Queen's University
School of Kinesiology and Health Studies

Course Name: **KNPE 251/3.0** Introduction to Statistics	**Course Instructor:** Dr. Sarah Yakimowski	**Contact Hours:** Lectures: 1 x 1.0 hr / 12 weeks Lab: 1 x 1.5 hrs/ 12 weeks
		Prerequisite: Level 2 or above in a HLTH or KINE plan.
		Exclusion: No more than 3.0 units from BIOL 243/3.0; CHEE 209/3.0; COMM 162/3.0; ECON 250/3.0; GPHY 247/3.0; KNPE 251/3.0; NURS 323/3.0; POLS 385/3.0; PSYC 202/3.0; SOCY 211/3.0; STAM 200/3.0; STAT 263/3.0; STAT 267/3.0; STAT 367/3.0;

Course Description:

An introduction to the analysis of data from real life situations. Covers study design, descriptive and inferential statistics. Topics include probability, t-tests, regression, Chi-square tests, analysis of variance. Emphasis is in the foundation of statistical inference and practical application of statistical methods using statistical software.

The purpose of this course is to improve your numeracy and critical thinking skills to help you make better decisions in your professional and personal life. To achieve this, you will learn about probability, how to make sense of raw data, how best to describe data to others, and how to test hypotheses using statistics. The components of this course have been designed with care to maximize your opportunities to learn in an engaging and supportive environment.

Course Material:

1. The first is an ebook entitled "Taking the Anxiety out of Statistics" by Nelson & Beyer (Kendall Hunt Publishing). Queen's students can purchase a special subscription rate here. Note that no royalties are collected on this ebook.

2. The second is a Top Hat account for active learning during lectures. https://tophat.com/ You will receive an email inviting you to join the Top Hat course.

3. Software skills guides will be available in onQ. The course uses Microsoft Excel and RStudio, both of which are free for students.

Learning Outcomes:

- Identify the features of a data set to determine how best to summarize and display it.
- Choose the appropriate statistical test and provide the rationale for selection.
- Compute basic parametric statistical tests to test hypotheses.
- Interpret the results of statistical tests and data software output to draw valid conclusions.
- Communicate results of statistical analyses with clear

Course Evaluation:

TopHat	5%
Software Skills R Tests	20%
Weekly Quizzes	10%
Tutorial Activities	23%
Term Test	12%
Final Exam	30%

figures and text. • Apply knowledge of statistics and research design (e.g., sampling) to critically evaluate research findings.	

Course Outline	
Anatomy of a Statistical Study	Hypothesis Testing and T-tests
Study Designs and Sampling	Chi-Square Test
Descriptive Statistics	Linear Regression
Visualizations	Single-Factor ANOVA
Probability / Sampling Distributions	Two-Factor ANOVA

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