Program	BS Physical Education	Course Code	PE-354	Credit Hours	01
Course Title	**Applications of Statistics in Physical Education (Practical)**				

Course Introduction

This course introduces students to the application of statistical methods in physical education and sports sciences. It covers descriptive and inferential statistics, data collection, analysis, interpretation, and presentation. The course emphasizes the practical use of statistics in evaluating physical education programs, sports performance, and research in sports sciences.

Learning Outcomes

On the completion of the course, the students will:

- Understand the basic concepts and principles of statistics.
- Collect, analyze, and interpret physical education and sports sciences data.
- Apply statistical methods to evaluate and improve physical education programs and sports performance.
- Use statistical software for data analysis.
- Present statistical findings effectively in written and oral forms.
- Critically evaluate research articles and studies in physical education and sports sciences.

	Course Content	Assignments/Readings
Week 1	**Introduction to Statistical Concepts** • Lecture on fundamental statistical terms (mean, median, mode, variance, standard deviation). • Group activity to classify data types and measurement scales. • Hands-on exercise using simple data sets to calculate basic statistics.	From Books and Class Lectures
Week 2	**Data Collection Methods** • Practical session on designing surveys and questionnaires. • Group discussion on different data collection techniques (observations, experiments, surveys). • Workshop on ensuring reliability and validity in data collection	From Books and Class Lectures
Week 3	**Organizing and Summarizing Data** • Practical session on creating frequency distributions and histograms. • Hands-on exercise on summarizing data using descriptive statistics. • Workshop on using software (e.g., Excel, SPSS) to organize and summarize data.	From Books and Class Lectures

Week 4	**Measures of Central Tendency and Variability** • Hands-on practice calculating mean, median, mode, range, variance, and standard deviation. • Group activity to interpret the results and their implications in physical education research. • Workshop on using statistical software to compute these measures	From Books and Class Lectures
Week 5	**Revision of** **Introduction to Statistical Concepts** • Lecture on fundamental statistical terms (mean, median, mode, variance, standard deviation). • Group activity to classify data types and measurement scales. • Hands-on exercise using simple data sets to calculate basic statistics. **Data Collection Methods** • Practical session on designing surveys and questionnaires. • Group discussion on different data collection techniques (observations, experiments, surveys). • Workshop on ensuring reliability and validity in data collection **Organizing and Summarizing Data** • Practical session on creating frequency distributions and histograms. • Hands-on exercise on summarizing data using descriptive statistics. • Workshop on using software (e.g., Excel, SPSS) to organize and summarize data. **Measures of Central Tendency and Variability** • Hands-on practice calculating mean, median, mode, range, variance, and standard deviation. • Group activity to interpret the results and their implications in physical education research. • Workshop on using statistical software to compute these measures	From Books and Class Lectures
Week 6	**Probability and Distributions** • Practical session on calculating probabilities and understanding probability distributions. • Group discussion on the properties and applications of the normal distribution. • Hands-on exercises using statistical software to explore probability distributions	From Books and Class Lectures

Week 7	**Hypothesis Testing and Inferential Statistics** • Practical session on formulating hypotheses and conducting hypothesis tests. • Hands-on exercises on calculating p-values and interpreting results. • Workshop on using statistical software to perform hypothesis tests	From Books and Class Lectures
Week 8	**Correlation and Regression Analysis** • Practical session on calculating correlation coefficients and performing regression analysis. • Hands-on exercises to interpret the strength and direction of relationships between variables. • Workshop on using statistical software for correlation and regression analysis	From Books and Class Lectures
Week 9	**Analysis of Variance (ANOVA)** • Practical session on setting up and conducting ANOVA. • Group activity to analyze and interpret ANOVA results. • Workshop on using statistical software to perform ANOVA	From Books and Class Lectures
Week 10	**Revision of** **Probability and Distributions** • Practical session on calculating probabilities and understanding probability distributions. • Group discussion on the properties and applications of the normal distribution. • Hands-on exercises using statistical software to explore probability distributions **Hypothesis Testing and Inferential Statistics** • Practical session on formulating hypotheses and conducting hypothesis tests. • Hands-on exercises on calculating p-values and interpreting results. • Workshop on using statistical software to perform hypothesis tests **Correlation and Regression Analysis** • Practical session on calculating correlation coefficients and performing regression analysis. • Hands-on exercises to interpret the strength and direction of relationships between variables. • Workshop on using statistical software for correlation and regression analysis	From Books and Class Lectures

	Analysis of Variance (ANOVA) • Practical session on setting up and conducting ANOVA. • Group activity to analyze and interpret ANOVA results. • Workshop on using statistical software to perform ANOVA	
Week 11	**Non-Parametric Tests** • Practical session on performing standard non-parametric tests (e.g., Chi-square, Mann-Whitney U test). • Hands-on exercises to interpret the results of non-parametric tests. • Workshop on using statistical software for non-parametric analysis	From Books and Class Lectures
Week 12	**Statistical Reporting and Presentation** • Practical session on writing statistical reports and creating visual presentations. • Group activity to critique and improve statistical reports and presentations. • Workshop on using software to create graphs, charts, and tables for presentations.	From Books and Class Lectures
Week 13	**Applications in Physical Education Research** • Practical session on designing a research study and collecting data. • Hands-on exercise to analyze research data using statistical methods. • Group project to present research findings using appropriate statistical techniques.	From Books and Class Lectures
Week 14	**Practical Assessment and Feedback** • Practical assessment of statistical skills, including data collection, analysis, and interpretation. • Peer and instructor feedback sessions. • Reflection on learning experiences and setting goals for future improvement.	From Books and Class Lectures
Week 15	**Revision of** **Non-Parametric Tests** • Practical session on performing standard non-parametric tests (e.g., Chi-square, Mann-Whitney U). • Hands-on exercises to interpret the results of non-parametric tests.	From Books and Class Lectures

	• Workshop on using statistical software for non-parametric analysis **Statistical Reporting and Presentation** • Practical session on writing statistical reports and creating visual presentations. • Group activity to critique and improve statistical reports and presentations. • Workshop on using software to create graphs, charts, and tables for presentations. **Applications in Physical Education Research** • Practical session on designing a research study and collecting data. • Hands-on exercise to analyze research data using statistical methods. • Group project to present research findings using appropriate statistical techniques. **Practical Assessment and Feedback** • Practical assessment of statistical skills, including data collection, analysis, and interpretation. • Peer and instructor feedback sessions. • Reflection on learning experiences and setting goals for future improvement.	
Week 16	**Review and Final Exam Preparation** • Review of key concepts and principles • Mock exams and practice questions • Final exam preparation	From Books and Class Lectures

Textbooks and Reading Material

Textbooks

- Field, A. (2017). Discovering Statistics Using IBM SPSS Statistics (5th ed.). Sage Publications.
- Tabachnick, B. G., & Fidell, L. S. (2019). Using Multivariate Statistics (7th ed.). Pearson.
- Thomas, J. R., Nelson, J. K., & Silverman, S. J. (2015). Research Methods in Physical Activity (7th ed.). Human Kinetics.
- Vincent, W. J., & Weir, J. P. (2012). Statistics in Kinesiology (4th ed.). Human Kinetics.