
Statistical Methods

STAT 105

First Semester, 1448 / 2026

Course Coordinator

Dr. Reem Alghamdi

Course Description

This course introduces fundamental concepts in probability and statistical inference. Topics include discrete and continuous probability distributions, sampling distributions, estimation, hypothesis testing, chi-square tests, correlation, simple linear regression, and one-way analysis of variance.

Course Objectives

- Understand fundamental concepts of discrete and continuous probability distributions.
- Understand the sampling distributions of sample statistics, including the sample mean, sample proportion, and sample variance.
- Apply point and interval estimation methods for population parameters.
- Conduct hypothesis tests for population means, proportions, and variances.
- Apply chi-square tests for categorical data.
- Analyze and interpret relationships between variables using correlation and simple linear regression.
- Apply one-way analysis of variance to compare multiple population means.

Assessment and Exam Information

Assessment	Date & Time	Topics Covered	Marks
Midterm 1	Week 7 (06/10/2026), 3–5 PM	Chapters 1 and 2	25
Midterm 2	Week 12 (10/11/2026), 3–5 PM	Chapters 3 and 4	25
Final Exam	14/12/2026, 1 PM	Chapters 5, 6, 7, and 8	40
Homework	Throughout the semester	Chapters 1–8	10

Course Timeline

Week	Topic
1–2	Chapter 1: Common Discrete Probability Distributions – Binomial, Hypergeometric, Poisson, and Discrete Uniform Distributions
3–4	Chapter 2: Common Continuous Probability Distributions – Normal, Student's t , Chi-Square, and F Distributions
5	Chapter 3: Sampling Distribution of the Sample Mean
6	Chapter 3: Sampling Distributions of Sample Proportions and Sample Variances
7	Chapter 4: Point and Interval Estimation for Population Means
8	Chapter 4: Point and Interval Estimation for Population Proportions and Variances
9	Chapter 5: Hypothesis Testing for Population Means
10	Chapter 5: Hypothesis Testing for Population Proportions and Variances
11	Chapter 6: Chi-Square Tests
12	Chapter 7: Correlation and Simple Linear Regression
13	Chapter 8: One-Way Analysis of Variance
14	Revision

Course Policies and Regulations

- Attendance is mandatory according to King Saud University regulations.
- Students missing more than **25%** of total class hours will not be allowed to take the final exam.
- No extra-credit assignments or activities will be offered.
- Make-up exams will be unified across all sections of STAT 105 for students with an approved medical excuse.
- The final exam will be unified across all sections of STAT 105.
- The last day to drop the course is **28/11/2026**.

Textbooks and References

- Walpole, R. E., Myers, R. H., Myers, S. L., & Ye, K. (2012). *Probability and Statistics for Engineers and Scientists* (9th ed.). Pearson Education.
- Devore, J. L. (2015). *Probability and Statistics for Engineering and the Sciences* (9th ed.). Cengage Learning.