

# NURSING RESEARCH AND STATISTICS

Placement 1<sup>st</sup> Year

Hours of Instruction  
Theory :150 Hours  
Practical :100 Hours  
Total: 250 Hours

## **Part A: Nursing Research**

### **Course Description:-**

The Course is designed to assist the students to acquire an understanding of the research methodology and statistical methods as a basis for identifying research problem, planning and implementing a research plan. It will further enable the students to evaluate research studies and utilize research findings to improve quality of nursing practice, education and management.

### **General Objectives:**

At the end of the course, the students will be able to :

1. Define basic research terms and concepts.
2. Review literature utilizing various sources
3. Describe research methodology
4. Develop a research proposal.
5. Conduct a research study.
6. Analyze and interpret the research data
7. Communicate research findings
8. Utilize research findings
9. Critically evaluate nursing research studies
10. write scientific paper for publication

## CONTENT OUTLINE

Unit	Hours		Course Content
	Theory	Practical	
I	10 +2		<p><b>Introduction :</b></p> <ul style="list-style-type: none"> <li>• Methods of acquiring knowledge – problem solving and scientific method.</li> <li>• Inductive and deductive reasoning</li> <li>• Research – definition, Characteristics, purposes, kinds of research</li> <li>• Historical Evolution of research in nursing</li> <li>• Basic research terms</li> <li>• Scope of nursing research : areas, problems in nursing, health and social research,</li> <li>• Role of research in nursing</li> <li>• Evidence based practice</li> <li>• Ethics in research</li> <li>• Overview of Research process</li> </ul>
II	5 (-2) 3	5	<p><b>Review of Literature</b></p> <p>* Importance, purposes, scope, sources, criteria for selection of resources and steps in reviewing literature.</p>
III	12		<p><b>Research Approaches and designs</b></p> <ul style="list-style-type: none"> <li>• Type: Quantitative and Qualitative</li> <li>• Historical, survey and experimental – Characteristics, types advantages and disadvantages</li> <li>• Qualitative: Phenomenology, grounded Theory, ethnography</li> <li>• Research designs, its importance , characteristics of good design</li> <li>• Threats to internal and external validity</li> </ul>
IV	10	5	<p><b>Research problem :</b></p> <ul style="list-style-type: none"> <li>• Identification of research problem,</li> <li>• <b>Sources of research problem</b></li> <li>• Formulation of problem statement and research objectives</li> <li>• Definition of terms</li> <li>• Assumptions and delimitations and <b>limitation</b></li> <li>• Identification of variables</li> <li>• Hypothesis – definition, formulation and types</li> </ul>

Unit	Hours		Course Content
	Theory	Practical	
V	5	5	<b>Developing theoretical / conceptual framework</b> <ul style="list-style-type: none"> <li>• Theories: Nature, Characteristics, Purpose and uses</li> <li>• Using, testing and developing conceptual framework, models and theories</li> </ul>
VI	6	-	<b>Sampling</b> <ul style="list-style-type: none"> <li>• Population and sample</li> <li>• Factors influencing sampling</li> <li>• Sampling techniques</li> <li>• Sample size</li> <li>• Probability and sampling Error</li> <li>• Problems of sampling</li> </ul>
VII	20	10	<b>Tools and methods of Data collection :</b> <ul style="list-style-type: none"> <li>• Concepts of data collection</li> <li>• Data sources, methods/techniques quantitative and qualitative</li> <li>• Tools for data collection – types, characteristics and their development</li> <li>• Validity and reliability of tools</li> <li>• Procedure for data collection</li> </ul>
VIII	5		<b>Implementing research plan</b> <ul style="list-style-type: none"> <li>• Pilot study, review research plan (design), planning for data collection, administration of tool / interventions, collection of data</li> </ul>
IX	10	10	<b>Analysis and interpretation of data</b> <ul style="list-style-type: none"> <li>• Plan for data analysis: quantitative and qualitative</li> <li>• Descriptive and Inferential Analysis</li> <li>• Preparing data for computer analysis and presentation</li> <li>• Statistical analysis</li> <li>• Interpretation of data</li> <li>• Conclusion and generalizations</li> <li>• Summary and discussion</li> </ul>

Unit	Hours		Course Content
	Theory	Practical	
X	10		<b>Reporting and utilizing research findings:</b> <ul style="list-style-type: none"> <li>• Communication of research results; oral and written</li> <li>• Writing research report purposes, methods and style-vancouver, American Psychological Association (APA), Campbell etc</li> <li>• Writing scientific article for publication: purposes &amp; style</li> </ul>
XI	3	8	Critical analysis of research reports and articles
XII	4	7	Developing and presenting a research proposal

### Activities

- Annotated Bibliography of research reports and articles
- Review of literature of selected topic and reporting
- Formulation of problem statement, objective and hypothesis
- Developing theoretical/conceptual framework.
- Preparation of a sample research tool
- Conducting validity and reliability of research tool
- Analysis and interpretation of given data
- Developing and presenting research proposal
- Journal club presentation
- Critical evaluation of selected research studies
- Writing a scientific paper.

### Method of Teaching

- Lecture - cum – discussion
- Seminar / Presentations
- Project
- Class room exercises
- Journal club

## **Methods of Evaluation**

- Quiz, Tests (term)
- Assignments / Term paper
- Review of literature of at least 20 Journals and 20 book - 50 marks
- Research Critiques- 50 marks
- Presentations- Presentation of two related researches **50 marks**
- Project Work Project on topic of Interest **100 marks**

## PART – B : STATISTICS

### Course Description

At the end of the course, the students will be able to develop an understanding of the statistical methods and apply them in conducting research studies in nursing.

### Theory 50 Hrs. & Practical 50 Hrs.

### General Objectives

At the end of the course the students will be able to

1. Explain the basic concepts related to statistics
2. Describe the scope of statistics in health and nursing
3. Organize, tabulate and present data meaningfully
4. Use descriptive and inferential statistics to predict results.
5. Draw conclusions of the study and predict statistical significance of the results.
6. Describe vital health statistics and their use in health related research
7. Use statistical packages for data analysis.

Unit	Hours		Course Content
	Theory	Practical	
I	7	4	<b>Introduction :</b> <ul style="list-style-type: none"><li>• Concepts, types, significance, and scope of statistics meaning of data, parametric and non-parametric data</li><li>• Sample, parameter</li><li>• Type and levels of data and their measurement</li><li>• Organization and presentation of data – Tabulation of data:</li><li>• Frequency distribution</li><li>• Graphical and tabular presentations</li></ul>
II	4	4	<b>Measures of central tendency :</b> <ul style="list-style-type: none"><li>• Mean, Median, mode</li></ul>
III	4	5	<b>Measures of variability:</b> * Range, Percentiles, average deviation, quartile deviation, standard deviation

Unit	Hours		Course Content
	Theory	Practical	
IV	3	2	<b>Normal Distribution :</b> * Probability , Characteristics and application of normal probability curve; sampling error.  Cumulative distribution The cumulative frequency graph, Percentiles and percentile ranks The Cumulative percentage curve or Ogive
V	6	8	<b>Measures of relationship :</b> <ul style="list-style-type: none"> <li>• Correlation – need and meaning</li> <li>• Rank order correlation</li> <li>• Scatter diagram method</li> <li>• Product moment correlation</li> <li>• Simple linear regression analysis and prediction.</li> </ul>
VI	4	2	<b>Designs and meaning:</b> <ul style="list-style-type: none"> <li>• Experimental designs</li> <li>• Comparison in pairs, randomized block design, Latin squares</li> </ul>
VII	8	10	<b>Significance of statistic and significance of difference between two statistics (testing hypothesis)</b> <ul style="list-style-type: none"> <li>• Non parametric test – Chi – square test, Sign median test, Mann-Whitney test.</li> <li>• Parametric test – ‘t’ test, anova, manova, ancova, Pearson’s r</li> </ul>
VIII	5	5	<b>Use of statistical methods in psychology and education:</b> <ul style="list-style-type: none"> <li>• Scaling – Z Score , Z Scaling</li> <li>• Standard Score and T score</li> <li>• Reliability of test Scores: test-retest method, parallel forms, spilt half method</li> </ul>
IX	4	2	<b>Application of statistics in health:</b> <ul style="list-style-type: none"> <li>• ratios, Rates, Trends</li> <li>• Vital health statistics – Birth and death rates.</li> <li>• Measures related to fertility, morbidity and mortality</li> </ul>
X	3	6	<b>Use of computers for data analysis</b> Use of statistical package.

**Activities**

- Exercises on organization and tabulation of data.
- Graphical and tabular presentation of data
- Calculation of descriptive and inferential statistics (Chi, square, t-test, correlation)
- Practice in using statistical package
- Computing vital health statistics

**Methods of Teaching:**

- Lecture – cum-discussion
- Demonstration – on data organization, tabulation, calculation of statistics, use of statistical package, Classroom exercises, organization and tabulation of data,
- Computing Descriptive and inferential statistics; vital and health statistics and use of computer for data entry and analysis using statistical package.

**Methods of Evaluation:**

- Test , Classroom statistical exercises

**Internal Assessment**

Techniques	Weightage 10 marks
Test – (2 tests)	100%



## Internal Assessment : Theory

### I. Test

	Marks	Research	Statistics
1) Mid term	50	30	20
2) Pre final	75	50	25
	125	80	45

40% of test marks - **10 marks**

### II. Assignments

i. Review of literature on topic of Interest (At least 20 books and 20 Journals) - 50 marks

ii. Critiquing - 50 marks

Total 100 marks

20% of Assignments – 5 marks

### III. Presentation

Presentation of two related researches - 50 marks - **Total 100 marks**

20% of Presentation - **5 marks**

### IV. Project work

20% - **5 marks**

## References – for Nursing Research and Statistics

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2. Garrett, H.E. Statistic in Psychology & education. Vakils, Feffer and Samons, Bombay.
3. Mahajan, B.K. Methods in Biostatistics, Jyppe. 6<sup>th</sup> ed.1999.
4. Rose Hott & Budin. Notter's Essentials of Nursing Research 5<sup>th</sup> ed. spinger publisher, Newyork. 1999
5. Patricial Nunhall. Nursing Research 3<sup>rd</sup> ed. James & Bar. 2001. Canada
6. Caroly M.H. Research methods for clinical Therapists Applied project design and analysis second ed. 1999. Churchill Livingstone.
7. P.K. Indrani, T.K. Research Methods for Nurses. Jyppe, 2005.
8. Clifford etal, Getting Research into Practice, Churchill Livingstone, New York, 2004.
9. Freshwater, D & Bishop, V, Nursing Research In Context, Palgrave Macmillan, New York, 2004.
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11. Macnee, C L ,Understanding Nursing Research: Reading & Using Research in Practice, Lippincott Williams, Wilinks, London. 2004.
12. Polit, D.F.& Beck, C.T.,Nursing Research Principles & Methods, 7<sup>th</sup> Ed, Lippincott Williams Wilkins,New York,2004.
13. Burns & Grovo. Under standing Nursing Research. 4<sup>th</sup> ed. Elsevier. 2007
14. Polit, Beck & P. Hungler” Nursing Research methods, Appraisal & Utilization” 5<sup>th</sup> edition 2001, Lippincott.
15. Specials & Carpenter Qualitative Research in Nursing Advancing the Hamanistic imperative 4<sup>th</sup> ed. Lippincott Williams. 2007

### Journals:

- 1 Journal of nursing practice and research.
- 2 Indian journal of medical ethics.