



Indraprastha College for Women University of Delhi

WORK PLAN FOR ODD SEMESTER 2025

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| Course Name: | B.A. (Prog.) Psychology |
| Paper Title: | DSC-13- Fundamentals of Inferential Statistics (Theory) |
| Unique Paper Code: | |
| Semester: | VII |
| Faculty(s): | Dr. Nidhi Malik |
| Year: | 2025 |

| Work Plan | | | |
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| Unit No. | Learning Objective | Lecture No. | Topics to be Covered |
| I | Introduction to inferential statistics, fundamentals of hypothesis testing, using t-test for single mean and for comparing two groups | 1 | Introduction, syllabus, learning objectives, workplan, recommended readings, assessment |
| | | 2 | Introduction to Inferential Statistics |
| | | 3 | Parametric and Non-Parametric Statistics |
| | | 4 | Random Sampling Distribution of the Mean |
| | | 5 | Properties of Random Sampling Distribution of the Mean |
| | | 6 | Hypothesis Testing - Null and Alternate Hypotheses |
| | | 7 | One-tailed (directional) and Two-tailed (non-directional) hypothesis |
| | | 8 | Characteristics of Student's distribution of t |
| | | 9 | Degrees of freedom |
| | | 10 | Calculation of single mean t -test |
| | | 11 | Assumptions of t -test |
| | | 12 | Levels of significance versus p -values |
| | | 13 | Errors in Hypothesis Testing - Type I and Type II error |
| | | 14 | Power of a Test |
| | | 15 | Interpreting the Results of Hypothesis Testing |
| | | 16 | Difference between Two Means (t -test) - Independent groups |

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| | | 17 | Difference between Two Means (t-test) - Independent groups |
| | | 18 | Difference between Two Means (t-test) - Independent groups |
| | | 19 | Difference between Two Means (t-test) - Dependent groups |
| | | 20 | Difference between Two Means (t-test) - Dependent groups |
| | | 21 | Assumptions of t-test for Independent and Dependent Groups |
| II | Determining confidence intervals | 22 | Confidence Intervals |
| | | 23 | Relation between Confidence Intervals and Hypothesis Testing |
| | | 24 | Confidence interval for μ_X |
| | | 25 | Confidence interval for $\mu_X - \mu_Y$ |
| | | 26 | Confidence interval for $\mu_X - \mu_Y$ |
| | | 27 | Advantages of confidence intervals |
| III | Using ANOVA for hypothesis testing | 28 | Meaning and use of ANOVA |
| | | 29 | Basis of ANOVA |
| | | 30 | Calculation of one-way ANOVA |
| | | 31 | Calculation of one-way ANOVA |
| | | 32 | Comparison between t and F |
| | | 33 | Assumptions of one-way ANOVA |
| | | 34 | Post-hoc comparisons |
| | | 35 | Practice of numerical questions |
| IV | Using Chi-Square for hypothesis testing | 36 | Chi-Square as a measure of discrepancy between Expected and Observed Frequencies |
| | | 37 | Chi-square - Goodness of Fit |
| | | 38 | Chi-square - Different Hypothesized Proportion |
| | | 39 | Chi-square - Independence between Two Variables |
| | | 40 | Chi-square - Independence between Two Variables |
| | | 41 | Logic of Chi-Square Test |
| | | 42 | Assumptions of Chi-Square Test |
| | | 43 | Revisiting Non-parametric Tests - Applications and Comparison with Parametric Tests |
| | | 44 | Additional practice of numerical questions |
| | | 45 | Revision and Doubt Clarification |

| Syllabus | | |
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| Unit | Contents | Contact Hours |
| I | Introduction to Inferential Statistics; Properties of Random Sampling Distribution of the Mean; Hypothesis Testing – t test – Calculation with raw scores and Assumptions (Single mean, Independent samples, Dependent samples); One-tailed and Two-tailed tests; p-Value; Errors in hypothesis testing; Power of test | 15 |
| II | Confidence Intervals for Single Mean and Difference between two means (Calculation); Relation between Confidence Intervals and Hypothesis Testing; Advantages of Confidence Intervals | 10 |
| III | Hypothesis testing – One-way Analysis of Variance (ANOVA); Basis of ANOVA, Calculation with raw scores, Assumptions, Comparison of t and F; Conceptual understanding of Post Hoc Comparisons | 10 |
| IV | Chi-Square Test – Logic and Assumptions, Calculation for Goodness-of-fit, Test for Independence between two variables; Nonparametric Tests - Uses and Applications; Comparison with Parametric Tests | 10 |
| | Total | 45 |

Text Books/Suggested Readings:

| S. No. | Name of Authors/Books/Publishers | Year of Publication/ Reprint |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 1. | Howell, D. C., (2013). <i>Statistical Methods for Psychology</i> . Wadsworth. | 2013 |
| 2. | King, B.M., Rosopa, P.J., & Minium, E.W. (2018). <i>Statistical reasoning in the behavioral sciences</i> . (7th Ed.). USA: John Wiley. | 2018 |
| 3. | Mangal, S.K. (2010). <i>Statistics in psychology and education</i> (2nd Ed.). PHI Learning. | 2010 |
| 4. | Aron, A., Coups, E.J. & Aron, E.N. (2013). <i>Statistics for Psychology</i> (6th Ed.) Pearson Education. | 2013 |
| 5. | Garrett, H.E. (2005). <i>Statistics in Psychology and Education</i> . Paragon International Publishers. | 2005 |
| 6. | Mangal, S.K. (2010). <i>Statistics in Psychology and Education</i> (2nd Ed.). PHI Learning. | 2010 |

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| 7. | Veeraraghavan, V. & Shetgovekar, S. (2016). Textbook of Parametric and Non- Parametric Statistics. New Delhi: Sage. | 2016 |
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| Paper Components | | | |
|--------------------------|--------------------|-----------------------|----------------------|
| Credits | Lecture (L) | Tutorial (T) | Practical (P) |
| 4 | 3 | 1 | 0 |
| Assessment Scheme | | | |
| S.No. | Component | Marking Scheme | Total Marks |

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| 1 | Internal Assessment | | 30 |
| | <ul style="list-style-type: none"> • Assignment/Quiz/Project/Presentation | 12 | |
| | <ul style="list-style-type: none"> • Class Test | 12 | |
| | <ul style="list-style-type: none"> • Attendance | 6 | |
| 2. | Continuous Assessment (Tutorial) | | 40 |
| | <ul style="list-style-type: none"> • Activity 1 | 20 | |
| | <ul style="list-style-type: none"> • Activity 2 | 15 | |
| | <ul style="list-style-type: none"> • Attendance | 5 | |
| 3. | Practical | | NA |
| | <ul style="list-style-type: none"> • Continuous Assessment | NA | |
| | <ul style="list-style-type: none"> • End term practical examination | NA | |
| | <ul style="list-style-type: none"> • Viva | NA | |
| 4. | End Semester Examination | | 90 |