# Croton Harmon High School 2026/2027

**Course:** **Statistics**
**Credits:** **1**
**Prerequisite:** **Students already have 2 math credits**
**Guideline:** **Teacher recommendation**
**Description:** **In addition to fulfilling a STEM Concentration requirement, this course can also be used to fulfill a requirement in the Civics Concentration.**
This course is divided into four quarters. The first quarter emphasizes statistical literacy and study design. The 2nd and 3rd quarters focus on analyzing, illustrating, and modeling univariate and bivariate data sets. The fourth quarter is a study of probability and inference. This course culminates with the presentation by students of an independent year-long study they have conducted.

**Required Materials:**

**Text(provided):**

The Practice of Statistics for AP - 4th Edition - Starnes, Yates, Moore

**Graphing Calculator(provided if necessary)**

**Rolling Gradebook Grading Criteria:**

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|---|---|
| Exams, Quizzes, Projects | 80% |
| HW, Problem Sets | 20% |

**Syllabus**

**Unit 1:** **Univariate Analysis (weeks 1-7)**

- **interpret boxplots, histograms, stem and leaf, and dot plot**
- **interpret all measures of size, variability, and shape**
- **write and verbalize comparisons of multiple data sets in terms of size, shape, and variability**
- **project, 2 quizzes, 2 exams**

**Unit 2:** **Bivariate Analysis(weeks 7-10)**

- **describe the strength and direction of relationships in bivariate data sets**
- **recommend appropriate models**
- **assess models**
- **use models for predictions**

**- 2 quizzes, 1 exam**

**Unit 3: Probability (weeks 10-15)**

**-calculate and interpret simple, compound, conditional probabilities**

**-establish a variety of methods for calculating probabilities including the use of technology**

**- determine the appropriate mathematical operation in solving a probability problem**

**- represent outcomes of an event in set and flow-chart notation**

**- interpret probabilities**

**- demonstrate the impact of the law of large numbers**

**- 3 quizzes, 1 exam**

**Unit 4: Probability Distributions(weeks 15-20)**

- **construct and analyze discrete probability distributions in tabular and graphical form**
- **construct and analyze continuous probability distributions in graphical form**
- **analyze binomial, geometric, normal distributions**
- **calculate and interpret mean and a variance of distribution**
- **appropriately model events with probability distributions**
- **2 quizzes, 1 exam**

**Unit 5: Sampling Distributions(weeks 20-22)**

- **construct sampling distributions**
- **utilize sampling distributions to estimate parameters**
- **interpret sampling distributions**
- **justify appropriate models**
- **Project, 1 quiz, 1 exam**

**Unit 6: Study Design(weeks 22-26)**

- **distinguish between the different types of data and studies**
- **evaluate a study**
- **determine the appropriateness of observational and experimental studies**

- **design an observational study**
- **design an experimental study**
- **make inferences from studies**
- **Project, 1 quiz, 1 exam**

**Unit 7: Inference(weeks 26-36)**

- **choose appropriate point estimates (statistics) for parameters**
- **determine appropriate distribution models for phenomena**
- **determine assumptions necessary for confidence interval estimation**
- **construct and interpret one and two sample confidence intervals for means, proportions, and other parameters**
- **write hypotheses**
- **define and weigh the impact of type I and II errors**
- **derive significance levels**
- **determine appropriate models and tests**
- **state assumptions necessary for a given test**
- **use appropriate models to determine significance**
- **calculate appropriate test statistics**
- **interpret p-values**
- **evaluate hypotheses based on a comparison of p-values and significance levels**
- **use the calculator and minitab to conduct tests**
- **4 projects, 2 quizzes, 2 exams**