O/C

Department of Home Science A.U.

Minutes of BOS Home Science dated 14.09.2018, held at 11: A.M. in the Chamber of HOD, Home Science, A.U.

Minutes

The meeting of BOS was held on 14th Sept 2018. The Head welcomed all the members.

The following members were present:-

Members Present:-

Prof .S. Srivastava, HOD, Department Home Science, A.U.

Prof. S.I. Rizvi , Department of Biochemistry, A.U.

Prof. Nar Singh, HOD, Department of Electronics & Communication, A.U.

Prof. P.K. Singh, HOD, Department of Mathematics, A.U.

Dr. Mukta Singh, Associate Prof., Department Home Science, BHU, Varanasi

Dr. Neetu Mishra, Associate Prof., Department Home Science, A.U.

The members resolved:-

1. All the members unanimously agreed that the department of Home Science should open one M.Sc. course in Food & Nutrition, The BOS approved the syllabus. The syllabus for PGAT in Food & Nutrition was also approved by the BOS members
2. Examiners PhD. Students Ms.Shivani Srivastava and Ms.Hina Kaushar were appointed
3. Examiers for B.Sc. Home Science Part I, II, III and M.Sc. Textile & Apparel Designing Semester I & III were appointed.
4. The Syllabus of M.Sc Textile & Apparel Designing was revised copies of syllabus are being sent for all the members.

In the end the chair person thanked every-one.

(S. Srivastava)

Head
Department of Home Science
University of Allahabad
Allahabad

Syllabus

MSc. Food and Nutrition

Paper Code	Papers	Credits	L-T-P-C	Marks		
				Sessional	End Semester	Total
Semester First						
FAN501	Physiology	3	3-0-0-3	40	60	100
FAN502	Basics of Nutrition	5	3-0-4-5	40	60	100
FAN503	Principles of Food Science	5	3-0-4-5	40	60	100
FAN504	Biochemistry of Nutrition	3	2-0-2-3	40	60	100
FAN505	Basics of Statistics and Computer Application	4	2-1-2-4	40	60	100
		Total 20				
Semester Second						
FAN506	Research Methods	4	3-1-0-4	40	60	100
FAN507	Advanced Nutritional Biochemistry	5	3-0-4-5	40	60	100
FAN508	Instrumentation in Nutrition	2	2-0-0-2	40	60	100
FAN509	Food Microbiology & Food Safety	5	3-0-4-5	40	60	100
FAN510	Advanced Human Nutrition	5	3-0-4-5	40	60	100
		Total 20				
Semester Third						
FAN511	Food Chemistry and Food Analysis	5	3-0-4-5	40	60	100
FAN512	Therapeutic Nutrition	5	3-0-4-5	40	60	100
FAN513	Institutional Food Management	4	3-1-0-4	40	60	100
FAN514	Public Health Nutrition	5	3-0-4-5	40	60	100
FAN515	Food Processing & Food Laws	3	3-0-0-3	40	60	100
		Total 22				
Semester Fourth						
FAN516	Seminar	4	0-0-4-4	40	60	100
FAN517	Scientific Writing	2	2-0-0-2	40	60	100
FAN518	Statistical Techniques and Data Analysis	2	2-0-0-2	40	60	100
FAN519	Dissertation	15	0-0-30-15	40	60	100
		Total 23				

Total credits for the 2 years Semester of P. G. (Food and Nutrition) are 85.

Paper Code: FAN501 LTPC: 3-0-0-3

Paper: Physiology

Unit-I

Cell Structure and Function: Cell membrane, Transport across cell membrane, Homeostasis.

Digestive System: Secretary, digestive and absorptive functions of GIT, Function of liver, pancreas and gall bladder, Motility and hormones of GIT.

Unit-II

Circulatory System: Regulation of cardiac output and blood pressure, Blood formation, composition, Blood clotting and plasma protein.

Respiratory System: Transport and exchange of oxygen and CO_2, Role of haemoglobin and buffer systems.

Unit-III

Excretory System: Structure and function of Nephron, Urine formation, Role of kidney in maintaining pH of blood, Electrolyte and acid base balance.

Unit-IV

Endocrine System: Role and regulation of hormonal secretion.

Nervous System: Blood Brain Barrier, Conduction of nerve impulse, Synapses, Role of neurotransmitters.

Unit-V

Immune System: Cell mediated and humeral immunity, Inflammation, Immunization.

Reproduction: Sex hormone, Contraception, Breast milk production, Physiological changes in pregnancy.

Reference Books

- Subrahmanyam S. and Kutty K (1985). Textbook of Human Physiology. Revised by H.D.Singh. S. Chand Publishing
- Chaudhury, K.C (2004). Concise Medical Physiology. New Central Book Publishing, Calcutta.
- Ganong, W.F. (2001). Review of Medical Physiology. Tata McGraw-Hill publishing company. New Delhi.

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Paper Code: FAN502 **LTPC: 3-0-4-5**

Paper: Basic of Human Nutrition

Unit-I

Energy: Energy content of foods. Body composition, Physiological fuel value, Measurement of Energy Expenditure: BMR, RMR, Thermic effect of feeding and physical activity, RDA Estimating energy requirement for individuals and groups, Food groups, Balanced diet, Exchange list

Unit-II

Carbohydrates: Type, Source, Function, Dietary requirements and physiological significance. Glycaemic index of foods.

Proteins: Type, Source, Function, Dietary requirements. Evaluation methods and improvement of protein quality. PEM.

Unit-III

Lipids: Type, Source, Function, Dietary requirements, EFA, Transport of lipoprotein, Prostaglandins.

Water: Regulation of intra and extra cellular volume, Electrolyte balance, Osmolality, Water balance and its regulation, Oral dehydration therapy.

Unit-IV

Minerals: (Note: for each nutrient sources, bioavailability, metabolism, function, RDI, deficiency and toxicity, interactions with other nutrients are to be discussed).

Macro minerals: calcium, phosphorus, magnesium, sodium, potassium and chloride.

Micro minerals: Iron, copper, zinc, manganese, iodine, fluoride.

Trace minerals: selenium, cobalt, chromium.

Unit-V

Vitamins: Type, Source, Function, Dietary requirements, Deficiency and Toxicity of Fat soluble and Water soluble vitamins.

Practical

- Calculation of BMR and activity increments.
- Identification of clinical signs and symptoms of various deficiency diseases.
- Recording of 7 day dietary intakes.
- Enlisting foodstuffs based on their nutrient content.

- Preparation of essential macro (protein, fibre)and micronutrient (calcium, iron vitamin C, A and B) rich recipe, calculation of nutritive value and cost per serving.

Reference Books

- Bamji, M.S., Rao, N.P & Reddy, V. (1996). Textbook of Human Nutrition. Oxford & IBH Publishing Co. (P). Ltd. Delhi.
- Gopalan, G. RamaShastri B.V &Balasuvramnian, S.C. (2000). Nutritive Value of Indian Foods. National Institute of Nutrition, Indian Council of Medical Research, Hyderabad 500-007, India.
- Sri Lakshmi, B. (2000). Nutrition Science. New Age International (P) Ltd. Pub. New Delhi
- Swaminathan, M. (2009). Textbook of Food and Nutrition. Bappco publishers, Bangalore.

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Paper Code: FAN503 **LTPC: 3-0-4-5**

Paper: Principles of Food Science

Unit- I

Introduction to Food Science.

Effect of cooking and processing techniques on nutrients, Sensory evaluation of food.

Cereals, Millets and Pulses: Composition and nutritive value, Cereal cookery, Effect of cooking, processing and storage in nutritive value. Methods for improving nutritional quality of foods-fermentation, germination, supplementation, fortification.

Unit- II

Vegetables and Fruits- Type, Composition, Nutritive value, Effect of cooking, processing and storage on pigments and nutritive value, Post harvest changes.

Milk and milk products- Nutritional composition, Properties, Processing, Storage and Packaging. Effects of heat, acid and enzyme on its quality, Milk Cookery.

Sugar: Type, Function and Nutritional composition of sugar. Sugar cookery.

Unit- III

Egg- Structure and Nutritional composition of egg, Evaluation of egg quality, Egg cookery.

Flesh Food- Type, Structure and Nutritional composition, Effect of cooking, processing and storage in nutritive value. Ageing, Tenderization, Curing.

Unit-IV

Fats and Oils- Type, Nutritive value and Function.Its role and importance.

Beverages and Spices-Classification and Importance.

Unit-V

Food toxins, Food Additives, Adulterants, Preservatives, Packaging.

Practical:

- Sensory evaluation of the given samples using descriptive method.
- Sensory evaluation of given sample with the help of 'Duo trio test' and prepare evaluation card for the same.
- Sensory evaluation of given samples using 'Triangle Test' and prepare an evaluation card for the same.
- To demonstrate the process of sugar re crystallization through the preparation of fondant, *shakkarpara* and fudge.
- To determine the best method of preparing a stable emulsion like mayonnaise.
- Preparation of fruit jam and fruit jelly.
- To study and detect various adulterants in food stuffs.

Reference Books

- Manay. M. and Manay, S.N. (2014). Food Facts and Principles. New Age International (P) Limited. New Delhi.
- Meyer. .L.H (1987). Food Chemistry. CBS Publishers.
- Srilakshmi, B. (2015). Food Science. New Age International (P) Limited, New Delhi.

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Paper Code: FAN504 LTPC: 2-0-2-3

Paper: Biochemistry of Nutrition

Unit I

Concept of metabolism.
Composition of membrane structures, Transport process across cell membranes.
Introduction, Classification and Nutritional importance of nutrients- Carbohydrate, Protein and Lipids.

Unit II

Metabolism of Carbohydrate- Glycolysis, TCA cycle, Glycogenesis, Glycogenolysis (in brief), Glycolysis, Citric acid cycle & its significance, HMP shunt & Gluconeogenesis (in brief), Regulation of blood glucose level.

Unit-III

Metabolism of Protein-Transamination, Deamination, Oxidation of amino acid, Ammonia formation & transport, Urea cycle.synthesis and breakdown of body protein.

Unit-IV

Metabolism of Lipid- Beta oxidation of fatty acids, Ketosis, Cholesterol & it's clinical significance.

Unit-IV

Nucleic acid- DNA, RNA, Watson and Crick model and Chargraff's rule. Structure and function of different ribonucleic acids. Replication,Transcription and Translation.

Unit V

Electron transport chain and Oxidative phosphoralytion.
Role of enzymes in metabolism- Definition, Classification, Mode of action, Factors affecting enzyme activity, Coenzymes and Co-factors.
Hormones and its role in biochemical pathway

Practical

- Estimation of Blood hemoglobin.
- Measurement of FBS, RBS and PPBS.
- Measurement of Blood pressure by Sphygmomanometer.
- Estimation of normal constituents of urine (urea, uric acid creatinine).
- Estimation of abnormal constituents of urine (Glucose, protein, ketone bodies, Blood).

Reference Books

- Dandekar, S. (2011). Medical Biochemistry. B.L. Churchill Livingstone (P) Ltd. New Delhi, India.
- Satyanarayana, U. (2009). Biochemistry. Books and Allied (P) Ltd. Calcutta, India.
- Michael A Lieberman and Allan D. Marks, (1996). Basic Medical Biochemstry. Book.
- J. David Rawn (2004). Biochemistry. Panima Publishing Corporation, New Delhi.

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Paper Code: FAN505

LTPC: 2-1-2-4

Paper: Basics of Statistics and Computer Application

Unit-I

Data, type of data, classification of measurement scale

Unit-II

Mean, Medium, Mode, Measures of central tendency and Variability

Unit-III

Normal distribution.

Parametric and Non-parametric test.

Unit-IV

Introduction and scope of computer

Unit-V

Microsoft Word, Microsoft excel, Microsoft power point and its application.

Practical

- Handling of computer.
- Use and application of internet.
- Use of MS Excel (data entry, graph preparation chart preparation).
- Use of MS world.
- Use of MS power point.

Reference books:

- Elhance, D.L. (2008). Fundamentals of Statistics. Kitab Mahal, Patna.
- Rao, K.V. (2007) Biostatistics. Jaypee Brothers medical publishers, New Delhi.
- Sundar, R.P. & Richard, J. (2003). An Introduction to Biostastics. Prentice Hall, New Delhi.
- Fundamentals of Computers by E. Balagurusamy (Author) Publisher: McGraw Hill Education (India) Private Limited
- Ms Office 2007 in a Nutshell by S. Saxena (Author) Publisher: S.Chand (G/L) & Company Ltd.

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Semester –II

Paper Code: FAN506

LTPC: 3-1-0-4

Paper: Research Methods

Unit I

Research Process–Meaning, Objective, Purpose, Characteristic, Type and Approaches.

Problem Identification and Formulation- Defining research problem, Selection of research problem, hypothesis-Null and Alternative hypothesis, Significance and Importance.

Unit II

Research Designs –Meaning and importance, Concept of research design, Types of variables, confounded relationship, Different research design, Type of Experimental Design.

Design of Sample Survey-Introduction, Sampling and Non sampling error, Type of Sampling Error: Non probability and Probability Error.

Unit III

Data Collection- Type of data, Data Collection, Data preparation and analysis of data, Measurement and scaling of data.

Interpretation and Report Writing-Meaning, Techniques, Significance and Steps of report writing, Type of report.

Reference Books

- Kothari, C.R. (2008) Research Methodology. Wishwa Prakashan. New Delhi, India.

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Paper Code: FAN507 LTPC: 3-0-4-5

Paper: Advanced Nutritional Biochemistry

Unit-I

Health and Diseases- Defining and Scope of health and disease, Methods of assessment. Biochemical tests in assessment of nutritional status

Assessement of Nutritional deficiency- Macronutrients and Micronutrients deficiency, Clinical and Subclinical Assessment.

Starvation- Alternative methods of energy generation, Interrelationships of organ.

Unit-II

Metabolism of Alcohol- As energy source, Fatty liver disease and Liver Cirrohosis.

Lipoprotein metabolism- Lipolysis, adipose tissues, LDL, HDL,VLDL, Chylomicron and Atherosclorosis.

Reactive Oxygen Species and Antioxidant System- Free radical, Antioxidant enzyme, Mechanism.

Cancer- Concept of oncogenes, Pro-oncogenes, Malignancy and Role of diet.

Unit-III

Liver functions and their assessment - Measurements of protein, Serum enzyme levels, Bile pigment, Jaundice.

Renal functions tests - Various tests, GFR and Clearance.

Inborn errors of metabolism.

Endorphins and Stress biochemistry

Practical

Planning of Macro and Micronutrients deficiency diseases.

Diet planning for Inborn error diseases.

Diet planning for Cancer patients.

Estimation of Serum Cholesterol, LDL, HDL, TG

Evaluation of Anti-oxidant parameter

Reference Books

- Anderson, L, Dibble, M.U. &Turkki. (1982). Nutrition in Health and Disease. JB Lippincott Co. Toronto.
- Murray, R.K, Granner, D.K & Rodwell V.W. (2006). Harper's Illustrated Biochemistry. McGraw-Hill, Boston.

- Plummer, D.T. (2006). Practical Biochemistry. Tata McGraw Hill Publishing Company Ltd. New Delhi, India.
- Nelson, D. L. (2003). Lehninger Principles of Biochemistry. Macmilan Worth Publishers, India.

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Paper Code: FAN508 LTPC: 2-0-0-2

Paper: Instrumentation in Nutrition

Unit I

Spectrophotometer-Principle, Methodology and Application of UV Spectroscopy, Visible, IR, NMR and ESR Spectroscopy, Atomic Absorption, Plasma Emission Spectroscopy

Chromatography-Principle, Methodology and Applications of gel filtration, Ion exchange Chromatography, Affinity Chromatography; Thin Layer Chromatography, Gas Chromatography; High Performance Liquid Chromatography (HPLC) , Gas Liquid Chromatography (GLC).

Unit II

Electrophoresis- Principle and Applications of Native, SDS PAGE, Agarose Electrophoresis, 2D Gel Electrophoresis.

Application of PCR, Colorimeteric, Flame photometery and Respirography.

Non-invasive methods for assessment: Radiological, Bone mineral density, ECG, EEG, NMR. Advantages and Limitations.

Reference Books

- E Kress-Rogers, C J B Brimelow (2000). Instrumentation and Sensors for the food industry, Second edition, CRC press, NW.
- Sharma BK (1986). Instrumental methods of chemical analysis, 8th edition, Goel Publishing house.
- Raghuramulu N., Madhavan Nair K. and Kalyansundaram S. (1983). A manual of laboratory techniques edited by NIN, ICMR .

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Paper Code: FAN509

LTPC: 3-0-4-5

Paper: Food Microbiology & Food Safety

Unit – I

Introduction of Microbes-General characteristics of microorganisms: yeasts, molds and bacteria and its importance in food industry.

Source of contamination- Air, Water, Soil, Sewage, Pecticide, Insecticide, Post processing contamination.

Microbes in Foods- Growth and survival of pathogens in food, Microbial toxins, Microbial infections and intoxications, Preventing measures and deactivation techniques.

Unit – II

Food borne diseases- Causes and prevention of bacterial, fungal, viral and other infectious diseases.

Microbes in Fermentation- Role of microbes in fermentation of milk products, cereals, oriental foods, alcoholic beverages and other processed foodS. Therapeutic importance of fermented foods.

Unit – III

Food Spoilage- Spoilage of different food group- cereal, pulses, dairy products, meat, fish, eggs, poultry products, fruit and vegetables, Spoilage of various fresh and processed foods.

Food Safety- General principles involved in their preservation, Low temperature preservation: Lethal effects of chilling, Freezing and Thawing; High temperature preservation: Pasteurization, sterilization, canning, thermal death time, Dehydration, Chemical preservation, Irradiations and its toxic effects,

Role of Biotechnology in Food Microbiology- Diagnosis of Diseases.

Practical

- Microscopic examination of bacteria with simple staining, negative staining and gram stain.
- Demonstration of different sterilization procedures of glassware.
- Preparation the different culture media and demonstration of sterilization procedure for media and equipment.
- Isolation techniques of microbial cultures from soil, water and food: serial dilutions, Plating techniques.
- Determining the number of viable cells in the culture (standard plate count).
- Culturing and identification of microbes (Yeasts and Moulds) in different food samples.
- Determination of Coliform in water sample.

Reference Books

- Pelezar, M.J. Chan EGS and Krieg N.R.(1999). Microbiology
- Frazier, J. &Westhoff, D.C. (1988). Food Microbiology. 4th Ed. McGraw Hill.
- Prescott, L.M., Harley, JP and Klein DA (1999). Microbiology, WCB. Oxford.

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Paper Code: FAN510 **LTPC: 3-0-4-5**

Paper: Advanced Human Nutrition

Unit I

Determining nutritional requirements for different physiological stages of life cycles, RDA, Food exchange list.

Pregnancy- Physiological changes in pregnancy, and nutrient requirements, Impact of good nutrition on the outcome of pregnancy, Complications of pregnancy and their nutritional management.

Lactation and Infancy- Physiology of lactation, Impact of nutrition on efficiency and milk production, Breast feeding vs Artificial feeding, Importance of weaning and Supplementary food, Role of nutrition on physical and mental development, Types of milk and their use in infant feeding, Assessment of growth, Feeding the premature and low birth weight infants.

Unit II

Preschool age and Child hood-: Growth and development, Food Habits, Prevalence of malnutrition in preschool years, Specific problems in feeding school children.

Adolescence- Physical and physiological changes, Food preferences, Nutritional problems. Eating disorder: Anorexia Nervosa and Bulimia.

Geriatric- Physical and Physiological changes, Nutritional requirement, Problems of old age, Nutrients influencing aging process.

Unit III

Sports Nutrition- Energy production cycle, Nutritional requirements for optimum performance, Ergogenic aids, Carbohydrate loading.

Bone Health and Nutrition- Arthritis, Rheumatoid arthritis, Role of calcium, phosphorus, magnesium and vitamin D hormonal regulation.

Nutrition for Skin and Hair- Introduction and Diet management.

Role of Nutrition in Immunity- Concept of immunity, Role of nutrition in infection, Effect of nutritional status on immunity.

Practical

Planning and calculating nutritive value of balanced diet for different age groups
Enrichment and Fortification of daily diet.
Planning of diet for Pregnant and Lactating women.
Planning and calculating nutritive value for healthy skin and hair.
Planning and calculating nutritive value for Sports person.

Reference books:

- *Bamji, M.S, Rao, N.P & Reddy, V. (1996). Textbook of Human Nutrition. Oxford & IBH Publishing Co. (P) Ltd. Delhi.*
- *Swaminathan M. (2010). Food and Nutrition, Second Edition, Bangalore Printing & publishing co. ltd., Bangalore.*

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SEMESTER III

Paper Code: FAN511

LTPC: 3-0-4-5

Paper: Food Chemistry and Food Analysis

Unit – I

Introduction to Food Chemistry: Definition and composition of food

Water: Structure of water, Type of water, Sorption phenomenon, Water activity, Role in packaging and shelf life.

Carbohydrates: Classification, Structure of important polysaccharides (starch, cellulose, hemicelluloses, pectin, gums), Modified cellulose and starches. Chemical reactions of carbohydrates – oxidation, reduction, acid and alkali.

Lipids: Classification and Physico-chemical properties of lipids. Refining of crude oils, Hydrogenation and Winterization. Vegetable and animal fat. Frying and Shortening. Flavor changes in fats and oils, Lipid oxidation, Factors affecting lipid oxidation.

Proteins: Classification, Properties of protein (electrophoresis, sedimentation, and denaturation), Functional properties of protein (solubility, viscosity, gelation, emulsification and foaming).

Unit – II

Vitamins and Minerals: Role of vitamins and minerals in food industry, Effect of various processing treatments and fortification of foods.

Food enzymes- Nature, Classification, Properties of Food enzyme, Enzyme activity in different food systems, Hydrolyses and Lipases, Utilization in Food Chemistry. Browning reaction in foods.

Unit- III

Principles of Proximate Analysis- Moisture, Ash, Crude Fat, Crude Fibre, Crude Protein and Carbohydrates by difference.

Principles and methods of Food Analysis.

Determination of Starch. Test for unsaturation of fats, rancidity of fats.

Quantitative analysis of Protein by Biuret method, Ninhydrin method, Lowry's method.

colorimetric methods of analysis of fat soluble and water soluble vitamins

Principles and methods for estimation of Minerals: Titrimetric and Gravimetric methods

Methods for determining physical and rheological properties of food.

Practical

Determination of proximate analysis of given samples: Moisture, ash, crude fat, crude fibre, crude protein and carbohydrate by difference.

Estimation of total sugar content, reducing and non-reducing sugars in given food samples.

Estimation of starch content of cereals.

Determination of iodine value and saponification number of fats.

Estimation of minerals, iron, calcium and phosphorus

Estimation of vitamins: Ascorbic acid, thiamine, beta-carotene.

Determination of titrable acidity and total soluble solid in the given food samples.

Reference Books:

- Damodaran, S., Parkin, K.L. and Fennema, O. R. (2007). Fennema's Food Chemistry, fourth edition,published by CRC Press.
- Meyer L.H. (2003). Food Chemistry, Reinhold Pub. Corp.
- Nielsen, S.S.(2003). Food Analysis, Third Ed., Kluwer Academic/Plenum Publishers, New York.

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Paper Code: FAN512 **LTPC: 3-0-4-5**

Paper: Therapeutic Nutrition

Unit I

Introduction to Therapeutic Nutrition- Normal diet, Dietary modifications: Clear liquid diet, Soft diet, liquid diet, Total Enteral Nutrition and Total parental Nutrition.

Disease of the G. I. System- Introduction, Pathogenesis, Clinical manifestation and Dietary management of gastrointestinal Diseases, Malabsorption Syndrome, Lactose Intolerance, Post surgical complications and management.

Diseases of the Liver, Pancreas and Biliary System-Introduction, Pathogenesis, Clinical manifestation and Dietary Management- Hepatitis, Cirrhosis of Liver, Hepatic Encephalophathy, Diseases of Gall Bladder and Pancreas (Cholelithiasis, Cholecystitis, Cholecystectomy, Pancreatitis).

Unit II

Diabetes Mellitus and Hypoglycemia: Classification, Physiological symptoms and Diagnosis, Dietary care and Nutritional Therapy, Oral Hypoglycemic Agents.

Cardiovascular diseases- Introduction, Pathogenesis, Clinical manifestation and dietary management. Atherosclerosis. Role of nutrients to prevent Atherosclerosis, Hypertension, Hyperlipoproteinemia, Congestive heart failure and Myocardial infraction.

Weight management-Introduction, Clinical manisfestation and Dietary management- Underweight, Overweight and Obesity.

Unit III

Renal diseases-- Introduction, Pathogenesis, Clinical manisfestation and Dietary management- Nephiritis, Acute Kidney Failure, Chronic Kidney disease, Urinary calculi, Dialysis.

AIDS and Cancer- Introduction, Pathogenesis, Clinical manisfestation and Dietary management during Burns, Allergy, AIDs and Cancer.

Interaction between Nutrients, and Drugs- Effect of drugs on absorption, utilization and metabolism of nutrients, Effect of nutrients on absorption and utilization of drugs.

Practical:

Planning of diets for following disease conditions:

Fever, Malabsorption disease, Lactose Intoleraance.

Hypertention and Chronic heart diseases,

Liver diseases, Cholecystitis and Pancreatitis,

Kidney diseases,

IDDM, and NIDDM.

Diet management: For AIDS, Burns, Trauma and Sepsis (Formula+diet)

Diet planning: For Formula feeds (Total Parenteral Nutrition and Total Enteral Nutrition).

Reference Books:

- Mahan, L.K. & Escott Stump, S. (2000). Krause's Food Nutrition and Diet Therapy 10th Ed., WB Saunders & Co. London.
- Shils. M.E. (2006). Modern Nutrition in Health and Disease. Lippincot, Williams & Williams, USA.
- Passmore, R. & Eastwood, M. A. (1986). Human Nutrition & Dietetics. ELBS Churchill Livingstone.

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Paper Code: FAN513 **LTPC: 3-1-0-4**

Paper: Institutional Food Management

Unit I

Food Services- Concept, Principle and Objective, Type of food services (hospital, hostel, school meal, industrial canteen, commercial hotels).

Food Services in hospitals- Requirement of equipments for food preparation, Distribution, Storage and Services.

Food Service management- Menu planning, Receipt of food and its storage, Principles and Techniques in quantity food production.

Unit II

Theories of Management and Approaches- Classical Theory, neoclassicial approach, Quantitative approach, MBO approach, System approach, Behavioral and Human relation approach, Contigency approach, JIT approach, TQM approach.

Developing objective and goals- Definition, Importance, Types of goal, Policies, Procedures, Rules.

Principles and procedures of management-Definition of management, Organization Interaction at work , Principles, Functions of management, Role and responsibilities.

Unit III

Tools of management –Definition, classification, Organization chart, Structure, Function, Work improvement techniques.

Personnel management -Definition, Scope, Concept of personnel management, Approaches of personnel management, Personnel policies, Training, Placement, Promotion, Personnel records, Work appraisals

Financial management in food service institutions-Methods of food purchasing, Inventory management, Maintaining quality in food production and services.

Financial management-Definition, Scope of financial management, Financial accounting, Management accounting, Budgeting, Costing, Cost control, Accounting.

Hygiene and sanitation in preparation and serving area – Personal hygiene, Types, Sources of contamination, Prevention, Safety measures, Methods of controlling infestation, Methods of dish washing.

Reference Books

- Sethi, M. (2008). Institutional Food Management. New Age International (P) Ltd.
- Bansal, T. (2011). Hotel facility and planning. Oxford publishing, New Delhi.

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Paper Code: FAN514 LTPC: 3-0-4-5

Paper: Public Health Nutrition

Unit-I

Concept of Public Nutrition-Concept of Community, Socio cultural aspect of food preference, Relationship between health and nutrition, Role of public nutritionists in the health care, Delivery system.

Nutritional Epidomology- Concept and scope, Classification of growth standard (Gomez and Waterlow), Growth charts, Population health index, methods for assessing nutritional status.

Nutritional Problem of Community- Global perspectives in malnutrition, Protein energy malnutrion, vitamin A deficiency, Anaemia, Iodine deficiency disorder, Fluorosis and their Control and Management

Unit -II

Health Communication: Concepts, Scope, Elements and Models of communication, Communication Process - Approaches and Barriers to communication, Communication for Extension Education and Development. Nutritional education-Objective and Channels. PLA and PRA.

Nutritional Policy and Planning- Aims, Government guildlines and Policy, Governmental and Non Governmental organization, Health care delivary system in rural and urban India, I.E.C. (Information Education and Communication).

Unit III

National and International Agencies- Introduction to nutritional programme, Relationship of health and nutrition, Role of various agencies to improve the nutritional status of the community (WHO, UNICEF, NIN, ICAR, FAO, CSIR)

National Health Programs-Planning, Execution and Evaluation of various health programs (Special Nutritional Program, Mid day meal, ICDS, IDD), Immunization.

Food based interventions- Fortification, Supplementation, Genetic improvement of foods, Their characteristics and uses for different target groups.

Practical

- Assessment of nutritional status of an individual/community using anthropometry and dietary survey. A) Preparation of schedule B) Survey work C) Analysis of data D) Writing of report.

- Visit to local health centre to identify clinical signs and symptoms of nutritional problems.
- Development of audio visual aids- radio script; popular article; chart/posters leaflets etc. Planning, implementation and evaluation of nutrition education for a target group.

Reference Books

- Gibson, R.S. (1990). Principles of Nutritional Assessment. Oxford University Press. New Delhi.
- Gopaldas, T. & Seshadri, S. (1987). Nutrition – Monitoring and Assessment. Oxford University Press. New Delhi.
- Jelliffe, D.B. Latest Ed. The Assessment of Nutritional Status of Community WHO/FAO Monograph series No.53, WHO Geneva.
- Maclaren, D.S. (1986). Nutrition in the Community 2nd Ed. John Willey and Sons, New York.
- Mann, S.K., Sangha, J.K., Mehta, U. & Jain, R. (1999). Manual on Community Nutrition. College of Home Science, PAU, Ludhiana.
- Obert, J.C. (1986). Community Nutrition. Mac Millan New York.
- Park, K. (2000). Park's Text Book of Preventive and Social Medicine 16th Ed. BanarsidasBhanot Publishing Jabalpur, India.
- Shukla, P.K. (1982). Nutritional Problems of India. Prentice Hall of India.

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Paper Code: FAN515 LTPC: 3-0-0-3

Paper: Food Processing and Food law

Unit I

Fundamentals of Food Processing- Concept, Prospects for future growth in India.

Food Spoilage and Food Preservation - Principle, Type and Scope of food preservation;.

Post Harvest Treatment-Harvesting, transportation, storage, packaging of different food groups

Unit II

Food Processing: Fruit juice processing, Jam, Jelly, Marmalade, Puree, Paste, Sauce, Ketchup, Pickles. Fruits and vegetable preserves, Crystallized fruits.

Beverages Processing: Coffee, Tea, Confectionery foods, Candies, Toffees, Caramels, Chocolate products.

Speciality and Functional foods: Introduction and Application. Organic food, Super food..

Unit III

Food Safety, Laws and Standards - Hazard Analysis and Critical Control Points (HACCP), Good Manufacturing Practices (GMP), Good Hygienic Practices (GHP), International Organisation for Standardization (ISO), Essential Commodities Act, Codex Alimentarius, World Trade Organisation (WTO), Technical Barrier to Trades (TBT), Sanitary Phyto-Sanitary (SPS) rules, Bureau of Indian Standards (BIS),AGMARK, Food Safety and Standards Act, 2006 (FSSA): Prevention of Food Adulteration Act (PFA), Milk and Milk Products Order (MMPO), Meat Food Products Order (MFPO), Fruits Products Order (FPO).

Reference Books

Fellows, P. J. (2016). Food Processing Technology: Principles and Practice, Fourth Edition, Woodhead Publishing.

Kiron Prabhakar (2016). A Practical Guide to Food Laws and Regulations, Bloomsbury Professional, India.

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Semester IV

LTPC: 0-0-4-4

Paper Code: FAN516

Paper: Seminar

Seminar will include topics related to current researches in the field of Nutrition

LTPC: 2-0-0-2

Paper Code: FAN517

Paper: Scientific Writing

Unit I

Scientific writing: Introduction, Types, Characteristics of scientific writing, Articles, Chapter, Monographs, Dissertations, Bibliographies.

Use and guidelines: For drafting Titles, Heading, Sub heading, Tables, Illustrations, Appendices.

Parts of Dissertation/Research report/Article: Introduction, Review of Literature, Method, Results and Discussion, Clarity, Validity and Objectivity during writing each of the above parts

Unit II

Report Writing, CV and Resume making, plagiarism.

Writing for Grants: Question to be addressed, Rationale, Importance, Conceptualization, Pilot data, Clarity, Specificity of method, Budgeting, Outcome..

Plagarism- Concept and Guidelines, Softwares.

Reference Books

- Wren & Martin (2005). High School English Grammar and Composition, S.Chand.
- Singh, R.K. (2000).Using English in Science & Technology, Prakash Book Depot, Bareilly.

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Paper Code: FAN518 LTPC: 2-0-0-2

Paper: Statistical Techniques and Data Analysis

Unit I

Parametric and Non-parametric tests. T test, Chi test, Testing of hypothesis-Type I and Type II errors, Levels of significance.

Regression Correlation, Coefficient of correlation, Rank correlation.

Unit II

Analysis of variance, One way, Two way classification

Experimental Designs-Completely randomized design, Randomized block design, Latin square design, Factorial design.

Reference Books

- Bandarkar, P.L. and Wilkinson T.S. (2000): "Methodology and Techniques of Social Research", Himalaya Publishing House, Mumbai. Page 7 2.
- Batnagar, G.L. (1990): "Research Methods and Measurements in Behavioural and Social Sciences", Agri. Cole publishing Academy, New Delhi.
- Kothari, C.R. (2004): "Research Methodology (Methods and Techniques)". New Age International (p) Ltd., New Delhi.

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Paper Code: FAN519

LTPC: 0-0-30-15

Paper: Dissertation

Dissertation will be of one semester only which will include Practical work, Report Writing and Viva Voce on specific topic provided for Dissertation work to individual student.