

GENERIC ELECTIVES (GE-12): Introduction to Public Health and Epidemiology

CREDIT DISTRIBUTION, ELIGIBILITY AND PRE-REQUISITES OF THE COURSE

Course title & Code	Credits	Credit distribution of the course			Eligibility criteria	Pre-requisite of the course	Department offering the course
		Lecture	Tutorial	Practical			
Introduction to Public Health and Epidemiology Zoo-GE-12	04	02	Nil	02	Passed Class XII with Biology/ Biotechnology	NIL	Zoology

Learning Objectives

The learning objectives of this course are as follows:

- to acquaint students with the basic concepts and importance of epidemiology and its contribution in the public health research.
- to acquire knowledge about the descriptive, analytic, and experimental aspects that can be applied for assessing the epidemiological studies of health status in the Indian population-based registers.
- to understand the relevance of statistics for the analysis of health-related data and its implications in the health sector
- To enable students to interpret results of data analysis for public health research, policy or practice.

Learning Outcomes

By studying this course, students will be able to

- better understand the fundamental components of epidemiology and data analysis.
- gain an understanding of the unique resources that Indian health registers represent for epidemiological research.
- comprehend various types of epidemiological studies, and understand their 'hierarchy' with respect to research.
- evaluate and interpret basic measures of occurrence and association and interpret the results
- appreciate and analytically assess the collection, analysis of data, and evaluate the relevant hypotheses.
- evaluate the strengths and limitations of epidemiologic reports
- apply epidemiological thinking to critically read and appraise articles in medical literature.

SYLLABUS OF GE-12

UNIT- 1: Epidemiology of Infectious Diseases

12 hrs

Modes of infections with suitable examples. Overview of cause, extent, prevention, treatment and control of the diseases: Respiratory infections, Intestinal infections, Arthropod-borne infections, Zoonosis and Surface infections.

UNIT- 2: Understanding Epidemiological Data

8 hrs

Understanding incidence, mortality (rates, ratios and proportions); Components of epidemiology: disease frequency, distribution and determinants of diseases. Epidemiological approach and measurements- vital statistics, health indicator parameters (morbidity, mortality and fertility rates); Analysis of data from National Cancer Registry Program (NCRP) and Covid-19 data.

UNIT- 3: Epidemiologic Methods and Survey

6 hrs

Outlining the parameters for ethical issues in a study. Determining the target and control populations; Designing of questionnaires; Data collection: Strength of observation (descriptive and analytical) and experimental studies. Epidemiology study designs- case control and cohort studies (prospective and retrospective), procedures of sampling and matching, sources of bias.

UNIT- 4: Collection, Tabulation and Representation of Data

4 hrs

Analysis of data from NCRP data and survey conducted by the students. Basic principles of “R” software for tabulation and graphical representations (bar diagrams, histograms, pie charts, box plot, etc.), measures of central tendency (mean, mode, median and partition values), dispersion (range, standard deviation, coefficient of variance and covariance) and skewness.

Practical

60 hrs

(Laboratory periods: 15 classes of 4 hours each)

1. Designing a questionnaire for survey of prevalence diabetes/ hypertension/ allergy/ respiratory disorders/covid 19.
2. To conduct a population survey for the year for the any one of the disease- diabetes/ hypertension/ allergy/ respiratory disorders/covid 19.
3. Design an epidemiology study: case control and cohort study (prospective and retrospective), including techniques of sampling and matching, sources of bias.
4. Perform correlation and regression studies on the data collected.
5. Analyze the probabilistic distribution studies.
6. Comparison of groups and ascertaining statistical significance of differences.
8. Research and presentation on current trends in infectious diseases.

Essential/recommended readings

1. Glantz, S. (2011) Primer of Biostatistics, 7th edition, McGraw-Hill Medical. ISBN-13: 978-0071781503.
2. Park, K.(2011) Park's Textbook of Preventive and Social Medicine, 21st edition, M/s Banarsi Das Bhanot Publishers.
3. Bonita, R., Beaglehole, R., TordKjellstrøm, (2006) Basic epidemiology, 2nd edition (2006), Contributor; World Health Organization, illustrated, Publisher: World Health Organization.
4. Pagano, M. and Gauvreau, K. (2000) Principles of Biostatistics, 2nd edition, Thompson learning.

Suggestive readings

1. Wayne W Daniel and Chad L. Cross (2013), Biostatistics: A Foundation for Analysis in the Health Sciences, 10th edition, Wiley. ISBN-13: 978-1118302798.
2. Jerrold H. Zar (2009) Biostatistical Analysis, 5th edition, Pearson. ISBN-13: 978-0131008465.

NOTE: Examination scheme and mode shall be as prescribed by the Examination Branch, University of Delhi, from time to time.