



MASTERS OF PHILOSOPHY (M. PHIL.)
MICROBIOLOGY
DETAILED SYLLABUS
SESSION 2013-14



PAPER I

RESEARCH METHODOLOGY THEORY AND TECHNIQUES

UNIT - I

Research: Definition, Importance and Meaning of research, Characteristics of research, Types of Research, Steps in research, Identification, Selection and formulation of research problem, Research questions – Research design – Formulation of Hypo Dissertation, Review of Literature.

UNIT – II

Sampling techniques: Sampling theory, types of sampling – Steps in sampling – Sampling and Non-sampling error – Sample size – Advantages and limitations of sampling.

Collection of Data: Primary Data – Meaning – Data Collection methods – Secondary data – Meaning – Relevances, limitations and cautions.

UNIT – III

Statistics in Research – Measure of Central tendency, Dispersion, Skewness and Kurtosis in research, Hypo Dissertation, Fundamentals of Hypo Dissertation testing, Standard Error, Point and Interval estimates, Important Non-Parametric tests: Sign, Run, Kruskal, Wallis tests and Mann, Whitney test.

UNIT – IV

Para metric tests: Testing of significance, mean, Proportion, Variance and Correlation, testing for Significance of difference between means, proportions, variances and correlation co-efficient. Chi-square tests, ANOVA, One-way and Two-way.

UNIT– V

Research Report: Types of reports, contents, styles of reporting, Steps in drafting reports, editing the final draft, evaluating the final draft.

Reference Books:

1. Statistical Methods - S.P. Gupta
2. Research Methodology Methods and Techniques - C.R. Kothari
3. Statistics (Theory and Practice) - B.N. Gupta
4. Research Methodology Methods and Statistical Techniques - Santosh Gupta



PAPER-III
HISTORY AND SCOPE OF MICROBIOLOGY

UNIT I

Important discoveries in the physical, chemical and biological sciences (plants and animals) – A historical account. Importance of science (physical, chemical and biological) in human society.

UNIT II

The scope of Microbiology. The first microscopic observation; Leeuwenhoek's contributions and the microscope ; Spontaneous generatioim versus biogenesis; The germ theory of disease; -The pure culture concept; Immunization;

UNIT III

Paitow's and Koch!& contribution and other – widening horizons; growth of organize.

UNIT IV

Microbiology in science; Microbes and fermentation; Microbiology in human welfare, industry, medicine, agriculture and environmental sanitation, practice of Microbiology in Molecular biology and Biotechnology;

UNIT V

Present status of Microbiology; Microbiology and human society.



PAPER-III

DIVERSITY OF THE MICROBIAL WORLD

UNIT I

A broad outline describing various type of microorganisms (viruses, bacteria, algae, fungi and protozoa);

UNIT II

Microscopic observations of some important members of bacteria, algae, fungi, and protozoa to elaborate the various shapes and thallus range in these groups. The virus studies should be undertaken using electron microscopic and diagrammatic photographs

UNIT III

Detailed studies of life cycle patterns in bacteria, algae, fungi and protozoa. The study should include history, classification, occurrence, cell structure, cytology, reproduction, life cycle patterns and importance of each group.

UNIT IV

Basic physiological factors of growth (pH, temperature, nutritional requirements)

PAPER-IV

DISSERTATION