Charts

**II. Probability – 20%**

a. Basic concepts of probability (e.g., experiment, sample space, event, relative frequency, the law of large numbers)
b. Probability rules for dependent and independent events (e.g., addition, multiplication, conditional probability)
c. Counting (e.g., Factorials, Combinations and permutations)
d. Discrete distributions (expected values, binomial, poisson, geometric)
e. Continuous Distributions (uniform and normal)

**III. Correlation and Regression – 15%**

a. Scatter plots (e.g., linear and non-linear distinction)
b. Linear correlation coefficient (e.g., strength and direction)
c. Linear regression (line/model of best fit, slope, y-intercept, residuals, and coefficient of determination)
d. Prediction using the linear model

**IV. Sampling Distributions – 15%**

a. Standard scores such as Z scores
b. Sampling distributions of a mean including standard error, normal approximation
c. Central limit theorem

**V. Inferential Statistics – 30%**

a. Confidence intervals
b. Hypothesis testing (e.g., one and two-tailed, null and alternative), significance level
c. Type I and Type II errors and level of significance
d. Inference for the mean of the proportion of a population (e.g., large and small samples)
e. Comparing two sample means and proportions (e.g., z-test and t-tests)
f. Comparing the means of more than two samples (e.g., ANOVA)
g. Non-parametric testing (e.g., Chi-square for goodness of fit and contingency tables)

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## REFERENCES

Below is a list of reference publications that were either used as a reference to create the exam, or were used as textbooks in college courses of the same or similar title at the time the test was developed. You may reference either the current edition of these titles or textbooks currently used at a local college or university for the same class title. It is recommended that you reference more than one textbook on the topics outlined in this fact sheet.

You should begin by checking textbook content against the content outline provided before selecting textbooks that cover the test content from which to study.

Sources for study material are suggested but not limited to the following:


1. Larson, Ron. (2023). Elementary Statistics: Picturing the World Authors, 8th Edition.
2. Bluman, Allan. (2025). Elementary Statistics: A Brief Vision. McGraw-Hill Higher Education. 9th Ed.


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## SAMPLE QUESTIONS

All test questions are in a multiple-choice format, with one correct answer and three incorrect options. The following are samples of the types of questions that may appear on the exam.

1. A 100 question multiple-choice exam has 4 choices for each question. If a student selects all choicesrandomly, how many correct answers could the student expect?

   a. 4
   b. 8

c. 25
d. 40

2. A bag contains 15 marbles, of which 8 are red, 5 are blue, and 2 are white. Two marbles are drawn randomly from the bag one after the other, without replacement. What is the probability that both marbles are red?

a. 4/15
b. 64/225
c. 32/105
d. 8/15

3. A random sample of 100 values of x is taken from a distribution whose SD is k. What will be theapproximate value of the standard error of the average of x?

a. 0.01k
b. 0.1k
c. 0.5k
d. 0.10k

4. If Ho is the null hypothesis and P is the observed (computed) significance level, then

a. “small” values of P are evidence for Ho
b. “small” values of P are evidence against Ho
c. “small” values of P give no information for or against Ho
d. a rejected Ho “corresponds to a negative value of P”

5. Which of the following pairs of parameters is sufficient to define a specific normal curve?

a. The average and the standard deviation
b. The range and the standard deviation
c. The average and the chi-square (x 2 )-value
d. The standard deviation and the chi-square (x2 )-value
e.

Answers to sample questions: 1-C; 2-A; 3-B; 4-B; 5-A