DEPARTMENT OF FOOD SCIENCE AND TECHNOLOGY

UNIVERSITY OF KASHMIR

Ph. D Programme

PAPER 2: RESEARCH METHODOLOGY Marks: 100

Unit – I:

Methods of Data Collection:

- Primary data and secondary data, methods of primary data collection, classification and organisation of data.

Sampling Methods :

- Sampling, Need for sampling, unit, population, sample, sampling error, sampling methods; Simple, Random Sampling, Systematic Sampling, Stratified Sampling, Cluster Sampling and Multistage Sampling. Sample size, Standard Error.

Normal Distribution:

- Measures of Central Tendency (Mean, Median and Mode). Measures of dispersion (Range, Standard Deviation, Standard Error, Coefficient of Variation).

UNIT- II: Statistical Analysis of Experimental Data

- Correlation Analysis: concept and significance Karl Pearson's coefficient correlation.
- Regression analysis: Lines of regression and regression equation
- Analysis of Variation (ANOVA)
- Testing of Hypothesis; (Tests of significance, 't' Test,)

Unit III.

- Principles and applications of atomic absorption spectroscopy- components of atomic absorption spectroscopy.
- X-ray analysis of foods – Properties, Production and Detection, X ray tubes, Detectors, Sources, Applications in food industry.
- FTIR spectroscopy- Principles and application

- **Unit IV**
- Electrophoresis- Applications, Principles of separation of neutral molecules, Capillary zone electrophoresis.
- Immunoassays- applications in food with special reference to ELISA
- Differential scanning colorimetry.

Suggested Readings:

1. Kothari C.R., (1985) Research Methodology Methods and Techniques by New Age International Publishers, 2nd Edition.
2. Arya, P.P. and Pal , Y. (2001).Research Methodology in Management: Theory and Case
3. Chap T. Le., (2003).Introductory Biostatistics. A John Wiley & Sons Publication.
4. Aggarwal BL. 2003. *Basic Statistics*. New Age.
5. Introductory statistics by Prem S. Mann
6. Food Analysis by Pomernz.
7. The chemical Analysis of Food and Food Products by Jacobs.