

Course Title: Research Methods and Statistics

Course Category: PS517

Schedule of Offering: 2nd Semester

Course Credit Structure: 4 Credits

Lecture: 4 Hours per week

Contact Hours per week: 4 Hours per week

Course Instructor: TBA

1. Introduction:

This course provides a fundamental understanding of statistics and an overview of research process. The course explores statistical concepts and procedures such as central tendency and variability, hypothesis testing, etc. The broad range of research methods and research methodologies underlying them would also be explored. It covers topics such as problem formulation, operationalization, writing research proposal, research designs and data analysis.

1. Course Objectives

To enable students to:

- Understand the fundamentals of statistics and also their applications in different researches.
- Enable them to apply different statistical procedures to test hypotheses of various kinds'
- Distinguish between scientific and nonscientific methods of inquiry.
- Describe major quantitative, qualitative, and mixed research designs.
- Enumerate the main ethical issues that should be considered in conducting research.
- Analyze qualitative and quantitative data.
- Write a research proposal.

3. Pre-requisites:

Registration as student in M. Sc. Applied Psychology program.

3. References:

American Psychological Association (2010). *Publication manual of the American Psychological Association* (6th ed.). Washington, DC: Author.

Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for Psychology* (4th ED.). New Delhi: Pearson Education.

Best, J. W., & Kahn, J. V. (1999). *Research in education* (7th ed.). New Delhi: Prentice-Hall.

Bryman, A., & Cramer, D. (1994). *Quantitative data analysis for social scientists* (Revised edition). London: Routledge.

Cozby, P. C. (2001). *Methods in behavioral research* (7th ed.). Mountain View, California: Mayfield.

Craig, J. R., & Metze, L. P. (1986). *Methods of psychological research* (2nd ed.). Monterey, CA: Brooks/Cole.

Denzin, N. K., & Lincoln, Y. S. (Eds.) (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.

Gupta, S. P. (2017). *Statistical Methods*. New Delhi: Sultan Chand & Sons.

- Howitt, D. & Cramer, D. (2011). *Introduction to Statistics in Psychology* (5th Ed.). London: Pearson Education.
- Kerlinger, F. (1986). *Foundations of behavioral research*. NY: Holt Rinehart.
- Lind, D. A., Marchal, W. G., & Wathen, S. A. (2015). *Statistical techniques in business and economics*. New York: McGraw Hill Education.
- Mitchell, M. L. & Jolley, J. M. (2004). *Research design* (5th ed.). Wadsworth: Thomson.
- Punch, K. F., & Oancea, A. (2014). *Introduction to research methods in education* (2nd ed.). Los Angeles: Sage.
- Ray, W. J. (2003). *Methods toward a science of behavior and experience* (7th ed.). Wadsworth: Thomson.
- Rubin, A., & Babbie, E. (1997). *Research methods for social work* (3rd ed.). Pacific Grove, CA: Brooks/Cole.
- Shaughnessy, J. J., & Zechmeister, E. B. (1994). *Research methods in psychology* (3rd ed.). NY: McGraw-Hill.

5.Module-wise topics:

Module 1: Central Tendency and Variability (3 sessions)

- Central tendency
- Variability
- Central tendency and variability in research articles

Readings:

- Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for Psychology* (4th ED.). New Delhi: Pearson Education.
- Gupta, S. P. (2017). *Statistical Methods*. New Delhi: Sultan Chand & Sons.
- Howitt, D. & Cramer, D. (2011). *Introduction to Statistics in Psychology* (5th Ed.). London: Pearson Education.
- Lind, D. A., Marchal, W. G., & Wathen, S. A. (2015). *Statistical techniques in business and economics*. New York: McGraw Hill Education.

Module 2: Introduction to Hypothesis Testing (5 sessions)

- Core logic of hypothesis testing
- The hypothesis-testing process
- One-tailed and Two-tailed hypothesis tests
- Hypothesis tests in research article

Readings:

- Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for Psychology* (4th ED.). New Delhi: Pearson Education.
- Gupta, S. P. (2017). *Statistical Methods*. New Delhi: Sultan Chand & Sons.
- Howitt, D. & Cramer, D. (2011). *Introduction to Statistics in Psychology* (5th Ed.). London: Pearson Education.

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2015). *Statistical techniques in business and economics*. New York: McGraw Hill Education.

Module 3: Introduction to *t* tests and Analysis of Variance (10 sessions)

- *t* test for single sample
- *t* test for dependent means
- *t* test for independent means
- *t* test in research articles
- Basic logic of analysis of variance
- Hypothesis testing with analysis of variance
- Analysis of variance in research articles

Readings:

Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for Psychology* (4th ED.). New Delhi: Pearson Education.

Gupta, S. P. (2017). *Statistical Methods*. New Delhi: Sultan Chand & Sons.

Howitt, D. & Cramer, D. (2011). *Introduction to Statistics in Psychology* (5th Ed.). London: Pearson Education.

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2015). *Statistical techniques in business and economics*. New York: McGraw Hill Education.

Module 4: Correlation and Regression (10 sessions)

- Patterns of correlation
- The correlation coefficient
- Significance of correlation coefficient
- Correlation and causality
- Correlation in research article
- Predictor (X) and criterion (Y) variables
- The linear prediction rule
- The regression line
- Multiple regression
- Regression in research articles

Readings:

Aron, A., Aron, E. N., & Coups, E. J. (2006). *Statistics for Psychology* (4th ED.). New Delhi: Pearson Education.

Gupta, S. P. (2017). *Statistical Methods*. New Delhi: Sultan Chand & Sons.

Howitt, D. & Cramer, D. (2011). *Introduction to Statistics in Psychology* (5th Ed.). London: Pearson Education.

Lind, D. A., Marchal, W. G., & Wathen, S. A. (2015). *Statistical techniques in business and economics*. New York: McGraw Hill Education.

Module 5: Introduction to Research methods (6 sessions)

Topics:

- Methods of Acquiring Knowledge (Scientific and Nonscientific Methods)
- Goals of the Scientific Method
- Ethical Considerations in Conducting Research
- Problem Identification

- Research Questions/Hypotheses
- Literature Review
- Theoretical and Operational definitions
- The Research Proposal

Readings:

Best, J. W., & Kahn, J. V. (1999). *Research in education* (7th ed.). New Delhi: Prentice-Hall.

Cozby, P. C. (2001). *Methods in behavioral research* (7th ed.). Mountain View, California: Mayfield.

Craig, J. R., & Metze, L. P. (1986). *Methods of psychological research* (2nd ed.). Monterey, CA: Brooks/Cole.

Kerlinger, F. (1986). *Foundations of behavioral research*. NY: Holt Rinehart.

Mitchell, M. L. & Jolley, J. M. (2004). *Research design* (5th ed.). Wadsworth: Thomson.

Punch, K. F., & Oancea, A. (2014). *Introduction to research methods in education* (2nd ed.). Los Angeles: Sage.

Shaughnessy, J. J., & Zechmeister, E. B. (1994). *Research methods in psychology* (3rd ed.). NY: McGraw-Hill.

Module 6: Research Designs (17 sessions)

Topics:

- Three Research Paradigms
- Quantitative Research designs
- Qualitative Research designs
- Mixed Research designs
- Emphases of the Three Paradigms

Readings:

Denzin, N. K., & Lincoln, Y. S. (Eds.) (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.

Kerlinger, F. (1986). *Foundations of behavioral research*. NY: Holt Rinehart.

Mitchell, M. L. & Jolley, J. M. (2004). *Research design* (5th ed.). Wadsworth: Thomson.

Punch, K. F., & Oancea, A. (2014). *Introduction to research methods in education* (2nd ed.). Los Angeles: Sage.

Module 7: Data Analysis (9 sessions)

Topics:

- Analysis of Qualitative Data
- Analysis of Quantitative Data

Readings:

Bryman, A., & Cramer, D. (1994). *Quantitative data analysis for social scientists* (Revised edition). London: Routledge.

Denzin, N. K., & Lincoln, Y. S. (Eds.) (1994). *Handbook of qualitative research*. Thousand Oaks, CA: Sage.

Rubin, A., & Babbie, E. (1997). *Research methods for social work* (3rd ed.). Pacific Grove, CA: Brooks/Cole.

Punch, K. F., & Oancea, A. (2014). Introduction to research methods in education (2nd ed.). Los Angeles: Sage.

Shaughnessy, J. J., & Zechmeister, E. B. (1994). *Research methods in psychology* (3rd ed.). NY: McGraw-Hill.

6. Pedagogy

Teaching methods are expected to encourage proactive involvement of students and high level of participation, thus, shall involve interactive lectures (40%), independent learning (40%), and cooperative learning (20%). The interactive learning component will consist of lecture sessions, classroom exercises, and discussions. The independent learning component, on the other hand, shall include such exercises as independent reading and doing individual assignments in the form of behavioural assessments, behavioural intervention plan development, etc. Finally, the cooperative learning component involves doing assignments in groups.

It is envisaged that students will be guided to read, think, solve problems and actively participate in the learning process. This shall be attained through a mix of teaching methods, such as, lectures, projects, assignments, case studies, individual and group presentations, discussion, and fieldwork.

7. Evaluation Pattern

Both formative (periodic assignments and projects) and summative (mid semester and final examinations) evaluation will be used.

The breakdown of the evaluation shall be as follows.

Class Participation and Attendance	5%
Term Paper	10%
Individual Assignment (including Presentations)	10%
Group Assignments (including Presentation)	5%
Mid semester Examination	20%
Final Examination	50%
Total	100%