

**Institute of Nutrition and Food Science
University of Dhaka**

Syllabus for One Year M. S. degree in Nutrition and Food Science
From Session: 2009-2010 and onwards

(Thesis group)

Course Number	Name of the Course	Credits
Theory: NFS-501	Human Nutrition – I	4
NFS-502	Human Nutrition – II	2
NFS-503	Community Nutrition	4
NFS-504	Food Science and Technology	4
NFS-505	Food Microbiology	2
NFS-506	Research Methodology and Bio-statistics	4
NFS-507	Data Management and Analysis	2
Sub total		22
Other courses: NFS-509	Thesis	6
NFS-510	Seminar	2
NFS-511	General viva-voce	2
Total	-	32

Each 4 credit course will carry 100 marks (48 hours) and each 2 credit course will carry 50 marks (24 hours).

Course No. NFS- 501 **Human Nutrition – I** **4 Credits**

Biochemical Aspects:

1. Integrated metabolism of food, organ specific metabolism.
2. Antioxidants: Free radicals and oxidative stress. Roles of antioxidant nutrients in health and disease. Phytoprotectants and functional foods and their role in nutrition.
3. Biochemical aspects of heavy metals and their toxicity.
4. Recombinant DNA and its application in Nutrition.
5. Nutrient-gene interactions.
6. Nutrient- nutrient interactions.
7. Recent development of alpha -linolenic acid in the prevention of cardiovascular diseases. ω -3 PUFA's, inflammations and immunity. Effect of ω -3 PUFA on bone metabolism and osteoporosis. PUFA metabolism during lactation.

Recommended Books:

1. Human Nutrition- J.S. Garrow, W.P.T. James, A. Ralph.
2. Present Knowledge in Nutrition (7th rd) – E.E. Ziegen
3. Modern Nutrition in Health and Disease – M.E. Shils, T.A. Olson, M. Shike.
4. Recombinant DNA (2nd edition) – Waston and Gilman
5. Fatty Acids and Lipids – New findings. T. Hamnazaki and H. Okuyama. Vol-88.
6. Text Book of Human Nutrition – M.S. Bamji; N.P. Rao and V. Reddy (eds).
7. Human Nutrition in the Developing World – M. C. Latham. FAO.Food & Nutrition Series.

Course No. NFS – 502 **Human Nutrition - II** **2 Credits**

1. Emergence of chronic diseases in developing countries
2. Definition, principle, component and implementation of primary health care
3. Growth monitoring: interpretation of growth curves
4. Child growth and development (motor, social, visual, auditory, language and cognitive)
5. Cancer and nutrition
6. AIDS and nutrition
7. Geriatric nutritional problems (osteoporosis)
8. Arsenicosis, lead and other heavy metal poisoning
9. School health and nutrition program
10. Eating disorder (Anorexia nervosa, Bullaemia)
11. Role of micronutrients on immunity and its consequences to disease occurrence.

Recommended Books :

1. Introduction to infant development –Slater A & Lewis M (2002)
2. Child Development, Diagnosis & Assessment- Holt KS.
3. Arsenic in Drinking Water. National Academy Prevention Washington DC. Subcommittee on Arsenic in Drinking water.
4. Non malignant health effects of arsenic exposure, Dr. Mahfuzur Rahman, Faculty of Health Science, Sweden.
5. Physical status. The use and interpretation of Anthropometry- WHO. Technical series No 854.1995.
6. Arsenicosis in West Bengal- R. C. Saha.
7. Text Book of Preventive and Social Medicine-K.Park.
8. Modern Nutrition in Health and Disease – M.E. Shils, T.A. Olson, M. Shike
9. Immunology – I.R.J. Brostoff and D. Mals
10. Essential Immunology- I. Roitt

Course No. NFS-503**Community Nutrition****4 Credits**

1. Dynamics of Community Nutrition: Definition of community nutrition. Aspects of community nutrition diagnosis. Application of the principles of nutrition to various community problems of specific groups of the public. Specific educational objectives for community assessment.
2. Community Based Approach: Characteristics of community based programs; Disadvantages of vertical programs; Techniques of community mobilization; Assessment, analysis and action approach of management of nutrition at the community level.
3. a) Nutrition projects and programs : the project concept, aspects of project preparation and analysis, the project cycles, agricultural project analysis and nutrition, Identifying project costs and benefits, feeding programs and food related income transfers
b) Nutrition projects and programs in Bangladesh : Food for work, Vulnerable group development program, Food for Education, Public food distribution system, Bangladesh Integrated Nutrition Program, National Nutrition Program, Nutritional Blindness program, salt iodization program
b) Monitoring and evaluation of nutrition projects : Project monitoring, evaluation, indicators, characteristics,
4. Nutrition Communication: Strategies of nutrition communication, identification of target groups and their needs, tools, methods and media of nutrition communication and their limitations, formulation and testing of nutritional messages and communication materials and development of curriculum.
5. Agriculture – Nutrition linkages : Food systems for improved health, agricultural diversification, biofortification, nutritional effects of agricultural advances;
6. Nutrition and natural disasters: program needs, implementation and effectiveness

Recommended Books

1. Economic Development in the Third World - M. P. Todaro
2. Leading Issues in Economic Development - G. M. Meier
3. Human Nutrition in developing world – M.C. Latham
4. Economic analysis of agricultural projects – J.P. Gittinger

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Course No. NFS- 504**Food Science and Technology****4 Credits**

1. Food composition and classification; food production, food system and food security; and food contaminants and toxicants.
2. New food resources : Protein food resources and biotechnological production of foods; Traditional and conventional foods; and Enzyme technology and enzymatic food production
3. Quality factors of foods and quality management system, food laws, regulations and standards.
4. Food additives, use and safety.
5. Food fortifications and weaning food production.
6. Unit operations in food industries: unit operation approach, principles and names of common unit operation.
7. Packaging of food materials: types of containers, packaging materials, package testing; special features in packages and environmental issues.
8. Water and waste: properties and requirements of processing waters, waste water treatments.
9. Beverages production: processing of coffee and tea.

Recommended Books:

1. Food Science – N.N. Potter
2. Food Chemistry – H. D. Belitz and W. Grosch

- Principles of Food Science (vol.1 and 2)- G. Borgstron
- Human Nutrition in the Developing World – M.C. Latham
- Handbook of Edible Oils and Fats- G. Mowlah

Course No. 505 **Food Microbiology** **2 Credits**

- Short time and long time preservation of microbial cultures; culture collection and its management.
- Microbiology of milk and milk products (yoghurt, cheese, butter etc)
- Classification and characterization of various nutritional and physiological groups of microorganism
- Food waste treatment and disposal
- Microorganism as foods: single cell protein, yeast and lactic acid bacteria.
- Microbiological assay of vitamins and minerals.

Recommended Books :

- Food Microbiology – C. Frazier and D.C. Westhoff
- Food Poisoning and Food Hygiene- B. C. Hobbes and R.J. Gilbert
- Microbiology- M. J. Pelezar, E.C.S. Chan and W. R. Krieg.
- Modern Food Microbiology – James M. Jay
- Food Microbiology – M.R. Adams & M. O. Moss
- Food Hygiene and Sanitation- S. Roday

Course No. NFS-506 **Research Methodology and Bio-statistics** **4 Credits**

- Research, purpose of research, types of research
- Research process, problem formulation
- Research strategies and design
- Definitions, operationalization and indicators
- Data collection, design of a questionnaire
- Sampling methods and sample size
- Bias and confounding
- Basic risk measurements – measuring reliability, validity
- Data analyses – Preparing data for analysis, statistical tests
- Association and causation
- Ethical aspects of research
- Construction of a research proposal

Recommended Books .

- Research Methodology and Applied Statistics – Jaime B. Valera
- Health Research Methodology: A Guide for training in research method. WHO
- Survey Research Methodology – Floyd J. Fowler,Jr.

Course No. NFS- 507 **Data Management and Analysis** **2 Credits**

- Data Management with Computer
- Creation of Questionnaire
- Data Classification, Verification, Validation and Coding
- Creation of Data file and Data Entry
- Introduction to Cases/Records, Variables, Labels,. Missing Values and Description
- Data Editing, Sorting, Listing and Filtering/Querying
- Data analysis: Frequency, Table, ANOVA, Correlation, Regression, Tests
- Data exchange using Networking and Internet
- Graphical representation of data
- Dietary, Anthropometric and Socio-economic data management
- Data backup, storage and security
- Practice with sample data, output generation using SPSS, EPI Info, Anthro and other related software package, Presentation
- Portable data format (PDF), HTML

Recommended Books:

- An Introduction to Computer (4th edition) by Peter Norton
- SPSS, EPI Info, Anthro, Excel, Access and other related Packages