Course Title: Research Methodology and Scientific Writing credits:3

Unit I (A) Introduction – types (exploratory and conclusive), process of research, language, philosophy, ethics, patent laws, copy right and cyber laws
(B) Sampling – statistical terms, probability and non-probability, criteria for selecting sample procedure, characteristics of good sampling procedure.
(C) Measurement – construct validity, reliability, levels of measurement

Unit II (A) Survey research-types of surveys, selecting survey method, constructing the survey, Interviews, advantages and disadvantages of survey methods
(B) Scaling, general issues
(C) Qualitative and unobtrusive measures

Unit III (A) Research Design –introduction, types
(B) Experimental Design – introduction, classifying experimental designs, factorial Designs, randomized block design, covariance design, hybrid experimental design
(C) Quasi-experimental design- non equivalent groups design, regression-discontinuity design, other quasi-experimental designs

Unit IV (A) Analysis of results conclusion validity, data presentation, descriptive statistics as per subject specialization
(B) Data presentation – tabular and graphical

Unit V (A) Scientific writing- steps for better writing, flow of information, organization of material, footnotes and references
(B) Writing of: Research paper, article, report, thesis, proposal
(C) Oral presentation

References:
1. Trochim M.K William, Research methods, Biztantra, New Delhi
Course Title: Advances in Nutritional Sciences

Unit I: Introduction to Human Nutrition: A Global Perspective on Food and Nutrition, Body Composition and Energy Metabolism

Unit II: Nutrition and Metabolism of Proteins and Amino Acids

Unit III: Digestion and Metabolism of Carbohydrates

Unit IV: Nutrition and Metabolism of Lipids

Unit V: The Vitamins, Minerals and Trace Elements


**Course Title: Advances in Food Bio Sciences**  

**Unit I**: Genetic modification using recombinant DNA technology. Nutritional genomics. Functional foods.


**Unit III**: Enhancing the nutritional quality of foods - manipulation of sucrose and starch content; manipulation of fatty acid composition of oils, enriching the protein content, increasing the content of methionine & lysine in feed storage proteins increasing the levels of vitamins and mine ovals.

**Unit IV**: Removal or minimizing the antinutritional factors and toxic molecules from food - phytate, oxalic acid, neurotoxins etc., decreasing the contents of pesticides, herbicides & heavy metals - use of bioinsecticides, development of herbicide-resistant plants etc.

**Unit V**: Increasing the shelf life of fruits.

**Unit VI**: Development of value added food metabolites - food colors, food flavors, food additives sweeteners etc.

**Unit VII**: Animal biotechnology for increasing meat quality and milk production.

**Unit VIII**: Food Safety: Molecular detection of pathogens, Molecular detectiton of genetically modified organisms in food. (plants and bacteria),