

# COURSE CURRICULUM

This course will provide you with a detailed explanation of the key statistical concepts and principles tested on USMLE STEP 1, STEP 2 CK and STEP 3 translating into enhanced understanding and higher scores on your exams.

## Lesson 1: Study Design

This lesson will review the major types of study designs:

- Prospective cohort studies
- Retrospective cohort studies
- Case-control studies
- Case series
- Cross-sectional studies
- Randomized controlled trials, including:
  - Phases of randomized controlled clinical trials (RCTs)
  - Common experimental designs of RCTs
  - Advantages and disadvantages of RCTs
- Ecological studies
- Practice questions on study design

**Video length:** [54 min](#)

## **Lesson 2: Diagnostic Tests**

**Diagnostic tests and assessment measures are commonly tested on USMLE. This lesson will review the following topics:**

- Incidence vs. prevalence
- Sensitivity vs. specificity
- Positive and negative predictive values
- Changing the cutoff value
- Receiver Operating Characteristic (ROC curves)
- Practice questions on Diagnostic Tests

**Video length:** [1 hr 15 min](#)

## **Lesson 3: Risk Estimation**

**This lesson will review different measures for risk estimation, including:**

- Relative risk
- Odds ratio
- Attributable risk
- Relative risk reduction

- Absolute risk reduction
- Number needed to treat
- Number needed to harm
- Practice questions on Risk Estimation

**Video length:** 58 min

## **Lesson 4: Measures of Central Tendency & Dispersion**

**Data description and basic statistical analysis are crucial components of USMLE. This lesson will discuss:**

- Mean, median, and mode
- Standard deviation
- Standard error of the mean
- Normal distribution
- Skewed distribution
- Practice questions on Measures of Central Tendency & Dispersion

**video length:** 20 min

## **Lesson 5: Hypothesis Testing & Statistical Error**

**Different statistical tests are used to assess research hypotheses. In this lesson, we will review the details of the following concepts:**

- Hypothesis testing: null and alternative hypothesis
- Type I and type II error
- Various types of data (numerical, categorical, etc.)
- Statistical tests
- Correlation coefficient
- Confidence interval
- Practice questions on Hypothesis Testing & Statistical error checks

**video length:** [1 hr 20 min](#)

## **Lesson 6: Bias**

**Research studies may be affected by various forms of bias. This lesson will review such unwanted sources of error, including:**

- Confounding and effect modification
- Selection bias
- Measurement bias

- Recall bias
- Lead time bias
- Reliability and validity
- Internal and external validity
- Practice questions on Bias

video length: [1 hr 15 min](#)

### **Lesson 7: Abstracts**

**This lesson will review several examples abstracts to illustrate the topics discussed in previous lessons. This section of the course is especially high yield for STEP 2 CK and STEP 3.**

**Last Updated on 1/9/2023.**