-Nutrients (3207) 4h(per week)

1- Energy: Introduction, Measurement of energy, Gross energy, Digestible energy, Metabolized energy, The body's need for energy:
   One- Basal metabolic energy
   Two- Activity needs
   Three- Thermic effect of food
   Estimation of total energy needs, factors affecting energy requirment: Body composition, sex and body condition, Hormones secretion, Age, Environmental temperature, pregnancy, lactation.

2- Carbohydrate: Classification, Monosaccharides: Glucose, sorbitol, fructose, galactose.
   Disaccharides: Sucrose, lactose, Maltose
   Polysaccharides: Starches, Glycogen, Dextrin.
   Dietary fibre: Introduction, sources, function, recommended intake, and deficiency,
   Axcess
   Digestion and absorption of carbohydrates

3- Protein: Introduction, classification of amino acids, essential amino acids, and non-essential amino acids,
   - Protein quality: Complete protein, Incomplete protein, Limiting amino acid, How to improve the quality of plant protein.
   - The function of protein: Growth and maintenance of tissue, formation of essential body compounds, Regulation of water balance, Maintenance of body neutrality formation, Transport of nutrients.
   - Digestion and absorption of protein
   - Factors affecting protein Utilization: Growth, Injury, Emotional stress, Immobility, caloric intake.
   - Estimation of protein / amino acids need
   - Nitrogen balance: Nitrogen equilibrium, positive nitrogen balance, negative nitrogen balance
   - Evaluation of protein quality: Biological value, net protein utilization, protein efficiency ratio, amino acids score
   - Protein requirment
   - Energy protein malnutrition: Kwashiorker, Marasmus.

4- Lipids: Introduction, visible fats and oils, invisible fats and oils
   - Saturated fatty acids, monounsaturated fatty acids, polyunsaturated fatty acids
   - Essential fatty acids, Linileic acid, Linolenic acid, Arachidonic acid. Their function and deficiency

- Digestion, absorption and metabolism of fat
- Cholesterol: Hypercholesterolemia as a risk factor in cornary heart disease,

  The role of cholesterol in the mechanism of transport vehicle of lipoprotein:

  Chylomicrons, VLDLs, LDLs, LULs,. The factors affecting the amount of

  circulating cholestrol, National cholesterol education program for adults.
- Role of fat in the diet: Palatability, source of energy, carrier of fat – soluble vitamins
- Role of fat in the body: Energy reserve, regulator, insulator, protector
- Dietary requirment for fat
- Modification of dietary fat intake in several ubnormal condition
- Lipids and degenerative diseases: Cornary heart disease, cancer

5- Fat soluble vitamins vit. A, D, E, K
Measurment, Absorption and Metabolism, Toxicity, prevention of deficiency

6- Water soluble vitamins
Absorption, storage and excretion, toxicity

7- Minerals
Calcium, Phosphorus, Magnesium Iron, Iodine, Zinc
Absorption, transport, storage and excretion toxicity, deficiency and its prevention.

8- Other minerals (trace elements)
Copper, manganese, flurine, chromium, selenium, Molybdenum, Cobalt, Nickel, tin, Vandium, Silicon
Sources, functions, recommended intake, Absorption, transport, storage, excretion,
toxicity, deficiency and its prevention.

9- Water & electrolytes
water balance, water balance in infancy,
Na & K: intake and out put, sodium excess, potassium excess.

-Food Microbiology (3204) 4h(per week)

1- Historical development

2- Primary sources of microorganisms found in food:
Soil and water
Plant and plant product
Food utensils, intestinal tract of man and animals, food handlers, animal
feeding, air and dust.
Synopsis of common food borne bacteria
Synopsis of genera of moulds and yeasts common to food

3- Instrinsic and extrinsic parameters of foods that affect microbial growth
Intrinsic parameters: PH, moisture content, oxidation reduction potential
(O/R Eh), nutrient content, antimicrobial constituents, biological structures
Extrinsic parameters: temperature of storage relative humidity of
environment, presence and concentration of gases in the environment
(effect of CO_2 and O_2)

4- Microbial food spoilage in:
- Milk and milk products
- Oils and fat
- Fruit and vegetables
- Cereals and their products
- Meat and fish
- Egg
- Confictionary
- Beverages
- Miscellaneous food

5- Indicator and microbiological criteria (standards)
- Microbiological criteria (standards):
food standard, food Guidelines, Microbiological purchasing specification
- Indicator of food sanitary
Coliform bacteria as indicator pathogenic Escherichia coli
Total count

Dye reduction methods
Chemical methods

6- Food poisoning microorganisms
- Toxins produced by microorganisms
- Exotoxin
- Endotoxin
- Food poisoning
- Staphylococcus aureus
- Clostridium perfringens
- Clostridium botulinum
- Bacillus cereus
- Salmonellae, Escherichia and shogellae
- Vivrio parahaemolyticus and other vibrios
- Yersinia enterocolitica
- Campylobacter jejuni
- Prevention

7- Other proven and suspected food – borne pathogens
- Mycotoxins: Aspergillus flavus (Aflatoxin)
- Viruses
- Aeromonas species
- Listeria monocytogenes
- Protozoa

-Clinical Nutrition I (3203) 4h(per week)

* Nutritional care process:
    - Concept of good nutritional status.
    - Nutritional status assessment:
        - Levels of assessment
        - Methods of assessment
    - Meal planning: steps of meal planning.
    - Implementation of the meal.
    - Evaluation of the meal.

* Normal and modified diets.

* Nutritional care of hospitalized patients:
    - Risk factors for poor nutritional status of hospitalized patients.

* Nutritional support:-
    - Selecting the appropriate type and method of feeding.
    - Oral diet:- - Therapeutic diets.
    - Standard hospital diets.

* Enteral nutrition:
    - Indications, oral supplements.
    - Tube feeding, types, methods of administration.
    - Potential problems, rationale and intervention.
    - Types of formula, content and indications.
    - Monitoring of patients on enteral feeding.

* Parenteral nutrition:
    - Indications.
    - Types of parentral fluids.
    - Types of parentral nutrition.
    - Potential complications.

* Malnutrition:
    - Types.
    - Starvation: - Changes in body composition, defin, etiology.
        - Clinical features.
    - Protein energy malnutrition, types, etiology, classifications, treatment, prevention.

* Anorexia nervosa:
  Defin, clinical features, treatment.

* Bulimia:
  Defin, clinical features, treatment.

* Rickets and osteomalacia:
  Etiology, epidemiology, clinical features, treatment and prevention.

* Iodine deficiency disorders:
  Types, epidemiology, clinical features, prevention and treatment.

* Pellagra:
  Clinical features, diagnosis, prognosis, prevention, treatment.

* Vitamin A deficiency disorders:
  - Clinical features, treatment, prevention, etiology.
  - Epidemiology.

* Beriberi and wernick - korsakoff syndrome:
  - Types of disorders, clinical featurs.
  - Treatment, prevention, epidemiology.
  - Evaluation of nutritional status of vit B1.

* Scurvy:
  Clinical features, diagnosis, epidemiology prevention and treatment.

* Nutritional anemia:
  Etiology, Epidemiology, clinical features and tretment.

* Oncogenic diseases:
  - Effect on nutritional status.
  - Role of diet in prevention of cancer.
  - Dietary management.

-Applied Nutrition I(3202) 2h(per week)

I- Growth and Development:

Relation of nutrition to growth process-Growth - physical growth, the growth cycle development.

II- Development:

- **Growth & Development:**

1- Growth - Physical growth
- Velocity of growth

2- Development - Physical development
- Neurodevelopment
- Cognitive development
- Language
- Psychosocial development

- **Energy & nutrient needs:**

1- Energy

2- Protein - Protein quantity
- Protein quality
- Adequate energy intake

3- Lipids.

4- Carbohydrate.

5- Vitamins - Fat - soluble vitamins (vit A, D, E,K)
- Water - soluble Vitamins (vit C, Thiamine, Niacin,
- Riboflavin & vitB6, folate & vit B12)

6- Major minerals - calcium, phosphorus & magnesium

7- Trace minerals - iron, zinc, fluoride

8- Fluide & electrolytes - water
- sodium, potassium & chloride

- **Feeding infants:**

1- The feeding relationship

2- Breast milk - Biochemistry of human milk
- Colostrum
- Mature milk
- Protein
- Protective factors
- Lipids
- Carbohydrate
- Vitamins & minerals

3- Infant formula - Guidelines to commercial formulas (protein, CHO, lipids, vitamins, minerals)
- Supplementary food
- Nutritional Needs
- Physiologic maturation

- Infant feeding skills

4- Introducing the infant to solid foods - supplements

- **Nutrition - Related Concerns During Infancy:**

1- Under nutrition - failure to thrive [organic (FTT) & non organic FTT (NFTT) - Iron Deficiency

2- Baby Bottle Tooth Decay

3- Allergic Reaction to Food

4- Development of chronic diseases - obesity

- Cardiovascular Dis.

III- The High - Risk Infant:

- Definition: - preterm. Low - birth weight infant, very - low - birth weight, extremely low - birth weight, small for gestational age, large for gestational age
- Nutrition Risk factors:
  - Limited Nutrient Reserves
  - Increased Nutrient Needs
  - Immature Alimentary Tract
  - Metabolic Immaturities
  - Medical complications / stresses
- Nutrient Needs of High - Risk infants:
  - Fluid & electrolytes
  - Energy
  - Protein
  - Minerals & vitamins
- Feeding the High - Risk Infant:
  - Physiologic development
  - Mode of feeding ___ Parenteral
    ___ Enteral

Enteral (Human milk, preterm formulas, Other formulas, Lactation management)

- E. Growth & development Outcome:
- F. Medical / Surgical Conditions Complicating:

The Nutritional management of high - risk infants

- Hyperbilirubinemia
- Respiratory / Cardiac / Renal problems
- Gastrointestinal Problems
- Bone problems

IV- Nutrition during Growth: Preschool and School Years

- Growth and development
- Growth and body composition
- Development – the preschool years (age 1- 6)
- Physical development
- Nucor development
- Cognitive development
- Psychosocial development
- Energy and Nutrient Needs of Children
- Energy
- Protein
- Vitamins and Minerals (Calcium, Iron)
- Florida and oral Health –(Tooth structure, Dental caries fiber)
- Factors Influencing Food Intake:
- Poverty, Family, Peers, Media & Advertising
- Nutrition knowledge & Education.
- Recommendations for Food Intake:
  - Feeding the preschool child
  - Feeding the school – age child
  - Vegetarian diets for children
  - Dietary intakes of children
- Under nutrition:
  - Sever under nutrition
  - Under nutrition & cognition
  - Measuring cognition
  - Short - Term fasting & cognition
- Nutrition - Related concerns:

1- Diet & behavior - neurotransmitters
- Attention deficit hyper activity disorder (ADHD)
- Sucrose
- Caffeine

2- Food hyper sensitivities - (Incidense, diagnosis, treatment)

3- Lead: The silent health threat to children
- Sources of lead, the effects of lead, Role of diet, Acceptable blood levels, Treatment / prevention

- Promoting optimal nutrition for children.

V- **Nutrition during ADOLESCENCE:**

- Growth & development:

1- Growth - Height
- Weight

2- Development -Hormonal changes that influence growth & development
- Physical development

- Body composition (Body fat), Bone mineral mass, Body water
- Neurodevelopment
- Psychosocial development
- Cognitive development

- Energy & Nutrient Needs:
  Energy
  Protein
  Carbohydrate & fat
  Minerals & vitamins
  (Calcium, iron, zinc, other minerals) (vit D, B6, Folate, vit B12, vitC)
- Factors that influence food habits:
  1- Eating practices of Teenagers
    - Eating Away from Home
    - Snacks and meals

Nutrition –related concerns of adolescence:

- Cardiovascular disease
- Prevention, nutritional cholestrol education program (NCEP)

- Programming positive food habits.

-Foods Chemistry(3206) 2h(per week)

1- Water (moisture):
- Importance of water in food. Type of water in food.
- Water molecule structure - Hydrogen bond.

2- Oils and fats:
- Occurrence in food.
- Classification of lipids and fatty acids.
- Physical properties of fats:
  Melting point, softening point, slipping point, shot's melting point, Specific gravity, smoke, flash, and fire point, turbidity point
- Chemical properties of fats:
  Reichert meissl value, polenske No, saponification No, hehner value, Iodine No, acidity value.
- Flavour changes in fats and oils:
  Reversion, Rancidity
- Effect of processing on fat and oil.

3- Proteins:
- Protein structure and classification.
- Functions of protein and individual amino acids.
- Complexes of carbohydrates, protein, and lipids:
  glycoproteins, glycolipids, lipoproteins.
- Physical and chemical properties of proteins.
- Native and denaturated proteins.
- Pure protein from some foods.
- Effects of processing on proteins.

4- Carbohydrates:
- Classification of carbohydrates:
  Monosaccharides, oligosaccharides, polysaccharides.
- Changes in carbohydrates during processing: Solubility, hydrolysis, gelatinization of strach.
- Crude fibre.
- Browning reaction.

5. Vitamins: Classification, structure, effect of processing.
6. Minerals.
7. Enzymes in food.
8. The importance of organic acids in food.
9. Pigments, colours, and flavours of food.
10. Food additives.

- Research Methodology(3122) 2h(per week)

Introduction to research and various purposes of research

-Different research categories and main research approaches in public health

-Common terms and concepts used in research.(observational)

-Introduction to research process and various component of research.

-Review of literature

-Its relation with research question and retrieval.

-Formulation of research aims and objectives.

-Selection of variables and study equipment.

-Various methods of data collection.

-Organization and presentation of data.

-Ethical considerations in research.

-Survey types, essential prerequisites and lises.

# *- Communicable & non Communicable diseases (3113)*
2h(per week)

Communicable disease:

1- Terminology of infectious diseases.
2- Classification of communicable diseases.
3- Dynamic of disease transmission.
4- Sterilization, Disinfection, Disinfectants used in hospitals.
5- Immunization.
6- Air Borne infections:-
Epidemiology, prevention and control measures of:

a- Acute respiratory infection (A 121).
b- **Streptococcal** infection.
c- Chicken pox.
d- Small pox eradication.
e- Measles and German measles.
f- Diphtheria.
g- Pertussic.
h- Mumps.
i- Influenza.
j- Tuberculosis.
k- Agent factors of communicable diseases.

7- Water and food Borne infections:-
Epidemiology, prevention and control measures of:

a- Acute diarrhial diseases.
b- Cholera (vibriosis).
c- Typhoid and paratyphoid fever.
d- Poliomyelitis.
e- Hepatitis (A) and Hepatitis (E).
f- Food poisoning.

8- Zoonotic diseases:-
Epidemiology, prevention and control measures of:

a- Yellow fever.
b- Brucellosis.
c- Rabies.
d- Rickettsial diseases.
e- Hydatid diseases (Echinococcusis).
f- Plague.
g- Anthrax.
h- Toxoplasmosis.

9- Sexually transmitted diseases.
Classification, Epidemiological, portance, prevention and control measures of:

a- Acquired ummunodeficiency syndrom (HIV – AIDS).
b- Hepatitis B and Hepatitis C.

10- Vector Borne diseases.
- a- Malaria.
- b- Schiestosomiasis.
- c- Leishmaniasis.
- d- Worm infestation (Hook worm, scariasis, and Taeniasis).
- e- Parasitic diseases:-
  Amaebiasis and Toxoplasmosis.

11- Surface infections.
- a- Tetanus.
- b- Leprosy.

Non – Communicable diseases

Epidemiology, prevention and control measures of:

1- Introduction.

2- Isch. H. diseases.

3- Hypertension.

4- Diabetic mallitus.

5- Rheumatic H. diseases.

6- COLD.

7- Degenerative diseases.

8- Renal diseases.

9- Cancer.

10- Some neurological diseases.

- Health Legislation (3410) 2h(per week)

- Regulation related to environment
- Air protection
- Sea protection
- Water protection
- Food protection
- Improvement of environment
- Zoonotic diseases protection
- Soil protection
- Plants protection
- Undeer ground water protection
- Ionizing radiation protection

-Forensic Medicine(3117) 2h(per week)

- Death and postmortem changes
  - Indentification of
  - Burns
  - Scalds

- Electric injuries

- Death associated with pregnancy, delivery and abortion
- Child abuse
- Food poisoning
- Insecticides poisoning
- Addiction

- Classification of toxic effects
  - Teratogenesis
  - Chemical carcinogenesis
  - Necrosis (tissue damage)
  - Interruption of biological functions
  - Allergles
  - Idiosyneratic reaction

- Toxic Agents
  - Heavy metals
  - Organic solvents
  - Agriculture toxicology
  - Animal toxins
  - Plant toxins
  - Household preparation

- Toxicology of chemical warfareagents (chemical weapons)
  - Introduction
  - Concept and use of chemical weapons
    - Mustard gas
    - Phosgen
    - Hydrogen cyanide
    - Tear gas
    - Riot control agents
- Industrial toxicology
  - Petroleum distlates and turpentine

- Microelectronic industry
- Chlorinated hydrocarbons
- Aromatic hydrocarbons
- Alcohol

- Environmental toxicology
  - Air pollution
  - Water pollution
  - Soil pollution
  - Radiation toxicology

- Field decontamination of hazardous materials
  - Hazard indentification
  - Field decontamination
    - Prevention
    - Decontamination management
  - Techniques of decontamination
    - Physical
    - Chemical
  - Decontamination Equipment's

  - Radiation Decontamination
    - Detection
    - Equipment
    - Nine point decontamination
    - Pharmaco Therapy

-Computer (3115) 2h(per week)

- Data processing
- System objective
- Analysis and Design system
- Informative committees
- Participation in analysis and design
- Step put of system
- Data sources
- Data modeling and analysis