**Department of Statistics & Operation Research -King Saud University**
**First Semester 1447H /2025**
**Stat 109 Biostatistics**

**Instructor:** **Munirah Alothman**
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**Office:** **Building 25, Office: 2B05 second floor**
**Office hours:** **Sunday, Monday, Wednesday, Thursday: 11:05 AM – 11:35**
**PM.**

## Course Timeline

| Week | Title |
|------|-------|
| **W1** | **Chapter 1: Introduction to biostatistics:** Some Basic Concepts, Types of variables, Probability Sampling (Simple random sampling, Stratified sampling) |
| **W2** | **chapter 2: Grouped Data:** The Frequency Distribution, Displaying Grouped Frequency Distributions |
| **W3** | **Chapter 2: Descriptive Statistics:** Measures of Central Tendency (mean, median, mode), Measures of Dispersion (range, variance, standard deviation, coefficient of variation) |
| **W4+5** | **Chapter 3: Basic Probability Concepts:** General Definitions and Concepts, Probability of an Event, Marginal Probability, Conditional Probability, Bayes' Theorem |
| | **First Term Exam - Chapters 1, 2, 3** |
| **W6-7** | **Chapter 4: Probability Distributions: Discrete:** Probability Distributions for Discrete Random Variables, Expected Value and Variance of a Discrete Random, Cumulative probability, Binomial Distribution, The Poisson Distribution |
| **W8** | **Chapter 4: Continuous Probability Distribution:** The Normal Distribution, The Standard Normal Distribution, The T-Distribution |
| **W9** | **Chapter 5: Sampling Distribution:** Sampling distribution of one and two sample means and one and two proportions |
| | **Second Term Exam - Chapters 4 & 5** |
| **W10** | **Chapter 6: Estimation:** Point Estimators, Interval Estimation |
| **W11** | **Chapter 7: Hypothesis Testing:** Null and Alternative Hypotheses, Type of errors, Concept of P-value, Hypothesis Testing: A Single Population Mean ($\mu$) |
| **W12-13** | **Chapter 7: Hypothesis Testing:** 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 ($P_1 - P_2$) |
| | **Final Exam: Monday 22/12/2025 – (2-7-1447H) at 1:00 PM** **Chapters 6 & 7** |

**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)**