Programme	Biochemistry	Course Code	BC. 203	Credit Hours	3 (2+1)
Course Title	**Nutritional Biochemistry**				

Course Introduction

This course is about biochemical activities of nutrients and food constituents in human body. It allows the students to understand the role of nutrition in health and diseases. Moreover, it covers the assessment and influence of dietary modification/nutrition intervention during disease process.

Learning Outcomes

By the end of the course, the student must have acquired a reasonable working knowledge of:

- Understand fundamental concepts in nutrition and health.
- Describe the role of nutrients in optimal functioning of key biochemical pathways in the body.
- Integrate biochemical mechanisms with clinical problems resulting from nutritional deficiencies.

Course Content

Theory Unit

- Nutrients (introduction), Classification and functions of nutrients
- Basic metabolic rate (BMR), Body mass index calculations (BMI)
- Calorimetry; Respiratory quotient calculations
- Introduction (Balanced diet), Water (metabolic importance)
- Macronutrients: Carbohydrates, proteins and lipids (types, functions, deficiency illness, recommended intake, importance in health)
- Macronutrients: Alcohol (Metabolic role)
- Micronutrients: Fat and water soluble Vitamins (types, functions, deficiency illness, recommended intake, importance in health)
- Minerals: Major (types, functions, deficiency illness, recommended intake, importance in health)
- Nutritional Assessment: Anthropometric assessment, Biochemical assessment
- Clinical assessment, Dietary assessment
- Nutritional status biomarkers
- Nutritional disorders; Physiological eating disorders
- Toxins, allergens and pathogens

Practical Unit

- Anthropometric data collection (Weight, Height)
- Calculations of BMI
- Calculations of basal energy expenditure (BEE)
- Calculations of basal metabolic rate (BMR)
- Calculations of energy content in food
- Food labels, Food calories calculation
- Dietary analysis calculations
- Sample collection, processing and storage (Food-based)
- Sample collection, processing and storage (Biological)
- Nutritional assessment of moisture content in food
- Nutritional assessment of carbohydrates in food
- Nutritional assessment of fats in food
- Nutritional assessment of proteins in food

- Nutritional assessment of vitamins in food
- Nutritional assessment of minerals in food

Textbooks and Reading Material

- Fox and Cameron's Food Science, Nutrition & Health, by Michael EJ Lean, edition7th Edition First Published in 2006 by CRC Press.
- Nutrition, 7th Edition, by Dr. Paul Insel et al., Jones & Bartlett Learning Publishers.
- 3. Nutrition for Individual Family and Community by Professor Matina Zia. Caravan book house, Lahore.

Teaching Learning Strategies

- Class Lecture
- Class Discussions
- Class Tutorials
- Lab Demonstration

Assignments: Types and Number with Calendar

- 1st Quiz in 4th Week of 5 marks
- 2nd Quiz in 10th Week of 5 marks
- 3rd Quiz in 14th Week of 5 marks
- 1st Assignment in 8th Week of 10 marks

Assessment

Sr. No.	Elements	Weightage	Details
1	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.