

M.H.Sc. I semester
Subject – Food and Nutrition

Paper II – Advanced nutritional Biochemistry(Compulsory)

Credit : 5, Hours : 60

Max. Marks-100 (80+20)

Objectives –

This course will enable students-

1. To understand the integrated functions of all systems in the science of physiology.
2. To understand the structure & function in various organs and systems in relation to the diseased conditions.
3. To understand the advanced issues to the relevant topics of Human physiology.

Unit I

1. Energy : Energy value of foods, specific dynamic action of foods, Basal Metabolic Rate(BMR), factors affecting BMR.
2. Carbohydrates : Definition, classification and their structure metabolism of carbohydrates – Glycolysis, Glycogenesis, citric acid cycle, Hexose, Monophosphate pathway and Gluconogenesis.

Unit II

1. Proteins : Definition, classification and their structure, protein metabolism, plasma proteins – types, their properties and functions.
2. Nucleic acid : structure of purines and pyrimidines, nucleoside and nucleotide, synthesis and break down of purines and pyrimidines.

Unit III

1. Lipids : Definition, classification and their structure, de novo synthesis of fatty acids, synthesis and breakdown of unsaturated fatty acids, significance of cholesterol, phospholipids and triacylglycerol.
2. Water : Regulation of intracellular and extracellular volume, osmolarity, water balance and its regulation, water imbalance and its implication.

Unit IV

Added Vitamins : Definition, classification- water soluble vitamin B, C and fat soluble vitamin A, D, E, K and their structure and role in health and nutrition.

Unit V

Minerals : Meaning, classification- Macro element and Micro element and their properties and their role in health and nutrition.

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M.H.Sc. I semester
Subject – Food and Nutrition
Paper I – Applied Physiology(Compulsory)

Credit : 5, Hours : 60

Max. Marks-100 (80+20)

Objectives –

This course will enable students-

1. To understand the integrated functions of all systems in the science of physiology.
2. To understand the structure & function in various organs and systems in relation to the diseased conditions.
3. To understand the advanced issues to the relevant topics of Human physiology.

Unit I

1. Cell : Structure and function of cell.
2. Tissue :
 - i) Epithelial tissue – types, structure and function.
 - ii) Connective tissue – types, structure and function of connective tissue.
 - iii) Muscular tissue - types, structure and mechanism of muscle contraction
 - iv) Nervous tissue - structure and function

Unit II

1. Blood : Composition of blood and function, Hemoglobin synthesis, function of plasma protein, erythropoiesis, factors influencing erythropoiesis, leukopoiesis, RBC Indices- Blood groups, blood clotting, hemoglobin synthesis.
2. Circulatory system : Structure and function of heart and blood vessels, cardiac output and blood pressure, mechanism of cardiac cycle, heart rate and heart sound.

Unit III

1. Digestive system: Structure of Alimentary canal and supportive organ of digestion – Liver, gall bladder, pancreas, process of digestion, absorption and transports.
2. Respiratory system : structure and function of respiratory organ, mechanism of respiration, ventilation and its control, role of lungs in exchange of gases, transport of O and CO.

Unit IV

1. Excretory system : structure and function of Kidney, nephron, role of kidney in maintaining pH of blood, mechanism of urine formation, mechanism of filtration electrolyte and acid-base balance. Renal function testes (Urine and blood) Diuretics.
2. Reproductive system : Male and female reproductive organ, male and female menstruation.

Unit V

1. Nervous system : structure and function of brain, spinal cord, reflex and its classification, nerve impulse- afferent and efferent nerves – Hypothalamus and its role in various body function.
2. Sense organ : structure and functions, general sense and special senses, receptors of sensory nerves and perception of stimuli.

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M.H.Sc. I semester
Subject – Food and Nutrition
Practical

Human physiology & Advanced Nutritional Biochemistry
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1. Recording of blood pressure
2. Measurement of pulse rate
3. Thermometer reading (Body temperature)
4. Identification of blood group
5. Spotting – tissues and various organs
6. Study and interpretation of pathological tests reports of blood and urine (Normal and abnormal)

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Practical section B

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Protein : a) Estimation of proteins in food stuff.

b) Estimation of albumin, globulin and A:G ratio in serum and

c) Glucose : Estimation of glucose in blood and urine

d) Lipid : Estimation of lipid in food.

e) Calcium : Estimation of calcium in food and serum.

f) Phosphorus : Estimation of inorganic phosphorus in food and

g) Buffer : preparation of phosphate, carbonate and acetate buffer and determination of their pH values.

h) Survey : Study of equipment used in laboratory.

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M.H.Sc. III Semester
Subject - Food and Nutrition
Paper I - Advanced Nutrition (Compulsory)

Credit : 5, Hours : 60

Max. Marks-100 (80+20)

Objectives -

This course will enable students-

1. To understand the integrated functions of all systems in the science of physiology.
2. To understand the structure & function in various organs and systems in relation to the diseased conditions.
3. To understand the advanced issues to the relevant topics of Human physiology.

Unit 1 Energy - :

- i) Energy content of food and their measurement.
- ii) Physiological fuel value and their measurement.
- iii) Energy expenditure and measurement of energy expenditure.
 - a) BMR / RMR and factors affecting BMR, BMR measurement.
 - b) Thermic effect of feeding.
 - c) Energy expenditure, measurement of energy expenditure in physical activity.
- iv) Estimating energy requirements of individual and groups
- v) Concept of reference man and woman.
- vi) Regulation of food intake and energy balance.

Unit 2 Carbohydrates -

A) Chemical composition and physiological effect of -

- i) Dietary fibers
- ii) Fructooligosaccharides
- iii) Resistant starch.

B) **Glycemic index & glycemic load.**

C) Non - nutritive food components with potential health effect.

- i) Polyphenals ii) Tannins iii) Phytate iv) Phytoestrogen v) Cyanogenic (Carcinogenic) compounds vi) Lectins vii) Saponin

Unit 3 Protein:

- i) Protein quality and method of evaluation of protein quality.
- ii) Evaluation of protein needs.
- iii) Therapeutic application of branched chain **amino acids**, glutamine, **arginine**, homocysteine, Cysteine, **Histidine**, **Methionine**, **Phenylalanine**, **Threonine & Tryptan.**

Unit 4

1) Lipids : Functions of essential fatty acids. Role of n-3, n-6, fatty acids, Omega fatty acids, Prostaglandins, fat requirement, Transfat (Transfatty acids).

2) Minerals : Sources, bioavailability, functions, determination of RDA of macro minerals- Calcium, phosphorus, Magnesium, Sodium, Potassium, & Chloride. Micro minerals - Selenium, Cobalt & Chromium.

Unit 5 Vitamins - Food sources, biochemical functions, recommended, dietary intake of all vitamins and therapeutic effect of fat soluble & water soluble vitamins.

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M.H.Sc. IV Semester
Subject – Food and Nutrition
Paper IV – Nutrition and Health of Women

Credit : 5, Hours : 60

Max. Marks-100 (80+20)

Unit 1

- A) Health status of women in India with special reference to NFHS data.
B) Impact of urbanization & globalization on women.
C) Occupational health hazards & their impact on women health.

Unit 2

- A) Menstrual disorders & their management –
i) Amenorrhea ii) Dysmenorrhea iii) Premenstrual syndrome iv) Endometriosis v) Alteration in cyclic bleeding.
B) Menopause & its management –
i) Physical changes during the perimenopausal periods.
ii) Health risks of perimenopausal women.
iii) Menopausal hormonal therapy, alternative therapies & nutritional care.
C) Sexually transmitted diseases & other infections – types, preventions & care.
i) Bacterial STDs
ii) Viral STDs – HIV & AIDS
iii) Vaginal infections

Unit 3

- A) Infertility – factors associated with female infertility, assessment of female infertility and management.
B) Contraception – different measures of contraception care of at risks mothers-
A) Hypertensive disorders in pregnancy – classification, etiology, pathophysiology and their management.
B) Metabolic disorders in pregnancy –

Unit 4

- A) Diabetes mellitus – Pregestational & Gestational diabetes.
ii) Hyperemesis Gravidarum & its management
C) Mental health disorders - & substance abuse during pregnancy-
i) Anxiety disorders ii) Mood disorders. iii) Substance abuse during pregnancy – cigarette smoking, caffeine, alcohol, marijuana, cocaine etc.

Unit 5

- A) Postpartum physiology and nutritional care
B) Failure of lactation – causes & remedies.
C) Various health related schemes and program of women empowerment.

References –

1. Maternity & women's health care – Lowdermilk, Perry, Bobak, Mosby publication.
2. Nutrition & Dietetics – Davidson Passmore
3. Women's empowerment in India – Sarojini Nayak, Jeevan-Nair.
4. महिला सशक्तिकरण की अवधारणा – श्रीमती ममता चंद्रशेखर एवं चंद्रशेखर रायकवार

सुभाष

महाराष्ट्र शासन, स्नातक कक्षा

महाराष्ट्र शासन, पोलीस बंदी, मुंबई (१)

M.H.Sc. II Semester
Subject- Food and Nutrition
Paper III – Dietetics & Therapeutic Nutrition

Unit – I Role of Dietitian :

1. Role & responsibility of dietitian.
2. Nutrition (Diet) counselling – objective & counselling process.
3. Principle of nutritional care and process – (i) Assessment of patient's nutritional status through nutritional assessment and subjective global nutritional assessment (SGNA)
4. Identification of high risk patient.

Unit – II Nutritional care of hospitalized patient :

1. Diet modification – Normal diet as basis for therapeutic diet.
2. Routine hospital diets – Regular, light, soft liquid diet.
3. Mode of feeding- (i) enteral – tube feeding (ii) parenteral – peripheral vein feeding & TPN.
4. Effect of food, nutrient and drug interaction.
5. Surgery – Pre – operative & post operative nutritional care in gastric and esophageal surgery.

Unit – III Infection and Fever: *shifting from III sem, Paper II*

1. Etiology, pathology symptoms and dietary management of
 - (i) Acute fever – viral fever, Typhoid fever
 - (II) Chronic fever – T.B
2. Weight imbalance & management -
 - (i) Overweight and obesity - Definition classification assessment, causes, dietary management and different calorie restricted diets like Atkin's diet, Vegan diet, Paleo diet, Low Carb diet, Ornish diet, Duken diet, Ultra low fat diet.
 - (II) Under weight – Definition , Grades, Etiology & Dietary management.

Unit – IV Diseases of upper gastrointestinal tract :

Etiology, symptoms and dietary management of:

1. Diseases of esophagus – Achalasia & GERD, esophagitis.
2. Diseases of stomach – Indigestion, gastritis, peptic ulcer.

Unit – V Diseases of lower gastrointestinal tract :

Etiology, symptom and dietary management of:

1. Diseases of intestine - constipation, diarrhea, haemorrhoids.
2. Inflammatory bowel disease diverticulitis, ulcerative colitis, Irritable bowel syndrome.
3. Malabsorption syndrome – sprue, steatorrhea GIT enzyme deficiency.

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PRACTICAL:

1. Assessment of patients nutritional needs of following diseases
 (i)Overweight & obesity (ii)Under weight (iii)Acute fever (iv) chronic fever
 (v)Upper GIT diseases (vi)Lower GIT diseases.
2. Dietary calculation and meal planning & preparation according to meal exchange system of following diseases.
 (i)Overweight & obesity (ii)Under weight (iii)Acute fever (iv) chronic fever
 (v)Upper GIT diseases (vi)Lower GIT diseases.
3. Diet counselling in following diseases.
 (i)Overweight & obesity (ii)Under weight (iii)Acute fever (iv) chronic fever
 (v)Upper GIT diseases (vi)Lower GIT diseases.
4. Collection of health related published material (journal, magazine, paper, net)
5. Study of patient's case history.

References :

1. Fundamental of clinical nutrition – 93 – Weinsten
2. Dietetics – Srilaxmi.
3. Nutrition and dietetics – David Son Pasmore
4. Clinical dietetics and nutrition – F.P. Antia.
5. Textbook of nutrition and dietetics – Kumud Khanna.

Results

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माता जीजाबाई अनामिका प्रामाणिक

M.H.Sc. III Semester
Subject- Food and Nutrition
Paper II – Clinical & Therapeutic Nutrition

Unit – I

- 1. Burns – Degree of burn and nutrition care and management of burn patient.
- 2. Cancer – Etiology, types and dietary ,management of cancer patient’s ongoing different therapies.
- 3. Gout & osteoporsis – Etiology, symptoms and dietary management.

Unit – II

Nutrition care in cardio vascular disorders, definition, criteria, types, causes nutritional management.

- 1. Hypertension
- 2. Hyper lipidemia
- 3. Coronary heart disease (CHD), Atherosclerosis

Unit – III

- 1. Diet in diseases of endocrine pancreas –Diabetes –etiology, classification, symptoms and diagnosis management. Insulin therapy, Oral hypogly cemic drugs, Glucose monitoring at home. Dietary care with and without insulin, specific diabetic food, sweetners diabetic coma, insulin reaction, patient education.
- 2. Nutritional care in hypoglycemia-symptoms, types, reactive hypoglycemia, idiopathic hypoglycaemia, Dietary treatment.

Unit – IV

- 1. Nutritional care for patient with diseases of kidney – review and physiology and function of normal kidney.
- 2. Kidney diseases – classification, etiology, characteristics and nutritional care and management Nephritis, Nephrotic syndrome, Acute and Chronic renal failure.

Unit – V

- 1. Diseases of liver exocrine pancreas and billiary system, etiology, pathogenesis symptoms and management.
- 2. Physiology of liver and liver diseases – Cirohosis, Viral hepatitis Hepatic coma, Wilsons diseases.
- 3. Disorder related to gall bladder – Cholecystitis, Gall stones.
- 4. Disorder related to pancreas – Pancreatitis, Acute and Chronic.

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PRACTICAL

1. Planning, calculation and preparation of diets for following diseases:
 - Obesity
 - Underweight
 - Acute fever – Viral fever, Typhoid
 - Chronic Fever – T.B.
 - Atherosclerosis/Coronary heart diseases
 - Diabetes
 - Nephritis/Kidney failure
 - Cirrhosis/Hepatitis
 - Pancreatitis
 - Gall Stones
2. Diet plan for ^{surgical} of Heart, kidney.
3. Planning of DASH diet, Mediterian diet, Ketogenic diet, Vegan diet, Ornish diet, Atkin's diet.

Reference :-

1. Manual of dietetics practice – BronyThomus
2. Nutrition in health and disease – Anderson
3. Normal in Therapeutic Nutrition -- CH Robinson.
4. Basic nutrition diet theory – William 10/c
5. Modern nutrition in Health and disease – Robert S. Good Heart.
6. Fundamentals of clinical nutrition – 93 – Weinster
7. Diätetics – Shrilaxmi
8. Nutrition and dietetics – Shubhangi Joshi
9. Human nutrition and dietetics – Davidson Passmore
10. Clinical diätetics and nutrition – F.P. Antia
11. Textbook of nutrition and dietetics – Kumud Khande
12. Mohan L.K. and Excott Stump- (2000) Krause's food and nutrition diet therapy.

major name

M. P. Patel

Pracharya

प्रो. प्राचार्य
महता जीविकार्थ शास्त्र, महाविद्यालय

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Semester IV
Subject – food and Nutrition
Paper II Public Nutrition

UNIT I

1. Concept of public nutrition
2. Role of public nutrition in health care delivery
3. Food and nutrition security food production. Access distribution losses and consumption.
4. Nutrition emergencies – Identification, types and management.

UNIT – II

1. Dynamics of disease transmission
2. Sources, mode of transmission.
3. Disease prevention and control, early diagnosis, notification. Investigation. Isolation. Quarantine, Treatment.
4. Disinfection – definition types of disinfection.

UNIT-III

1. Epidemiology definition aims and approaches. Measurements and its role. Methods in epidemiology in brief.
2. Users of epidemiology.

UNIT – IV

1. Communicable disorders Dengue, plague, cholera, mumps, tetanus rabies.
2. Host defense mechanism – active and passive immunity.
3. Immunization program in india.

UNIT – V

1. National and international organization relevant o public nutrition – NIN, ICMR, CFTRI, NNMB, WHO, FAO, UNICF, Indian dietetic ASSO, Nutrition society of india food and nutrition board.
2. Nutrition monitoring and surveillance.

PRACTICAL

1. a) Types of nutritional problems in different segments and age groups.
- b) Assessment of nutritional status of preschool age, schools going age, Adolesceute and pregnant woman – 5 of each age group.
2. Development of tools of nutritional education using 3 methods – one of each.
3. Plan prepare and calucate one dish meal specific to your own region for (three each)
 - (i) Pregnant woman
 - (ii) Lactating mother
 - (iii) Wearyng food
4. Case study of existing intervention programme in voluntary and government sector.

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