

**Department of Statistics & Operation Research -King Saud University**

**First Semester 1448H /2026**

**Stat 109 Biostatistics**

**Instructor:** Alanoud Alzughibi

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**Office:** Building 5, Office: 66 third floor (College of sciences )

**Office hours:** (Sunday +Tuesday+ Wednesday) 12:00 PM – 1:00 PM

**Course Timeline**

| Week                                                                                       | Title                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| W2                                                                                         | <b>Chapter 1: Introduction to biostatistics:</b><br>Some Basic Concepts, Types of variables, Probability Sampling (Simple random sampling, Stratified sampling)                                                                                                                                                                      |
| W2                                                                                         | <b>chapter 2: Grouped Data:</b><br>The Frequency Distribution, Displaying Grouped Frequency Distributions                                                                                                                                                                                                                            |
| W3                                                                                         | <b>Chapter 2: Descriptive Statistics:</b><br>Measures of Central Tendency (mean, median, mode), Measures of Dispersion (range, variance, standard deviation, coefficient of variation)                                                                                                                                               |
| W4+5                                                                                       | <b>Chapter 3: Basic Probability Concepts:</b><br>General Definitions and Concepts, Probability of an Event, Marginal Probability, Conditional Probability, Bayes' Theorem                                                                                                                                                            |
| <b>First Term Exam - Chapters 1, 2, 3</b>                                                  |                                                                                                                                                                                                                                                                                                                                      |
| W6+7                                                                                       | <b>Chapter 4: Probability Distributions: Discrete:</b><br>Probability Distributions for Discrete Random Variables, Expected Value and Variance of a Discrete Random, Cumulative probability, Binomial Distribution, The Poisson Distribution                                                                                         |
| W8                                                                                         | <b>Chapter 4: Continuous Probability Distribution:</b><br>The Normal Distribution, The Standard Normal Distribution, The T-Distribution                                                                                                                                                                                              |
| W9                                                                                         | <b>Chapter 5: Sampling Distribution:</b><br>Sampling distribution of one and two sample means and one and two proportions                                                                                                                                                                                                            |
| <b>Second Term Exam - Chapters 4 &amp; 5</b>                                               |                                                                                                                                                                                                                                                                                                                                      |
| W10                                                                                        | <b>Chapter 6: Estimation:</b><br>Point Estimators, Interval Estimation                                                                                                                                                                                                                                                               |
| W11                                                                                        | <b>Chapter 7: Hypothesis Testing:</b><br>Null and Alternative Hypotheses, Type of errors, Concept of P-value, Hypothesis Testing: A Single Population Mean ( $\mu$ )                                                                                                                                                                 |
| W12+13                                                                                     | <b>Chapter 7: Hypothesis Testing:</b><br>The Difference Between Two Population Means: Independent Populations ( $\mu_1 - \mu_2$ ), Paired Comparisons ( $\mu_D = \mu_1 - \mu_2$ ), Hypothesis Testing: A Single Population Proportion ( $P$ ), Hypothesis Testing: The Difference Between Two Population Proportions ( $P_1 - P_2$ ) |
| <b>Final Exam: Sunday 4/7/1448H – (13-12-2026) at 1:00 PM</b><br><b>Chapters 6 &amp; 7</b> |                                                                                                                                                                                                                                                                                                                                      |

**Required textbooks:**

- Foundations of Biostatistics by Islam, M. Ataharul, Al -Shiha, Abdullah

**Additional textbooks:**

- Bernard Rosner. Fundamentals of Biostatistics.
- Pagano, Gauvreau. Principles of Biostatistics, 2nd edition.

**Attendance:**

Student missing more than 25% of the total class hours won't be allowed to write the final exam.

**Grading policy:**

**First Midterm: 30 Marks (1:30 hours)**

**Second Midterm: 30 Marks (1:30 hours)**

**Final Test: 40 Marks (2 hours)**