COURSE SYLLABUS

MASTER OF ARTS IN EDUCATION

Curriculum Description

The Master of Arts in Education (MAEd) program is designed to equip educators, administrators, and educational leaders with the advanced knowledge and skills necessary to foster effective learning environments. This program emphasizes a comprehensive understanding of educational theory, research methodologies, and practical applications in diverse educational settings. Students will engage with contemporary issues in education, explore innovative teaching strategies, and develop leadership capabilities that promote equity and inclusion. The MAEd program is delivered through a blend of online and in-person courses, allowing for flexible learning while fostering collaboration among peers. Graduates will be prepared to make meaningful contributions to the field of education, whether in classrooms, schools, or educational policy.

Program Objectives

1. **Advanced Knowledge Acquisition**: Equip students with a deep understanding of educational theories, philosophies, and practices to inform their teaching and leadership approaches.
2. **Research Proficiency**: Develop students' abilities to conduct educational research, analyze data, and apply findings to improve educational practices and outcomes.
3. **Culturally Responsive Teaching**: Foster an understanding of diversity in education, enabling students to create inclusive learning environments that respect and celebrate differences.

4. **Leadership Development**: Prepare students to take on leadership roles within educational institutions, focusing on effective communication, collaboration, and decision-making skills.
5. **Curriculum and Instruction Design**: Enable students to design, implement, and evaluate curricula that meet the needs of diverse learners and align with educational standards.
6. **Technology Integration**: Prepare students to effectively integrate technology into teaching and learning processes, enhancing student engagement and achievement.
7. **Policy and Advocacy**: Equip students with the knowledge and skills to engage in educational policy discussions and advocate for equitable educational practices.

Program Outcomes

Upon successful completion of the Master of Arts in Education program, graduates will be able to:

1. **Demonstrate Expertise in Educational Theory**: Articulate and apply key educational theories and philosophies to enhance teaching and learning practices.
2. **Conduct and Analyze Research**: Design and implement educational research projects, critically analyze data, and effectively communicate findings to stakeholders.
3. **Implement Inclusive Practices**: Develop and apply strategies that promote equity and inclusion in diverse educational settings, ensuring all students have access to quality education.
4. **Exhibit Leadership Skills**: Lead collaborative efforts within educational settings, demonstrating effective communication, conflict resolution, and team-building skills.

5. **Design Effective Curriculum**: Create and assess curricula that are responsive to the needs of learners, utilizing best practices in instructional design.
6. **Utilize Technology Effectively**: Integrate technology into instructional practices to enhance learning experiences and outcomes for all students.
7. **Engage in Policy Advocacy**: Analyze educational policies and advocate for changes that promote equity, access, and quality in education at local, state, and national levels.

COURSE SYLLABUS

Course Title: EDUCATIONAL STATISTICS
Credit: 3 Units
Time Allotment: 3 Hours / Week
Professor: PIC Faculty
Email: info@pic.education

I. COURSE DESCRIPTION

This course provides an introduction to the fundamental concepts and techniques of statistics as applied to educational research. Students will learn how to collect, analyze, and interpret data effectively, with a focus on quantitative methods. The course will emphasize practical applications of statistical analysis in educational settings and decision-making processes.

II. COURSE OBJECTIVES

By the end of this course, students will be able to:

1. Understand and apply basic statistical concepts and terminology.
2. Collect and organize data effectively.
3. Perform descriptive and inferential statistical analyses.
4. Interpret statistical results in the context of educational research.
5. Utilize statistical software for data analysis.
6. Communicate statistical findings clearly to various audiences.

III. LEARNING OUTCOMES

1. **Understanding Statistical Concepts:**

   Demonstrate a comprehensive understanding of fundamental statistical concepts and terminology relevant to educational research.

2. **Data Collection Skills:**

   Design and implement effective data collection methods, including surveys and observational techniques, to gather relevant educational data.

3. **Data Organization and Visualization:**

   Organize and visually represent data using appropriate statistical tools and software, including frequency distributions, charts, and graphs.

4. **Descriptive Analysis Proficiency:**

   Calculate and interpret key descriptive statistics (mean, median, mode, variance, standard deviation) to summarize educational data.

5. **Probability Comprehension:**

   Apply basic probability concepts to educational scenarios, understanding the implications of probability in decision-making processes.

6. **Inferential Statistics Application:**

   Conduct hypothesis testing and interpret results, including the use of t-tests and ANOVA, to make informed conclusions about educational phenomena.

7. **Correlation and Regression Analysis:**

Analyze relationships between educational variables using correlation and regression techniques, interpreting the significance and strength of these relationships.

8. **Chi-Square Analysis:**

   Perform and interpret chi-square tests to assess relationships between categorical variables in educational research.

9. **Non-parametric Statistics Knowledge:**

   Identify and apply appropriate non-parametric statistical tests when data do not meet parametric assumptions.

10. **Statistical Software Proficiency:**

    Utilize statistical software (e.g., SPSS, R, Excel) for data analysis, enhancing skills in interpreting and presenting statistical results.

11. **Critical Interpretation of Results:**

    Critically evaluate and interpret statistical findings from educational research literature, understanding their implications for practice.

12. **Ethical Research Practices:**

    Recognize and apply ethical considerations in educational research, including issues of data privacy, consent, and responsible reporting.

13. **Effective Communication of Findings:**

    Communicate statistical findings clearly and effectively to diverse audiences, including stakeholders in the educational community.

14. **Project Development:**

    Develop and present a comprehensive research project that applies statistical methods to

a relevant educational issue, demonstrating mastery of course content.

IV. LEARNING PLAN

WEEK	LEARNING MATERIALS	LEARNING OBJECTIVES
Week 1: Introduction to Educational Statistics	Learning Materials: • Textbook: Chapter 1 • Article: "The Role of Statistics in Educational Research" Activities: • Class discussion on the significance of statistics in educational settings.	Learning Objectives: • Understand the importance of statistics in education. • Familiarize with key statistical terminology and concepts.
Week 2: Data Collection Methods	Learning Materials: • Textbook: Chapter 2 • Video: "Survey Design Basics" Activities: • Create a survey for a hypothetical educational research project.	Learning Objectives: • Design effective data collection instruments (surveys, questionnaires). • Understand various sampling techniques.
Week 3: Organizing and Visualizing Data	Learning Materials: • Textbook: Chapter 3 • Software tutorial: Excel or Google Sheets for data visualization. Activities: • Hands-on practice in creating visual data representations.	Learning Objectives: • Organize data into frequency distributions. • Create visual representations of data (charts, graphs).
Week 4: Descriptive Statistics	Learning Materials: • Textbook: Chapter 4 • Online resource: "Descriptive Statistics Explained"	Learning Objectives: • Calculate and interpret measures of central tendency and variability.

	Activities: • Analyze a dataset and report descriptive statistics.	
Week 5: Probability Concepts	Learning Materials: • Textbook: Chapter 5 • Article: "Probability in Education" Activities: • Solve probability problems related to educational contexts.	Learning Objectives: • Apply basic probability concepts to educational scenarios. • Understand independent and dependent events.
Week 6: Introduction to Inferential Statistics	Learning Materials: • Textbook: Chapter 6 • Video: "Understanding Sampling Distributions" Activities: • Class discussion on the implications of sampling in educational research.	Learning Objectives: • Differentiate between populations and samples. • Understand the concept of sampling distributions.
Week 7: Hypothesis Testing	Learning Materials: • Textbook: Chapter 7 • Software tutorial: SPSS/R for hypothesis testing. Activities: • Conduct a hypothesis test using sample data.	Learning Objectives: • Formulate null and alternative hypotheses. • Conduct hypothesis tests and interpret p-values.
Week 8: t-Tests and ANOVA	Learning Materials: • Textbook: Chapter 8 • Online resource: "ANOVA in Education Research" Activities: • Analyze a dataset to perform t-tests and	Learning Objectives: • Perform independent and paired t-tests. • Conduct one-way ANOVA and interpret results.

	ANOVA.	
Week 9: Correlation and Regression Analysis	Learning Materials: • Textbook: Chapter 9 • Video: "Introduction to Regression Analysis" Activities: • Analyze relationships between educational variables using regression.	Learning Objectives: • Calculate and interpret correlation coefficients. • Conduct simple linear regression analysis.
Week 10: Chi-Square Tests	Learning Materials: • Textbook: Chapter 10 • Article: "Using Chi-Square in Educational Research" Activities: • Conduct chi-square tests using provided datasets.	Learning Objectives: • Perform chi-square tests for independence and goodness-of-fit. • Interpret chi-square results in educational research.
Week 11: Non-parametric Statistics	Learning Materials: • Textbook: Chapter 11 • Online resource: "Non-parametric Tests in Education" Activities: • Analyze a dataset using non-parametric methods.	Learning Objectives: • Identify when to use non-parametric tests. • Apply common non-parametric tests (Mann-Whitney U, Wilcoxon signed-rank).
Week 12: Statistical Software Applications	Learning Materials: • Software tutorials for SPSS/R/Excel. • Textbook: Chapter 12 (Statistical Software Applications). • Video: "Getting Started with SPSS/R/Excel for	Learning Objectives: • Gain proficiency in using statistical software (SPSS, R, Excel). • Understand how to input data and interpret outputs for

	Statistical Analysis." Activities: • Hands-on practice session: Input data and perform basic statistical analyses using the chosen software.	statistical analyses.
Week 13: Interpreting Statistical Results	Learning Materials: • Textbook: Chapter 13 (Interpreting Statistical Results). • Selected research articles for analysis. • Video: "Understanding Statistical Significance." Activities: • Group activity: Analyze and present statistical findings from selected research articles to discuss implications for educational practice.	Learning Objectives: • Critically evaluate and interpret statistical findings from educational research literature. • Understand the implications of statistical significance in educational contexts.
Week 14: Ethics in Educational Research	Learning Materials: • Textbook: Chapter 14 (Ethics in Educational Research). • Articles on ethical guidelines in research (e.g., APA or AERA guidelines). • Case studies involving ethical dilemmas in educational research. Activities: • Class discussion on case studies; students will	Learning Objectives: • Recognize and apply ethical considerations in educational research, including data privacy and informed consent. • Understand the ethical implications of data manipulation and reporting.

	identify ethical issues and propose solutions.	
Week 15: Course Review and Project Work	Learning Materials: • Review notes from previous weeks. • Guidelines for the final project. • Peer-reviewed articles for reference. Activities: • Group presentations of final projects, including methodology, data analysis, and implications for educational management. • Peer feedback sessions on presentations.	Learning Objectives: • Synthesize knowledge and skills acquired throughout the course. • Prepare and present a comprehensive research project involving statistical analysis of educational data.
Week 16: Final Exam	Learning Materials: • Review materials from the entire course (textbook chapters, notes, and articles). • Practice exam questions. Activities: • Final exam assessing understanding of course content, including multiple-choice, short answer, and problem-solving questions.	Learning Objectives: • Demonstrate mastery of statistical concepts and techniques covered throughout the course. • Apply statistical reasoning to solve problems related to educational data.

V. LEARNING OUTPUTS

1. **Statistical Knowledge:**

Demonstrate a clear understanding of fundamental statistical concepts, terminology, and their relevance to educational research and management.

2. **Data Collection Design:**

   Develop and implement effective data collection instruments, including surveys and questionnaires, tailored to educational contexts.

3. **Data Analysis Skills:**

   Organize, analyze, and interpret educational data using descriptive and inferential statistical methods, including measures of central tendency, variability, hypothesis testing, and regression analysis.

4. **Statistical Software Proficiency:**

   Utilize statistical software (e.g., SPSS, R, Excel) to conduct data analysis, interpret outputs, and visualize results effectively.

5. **Critical Evaluation:**

   Critically evaluate and interpret statistical findings from educational research literature, assessing their implications for educational practice and policy.

6. **Ethical Research Practices:**

   Apply ethical principles in educational research, including issues related to data privacy, informed consent, and responsible reporting of statistical results.

7. **Effective Communication:**

   Communicate statistical findings clearly and effectively to diverse audiences, including stakeholders in the educational community, through written reports and oral presentations.

8. **Research Project Development:**

Design and present a comprehensive research project that applies statistical methods to a relevant educational issue, demonstrating mastery of course content and research skills.

VI. REFERENCES:

1. Textbook References:

Gravetter, F. J., & Wallnau, L. B. (2021). Statistics for The Behavioral Sciences (10th ed.). Cengage Learning.

A comprehensive textbook covering essential statistical concepts, methods, and applications relevant to behavioral and educational research.

Creswell, J. W., & Creswell, J. D. (2018). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches (5th ed.). SAGE Publications.

Provides insights into research design, including statistical methods and their application in educational research.

2. Software Tutorials:

Field, A. (2018). Discovering Statistics Using IBM SPSS Statistics (5th ed.). SAGE Publications.

A user-friendly guide for conducting statistical analyses using SPSS, complete with examples and exercises tailored for educational research.

R Core Team. (2023). R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing. https://www.r-project.org/

Official documentation and resources for learning R, a powerful tool for statistical analysis.

3. **Online Resources:**

Laerd Statistics. (n.d.). Statistical Tutorials and Guides. https://statistics.laerd.com/

Provides step-by-step guides for various statistical analyses, including hypothesis testing, ANOVA, and regression.

Khan Academy. (n.d.). Statistics and Probability. https://www.khanacademy.org/math/statistics-probability

Offers free online courses covering foundational concepts in statistics and probability, suitable for beginners.

4. **Research Articles:**

American Educational Research Association (AERA). (2018). Standards for Educational and Psychological Testing. AERA.

A foundational document outlining ethical and professional standards for educational research, including statistical practices.

Cohen, J. (1988). Statistical Power Analysis for the Behavioral Sciences (2nd ed.). Lawrence Erlbaum Associates.

A seminal work on statistical power analysis, crucial for understanding sample size and effect size in educational research.

5. **Ethics in Research:**

American Psychological Association (APA). (2020). Publication Manual of the American

Psychological Association (7th ed.). APA.

Guidelines for ethical reporting and research practices in psychology and education, including statistical reporting.
National Commission for the Protection of Human Subjects of Biomedical and Behavioral Research. (1979). The Belmont Report: Ethical Principles and Guidelines for the Protection of Human Subjects of Research.

A foundational document outlining ethical principles in research involving human subjects, relevant to educational research.

VII. COURSE REQUIREMENTS

1. Active participation in class discussion is required.
2. Each student has to take and pass all formative (quizzes/written assignments) and summative tests (midterm/final exams). Homework must be submitted the next meeting.
3. Students have to submit a compilation of all the required outputs as stipulated in the learning outcomes.

VIII. GRADING SYSTEM

General Average. The students will be graded for two quarters (midterm and final rating periods) according to the following:

■ Class Attendance	10%
■ Participation in Class Discussion and Pair/Group Activities	25%
■ Individual Formative Tests, Homework, Research	25%
■ Summative Examination (Midterm/Final Exams)	40%
TOTAL	100%

Final Grade. The students will be given a final grade based on their average grade (AG) in the mid grading period (1st quarter of the term) and in the final grading grade (2^{nd} quarter). Midterm average grade has a weight of 50% and the final grading period has also a weight of 50%.

College Equivalent Rating:

95.5-100% 4.5 = A+ (Truly Exceptional Performance)

90.5-95.4% 4.0 = A (Excellent Performance)

85.5-89.4% 3.5 = B+ (Good Performance)

80.5-84.4% 3.0 = B (Acceptable Performance)

75.5-79.4% 2.5 = C+ (Marginally Acceptable Performance)

70.5-74.4% 2.0 = C (Passing but below expectations for graduate work)

65.5-69.4% 1.5 = D+ (Poor) 60.5-64.4% 1.0 = D (Lowest Passing Grade)

<59.4% 0.0 = F (Academic Failure No Credit Earned)

IX. CLASS POLICIES

All students who are enrolled in this course should conform to the following class policies:

1. Regardless of a disability, all students are responsible for fulfilling the essential requirements of courses/programs/degrees, including attendance expectations.
2. No one is allowed to attend a class unless officially enrolled on a credit or non- credit basis with the appropriate fees paid. Students who attend, participate and strive to complete course requirements without formal enrolment will not receive credit for their work.
3. In compliance with the University regulations governing class attendance, students who stop attending the class for five (5) or six

(6) times without justifiable reasons or who have never attended class will be dropped from the class. (Attendance is defined as online attendance to class meetings, participation or presence in an academically related activity such as submission of an assignment (e.g., homework, research paper), quiz/ examination, or participation in group activities.)

4. Severe consequences on students who miss term exams without a "satisfactory explanation" shall be imposed, namely, a failing grade in the course. To avoid such dire action, the policy instructs students "unable to take a midterm/final examination because of illness or other reasons over which they have no control" to notify the instructor/professor immediately. Students should be prepared to document their illness or the extenuating circumstances that caused them to miss the exam.
5. Students are excused from classes to participate in university-approved events or competitions. Before missing classes, the participants must present their instructors with a letter signed by both the director of the Student Affairs and the faculty adviser/coach of the student. These letters confirm the dates and locations of the events. An excused absence does not excuse students from completing course work missed during their absences.
6. Students who face emergencies, such as a death in the family, serious illness of a family member, court appearances, hazardous weather that makes attendance impossible or other situations beyond their control that preclude class attendance should notify their instructors immediately to be excused from their class.
7. Students without notifications of absence or excuse letters will not be allowed to have make-up course work such as quiz, but will be

allowed to take midterm and/or final examinations.

X. Class Participation and Behavior

1. Class participation is a very important part of the learning process in this course. Students will be evaluated on the quality of their contributions and insights
2. Any form of cheating will immediately earn you a failing grade.
3. If a student is disruptive, the faculty member may ask the student to stop the disruptive behavior and warn the student that such disruptive behavior can result in academic or disciplinary action.

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