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M.Sc. (Home Sc.) Food & Nutrition  
Nov

M.A. M.Sc. Exam. Dec., 2016

First/Third Semester (Third Sem.)

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FOR COLLEGE ONLY

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Semester Wise Syllabus for Postgraduates  
Recommended by Home Science Board of Studies  
Jiwaji University, Gwalior

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M.Sc. (Home Science)  
Food and Nutrition

III SEMESTER  
PAPER-I  
Advanced Nutrition

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Objectives

The course is designed to:

- Provide in depth knowledge of the physiological and metabolic role of various nutrients and their interactions in human nutrition.
- Enable students to understand the basis of human nutritional requirements and recommendations through the life cycle.
- Familiarize students with the recent advances in nutrition.

UNIT-I

**Energy:** Energy content of food. Physiological fuel value-review. Measurement of energy expenditure, BMR thermic effect feeding and physical activity. Methods of measurement. Estimating energy requirement of individual and groups. Regulation of energy metabolism: control of food intake, digestion absorption and body weight.

UNIT-II

**Carbohydrates:** Digestion and transport review-dietary fibre fructooligosaccharides, resistant starch-chemical composition and physiological effects, Glycemic index of foods. Sweeteners-nutritive and non-nutritive.

Non-nutritive food components with potential health effects: Polyphenols, tannis, phylate, phytoestrogens. Cyanogenic compounds, lectins and saponins.

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## UNIT-III

- (a) **Proteins:** Digestion, absorption transport-review, Metabolism of proteins, Role of muscle, liver and gastrointestinal tract.

Protein quality; methods of evaluation proteins needs. Therapeutic application of specific amino acids: Branched chain, glutamine arginine homocysteine, cysteine.

- (b) Nutritional regulation of gene expression  
(c) Inborn errors of metabolism: Sickle cell Anaemia, Thallasaemia, Cystinuria, Phenylketouria, Hereditary Lactose intolerance, crout.

## UNIT-IV

**Lipids:** Digestion, absorption transport review.

Functions of essential fatty acids. Role of n-3, n-6 fatty acids. Prostaglandins. Fat requirements.

**Minerals:** Note: For each nutrient sources bioavailability, metabolism, function, determination of requirement RDI/ESADDI, deficiency and toxicity, interactions with nutrients are to be discussed.

**Macro minerals:** Calcium, phosphorus. Magnesium sodium, potassium and chloride.

**Micro minerals:** Selenium, cobalt, Chromium, vanadium, silicon, boron, nickel.

## UNIT-V

- (A) **Vitamins:** Historical Background, structure food sources, absorption and transport, metabolism, biochemical function, assessment of needs, interaction with other nutrients  
Physiological, pharmacological and therapeutic effect toxicity and deficiency with respect to following:

- (i) Fat soluble: Vitamin A, D, E & K  
(ii) Water soluble: Thiamine, riboflavin, niacin, biotin, pyridoxine, folic acid, pantothenic acid, ascorbic acid, cyanocobalmin, choline, Inositol.

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References:

1. Annual Reviews of Nutrition. Annual Review Inc. California, USA
2. Shils, M.E.; Osson, J.; Shike, M. and Roos, C. (1998) Modern Nutrition in Health and Disease 9th edition. Williams and Williams, A. Beverly Co. London.
3. Bodwell, C.E. and Erdman, J.W. (1998) Nutrient Interactions. Marcel Dekker Inc. York.
4. World Reviews of Nutrition and Dietetics.
5. WHO Technical Report Series.
6. Indian Council of Medical Research, Recommended Dietary Intakes for Indians - Latest Recommendations.
7. Indian Council of Medical Research. Nutritive value of Indian Foods - Latest Publication.
8. Berdanier, CD and Harrgrove, JI (ed) (1996): Nutrients and Gene Expression: Clinical Aspects. Boca Raton FL CRC Press.
9. Baecurle, P.A. (ed) (1994) Inducible Gen Expression Part-I: Environmental Stresses and Nutrients Boston: Brikhauser.
10. O. Chandra, R.K. (ed) (1992) Nutrition and Immunology. ARTS Biomedical. St. John's New Foundland.
11. Mahan, L.K. & Ecott Stump, S. (2000): Krause's Food Nutrition and Diet Therapy, 10th Edition, W.B. Saunders Ltd.
- 12.Sizer, F & Whitney. E. (2000) Nutrition-Concepts & Controversies 8th Edition. Wadsworth Thomson Learning.
13. Whitney. E.N. & Rolfes, S.R.(1999): Understanding Nutrition, 8th Edition, West/Wadsworth, An international Thomson Publishing Co.
14. Ira Wolinsky (Ed) (1998): Nutrition in Exercise and Sports, 3rd Edition. CRC Press.
15. Shils, M.E.; Olson, J.A.; Shike N. and Roos, A.C. (Ed) (1999): Modern, Nutrition in Health and Disease 9th Edition, Williams and Wilkins.
16. McArdle, W. Katch F. and Katch (1996) Exercise Physiology. Energy Nutrition and Human Performance 4th edition, Williams and Wilking, Philadelphia.

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**Journals:**

1. Nutrition Reviews.
2. America Journal of Clinical Nutrition.
3. America Journal of Clinical Nutrition.
4. British Journal of Nutrition.
5. European Journal of Clinical Nutrition.
6. International Journal of Vitamin and Nutrition Research.
7. International Journal of Food Science and Nutrition.
8. Nutrition Research.
9. Ann Nutrition Metabolism.

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M.Sc. (Home Science)  
Food and Nutrition

SEMESTER-III  
PAPER-II  
Clinical and Therapeutic Nutrition

M.M. 100 85

Objectives

The course will enable the students to:

- Understand the etiology, physiologic and metabolic anomalies of acute and chronic diseases and patient needs.
- Know the effect of various diseases on nutritional status and nutritional and dietary requirements.
- Be able to recommended and provide appropriate nutritional care for prevention and treatment of various diseases.
- Orient the students with all the important state of the art methodology applied in nutritional assessment and surveillance of human groups.
- Develop specific skill to apply the most widely used method.

UNIT-I

(A) Role of dietitian

- (a) Responsibilities of nutritional counselor.
- (b) Communication of dietary advice, skills of communication.
- (c) Motivation of patients.
- (d) Teaching and used in dietary advice.

(B) Principles of nutritional care

- (i) Nutritional care process
  - (a) Assessment
  - (b) Objectives of nutritional care
  - (c) Implementation of nutritional care
  - (d) Evaluation of nutritional care.

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