

**University of Ghana**  
**Department of Nutrition & Food Science**  
**Sample Spring Courses**

**NUTR 302 Nutrients and their Metabolism II**

**(Prerequisites: NUTR 301)**

Functions and distribution of minerals in the human body. Dietary sources, deficiency symptoms, human requirements for minerals. Role of trace elements in human nutrition and requirements. Landmarks in the discovery of vitamins, functions, metabolism, recommended intakes, dietary sources, effects of deficiencies of fat soluble and water soluble vitamins

**NUTR 304 Animal Experimentation in Nutrition (Prerequisites: NUTR 302)**

Problems with human experimentation; advantages of animal experimentation; concerned societies and standards for animal experimentation; species of experimental animals; the experimental rat and disease; physical facilities for rat experimentation in Nutrition; rat models for human nutrition studies; effect of feeding different levels of protein; nitrogen balance; digestibility; effect of diet on body functions.

**NUTR 306 Food Analysis I (Prerequisites: NUTR 302)**

Sampling and sample preparation, glassware for laboratory analysis. Precision and accuracy, data reporting, report write-up. Principles behind food analysis methods. Comparative moisture analysis, ash, crude fat, crude protein and crude fiber analysis. Calorific value of foods. Determination of phosphorus, iron and calcium in foods.

**NUTR 308 Foods and Social factors in Nutrition**

Foods and food groups, nutrient contribution of foods, effects of processing and preparation methods on nutrient contents, utilization of foods in diets. Food habits and their influence on nutrition; ethnic diets. Population growth and resources.

**NUTR 310 Nutrition internship**

Practical experience for nutrition students to work with Governmental and Non-governmental organizations involved in Nutrition related activities. Report will be submitted for evaluation.

**NUTR 312 The History of Nutrition**

Pre-scientific ideas about foods; investigation of carbohydrates, fats and albuminous substances; food utilization, experiments with gelatin; pioneers in nutrition; animal nutrition; respiration and calorimetry; chemical analysis of foods; The discovery of vitamins; inorganic elements; fatty acids.

**NUTR 402 Food and Nutrition Policy**

Types of Food and Nutrition policies (FNP); Food importation and prices, income and quality of life, economic factors; necessary information for formulating FNP, efforts towards developing FNP for Ghana. FNP of other countries; food security; right to food.

**NUTR 404 Nutrition of Vulnerable groups (Prerequisites: NUTR 403, NUTR 407)**

Study of the nutritional requirements in pregnancy, lactation, infancy, childhood, adolescence and in the aged. Relationship between maternal diet and pregnancy outcome. Breast feeding, weaning, nutrition of premature infants Complementary feeding, Alternative feeding in special conditions.

**NUTR 406 Diet and Disease (Prerequisite: NUTR 302)**

A study of nutrition in the treatment and prevention of disease: Diabetes mellitus, protein-energy malnutrition, obesity, peptic ulcers, gout, hypertension, renal, cardiovascular diseases, cancer; Nutrition and dental health.

**NUTR 408 Human Energy metabolism (Prerequisite: NUTR 302)**

Estimation of human energy requirements; concepts of energy balance, factors influencing energy balance in obesity. Adaptation to low energy intakes in man. Energy, work capacity and performance.

**NUTR 412 Assessment of Nutritional status of a community II**

Analysis of data collected from field survey. Dietary, biochemical, clinical, socio-economic and anthropometric analysis using various computer software and laboratory techniques. Preparation of report.

**NUTR 414 Nutrient inter-relationships (Prerequisite: NUTR 302)**

Inter-relationships among the macro and micro-nutrients; anti-vitamins and anti-metabolites. Concept of nutritional adaptation.

**NUTR 416 Quality Control for laboratory and Field data collection**

General principles, setting up a quality control chart for the laboratory, Using the chart to identify questionable data; monitoring field data quality. Use of EPI-INFO computer software in data entry and analysis.

**FDSC 302: Thermal Processing of Foods**

**(Prerequisites: PHYS 200, 203, 204, BIOL 201-204, CHEM 201, 202, 211, 231, 232)**

Applications of heat transfer processes in canning, pasteurization and aseptic processing. Process calculations to ensure microbiological safety and nutrition. Thermal processing equipment – design operation safety factors. Thermal processes and food preservations.

**FDSC 304 Thermal Processing Practicals (Prerequisite: FDSC 302)**

Laboratory exercises in canning, pasteurization and aseptic process. Evaluation of quality of thermal processed foods including seam analysis. Applications to selected commodities

**FDSC 306 Plant Products Processing Technology**

**(Prerequisites: BIOL 201-204; CHEM 201, 202, 211, 212, 231, 232)**

Physical, chemical, nutritional and other characteristics of cereals, legumes, roots and tubers, fruits, vegetables, spices and oil seeds. Plant material characteristics in relation to their functionality. Processing and preservation technologies of plant food commodities.

**FDSC 308 Animal Products Processing Technology (Prerequisites: BIOL 201-204)**

The characteristics of conversion of muscle to meat; Unconventional sources of animal foods – wildlife. Characteristics of fish and milk products. Industrial and traditional technologies for processing and preservation of fish and meat. Processing techniques of dairy products. Technology for processing of eggs. Public Health issues.

**FDSC 310 Food Science Internship (10 week practical (Long vacation))**

Work experience in Food Industry in the practical application on Food Science. Seminar on report to be submitted.

**FDSC 312 Food Commodity Processing Practicals (Prerequisites: FDSC 306, 308)**

Practical course on processing food commodities.- cereals, legumes, roots and tubers, fruits and vegetables, oil seeds, fish , meat , dairy. Industrial visits and or processing demonstrations.

**FDSC 402 Food Chemistry (Prerequisites: CHEM 201, 202, 211, 212, 231, 232)**

Water in food systems. Chemistry of food proteins, lipids and carbohydrates and their significance on food processing and storage. The nature, occurrence and inhibition of enzymatic and non-enzymatic browning in foods. Flavour and colour chemistry.

**FDSC 404 Food Chemistry Practical (Prerequisite: FDSC 402)**

Laboratory experience in Food Chemistry. Protein, carbohydrate, lipids properties, colour and flavour measurement; analysis of browning systems.

**FDSC 408 Post-harvest Management**

Food systems approach to waste of raw food materials. Post-harvest problems of perishables and durables. Food loss vectors and their control. Food storage structure – design and management. Introduction to loss assessment. Field visits and evaluations

**FDSC 412 Food Additives and Toxicology**

Survey of the types of additives used in the food industry. The control of additives in foods- legislation. The assessment of food additives for safety. The science of toxicology – toxins occurring naturally in foods.

**FDSC 416 Industrial Microbiology (prerequisites: FDSC 301 and FDSC 303)**

Principles of industrial fermentation processes. Industrial microorganisms – their isolation, preservation and improvement. Brewing technology, production of enzymes, vitamins and antibiotics.

**FDSC 418 Food Microbiology (Prerequisites: FDSC 301, 303)**

Historical development of food microbiology. Microorganisms in foods – sources and types. The ecology of foods- Microbial survival and growth in foods– Factors influencing the growth, death and survival of microorganisms in foods. Microbiology of specific food commodities. Impact of microbial growth in foods- Food spoilage, Food preservation and processing, Food-borne illnesses- Food Infections and Intoxications, Major food-borne diseases. Control of microbial growth in foods- Physical, chemical and biological methods, Quality assurance methods- Microbiological criteria, GMPs, GHPs, HACCPs.

**FDSC 422 Food Microbiology Practical (Prerequisite: FDSC 418)**

Techniques in the analysis of microorganisms involved in food spoilage, food borne disease and food fermentations. Isolation, characterization and identification of food-borne microorganisms, Investigation of factors affecting survival and growth of microorganisms in foods, microbial examination of food commodities, Water quality analysis (MPN test)