



# GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Pharmacy

Subject Code: BP815TT

Semester: VIII

Subject Name: Epidemiology

**Scope:** This course introduces the student to the principles and basic methods of modern epidemiology. Epidemiology is defined as the study distribution and determinants of health-related states and events in defined populations and the application of this to study to solving public health problems. Presentation of epidemiologic data and basic measures of disease frequency are covered. Descriptive, analytical and interventional study designs are discussed in context to the health system with their corresponding analysis techniques. The concept of risk and its associated measures is also covered. It also covers the estimation and interpretation of odds ratio, attributable risk and their confidence intervals.

**Objectives:** Upon completion of this course, it is expected that students will be able to:

- To have a clear understanding of the definition and uses of epidemiology and appreciate its role in public health.
- To be able to identify the key sources of data and have the ability to draw appropriate inferences from them.
- To understand the concept and practical application of various measures such as: measures of disease frequency (prevalence and incidence), measures of effect (e.g. rate/risk ratios and rate/risk differences), and measures of public health impact (e.g. population attributable risk / fraction)
- To know the various types of epidemiological study designs and, understand their basic principles and the main analytic methods used in each specific design
- Ascertain causality between an exposure and an outcome

**Teaching Scheme and examination scheme:**

Teaching Scheme				Evaluation Scheme				Total Marks
Theory	Tutorial	Practical	Total	Theory		Practical		
				External	Internal	External	Internal	
3	1	0	4	80	20	0	0	100

Sr.	Topic	Teaching Hrs
1	Definition of Epidemiology, History and evolution of epidemiology. Aims and principles of Epidemiology Basic concepts and applications.	3
2	Sources of data and various methods of data collection  Important aspects of data collection: Reliability and validity Sensitivity, specificity and predictive values.	10
3	Natural history of a disease and its application in disease control. Levels of prevention and modes of intervention. Bias, Confounding, & Effect Modification Causation & Risk	8
4	Epidemiological methods – Descriptive, Analytical & Experimental. Surveillance	4



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5	Epidemiological study designs Overview of study designs Descriptive studies Ecological studies. Case control studies, cohort studies, randomized control trials.	6
6	Hybrid designs in epidemiology. Community based epidemiological studies.	3
7	Measuring disease occurrence. Measurement tools in Epidemiology – Rate, Ratio & Proportion Risk – frequency measures, morbidity frequency measures, mortality frequency measures, birth measures, measures of association, measures of public health impact.	8
8	Ethical and Professional Issues in Epidemiology.	3

### Textbooks:

1. Epidemiology: Gordis, Leon Elsevier Saunders, latest edition.
2. Foundations of Epidemiology: Marit L. Bovbjerg, Kelly Johnson, Oregon State University  
Download for free at <https://open.oregonstate.education/epidemiology/>
3. Principles of Epidemiology in Public Health Practice, U.S. Department of Health and Human Services, Centers for Disease Control and Prevention (CDC), Third Edition.
4. Basic Epidemiology: R. Bonita, R. Beaglehole, TKjellstrom, WHO, 2<sup>nd</sup> Edition.
5. Park's text book of Preventive and Social medicine: K. Park, M/s Banarasidas Bhanot publication, latest edition