

**Swami Rama Himalayan University,
Swami Ram Nagar, Jolly Grant, Dehradun-248016**

Subject Code: PHDEP110

Subject Name: Advances in Epidemiology

100 Marks

TIME: 3 HRS

Unit-I-Design & Conduct of clinical and epidemiological studies

1. Descriptive Studies
 - 1.1 Types- Correlation studies
 - Case reports and case series
 - Cross sectional Surveys
 - 1.2 Time, place and person distribution
 - 1.2 Hypothesis formulation
2. Case Control Studies
 - 2.1 Design of case control studies
 - 2.2 Selection bias
 - 2.3 Matching
 - 2.4 Analysis
 - 2.5 Interpretation
3. Cohort Studies
 - 3.1 Study design
 - 3.2 Timing of measurements
 - 3.3 Selection of subjects
 - 3.4 Data collection
 - 3.5 Analysis
 - 3.6 Interpretation
4. Clinical studies (Design & Conduct)
 - 4.1 Research question
 - 4.2 Hypothesis
 - 4.3 Core design
 - a) Parallel
 - b) Cross over
 - c) Mixed

- 4.4 Study participants
 - 4.5 Sample size calculation
 - 4.6 Statistical power
 - 4.7 Allocation
 - 4.8 Masking
 - 4.9 Treatment groups
 - 4.10 Ethical issues
 - 4.11 Data collection
 - 4.12 Analyses
 - 4.13 Interpretation
5. Strategies for minimizing bias in clinical and epidemiologic studies.

Unit-II- Applied Disease Epidemiology

Epidemiological basis disease control

- Principles to the design, implementation and evaluation of prevention interventions for chronic and infectious diseases
- The skills to design, carry out, and interpret epidemiologic studies, particularly of disease Epidemiology
- The principles of surveillance and risk assessment development,
- The evaluation of prevention strategies for chronic and infectious disease.
- The interaction of biologic and clinical information with epidemiologic data and analysis.

Epidemiology of infectious diseases

- Patterns of infectious disease transmission and risk for infection.
- The epidemiology, public health impact, and prevention and control measures for selected infectious diseases.
- The application of epidemiologic skills pertaining to infectious diseases and the public health concepts associated with specific infectious diseases.

Chronic disease epidemiology

1. Chronic Disease: A Public Health Perspective
2. Epidemiology of Non Communicable Diseases
 - Cardiovascular Diseases including stroke
 - Cancers particularly in relation to India
 - Type II Diabetes

Nutritional epidemiology

- Evaluate the nutritional epidemiology literature and design studies in nutritional epidemiology.
- Methods of assessing nutritional status, with a focus on dietary assessment, as well as biological markers, supplement use, anthropometry, and obesity.
- The application of epidemiologic methods to studies of nutrition and disease, highlighting methodological issues and interpretation of findings.

Unit-III –Advanced topics in epidemiological methods

- Advanced Epidemiologic and Clinical Research Methods
- The principles of study design, measurement, confounding, effect modification,
- Methods for obtaining and presenting data from existing sources.
- Data management and programming in the context of large public-use datasets and clinical databases.
- Analysis of imaging data, longitudinal clinical registries, and multi-level modeling.
- Secondary analysis research project
- Models of Causation in Epidemiology

Unit-IV- Ethical Issues Design, Conduct & Reporting of Medical Research

1. Gold standard
2. Ethical frameworks for conduct of clinical trial
 - Issues in clinical trial design
 - Informed consent
3. Four golden rules of ethical conduct in clinical research
 - Respect for patient autonomy
 - Maximization of research impact on medical treatment
 - Minimization of risk to research participants
 - Scientific integrity

Unit-V- Public health surveillance system

- 1. Population health: assessment, indicators, and measures**
 - Introduction to public health surveillance
 - Population health information
 - Population health and community health assessment
 - Population health indicators
 - Disease surveillance at state and local level
 - Surveillance : The Sentinel Health Event Approach
- 2. Information systems**
 - Types of health information systems in India
 - Evaluating Public health surveillance system
- 3. Types of surveillance**
 - Chronic disease surveillance
 - Occupational and environmental surveillance
 - Infectious disease surveillance

- Syndromic surveillance